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Monetary Authority of Singapore
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Definitions and Conventions

As used in this report, the term "country" does not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

In this Financial Stability Review, the following country groupings are used:

- "G3" refers to the euro area, Japan, and the United States
- "G-20" refers to the Group of Twenty comprising Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkey, the United Kingdom, the United States and the European Union
- "Asia 10" comprises China (CHN), Hong Kong (HK), India (IND), Indonesia (IDN), Korea (KOR), Malaysia (MYS), the Philippines (PHL), Singapore (SGP), Taiwan (TWN) and Thailand (THA)
- "SEA5" comprises Indonesia, Malaysia, the Philippines, Singapore and Thailand
- "NEA3" comprises Hong Kong, Korea and Taiwan

Abbreviations used for financial data are as follows:

- Currencies: Chinese Renminbi (RMB), Hong Kong Dollar (HKD), Indian Rupee (INR), Indonesian Rupiah (IDR), Japanese Yen (JPY), Korean Won (KRW), Malaysian Ringgit (MYR), Philippine Peso (PHP), Singapore Dollar (SGD), Taiwan Dollar (TWD), Thai Baht (THB), Vietnamese Dong (VND)
- Stock Indices: Bombay Stock Exchange Sensitive Index (SENSEX), FTSE Bursa Malaysia KLCI (FBMKLCI), Hang Seng Index (HSI), Ho Chi Minh Stock Index (VNINDEX), Jakarta Composite Index (JCI), Korea Composite Stock Price Index (KOSPI), Nikkei 225 (NKY), Philippine Stock Exchange Index (PSEI), Shanghai Composite Index (SHCOMP), Stock Exchange of Thailand Index (SET), Straits Times Index (STI), Taiwan TAIEX Index (TWSE)

Other Abbreviations

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ACU	Asian Currency Unit
ABS	Asset-Backed Securities
ADM	Asian Dollar Market
B&C	Building and Construction
BCBS	Basel Committee on Banking Supervision
BOE	Bank of England
BIS	Bank for International Settlements
CAR	Capital Adequacy Ratio
CBO	Congressional Budget Office
CBS	Credit Bureau (Singapore) Pte Ltd
CCP	Central Counterparties
CDS	Credit Default Swap
CEE	Central and Eastern Europe
COE	Certificate of Entitlement
CPF	Central Provident Fund
CPI	Consumer Price Index

CPSS	Committee on Payment and Settlement Systems
CRE	Commercial Real Estate
DBU	Domestic Banking Unit
DTD	Distance-To-Default
ECB	European Central Bank
EM	Emerging Market
EME	Emerging Market Economy
EU	European Union
EURIBOR	Euro Interbank Offered Rate
FASB	Financial Accounting Standard Board
FCL	Flexible Credit Line
FDI	Foreign Direct Investment
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FSR	Financial Stability Review
FSOC	Financial Stability Oversight Council
GDP	Gross Domestic Product
GFSR	Global Financial Stability Report
GLS	Government Land Sales
HDB	Housing Development Board
IAS	Interest Absorption Scheme
IASB	International Accounting Standards Board
IMF	International Monetary Fund
IOL	Interest-Only Housing Loans
IOSCO	International Organisation of Securities Commissions
JGB	Japanese Government Bond
LIBOR	London Interbank Offered Rate
LTV	Loan-To-Value
MAS	Monetary Authority of Singapore
MBS	Mortgage-Backed Securities
MMMF	Money Market Mutual Funds
MOM	Ministry of Manpower
MSD	Macroeconomic Surveillance Department
MTI	Ministry of Trade and Industry
NBFI	Non-Bank Financial Institution
NEA	Northeast Asia
NFIB	National Federation of Independent Business
NPL	Non-Performing Loan
OECD	Organisation for Economic Cooperation and Development
OIF	Offshore Insurance Fund
OIS	Overnight Indexed Swap
OTC	Over-The-Counter
PD	Probability of Default
PPI	Property Price Index
REER	Real Effective Exchange Rate
ROA	Return on Assets
ROE	Return on Equity
S&P	Standard & Poor's
S-REIT	Real Estate Investment Trust listed on SGX
SAAR	Seasonally Adjusted Annual Rate
SEA	Southeast Asia

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SEC	Securities and Exchange Commission
SIFI	Systemically Important Financial Institutions
SGS	Singapore Government Securities
SGX	Singapore Exchange Ltd
SIBOR	Singapore Interbank Offered Rate
SIF	Singapore Insurance Fund
SME	Small and Medium-Sized Enterprise
SMX	Singapore Mercantile Exchange
SOR	Swap Offer Rate
TR	Trade Repositories
TSC	Transport, Storage and Communication
URA	Urban Redevelopment Authority
VAR	Value at Risk
VIX	Chicago Board Options Exchange Volatility Index
WEO	World Economic Outlook

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PREFACE

The Monetary Authority of Singapore (MAS) conducts regular assessments of Singapore's financial system. Potential risks and vulnerabilities are identified, and the ability of the financial system to withstand potential shocks is reviewed. The analysis and results are published in the annual Financial Stability Review (FSR). The FSR aims to contribute to a better understanding among market participants, analysts and the public of issues affecting Singapore's financial system.

Section 1 of the FSR provides a discussion of the macroeconomic environment and financial markets both globally and in Asia. Against this backdrop, Section 2 analyses Singapore's macroeconomic environment and financial system. The health of the non-financial sector, comprising both the corporate and household sectors, is reviewed. This is followed by an analysis of the banking sector, which plays a dominant role in Singapore's financial landscape. A review of the non-bank financial sector, which includes the insurance sector and capital market infrastructure and intermediaries, is also provided. The section concludes with an overview of the outlook and risks for Singapore's financial system.

The production of the FSR was coordinated by the Macroeconomic Surveillance Department (MSD) team which comprises Chan Lily, Wang Liang Daniel, Cheok Yong Jin, Patricia Chua, Fang Yihan, Foo Suan Yong, Ho Ruixia Cheryl, Lee Jia Sheng Harry, Lim Ju Meng Aloysius, Ng Heng Tiong, Rishi Ramchand, Emma Ryan, Teo Yongxin Byron, Teoh Shi-ying and Zhong Kemin under the general direction of Wong Nai Seng, Executive Director (MSD). Valuable statistical and charting support was provided by Alvin Jason John, Choo Woon Yuen Karen, Goh-Tan Mui Choo Jenny, Low Lie En Elys, Tan Yonggang Nicholas, as well as members of the MSD Statistics Unit. The FSR also incorporates contributions from the following departments: Banking Department, Capital Markets Department, Capital Markets Intermediaries Department, Complex Institutions Department, Economic Surveillance and Forecasting Department, Insurance Supervision Department, Investment Intermediaries Department, Monetary and Domestic Markets Management Department, Prudential Policy Department and Specialist Risk Department. The FSR reflects the views of the staff of the Macroeconomic Surveillance Department and the contributing departments. The FSR has benefitted from guidance provided by Professor Charles Adams.

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The FSR may be accessed in PDF format on the MAS website:
http://www.mas.gov.sg/publications/MAS_FSR.html

OVERVIEW

The economic recovery remains fragile in the G3 countries. The initial rebound was faster than expected, aided by the unprecedented and wide-ranging monetary and fiscal policy measures put in place at the height of the crisis. However, the recovery is now losing momentum as the effects of fiscal stimulus measures and the one-off boost from inventory restocking fade. The sluggish recovery reflects weak private sector demand. In the absence of robust private sector demand substituting for public sector spending, a protracted period of sluggish growth is expected.

Further, prospects for fiscal stimulus are limited due to strains on public finances. The sharp downturn in real and financial activity during the global crisis resulted in a marked deterioration in fiscal balances and increase in public debt levels in the G3 countries. This leaves limited room for fiscal policy to provide additional support to the economic recovery.

Concerns about fiscal sustainability could also spill over into the financial system. With limited transparency about banks' sovereign and interbank exposures, widening sovereign risk spreads could increase counterparty risk and cause dislocations in interbank funding markets, as observed earlier this year in the euro area.

Moreover, specific characteristics of G3 banks' balance sheets make them vulnerable to funding risks. First, many banks, especially those in the euro area, rely on the wholesale markets for a significant proportion of their funding. Second, the average maturity of bank funding is relatively short and bank refinancing needs are particularly high over the next three years.

These bank funding needs coincide with significant sovereign refinancing needs, creating the possibility that sovereign and bank fund raising could place significant strains on capital markets. This could, in turn, lead to "crowding out effects". The latter could dampen private sector demand and ultimately the economic recovery.

In addition to funding challenges, G3 banks continue to face significant asset quality risks. Banks have made progress in acknowledging losses, but asset writedowns remain below IMF estimates. Banks in the US and Europe continue to face asset quality risks, including via residential and commercial real estate exposures. Headwinds to the G3 economic recovery also pose risks to asset quality. Further potential asset writedowns may erode banks' capital buffers even as new Basel III capital rules require additional capital raising.

In light of the still fragile real economy and financial system and limited room for further fiscal stimulus, normalisation of G3 monetary policy is likely to be delayed.

A prolonged period of low interest rates poses several challenges. First, it reduces incentives for banks to address vulnerabilities related to their funding structures. Second, it could encourage lax lending practices and imprudent borrowing, posing further risks to asset quality. Thirdly, it has a negative impact on liabilities and investment income of insurers, thereby rendering them vulnerable.

Furthermore, accommodative monetary policy and the resulting search for yield could increase commodity price volatility and prompt large capital flows to emerging market regions.

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In contrast to advanced economies, Asian economies have rebounded strongly, underpinned by global trade as well as resilient domestic demand. Robust sovereign and bank balance sheets are expected to continue to buffer potential shocks. However, given Asia's continued reliance on export demand from G3 economies and the headwinds these economies face, the region could experience a weaker than expected recovery.

In the meantime, the multispeed nature of the global economic recovery entails several risks for the region.

Accommodative monetary policies in G3 economies to support growth have contributed to abundant global liquidity. Risk appetite has returned with the strong rebound in emerging economies. Both factors have combined to result in a search for yield among domestic and foreign investors.

Asia has seen substantial capital inflows. If these persist at current levels or increase, there may be further upward pressure on asset prices. Large capital inflows could also trigger exchange rate volatility and introduce additional complexity to monetary policy management, particularly given emerging inflation pressures in some economies.

Furthermore, the search for yield among investors with short investment horizons or those that are excessively optimistic could push prices away from fundamentals for a range of asset classes. The risk is especially high where markets may not be sufficiently deep or liquid. Should capital flows reverse, disorderly corrections could result.

At this juncture, Asian banking systems appear resilient. However, there are risks to asset quality, given the magnitude and speed of the pick-up in loan growth in certain economies and the rebound in asset prices. Asset quality could deteriorate if economic growth turns out to be weaker than expected or asset prices adjust suddenly. The risk of a pullback in cross-border lending by foreign banks also remains.

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Asian authorities have taken a range of measures to address risks related to capital flows, asset prices and bank credit quality, even as some have begun tightening monetary policy in the face of rising inflation pressures. There is scope for structural reform to further address these risks. A key priority would be broadening and deepening Asian financial markets to enable more efficient intermediation of capital inflows.

In Singapore, domestic financial conditions have continued to improve in line with the robust performance of the domestic economy and the region as a whole. After posting strong growth in the first half of 2010, the Singapore economy has seen signs of moderation in recent months as the global recovery lost some momentum. While final demand in advanced economies is expected to remain sluggish, the growth outlook for Asia ex-Japan economies is more positive. Singapore's GDP for 2010 is on track to grow by 13% to 15%, with growth expected to continue into 2011, albeit at a more moderate pace of 4% to 6%.

Amidst improving economic conditions, the domestic corporate and household sectors have fared well on the back of strengthening balance sheets. Corporate earnings have picked up somewhat and access to financing has improved. Household net wealth has recovered from the trough seen last year.

Turning to the financial sector, banks and insurers continue to see steady growth in earnings and premiums respectively, while maintaining high capital and liquidity ratios. Local banks are well placed to meet the new Basel III capital requirements.

However, the domestic financial system faces some risks. First, uncertainty about the global economic recovery remains. An adverse shock, like a protracted slowdown in G3 economies, could weigh on domestic economic growth. Corporate finances could come under renewed stress and earnings could fall, with knock-on effects on employment and wage growth.

The resulting impact on corporate and household balance sheets could impinge on repayment ability and eventually affect the quality of banks' loan exposures. Second, current global conditions of flush liquidity and low interest rates may lead to upward pressures on domestic asset prices. The Government has introduced a series of measures since September 2009 to temper exuberance in the property market and pre-empt a speculative bubble from forming. Nonetheless there is a possibility that transaction activity and prices could pick up again. Arising from these concerns, the Government will continue to be vigilant in monitoring developments in the property market and if necessary, adopt

additional measures to promote a sustainable property market.

Third, expectations of a sustained period of low interest rates may affect the borrowing decisions of individuals and businesses. Financial institutions may be tempted to loosen lending standards in a bid to extend more loans in the face of thinning margins. When interest rates eventually rise, overextended households and corporates could be affected, thus impairing repayment ability and eventually impacting banks' asset quality. The MAS is closely monitoring market developments and stands ready to address such concerns should they materialise.

Macroeconomic Surveillance Department
Monetary Authority of Singapore
25 November 2010

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1 GLOBAL ENVIRONMENT

1.1 G3 Macroeconomic Environment and Financial System

Economic recovery in G3 economies remains fragile.

Economic activity in G3 economies contracted sharply over H2 2008 to H1 2009 (Chart 1.1). The subsequent turnaround has been sharper and faster than expected, aided by the unprecedented and wide-ranging monetary and fiscal policy measures adopted in response to the crisis. However, the economic recovery is now losing momentum as the effects of fiscal stimulus measures wane and the one-off boost from inventory restocking fades. Leading indicators appear to have levelled-off for all G3 economies except Japan, suggesting that economic activity may slow in the period ahead (Chart 1.2).

Economic recovery is expected to continue at a sluggish pace. Consensus forecasts suggest that growth next year will be slightly slower than in 2010 in most G3 economies (Table 1.3). From historical experience, this is to be expected given that financial crisis-induced recessions tend to exhibit slower recoveries (Charts 1.4 and 1.5).

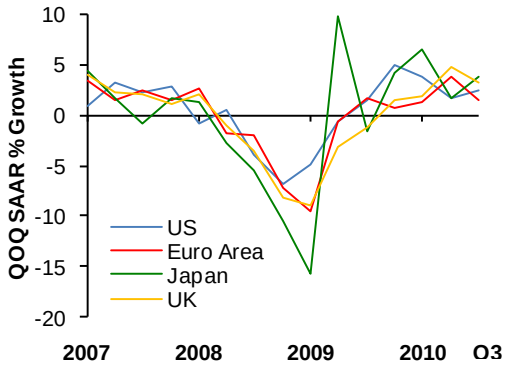
The sluggish recovery reflects weak private sector demand.

As the boost from fiscal stimulus measures weakens, private sector demand has yet to effectively substitute for public sector demand in supporting economic growth. In many G3 economies, household balance sheet repair and deleveraging has continued. Firms are also adopting a cautious attitude towards fresh investment in light of the risks to economic recovery. Without a pick-up in private sector demand, a protracted period of sluggish economic recovery is expected.

In the US, consumer and business confidence remain weak.

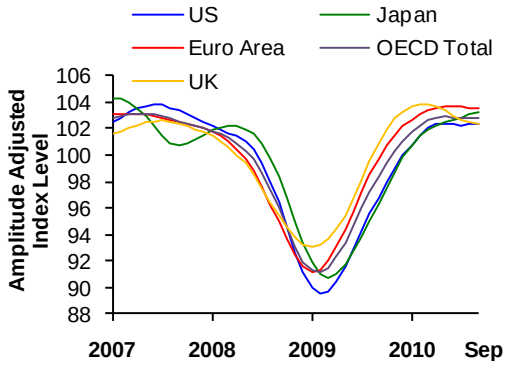
In the US, consumer confidence remains far below pre-crisis levels. There are two key driving factors. First, the unemployment rate is stubbornly high (Chart

Chart 1.1
G3 GDP Growth



Source: CEIC, Datastream

Chart 1.2
OECD Composite Leading Indicators



Source: Datastream

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Table 1.3
Consensus Forecasts for GDP Growth in Selected Advanced Economies

YOY %	2010		2011	
	Mar-10	Nov-10	Mar-10	Nov-10
US	3.1	2.7	3.0	2.4
Euro Area	1.1	1.6	1.5	1.4
Japan	1.9	3.0	1.6	1.2
UK	1.4	1.7	2.3	2.0

Source: Consensus Economics

1.6), with a large proportion of the unemployed accounted for by the structurally unemployed and long-term unemployed. [1] Such labour market weakness would lower incomes and debt-servicing ability, and discourage consumption.

Second, the US housing market remains persistently weak following the expiry of homebuyer tax credits at the end of April 2010. Existing and pending home sales have fallen sharply (Chart 1.7), while inventories have increased from an estimated 7.2 months in December 2009 to 10.7 months in September this year. [2] Prices remain at about one-third below the 2006 peak (Chart 1.8). Given the tough job market conditions and uncertainty over inventories, prospective delinquency rates and foreclosure rates, a substantial upturn in the housing market is unlikely in the near term.

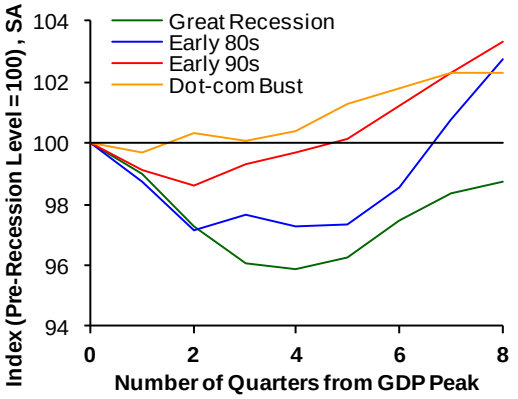
In the corporate sector, overall investment spending has yet to recover and now stands close to 2001-2004 levels.[3] Small businesses are particularly downbeat, and capital expenditure plans are accordingly restrained (Chart 1.9).

In addition, credit conditions have not improved sufficiently. It has not been long since banks began loosening lending standards on a net basis, despite the US Federal Reserve's accommodative monetary policy stance (Chart 1.10). Substantial numbers of banks expect lending standards to remain tighter than long-run averages for the foreseeable future.[4]

Euro area recovery is showing signs of losing momentum as fiscal consolidation begins.

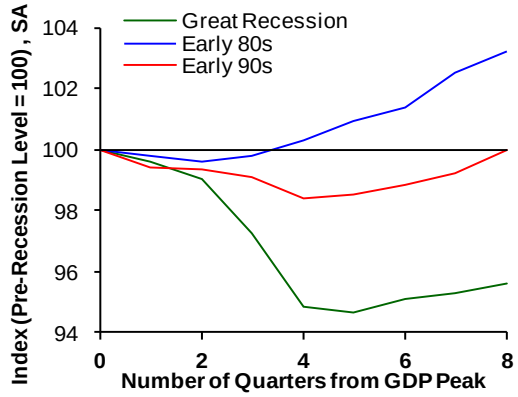
In the euro area and to a certain extent in the UK, economic growth has so far surprised on the upside in the first half of 2010. In Q2 2010, the euro area as a whole grew by 3.9% on a q-o-q seasonally adjusted annual rate (SAAR) basis while the UK saw 4.7% growth, in comparison to 1.7% in the US. However, euro area growth has been driven largely by strong export performance in the core euro area economies,

Chart 1.4
US GDP Recoveries



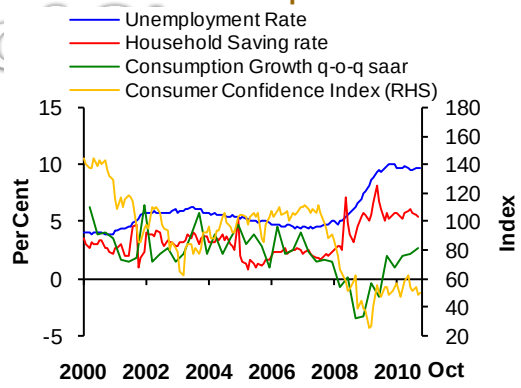
Source: CEIC
Early 80s 100=Mar 1982, Early 90s 100=Mar 1992, Dot Com Bust 100=Mar 2001, Great Recession 100=Mar 2008.

Chart 1.5
Euro Area GDP Recoveries



Source: CEIC
See Chart 1.4 for index starting points.

Chart 1.6
US Unemployment Rate, Consumer Confidence Index, Household Savings Rate and Consumption Growth



Source: US Department of Labor, Bloomberg, CEIC

[1] According to the US Department of Labor, as of October 2010, 41.8% (in seasonally adjusted terms) of the unemployed had been jobless for 27 weeks or longer, up from 19.7% in 2008.
[2] National Association of Realtors.
[3] Calculations based on US GDP data.
[4] Senior Loan Officer Opinion Survey on Bank Lending Practices, US Federal Reserve, October 2010.

especially Germany, while growth in other euro area economies has been weaker. The recovery has since shown signs of losing momentum, with euro area growth registering 1.5% on a q-o-q SAAR basis in Q3 2010, while US and UK growth were 1.7% and 3.2% respectively over the same period.

Going forward, fiscal austerity measures, which have yet to bite in most euro area economies, will likely weaken domestic demand and further dampen the economic recovery. High and persistent unemployment in some of the peripheral euro area economies is also likely to moderate household consumption. Furthermore, still tight credit conditions could prove to be a drag on economic growth. Euro area banks have continued to tighten lending standards over the past year, albeit at a slower pace (Chart 1.10).

Japanese recovery is sensitive to final demand in the US and Europe.

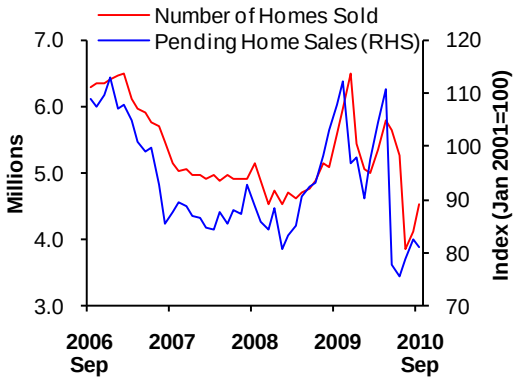
In Japan, exports have driven the recovery. However, final demand for Japanese exports from the US and Europe is likely to weaken as growth in these economies moderates.

Domestic private sector demand remains weak and is unlikely to substitute completely for external demand. The latest Tankan survey revealed a negative outlook for business conditions in Q4 2010. Measures of consumer confidence have been largely stagnant over the past year (Chart 1.11). The Bank of Japan's latest assessment of the economic outlook[5] indicated that both bank and non-bank financing have been declining on a y-o-y basis despite easing credit conditions. This suggests that loan demand remains soft in light of weak household and corporate sentiments.

Meanwhile, prospects for further fiscal stimulus in G3 economies are limited due to strains on public finances.

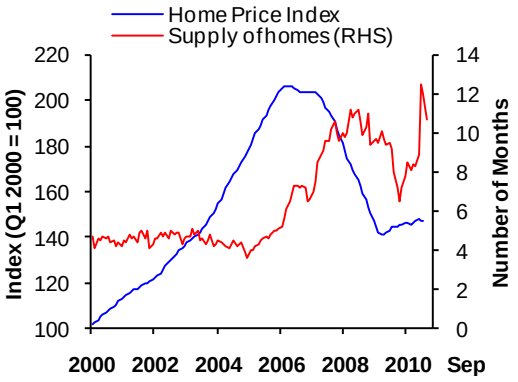
While private sector demand in G3 economies remains weak, the effects of the fiscal stimulus measures introduced during the crisis are winding

Chart 1.7
US Existing and Pending Home Sales



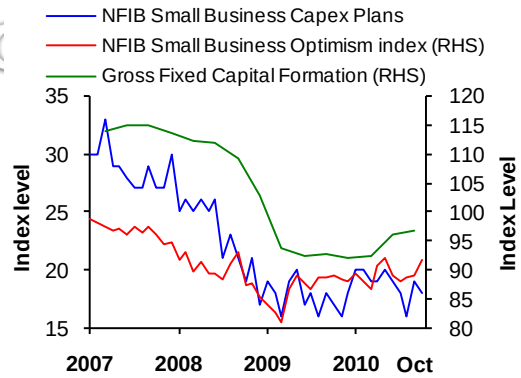
Source: US National Association of Realtors (NAR)

Chart 1.8
US Stock of Homes Inventory and S&P/Case-Shiller US National Home Price Index



Source: S&P, Bloomberg

Chart 1.9
US Investment, NFIB Small Business Optimism Index and Capex Plans



Source: Bloomberg, NFIB
1986=100 for NFIB Optimism Index; 2001=30 for NFIB Capex; 2000=100 for Gross Fixed Capital Formation.

[5] As of November 2010.

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down. Prospects for further stimulus are limited because the sharp downturn in both real and financial activity in 2008 and at the start of 2009 resulted in a marked deterioration in fiscal balances and an increase in public debt levels (Charts 1.12 and 1.13).[6] This leaves little fiscal space to introduce stimulus to support the still fragile economic recovery.

To date, concerns about fiscal sustainability have concentrated on the euro area, where several economies face a difficult combination of high sovereign debt levels, large fiscal deficits and lower long-term growth potential. Peripheral euro area economies have come under the most intense market scrutiny, prompting a sharp widening of sovereign bond yields and credit default swap (CDS) spreads on their sovereign debt (Charts 1.14 and 1.15) and several credit rating downgrades. As a result, the initial boost from fiscal expansion has given way to plans for fiscal consolidation, which although important and necessary, may now prove to be a drag on the economic recovery.

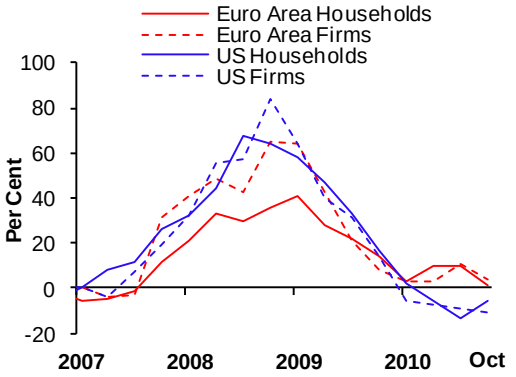
For the US, analysts estimate that while fiscal stimulus contributed significantly to GDP growth between Q2 2009 and Q1 2010, its impact is believed to have diminished through 2010 and is expected to be a drag on GDP growth through 2011.[7] The US and Japan also face longer-term fiscal pressures (see Box A).

Fiscal sustainability concerns could also spill over into the financial system

The euro area sovereign debt crisis in H1 2010 demonstrated how fiscal sustainability concerns could spill over into financial markets (see Box B). Widening risk spreads and limited transparency of individual banks' sovereign and interbank exposures can increase counterparty risk and lead to dislocations in interbank funding markets. Large sovereign funding needs may also crowd out bank funding.

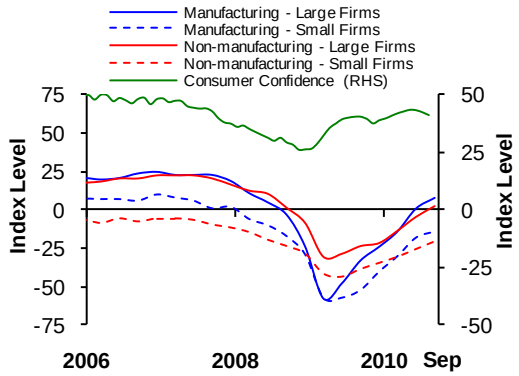
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Chart 1.10
Net Percentage of Banks Tightening Lending Standards: US and Euro Area



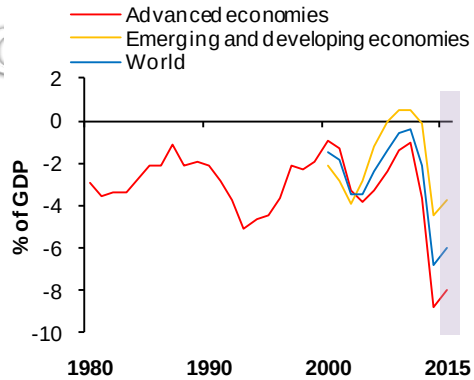
Source: ECB, US Federal Reserve
US firms refers to large and medium-sized firms. US and European households excludes residential mortgage loans. US households also exclude credit card loans.

Chart 1.11
Japan Business and Consumer Confidence Indices



Source: Tankan Survey, Japan Cabinet Office

Chart 1.12
General Government Balance



Source: IMF WEO Database

[6] In its April 2010 World Economic Outlook, the IMF estimated that advanced economy government debt will exceed 100% of GDP by 2014, over 35 percentage points (pp) higher than debt levels prior to the crisis. Of this, only 3.5pp was the result of fiscal stimulus, and another 3pp the cost of supporting the financial sector. Over half of the increase (19pp) was the result of automatic stabilisers and lost revenue from lower asset prices and financial profits.
[7] Goldman Sachs, Deutsche Bank

Banks have substantial funding needs in the near term.

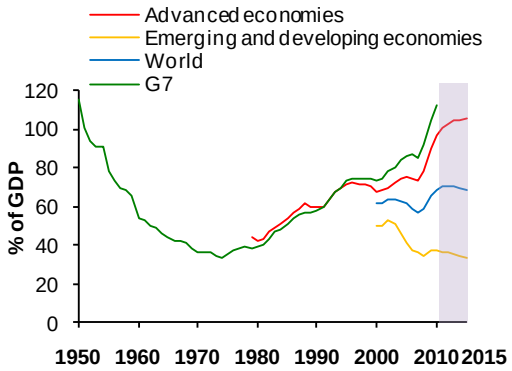
Concerns about fiscal sustainability could transmit quickly to the financial sector due to structural weaknesses on the liabilities side of bank balance sheets.

First, many banks, particularly those in the euro area, rely on wholesale markets for a significant proportion of their funding (Chart 1.16).[8] Second, the average maturity of funding is relatively short, with both European and US banks having significant funding needs over the next two years. More than US$5 trillion of global bank debt will mature between 2010 and end-2012, over half of which is accounted for by European banks (Chart 1.17). This represents 34%[9] of total global bank debt outstanding. Furthermore, around 16% of European bank debt maturing between 2010 and end-2012 is backed by government guarantees. As many of these guarantees have not been renewed, the cost of funding could increase.

In response to increased concern about sovereign risks in the euro area in 2010, there have been some signs of stress in euro area interbank markets. Both the 3-month Euribor and 3-month Euribor-OIS spread – an indicator of bank risk – have widened (Chart 1.18), although these remain well below the levels following the collapse of Lehman Brothers in September 2008.[10] Banks also turned increasingly to the European Central Bank (ECB) for funding. Amounts outstanding under ECB refinancing operations increased by over €160 billion in the first half of 2010 and have remained high for banks domiciled in peripheral euro area economies (Chart 1.19).

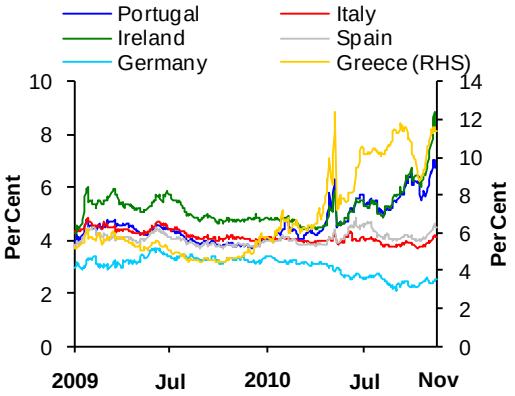
In contrast, US banks reduced their reliance on liquidity facilities provided by the US Federal Reserve over the same period (Chart 1.20). Commercial paper issuance has, however, trended down (Chart 1.21), although this could be partly accounted for by reduced

Chart 1.13
Gross General Government Debt-to-GDP Ratios



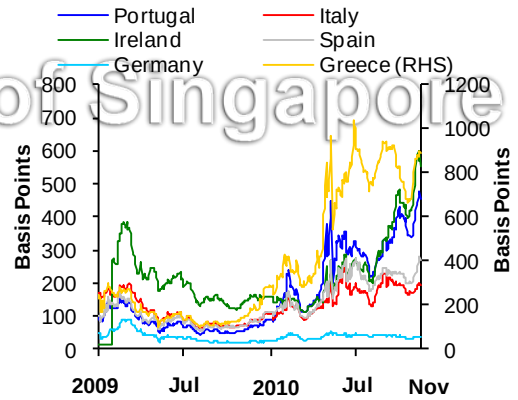
Source: IMF WEO Database

Chart 1.14
10-Year Benchmark Sovereign Bond Yields: Selected Euro Area Economies



Source: Bloomberg

Chart 1.15
5-Year Sovereign CDS Spreads: Selected Euro Area Economies



Source: Bloomberg

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[8] Part of the higher reliance on wholesale funding in Europe relative to the US can be explained by the fact that European bank balance sheets are much larger. Unlike in the US where the 'originate and distribute' model is widely used to take assets off bank balance sheets, European banks tend to hold their loans on balance sheet.
[9] Source: Dealogic, MAS estimates.
[10] 3-month Euribor reached 5.3% at the beginning of October 2008, and the 3-month Euribor-OIS spread widened to as much as 206 basis points.

financing needs as banks scaled back activities or sought funding with longer maturities.

Competing sovereign funding needs could crowd out bank fund raising.

Substantial bank funding needs come at a time when sovereigns also have substantial refinancing needs. Nearly US$7 trillion of sovereign debt will mature between 2010 and 2012, of which close to one-third or about US$2 trillion relates to Europe (Chart 1.22). There is a risk that sovereign and bank fund raising could crowd out each other as well as private sector credit. The latter could be a drag on private sector demand and ultimately the economic recovery.

The shadow banking system may not be able to support the same level of fund raising as before the crisis.

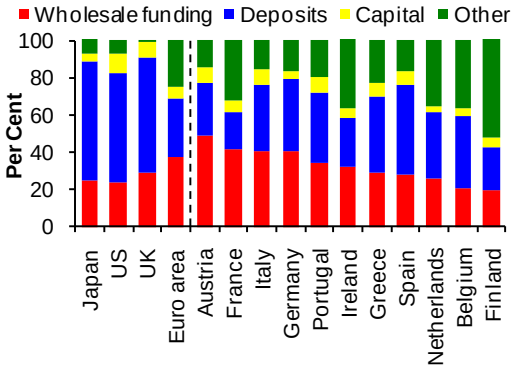
At the same time, the shadow banking system may be less able to support fund raising than in the past. US private-label securitisation markets remain largely closed (Chart 1.23), leaving banks with fewer fund raising options.

In addition, recent changes to the regulation of US money market mutual funds (MMMFs) could constrain their ability to provide wholesale funding to banks. Currently, a large share of US MMMF assets represents funding for the US government, government-sponsored entities and banks (Chart 1.24). In addition, a significant proportion relates to US$-denominated funding for European banks.[11]

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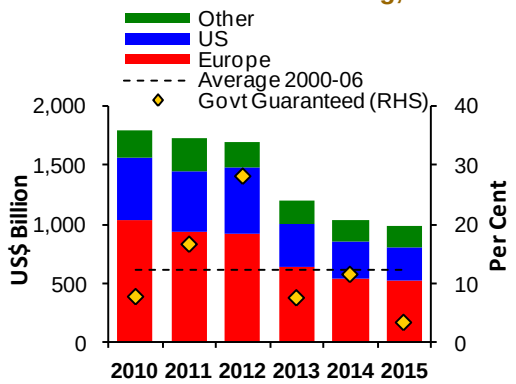
In January 2010, the US Securities and Exchange Commission (SEC) promulgated new regulations requiring US MMMFs to improve their liquidity positions[12]. The rules are being phased in for full implementation by March 2011. Meanwhile, the US President's Working Group on Financial Markets has

Chart 1.16
Banking System Funding Profiles: Selected Advanced Economies



Source: IMF GFSR October 2010
Wholesale funding includes bonds and short-term securities issued in the euro area, interbank and central bank financing. Other includes liabilities from outside the euro area.

Chart 1.17
Global Financial Debt Maturing, 2010-15



Source: Dealogic, MAS estimates

[11] The BIS estimated that around one-eighth (or US$1 trillion) of European banks' US$ funding needs were provided by US MMMFs at end-2008. See Baba, N., McCauley, R. N. and Ramaswamy, S. (2009), 'US dollar money market funds and non-US banks', *BIS Quarterly Review*, March 2009.

[12] MMMFs must keep at least 10% of their assets in "Daily Liquid Assets" and 30% of assets in "Weekly Liquid Assets". MMMFs may not have more than 5% of their portfolio invested in illiquid assets and must take steps to prepare for large redemptions. The maximum weighted average maturity (WAM) for MMMF assets is now 60 days versus 90 days prior to the new rules. Also, weighted average life to maturity (WALM) may not exceed 120 days. WALM differs from WAM, as WAM treats a security's maturity as the lesser of the stated maturity date or interest rate reset date, while WALM looks at the final maturity date for each security. There was no previous rule for WALM.

put forward several reform options[13] for the newly established Financial Stability Oversight Council (FSOC) to consider. If US MMMFs shorten the maturities of their assets markedly or cut their bank-related exposures, banks could face significant funding strains.

Separately, deterioration in the credit quality of sovereign or bank debt could result in mark-to-market losses on US MMMF assets. This could lead to possible second-round contagion back to bank funding in both the US and Europe if US MMMFs respond by reducing their exposures to banks.

In addition to funding challenges, G3 banks continue to face significant asset quality risks.

Globally, banks have made progress in acknowledging losses through asset writedowns. However, writedowns as of Q2 2010 were still US$550 billion below the International Monetary Fund's (IMF) estimate of total global writedowns between Q2 2007 and Q4 2010 (Chart 1.25).[14]

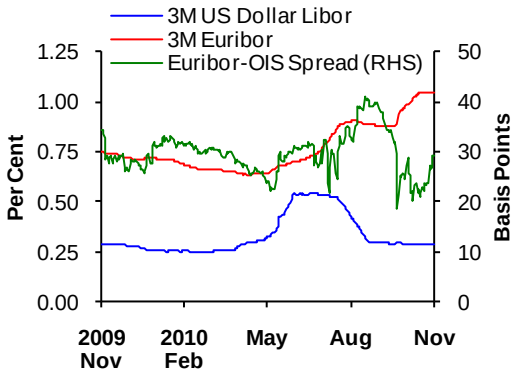
Further bank writedowns in both Europe and the US in 2011 and beyond may therefore be expected. The ECB recently estimated that euro area banks faced potential loan losses of €105 billion in 2011.[15] Separately, the IMF estimated in its Financial Sector Assessment Program (FSAP) Report on the US that US bank holding companies could post cumulative loan losses of US$794.9 billion between 2010 and 2014 in a "baseline" scenario, with the top four banks accounting for US$496.3 billion.[16]

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There are considerable risks to the quality of US banks' loan portfolios.

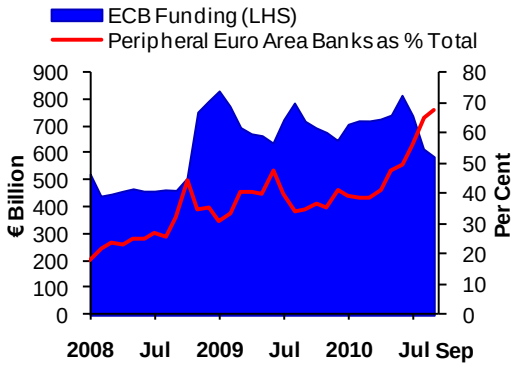
In the US, banks continue to face considerable risks in their credit portfolios. Charge-off rates for different

Chart 1.18
3-Month US Dollar Libor, Euribor and 3-Month Euribor-OIS Spread



Source: Bloomberg
Spread between 3-month unsecured Euribor and 3-month EONIA swap index (OIS).

Chart 1.19
Central Bank Funding of Euro Area Banks



Source: ECB, national central bank s, MAS estimates
Amounts outstanding under the ECB's Main and Longer-Term Refinancing Operations.

[13] These include: moving some MMMFs to a floating net asset value (NAV) regime to help remove the perception that these funds are risk-free and to reduce investors' incentives to redeem shares from distressed funds; regulating stable NAV MMMFs as special purpose banks; requiring MMMFs to distribute large redemptions in kind rather than in cash, so as to force redeeming shareholders to bear their own liquidity costs and thus reduce their incentives for redemptions; having private emergency liquidity facilities for MMMFs; and enhancing constraints on unregulated MMMF substitutes with stable NAV values, so as to reduce risks arising from potential shift of assets to these unregulated funds.

[14] This is despite the IMF's estimate having been revised down from US$3.4 trillion in October 2009 to US$2.2 trillion in October 2010 due to improved economic and financial conditions.

[15] ECB Financial Stability Review, June 2010.

[16] Financial System Stability Assessment of the US, undertaken as part of the IMF's Financial Sector Assessment Program (FSAP), in July 2010.

types of loans are still high (Chart 1.26). Residential and commercial real estate (CRE) loans present a significant vulnerability. In its FSAP Report on the US in July, the IMF highlighted that about US$1.4 trillion of CRE loans will mature in 2010–14, with nearly half being already seriously delinquent or "underwater" (loan values exceeding property values). Regional and community banks could be especially vulnerable.

Recently, banks have come under the spotlight over potential liability for breaches of representations and warranties and loan documentation errors. This development could expose them to additional losses on their residential mortgage loan and mortgage-backed securities (MBS) portfolios. Estimates of these losses range to as high as US$100 billion for large- and medium-size banks. Meanwhile, stalled foreclosures arising from investigations into possible documentation flaws could also prevent banks from foreclosing and selling properties in a timely manner, thereby hurting recovery values.

Exposures to CRE and central and eastern Europe continue to present risks to European banks' asset quality.

In Europe, there remain pockets of weakness on bank balance sheets. For example, banks' exposures to CRE and to central and eastern Europe (CEE) are still significant and could present larger than expected loan losses, particularly if European economic recovery is sluggish. Exposures to these sectors are more concentrated in some institutions and jurisdictions.

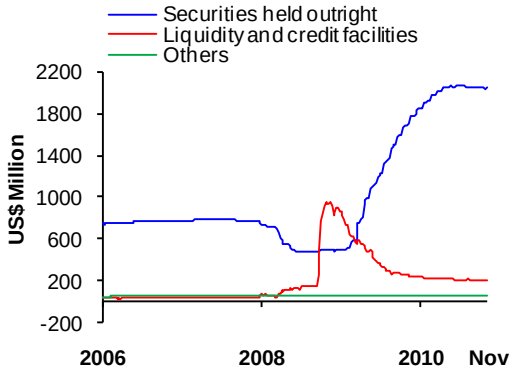
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In addition, bank holdings of peripheral euro area sovereign and private sector debt are large and concentrated among certain countries. Any increase in sovereign risk could bring mark-to-market losses on some of these holdings (Chart 1.27).

Headwinds to G3 economic recovery pose another adverse feedback loop to bank asset quality.

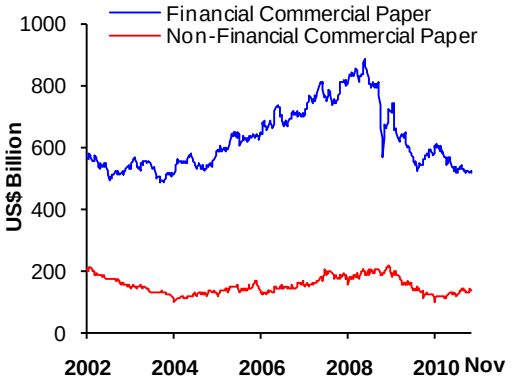
As mentioned earlier, G3 growth in 2011 is expected to be lower than in 2010 (Table 1.3). Moreover, there are risks to the central scenario of subdued growth.

Chart 1.20
US Federal Reserve Balances



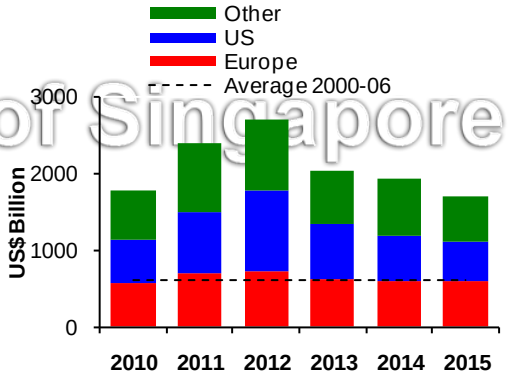
Source: US Federal Reserve

Chart 1.21
US Commercial Paper Outstanding: Financial and Non-Financial



Source: US Federal Reserve

Chart 1.22
Global Sovereign Debt Maturing, 2010-15



Source: Dealogic, MAS estimates

Growth significantly slower than the baseline could translate into higher amounts of non-performing loans (NPLs) for banks. This may then raise the prospect of banking systems needing further support from governments, which could in turn trigger fresh concerns about the sustainability of public finances.

Further potential asset writedowns may erode banks' capital buffers at the same time that Basel III may require additional capital raising.

Banks have returned to profitability, which has helped rebuild capital buffers. Tier I and tangible common equity ratios have risen over the past year (Chart 1.28). The increase in capital ratios has been particularly sharp in the US, where positive bank earnings have added to buffers.

Further asset writedowns would eat into banks' capital buffers at the same time that new Basel III capital rules require banks to raise additional regulatory capital (see Box C). Notwithstanding the transition periods provided, some banks have already begun to raise capital in excess of the current regulatory minimum in anticipation of the new rules. While holding additional capital buffers is to be encouraged as it makes banks more resilient, there is a risk that a race to the top by the strongest banks could crowd out capital raising efforts by other banks and non-bank corporates.

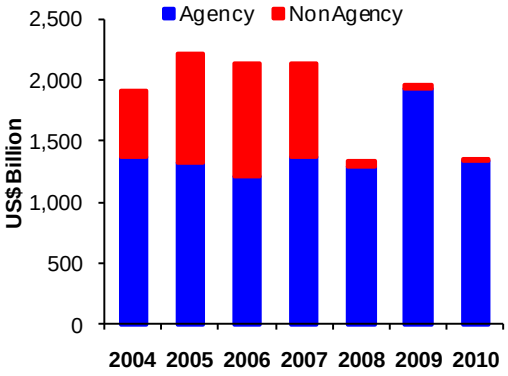
In light of current challenges and limited room for further fiscal stimulus, G3 monetary policy normalisation is likely to be delayed.

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With limited fiscal space to introduce further stimulus, monetary policy is likely to stay accommodative for longer than expected a year ago to support the recovery of both the economy and the financial sector.

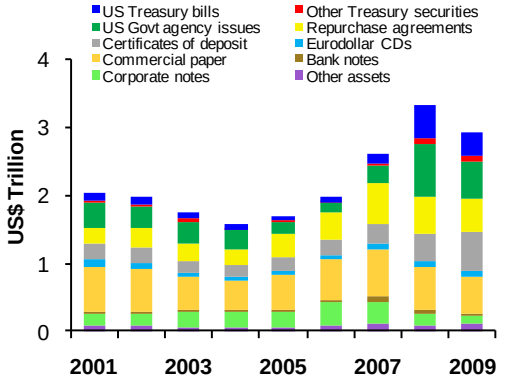
The likely delay to monetary policy normalisation was illustrated in the further round of quantitative easing announced by the US Federal Reserve at the beginning of November 2010.

Chart 1.23
US MBS Issuance: Agency and Non-Agency



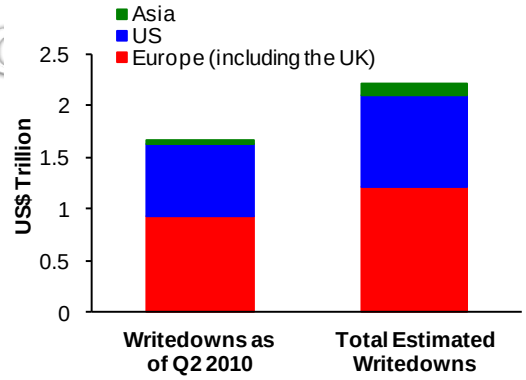
Source: SIFMA

Chart 1.24
Net Asset Composition of Taxable US Money Market Funds



Source: Investment Company Institute (ICI)

Chart 1.25
Global Bank Writedowns and Expected Losses



Source: Bloomberg, IMF GFSR Oct 2010
Writedowns taken between Q2 2007 and Q2 2010; total losses expected between Q2 2007 and Q4 2010.

A prolonged period of low interest rates reduces incentives to address vulnerabilities on the liabilities side of bank balance sheets and poses risks to asset quality.

The current environment of low interest rates and abundant central bank liquidity carries certain risks.

First, banks have little incentive to lengthen their funding maturity and diversify their funding sources so long as they can rely on central bank liquidity support or obtain cheap short-term funding. If banks become complacent about the interest rate environment, there is a risk that they may face sudden large increases in funding costs when policy rates rise eventually, even if gradually.

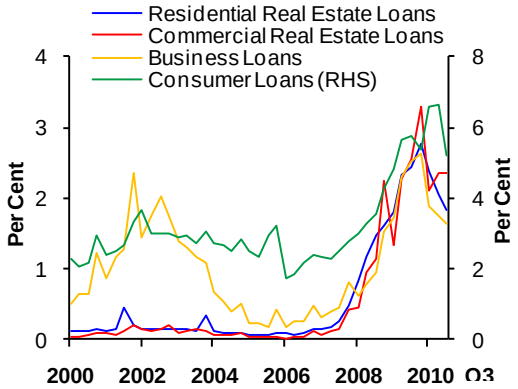
Second, low interest rates may lead to lax lending practices and eventual deterioration in asset quality. While credit growth for several types of loans across the US and euro area remains fairly sluggish (Chart 1.29), unusually low policy rates provide banks considerable room to loosen lending standards if loan demand picks up. Banks may also exercise greater forbearance of delinquent borrowers, such as by postponing repayment of principal. Such practices could increase risks to asset quality.

In fact, signs of loosening can already be seen in non-bank financing. As market conditions improved from Q2 2009 onwards, inflows into bond funds have picked up (Chart 1.30), possibly reflecting a renewed search for yield in the current low interest rate environment. Market contacts suggest that some investors have shortened their investment horizons considerably. These forces have in turn driven a marked narrowing of corporate credit spreads, with spreads on high yield bonds tightening even more sharply than investment grade securities (Chart 1.31).

Insurers are also vulnerable to a prolonged period of low interest rates.

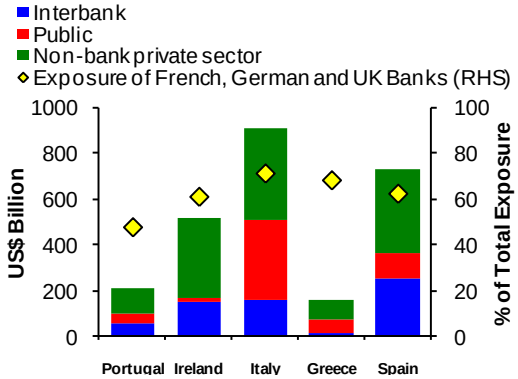
During the financial crisis, euro area insurers shifted away from equities into government bonds. As a result, insurers have become more vulnerable to movements in long-term interest rates. Low interest rates reduce investment income and insurers' ability to meet payouts, especially for life insurers with a

Chart 1.26
US Banks' Loan Charge-Off Rates



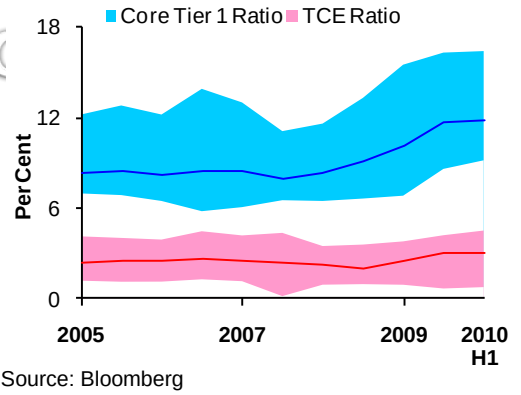
Source: US Federal Reserve

Chart 1.27
BIS Reporting Banks' Exposure to Greek, Irish, Italian, Portuguese and Spanish Debt, End-Q2 2010



Source: BIS Consolidated Banking Statistics

Chart 1.28
Capital Ratios of Major US and European Banks



Source: Bloomberg
Shaded swathes show the range between maximum and minimum; lines show average.

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large stock of guaranteed-return contracts. As insurers search for yield, they may take on assets that pose higher investment risk. Lower bond yields, used to discount insurers' liabilities, have also had a negative impact on insurers' balance sheets.

Although US insurers face the same low interest rate environment, they are reportedly better positioned to withstand the risks as they derive a smaller proportion of their earnings from bonds than equities.

Accommodative monetary policy and the resultant search for yield could increase commodity price volatility…

The easing of global liquidity and resulting search for yield have supported prices of various asset classes. Commodity prices have rebounded sharply since 2009 (Chart 1.32), alongside the strong economic recovery in emerging market (EM) regions, an uptick in global risk appetite, as well as a depreciating US dollar.[17] There is also evidence of increased investor interest in commodities.[18]

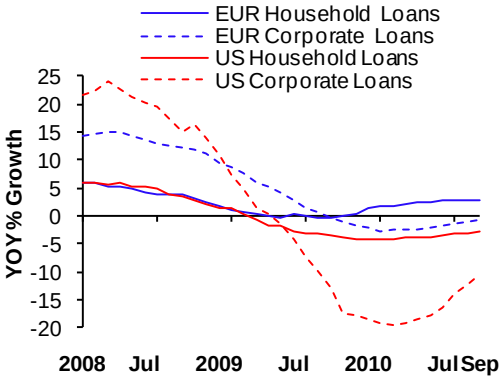
Going forward, a prolonged period of accommodative monetary policy in the G3, coupled with an uncertain economic outlook, could contribute to more volatility in commodity markets. This would impact investors, including financial institutions that have increased their commodity sector exposures. In addition, foreign capital flows, including those of a short-term nature, may increasingly find their way into commodity-producing countries in anticipation of strong growth or currency appreciation. As a result, these countries may be vulnerable to volatile capital inflows and outflows.

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…and prompt large capital flows to emerging market regions.

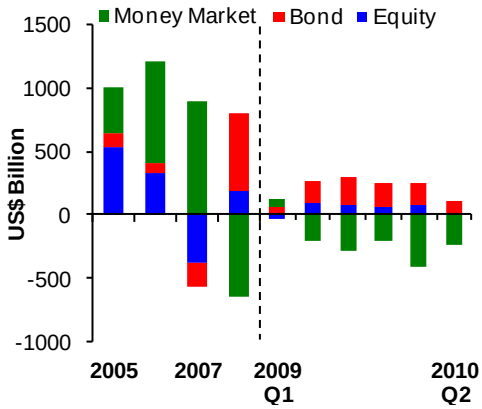
The global search for yield has also resulted in large flows of foreign capital to EM regions, where growth and interest rate differentials with the G3 are currently

Chart 1.29
US and Euro Area Credit Growth



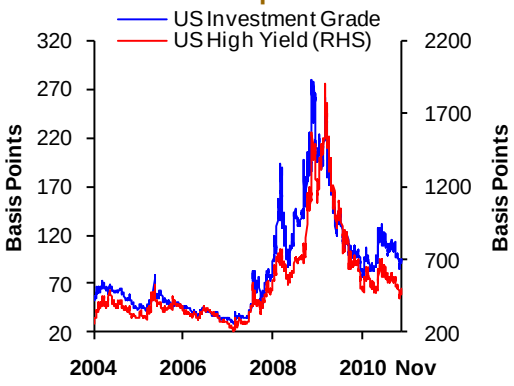
Source: ECB and US Federal Reserve
US corporate loans are those from commercial banks only.

Chart 1.30
Global Mutual Fund Flows



Source: Investment Company Institute

Chart 1.31
US Investment Grade and High Yield Credit Spreads



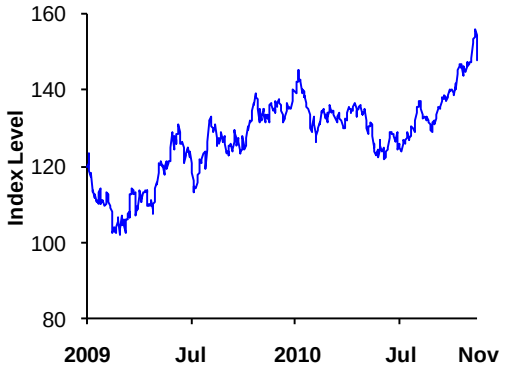
Source: JP Morgan Chase

[17] Views are mixed on the effect that the US$ exchange rate has on commodity prices. Studies by IMF and others have found that commodity prices in US dollar terms tend to increase as the US dollar depreciates. However, measured in a currency basket, commodity prices are generally less correlated with the US dollar and the sign is reversed, suggesting negative correlations between the prices of US dollar-denominated commodities and the US dollar may partly reflect changes in the value of the US dollar against other currencies. In addition, commodity prices have been significantly more volatile than the US dollar.

[18] A recent report by Barclays Capital noted that assets under management related to exchange-traded commodity products increased from US$269.9 billion in 2009 to US$320 billion in September 2010.

wide. The following section examines the risks arising from large capital inflows into Asia.

Chart 1.32
Dow Jones-UBS Commodity Price Index



Source: Bloomberg
Dow Jones-UBS Commodity Index is an index of exchange-traded futures contracts on 19 commodities.

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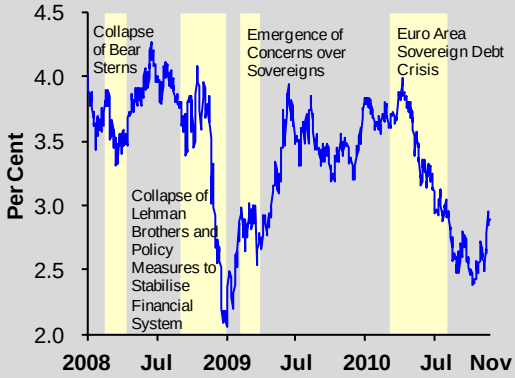
Box A: An Assessment of Fiscal Sustainability in the US and Japan

While the euro area sovereign debt crisis in mid-2010 has focused attention on the fiscal sustainability of certain euro area economies, the US and Japan have not been completely immune to similar concerns, albeit of a longer-term nature. This box examines the medium term challenges posed by the fiscal situation in the US and Japan.

US Fiscal Position

In the near term, US sovereign risk appears to be contained. US Treasury yields have fallen sharply during periods of stress over the past two years (Chart A1), and foreign holdings of US Treasuries have continued to increase.[19] A significant part of the demand for US Treasuries is likely to have been driven by flight-to-quality effects and reserve accumulation by emerging market economies (EMEs).

Chart A1
US Ten-Year Treasury Yields



Source: Bloomberg

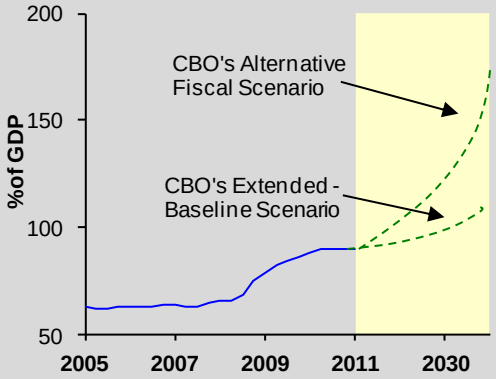
There are, however, risks to the longer-term health of US public finances. The US Congressional Budget Office (CBO) has projected that a persistent gap between federal revenues and outlays would result in federal debt held by the public rising from an estimated 62% of GDP as at end-2010 to potentially 80% or even 185% by the year 2035 (Chart A2), with a sizeable share of revenues used for interest payments.[20] Furthermore, state and local government debts could be seen as contingent liabilities of the federal government. These debts amounted to about 17% of GDP in 2009, and could increase if other risks such as unexpectedly high state employee pension funding requirements materialise.

Increased investor concerns about fiscal sustainability could raise financing costs for the US and hurt its longer term growth potential. The impact could also spill over into financial markets and the rest of the world given significant holdings of US Treasuries globally.

[19] According to data from the US Treasury, foreign holdings of US Treasuries have gone up from US$3.1 trillion at the beginning of 2009 (28.8% of the total outstanding) to US$4.3 trillion (31.5% of the total outstanding) at the end of September 2010.

[20] According to the CBO's long-term budget outlook revised in August 2010, interest payments currently amount to more than 1% of GDP. Under the extended baseline scenario, these could rise to 4% (or 1/6 of federal revenues) by 2035. Under the much more adverse alternative fiscal scenario, after debt reaches 87% of GDP in the year 2020, the growing imbalance between revenues and non-interest spending, combined with spiralling interest payments, could swiftly push debt-to-GDP to exceed its historical peak of 109% by 2025 and to reach 185% in 2035.

Chart A2
US Federal Debt Held by the Public
(Baseline Extended Scenario and Alternative Fiscal Scenario)



Source: US Treasury, US CBO

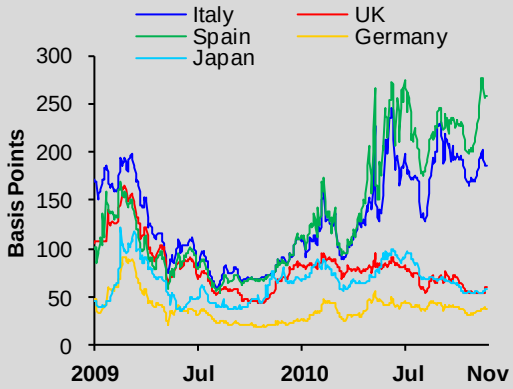
Japan's Fiscal Position

Japan has largely avoided scrutiny of its public finances, despite having the highest gross debt-to-GDP ratio in the Organisation for Economic Cooperation and Development (OECD). Sovereign bond yields have remained fairly stable and sovereign CDS spreads have not widened significantly vis a vis other advanced economies (Chart A3).

Concerns over Japan's high debt level have been mitigated by its largely domestic creditor base, particularly public sector entities. This has insulated the government from confidence shocks and provided a relatively stable level of demand for its debt, thus mitigating refinancing risk. Furthermore, with deflationary pressures in the Japanese economy producing low to negative expected inflation for most of the last two decades, Japanese investors accepted low nominal yields.

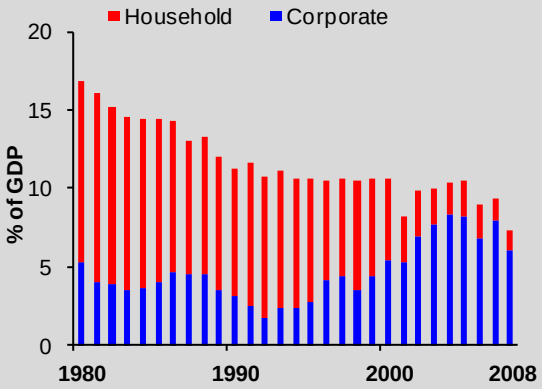
However, Japan's domestic creditor base advantage is likely to diminish over time as the savings rate continues to decline due to an ageing population (Chart A4). This would reduce domestic investors' ability to absorb government debt, and may eventually lead Japanese sovereign debt to be re-priced upwards should Japan come to rely increasingly on foreign investors for financing.

Chart A3
5-Year Sovereign CDS Spreads:
Selected OECD Economies



Source: Bloomberg

Chart A4
Japanese Savings Rate



Source: CEIC

Further, Japanese banks currently form the largest bloc of investors in Japanese government bonds (JGBs) due to weak loan demand and limited domestic investment opportunities in recent years. Improving economic conditions could lead to a slowdown or reversal of these purchases. This could potentially cause

yields to rise, and if significant, could trigger a second-round sell-off in Japanese government debt. Interest rate hikes, albeit unlikely in the near term, could add even more downward pressure. A disruption to the JGB market would present the government and banks with not insignificant refinancing and portfolio risks.

Recognising these medium term challenges, Japan has taken some steps towards mitigating its fiscal risks. In June 2010, the Japanese government pledged to cap annual policy-related expenditure over the next three fiscal years and keep government bond issuance in the next fiscal year below expected issuance of the current fiscal year. The government has also pledged to halve the primary budget deficit as a percentage of GDP by March 2016.[21] Further, the government's recently proposed 5.1 trillion yen budget stimulus package will not be funded through the issuance of more debt.[22]

Conclusion

While challenges to fiscal sustainability in the US and Japan are longer-term in nature, markets will be looking towards these economies to formulate and implement credible medium term fiscal consolidation plans so as to ensure fiscal sustainability moving forward.

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[21] This goal was announced by Prime Minister Naoto Kan in Japan's Fiscal Management Strategy, released in June 2010. Detailed plans on how this and other stated goals will be achieved remain to be announced.
[22] This has been approved by Japan's Cabinet and currently is pending approval by the Diet.

Box B: Euro Area Fiscal Sustainability – Impact on Wholesale Funding Markets

In mid-2010, concerns over the fiscal sustainability of peripheral euro area economies intensified, which led to noticeable strains in euro area interbank funding markets. This box recaps the key features and ensuing policy responses to the euro area sovereign debt crisis, and illustrates how perceptions of weakened fiscal positions were transmitted to the financial system, particularly wholesale funding markets in Europe.

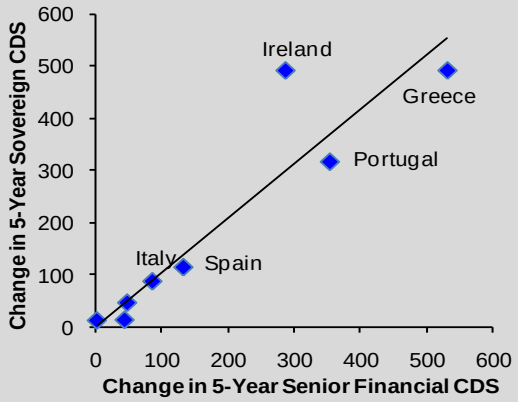
Concerns about some euro area countries' fiscal sustainability heightened in April 2010…

The public finances of peripheral euro area economies came under intense market scrutiny in April after S&P downgraded Greece to sub-investment grade and the country sought funds from the IMF and EU.[23] This prompted a sharp widening of sovereign bond yields and CDS prices across peripheral euro area countries and several credit rating downgrades.

And quickly transmitted to the financial system

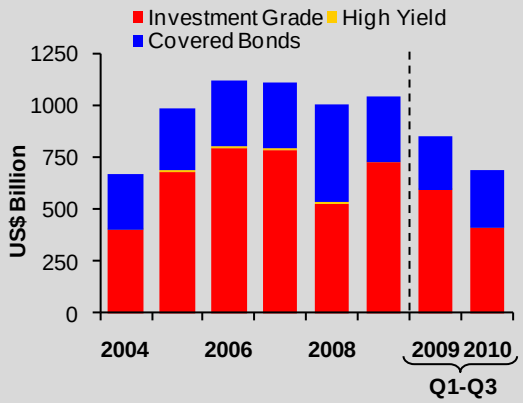
As sovereign risk spreads widened, concerns were quickly transmitted to the financial system, in particular the wholesale funding market for banks. Widening sovereign CDS spreads were closely tracked by a corresponding widening of financial sector CDS spreads in peripheral euro area economies (Chart B1). This correlation likely reflected both the implicit government guarantee typically afforded to banks and the potential impact of worsening fiscal positions on economic growth and thus profits and asset quality for banks domiciled in these countries.

Chart B1
Sovereign CDS Vs. Financial Sector CDS: Selected European Economies



Source: Bloomberg
Chart reflects changes in CDS prices between January and end-September 2010

Chart B2
Bond Issuance by European Banks and Other Financials



Source: Dealogic
2009 and 2010 YTD show bond issuance between Q1 and Q3 of the respective year

Given the then limited transparency of banks' sovereign and interbank exposures, counterparty risk rose as sovereign risk spreads widened. This led to widespread strains in euro area interbank funding markets. Bank funding costs rose, although they remained well below the levels following the collapse of Lehman Brothers in September 2008. Trading of peripheral euro area sovereign bonds on secondary markets and in government repo markets reportedly turned increasingly thin.

As wholesale funding conditions became more stressed, banks turned increasingly to the ECB for funding. Amounts outstanding under ECB refinancing operations increased by over €160 billion in the first half of 2010.

[23] The IMF and the EU subsequently agreed in May to provide Greece with a joint package totaling €110 billion.

European authorities' response helped to ease fiscal concerns and improve funding conditions

In response to continued market turbulence, European policymakers announced a €500 billion support package in May 2010. This included a new €440 billion loan facility for euro area countries in need of financing, the European Financial Stability Facility (EFSF), and a €60 billion expansion of an existing European Commission lending facility. The IMF also agreed to provide further financial support if needed. In addition, the ECB started buying euro area government bonds outright to address stresses in sovereign debt markets.[24] The ECB also reactivated its swap line with the US Federal Reserve to supply US dollar to the banking system, as did other central banks.[25]

To address uncertainty around the resilience of the banking system, European regulators published the results of European-wide bank stress tests in July. Under the most stressed scenario, only seven of the 91 banks included in the tests would experience a capital shortfall. Alongside the stress test results, participating banks released a snapshot of their sovereign exposures. The markets welcomed the increased transparency. Counterparty risk may also have been lowered by other initiatives. In Spain, for example, access to central counterparties (CCPs) allowed larger Spanish banks to repo Spanish government debt through a CCP, thereby mitigating counterparty risk.

The measures taken brought some calm to wholesale funding markets. The market coped with the expiry of the ECB's one-year, long-term refinancing operation in June. Since then, use of ECB facilities has fallen, despite the ECB offering unlimited liquidity at three-month maturities. European banks have also issued bonds, including covered bonds, although total issuance remains below 2009 levels (Chart B2).

But funding conditions have improved mainly for the bigger banks; some concerns linger

Whilst access to private capital markets has improved, it appears to be mainly for larger euro area financial institutions, resulting in a two-tier wholesale funding market within the euro area. Furthermore, whilst ECB lending to euro area banks as a whole has fallen, the proportion borrowed by banks based in peripheral euro area countries has continued to rise alongside sovereign risk spreads for these countries. This suggests that wholesale market participants are still discriminating across borrowers on the basis of sovereign risk.

Overall, wholesale funding conditions in Europe have improved compared to mid-2010, but remain somewhat strained and subject to changes in risk sentiment.

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[24] The ECB purchased €51 billion of bonds in the first six weeks of the programme. The composition of these purchases was not disclosed.
[25] The ECB, Bank of England, Bank of Canada, Swiss National Bank and Bank of Japan

Box C: Assessing the Impact of Basel III Capital Rules

Introduction

On 12 September 2010, the Basel Committee on Banking Supervision (BCBS) announced capital reforms[26] which will essentially:

(i) Increase banks' minimum common equity (CE) capital requirement from 2% to 4.5% between 1 Jan 2013 and 1 Jan 2015;
(ii) Increase banks' Tier 1 capital requirement from 4% to 6% between 1 Jan 2013 and 1 Jan 2015; and
(iii) Introduce a new requirement to hold a capital conservation buffer of 2.5% (made up solely of CE) to withstand future periods of stress, which will be phased in between 1 Jan 2016 and 1 Jan 2019.

In total, banks will effectively be required to raise CE ratios to 7% by 1 Jan 2019.

The reforms are intended to ensure that banks are better able to withstand periods of economic and financial stress, therefore supporting economic growth. This box explores the potential impact[27] of these new capital rules on the global financial system, with a focus on those affecting banks' CE ratios.

Global shortfall of US$47.5 billion – US$262 billion

A survey of analysts' estimates[28] of banks' CE levels and risk-weighted assets (RWA) suggest a global banking system CE shortfall of at least US$47.5 billion[29] in order to meet the 7% requirement. However, banks are likely to hold more than the regulatory minimum in order to maintain a buffer and/or to signal relative strength against their peers. Assuming a market expectation of a 9% CE ratio on average, the CE shortfall is expected to be at least US$262 billion.

G3 banks expected to account for large share of capital raising

Based on analysts' estimates, G3 banks would need to raise at least US$37.1 billion of CE in aggregate to meet the 7% requirement. This would increase to at least US$201 billion (or 76.8% of the total of US$262 billion), assuming the more stringent 9% CE ratio.

In addition, systemically important banks (SIBs), most of which are domiciled in the G3, could face additional capital surcharges. These proposals, which are still being deliberated on, aim to improve SIBs' loss absorbing capacity. A suitably phased implementation timeframe would help minimise strains on funding markets.

Impact on Asia ex Japan banks expected to be generally immaterial

Compared to banks in the G3 economies, most banks in Asia are relatively well capitalised. The survey of analyst estimates suggests that no Asia ex Japan bank would face difficulty in meeting the 7% CE ratio. Assuming the more stringent 9% CE ratio, the aggregate shortfall of Asia ex Japan banks is estimated to amount to at least US$15.1 billion (or 5.8% of the total).

[26] These capital requirements will be supplemented by a non-risk-based leverage ratio that will serve as a backstop to the risk-based measures described above. The BCBS also announced that new liquidity rules for banks, including a new liquidity coverage ratio and net stable funding ratio (NSFR), will come into effect from 2015 and 2018 respectively. In addition, a countercyclical capital buffer ranging from 0%-2.5% of CE or other fully loss absorbing capital has been proposed to help mitigate the buildup of systemic risk during periods of excess credit growth.

[27] The Basel Committee on Banking Supervision (BCBS) conducted a comprehensive quantitative impact study (QIS) to assess the collective impact of the capital and liquidity proposals to strengthen the resilience of the banking sector. A summary of the QIS results will be issued later this year.

[28] Analyst reports from Bank of America-Merrill Lynch, Citigroup, Credit Suisse, Goldman Sachs, HSBC Bank, Macquarie Research, Maybank Investment Bank, Morgan Stanley and UBS Securities published between 13 September and 15 September 2010 were used in a survey covering 139 banks from 26 countries.

[29] Analyst estimates are likely to differ from actual levels of banks' CE and RWA, as the data available from publicly available financial information may not be sufficiently granular to enable an accurate impact assessment of the proposed capital reforms, e.g. asset class level data may not be publically available.

Some analysts have speculated that the implementation of the Basel III capital rules could prompt Asian banks to reduce RWA by either reducing credit supply or off-loading loans from their balance sheets. The latter could accelerate growth in Asia's nascent secondary loan trading market. These may occur if Asian regulators maintain their practice of requiring higher capital standards than global rules, whether explicitly under Pillar 1 or through Pillar 2. On the other hand, Asian banks are already well capitalised. With demand for bank credit likely to rise as Asian economies continue to grow and NPL ratios staying low, Asian banks will have a near-term competitive advantage over their G3 peers to meet this demand. Asian banks may prefer to exploit this advantage instead of pushing more loans to the secondary market. In addition, Asian banks typically place a premium on maintaining client relationships which may make them unwilling to shrink their loan books.

Effects of Basel III Capital Rules on the Global Financial System

Given the timeframe for implementing Basel III, some analysts have suggested that banks may be able to address capital shortfalls via retained earnings rather than raising fresh equity. Weaker banks facing declining earnings from write-downs on bad loans may not be able to do so. For shareholders of these banks, dilution effects and reduced dividends could result. Overall, shareholders may have to moderate their expectations of investment returns over the medium to long term. Conversely, the higher CE capital levels required under the new rules will, all things being equal, be welcomed by bondholders, and could help lower premiums relating to new bank bond issuances over time.

There could be some economic costs to raising capital levels for global banks. Capital constrained banks could weaken the ability of the banking system to provide credit to a still fragile global economy. Lending spreads could rise should banks pass on higher capital costs to their clients. Constraints on lending and/or higher borrowing costs could impact domestic demand and economic growth, potentially reducing tax revenues and raising concerns about sovereign credit risk.

A study by the FSB/BCBS Macroeconomic Assessment Group (MAG)[30] suggests that the transition to higher capital requirements is not likely to have significant impact on aggregate output. Assuming a two-year transition to the higher capital ratio (which is about the length of time between now and the first phase-in of higher CE capital requirements in 2013), the MAG's median estimate is that a one percentage point increase in the CE capital requirement will lead to a decline in GDP of up to about 0.2% from its baseline path after 2.5 years.[31] In addition, according to the BCBS' Long-term Economic Impact (LEI) study which analysed banks in 13 countries, lending spreads could potentially increase, but only by 26-78 bps for a two to six percentage point increase in Tier 1 CAR (using Basel II definitions).[32]

The economic benefits arising from higher capital levels cannot be ignored. Overall, this will make the global financial system more resilient over the long term. The LEI study found that raising the capital ratio by one percentage point from its average pre-crisis level should cut the probability of financial crises roughly in half, producing an estimated benefit of 1.6% of GDP. Basel III also requires higher quality bank capital. As banks become safer, market expectations of returns on bank-issued securities may moderate. This would ease the pressure on funding costs and reduce the possibility of substantial cutbacks in credit to the real economy, thus attenuating the negative macroeconomic impact of the new Basel III rules over time.

Moreover, banks are not passive observers of the regulatory changes, and are likely to adjust their business models and strategies. As noted earlier, banks may aim to raise more than the minimum requirements, perhaps within a shorter timetable, in order to signal their relative strength. Some banks[33]

[30] The MAG was commissioned by both the BCBS and FSB to assess the macroeconomic effects of the transition to strengthened capital and liquidity regulations. The MAG report was published in August 2010.
[31] This is the median of the MAG's estimates. It should be noted that different models resulted in a wide range of estimates. The paper, which sets out the assumptions and results in full, can be found at: http://www.bis.org/publ/othp10.pdf
[32] The Long-term Economic Impact (LEI) working group of the BCBS was tasked to assess the economic benefits and costs of stronger capital and liquidity regulation in terms of their impact on output. The LEI report was published in August 2010.
[33] Deutsche Bank and Standard Chartered Bank

have recently announced capital raising measures. From a prudential perspective, bolstering capital buffers is a positive development by making banks more resilient. Other adjustments that lead to better operating efficiency (e.g. sale of stakes in some non-critical operations to reduce RWA) or direct credit to sectors of the economy where it is most needed would promote global economic growth. Nonetheless, it would be of concern if banks start targeting lightly-regulated or unregulated activities, or take on higher risk in order to raise return on equity (ROE) to compensate for higher capital requirements, etc. These changes would bring with them new risks for the stability of the financial system. Much will depend on how banks shift their business strategies as they take stock of the new capital rules, and this will have to be monitored closely in the periods ahead.

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Box D: The Implementation and Impact of Central Bank Asset Purchases During the Global Financial Crisis

As the challenges facing the global economy continue to evolve, policymakers have responded in unprecedented ways. Most recently, the US Federal Reserve (Fed) resumed its asset purchase programme to ease monetary conditions. This box examines the use and impact of G3 central bank asset purchases in the last two years.

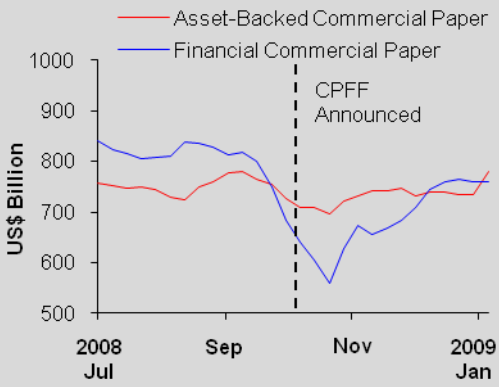
Background

Central bank asset purchases during the Global Financial Crisis can be roughly characterised into three stages. The first phase focused on supporting normal market functioning when the spike in risk aversion following the collapse of Lehman Brothers and AIG threatened market dislocation in key US funding markets. The second phase took place when US and UK authorities determined that further monetary easing was needed to lift their economies out of recession after successive interest rate cuts had brought policy rates close to zero. The third and current phase is taking place in the context of a slow economic recovery in the US, with the objective of promoting a stronger pace of growth.

Phase 1: Restoring Normal Market Functioning

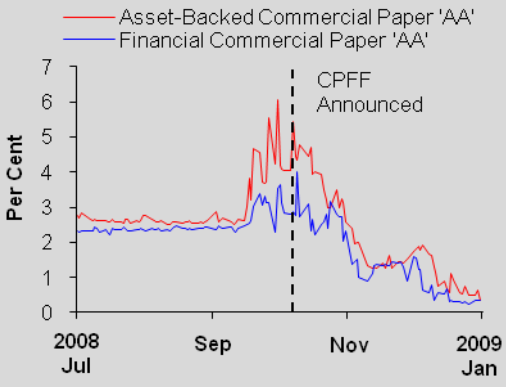
The dislocation in US financial markets that followed the collapse of Lehman Brothers and AIG led to the Fed taking targeted action in affected markets to restore normal market functioning. These included: (a) direct purchases of agency discount notes issued by Fannie Mae, Freddie Mac and Federal Home Loan Banks and commercial papers issued by eligible issuers[34]; and (b) "indirect purchases" by setting up liquidity facilities[35] to grant non-recourse loans to eligible buyers of qualifying commercial papers and asset-backed securities. By acting as a liquidity backstop, the Fed helped restore some normalcy to funding markets that had turned illiquid due to heightened risk aversion (Charts D1 and D2).

Chart D1
Commercial Paper Outstanding



Source: Federal Reserve

Chart D2
Commercial Paper Rates



Source: Federal Reserve

Phase 2: Getting out of Recession

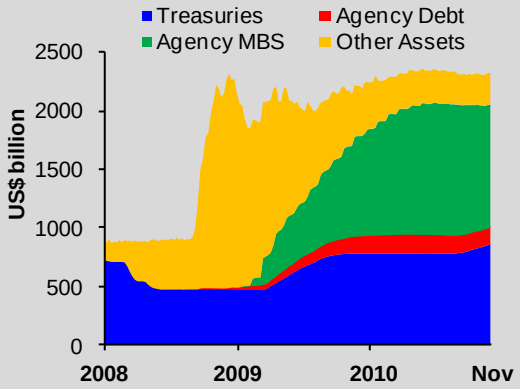
In response to the intensification of the financial crisis in late 2008, central banks around the world eased monetary policy substantially with a series of sharp successive cuts in policy rates to close to zero. This left little room for further reductions. Moreover, there was a risk of creating dislocation in money markets if rates got too close to zero. As a result, when some central banks determined that further monetary

[34] The purchases are made by a special purpose vehicle, funded by the US Federal Reserve via the Commercial Paper Funding Facility (CPFF).
[35] These included the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) and the Term Asset-Backed Securities Loan Facility (TALF). The non-recourse nature of the loans granted under these facilities effectively meant that the US Federal Reserve took on the risk of the commercial papers that were purchased using those loans.

accommodation was needed to lift their economies out of recession, they chose to make direct purchases of securities in certain markets (e.g. housing finance market, government bond markets) to reduce the cost and increase the availability of credit in those markets directly. This is commonly referred to as "quantitative easing" (QE).

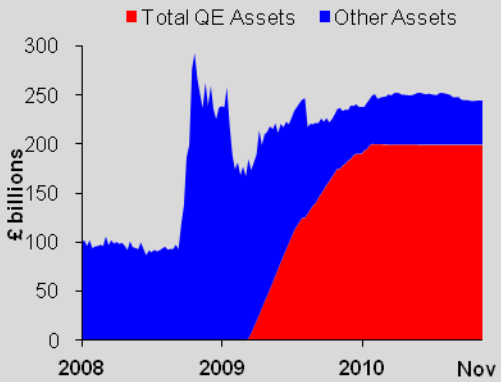
As an example, the Fed announced in November 2008 that it would buy up to US$600 billion of agency debt and mortgage-backed securities (MBS) to support mortgage markets directly. In March 2009, it announced that the cumulative amount of asset purchases would be increased to US$1.75 trillion, and extended to include Treasury securities as well. When purchases ended in March 2010, the Fed had more than doubled the securities it held outright on its balance sheet (Chart D3). The Bank of England (BOE), meanwhile, commenced its QE efforts in March 2009 via the Asset Purchase Facility, through which it bought £200 billion in assets by February 2010 (Chart D4). The vast majority of these assets were gilts, but also included smaller quantities of corporate bonds and commercial paper. The sizes of the two asset purchase programmes were broadly similar - 12% and 14% of US and UK GDP respectively.

Chart D3
Federal Reserve Balance Sheet



Source: Federal Reserve

Chart D4
Bank of England Balance Sheet



Source: Bank of England, Bloomberg

The consensus today is that QE has helped support the US mortgage market at a time when it was severely impaired, and has provided liquidity to the real economy and financial system. The primary channel through which QE is thought to bring about monetary easing is the so-called "portfolio rebalancing" effect. The asset purchases by the Fed and the BOE removed longer term risky assets from the market and replaced them with short term, riskless reserves. In the process, they bid up the prices of these assets, or equivalently, reduced their yields.[36] Lower yields on the targeted assets made them less attractive to investors, leading investors to buy other assets. This, in turn, bid up the prices and pushed down the yields of the other assets.

The Federal Reserve Bank of New York estimated that asset purchases lowered longer-term Treasury yields by between 38 and 82 basis points on account of portfolio rebalancing effects.[37] The BOE estimated that gilt yields were about 100 basis points lower than they would have been in the absence of QE. The effects of QE were felt in other asset markets as well. Chart D5 shows how corporate bond yields and mortgage rates narrowed over the duration of asset purchases (though other factors contributed to the narrowing as well), pointing to successful flow-through to the real economy. According to research from the Federal Reserve Bank of St. Louis, QE by the Fed has also had an impact internationally by reducing

[36] In aggregate, purchases of longer dated assets removed duration risk from the market and thus lowered the term premium component of longer-term yields.
[37] One other approach to quantifying the impact of asset purchases is in terms of an equivalent cut to the policy rate. Estimates for the US from private analysts and Fed officials suggest that $1trillion in asset purchases would provide a similar degree of easing as a cut to the Fed Funds rate of between 75 and 150bps.

significantly the 10-year yields of Australia, Canada, Germany, Japan, and the UK, primarily through arbitrage relationships.[38]

The decision to embark on QE also signalled the willingness of some central banks to provide a safeguard against the tail risks facing the economy, which all else equal would boost risk appetite. Chart D6 shows the S&P 500 index during the time the Fed was carrying out its asset purchases. Equity prices rose in Asia as well, as seen in the MSCI Asia index on the same chart. By supporting asset prices, QE probably created a positive wealth effect that helped boost consumption as well. QE may also have helped support inflation expectations, and thus discouraged consumers from postponing consumption. Chart D7 shows expected inflation as implied by breakeven inflation rates rose about one percentage point soon after the commencement of QE operations.

Although Fed and BOE asset purchases ceased in March 2010 when the planned amounts were reached, QE continues to provide support because the excess reserves created to fund the purchases have not been removed from the banking system.[39] In this regard, it is interesting to note the Fed's decision to reinvest the proceeds from maturing MBS that it holds in Treasuries, so as to maintain the level of monetary stimulus.

Phase 3: Spurring Faster Recovery

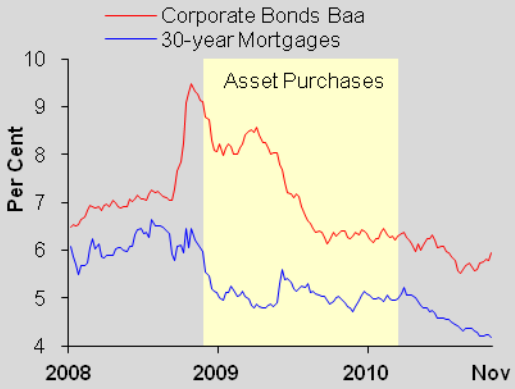
Despite the continued stimulus from QE and other policy measures to support economic activity, the outlook for growth, inflation and unemployment remains weak. This has prompted the Fed to decide at its November 2010 meeting to resume its asset purchases, with a view to promoting a stronger economic recovery. The Fed announced that it will buy about US$75 billion of long-term Treasury securities each month until the end of Q2 2011, for a total of US$600 billion. These purchases will be in addition to reinvestment of proceeds from existing MBS holdings, expected to amount to US$250-300 billion. Purchases will be concentrated in Treasuries with maturities between 2.5 to 10 years, with an average duration of between 5 and 6 years. Analysts estimate that this new round of purchases will provide a boost to GDP growth of approximately 50bps in 2011.

While markets have broadly welcomed this fresh round of support, its effects in the near and medium term will be closely monitored. Commentators have noted that further QE could introduce volatility in currency markets. Furthermore, as the size of the Fed's balance sheet grows, normalisation gets increasingly difficult. Even with the appropriate tools, the risk of inadvertently causing disruption in asset markets increases. Next, a resumption of asset purchases suggests that it will be some time before QE is finally unwound. The previous round of QE has been understood to be an extraordinary measure taken in response to a severe crisis. It is unclear how the markets will react to a world where QE is used alongside the policy rate for the conduct of monetary policy under more normal conditions. As QE would put downward pressure on the US dollar against the currencies of other advanced economies, some commentators have suggested that a resumption of asset purchases by the Fed could prompt other central banks to extend their QE programmes as well, reflecting the growing uncertainty about the principles guiding the use of QE going forward.

[38] Asset purchase announcements were associated with cumulative falls in bond yields of between 50 and 78bps for these economies, except Japan for which the decline was 19bps – though from a lower base. See Neely (2010), 'The Large-Scale Asset Purchases Had Large International Effects'.

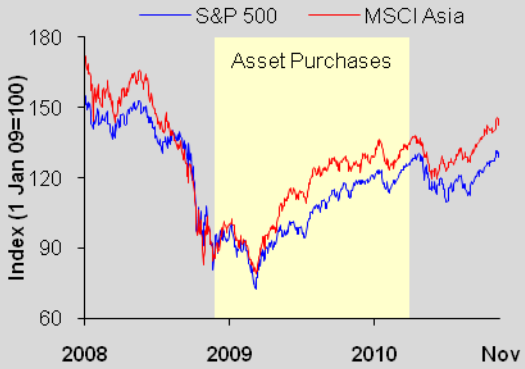
[39] Removing the excess reserves would entail the central bank either selling assets or allowing the assets to mature and run off its balance sheet.

Chart D5
Corporate Bond Yield and Mortgage Rate during QE



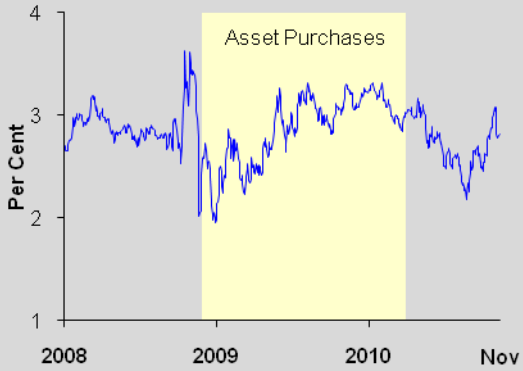
Source: Federal Reserve

Chart D6
Equity Markets during QE



Source: Bloomberg

Chart D7
Fed 5-year Breakeven Inflation Expectations



Source: Bloomberg

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Box E: International Initiatives to Strengthen the Global Financial System

Over the past year, various international organisations, together with central banks and regulators globally, have made further progress in strengthening a global financial system that had been rocked by the recent financial crisis. This box highlights some of the wide-ranging set of initiatives that have been taken.

Global Financial Safety Nets

In order to help countries cope with financial volatility, the IMF has strengthened global financial safety nets by enhancing the Flexible Credit Line (FCL). This included extending the duration and removing the access cap of the FCL. The IMF also created the Precautionary Credit Line to allow countries with sound fundamentals and policies, but moderate vulnerabilities, to benefit from the IMF's precautionary liquidity provision.

In addition, G20 leaders at the Seoul Summit called upon the IMF to deepen its work on aspects of the international monetary system including capital flow volatility. The G20 will also explore, with input from the IMF, a structured approach to cope with shocks of a systemic nature and ways to improve collaboration between regional financing arrangements (e.g. the Chiang Mai Initiative[40]) and the IMF.

Financial System Reforms

Financial institutions

As part of the global reform of the financial system, the BCBS has drawn up a new bank capital and liquidity framework that the G20 has committed to adopting and implementing fully (See Box B).

The Financial Stability Board (FSB) has been developing a policy framework to mitigate the risks posed by systemically important financial institutions (SIFIs) and address the "too-big-to-fail" problem. A key element is a resolution framework that ensures all SIFIs can be resolved safely, quickly and without destabilising the financial system. Other parts of the policy framework call for globally systemic SIFIs to maintain a higher loss absorbency capacity to reflect the greater risk that the failure of these firms could pose to the global financial system. The FSB has also developed guidance on intensive supervisory oversight of SIFIs.[41] Further, the FSB has called for stronger robustness standards for core financial market infrastructure to reduce contagion risk from individual failures.

In addition, the FSB has released a set of principles designed to reduce reliance on external credit ratings from credit rating agencies (CRAs) in order to reduce the risk of herding and cliff effects that arise from CRA rating thresholds being hard-wired into laws, regulations and market practices.[42]

Over-The-Counter (OTC) derivative markets

The FSB has released a report on implementing OTC derivatives market reforms in order to improve the functioning, transparency and regulatory oversight of OTC derivatives markets.[43] The report sets out recommendations on implementing the G20 commitments made in September 2009 concerning standardisation, central clearing, organised platform trading and reporting to trade repositories (TRs) of all OTC derivative contracts.[44] In addition, the Committee on Payment and Settlement Systems (CPSS) and International Organisation of Securities Commissions (IOSCO) have proposed guidance for CCPs that clear OTC derivative products and TRs in OTC derivative markets.[45]

[40] The Chiang Mai Initiative is a multilateral currency swap arrangement among ASEAN countries, China, Japan and South Korea that was launched in March 2010.
[41] Report on Supervisory Intensity and Effectiveness, Nov 2010.
[42] Report on Principles for Reducing Reliance on CRA Ratings, Oct 2010.
[43] Report on Improving OTC Derivatives Markets, Oct 2010.
[44] Non-centrally cleared contracts should be subject to higher capital requirements.
[45] Guidance on the application of the 2004 CPSS—IOSCO recommendations for Central Counterparties, May 2010; and Considerations for trade repositories in OTC derivatives markets, May 2010.

Global Accounting Standards

Over the past year, the International Accounting Standards Board (IASB) and Financial Accounting Standards Board (FASB) have made progress in bringing about greater convergence in global accounting standards via a joint project, and have released proposed accounting standards on issues such as revenue recognition, accounting for financial instruments and fair value measurement in June 2010. The convergence project is due to be completed by the end of 2011.

Further Initiatives

Going forward, the G20 has resolved to look into further work on macroprudential policy frameworks, addressing regulatory reform issues pertaining specifically to emerging market and developing economies, strengthening regulation and supervision of shadow banking, regulating and supervising commodity derivative markets, improving market integrity and efficiency, and enhancing consumer protection.

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1.2 Asian Macroeconomic Environment and Financial System

Asian economies have rebounded strongly.

In contrast to the G3, Asia's recovery has been stronger and more sustained. The recovery has been underpinned by the upturn in global trade as well as resilient domestic demand (Chart 1.33). Export growth and rebuilding of inventories were strong in the first half of 2010, but the momentum subsequently eased as the effects of fiscal stimuli in advanced economies waned and inventories were replenished. Domestic consumption growth for the region as a whole remained positive throughout the crisis, and continues to stay firm. Investment spending has also picked up in recent quarters, supported by favourable sentiments among businesses and households (Chart 1.34).

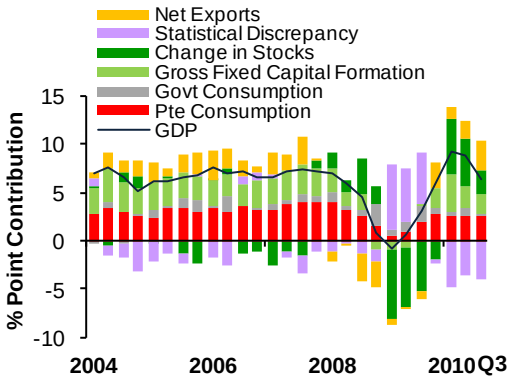
There are considerable divergences in the nature and pace of economic recovery within the region (Chart 1.35). Most economies with larger domestic demand bases have been able to maintain fairly robust growth through the crisis. In contrast, smaller or more export-dependent economies have relied heavily on the return of external demand in advanced economies as well as in Asia.

Relatively robust sovereign balance sheets and a recovery in credit should continue to underpin Asia's recovery…

Going forward, Asia's strong sovereign and banking system balance sheets are expected to continue to provide buffers against potential shocks along the recovery path. In contrast to several advanced countries, Asian economies have substantially lower public debt burdens (Chart 1.36) and manageable budget balances. This implies the capacity for further fiscal stimulus measures if needed.

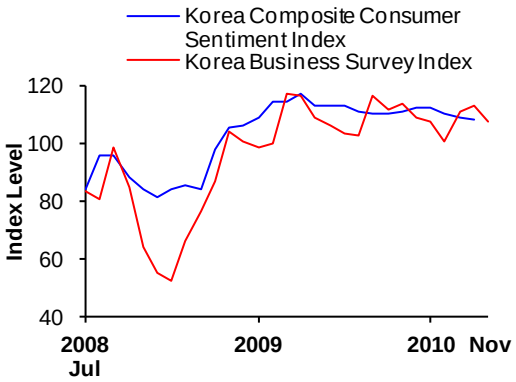
A pick-up in the pace of bank credit growth in several Asian economies this year has also played a role in supporting the region's economic recovery. In the aftermath of Lehman's collapse, credit growth dipped substantially in several countries, with the notable exception of China, where loan growth accelerated following its fiscal stimulus plan. Since the later part of 2009 and through 2010, credit growth has picked

Chart 1.33
Contribution to GDP Growth: Asia-10 ex China, 2004-2010



Source: CEIC and National Sources
Weighted by 2009 GDP.
Q3 2010 data excludes India and the Philippines.

Chart 1.34
Consumer and Business Sentiment Indices: Selected Asian Economies





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up across the region (Chart 1.37). Credit condition surveys conducted by some authorities and other indicators such as loan approvals and disbursements also suggest that banks are no longer tightening lending standards and terms.

… but growth could weaken if G3 recovery stalls.

It would be premature to assume that Asian economies are "decoupled" from the G3's growth outlook. In spite of the near-term rebound and some signs of larger Asian economies absorbing more imports from the rest of the region (Chart 1.38), Asia as a whole remains dependent on G3 economies for export demand (Chart 1.39). The headwinds to growth in the advanced economies could translate to a weaker than expected recovery in the region.

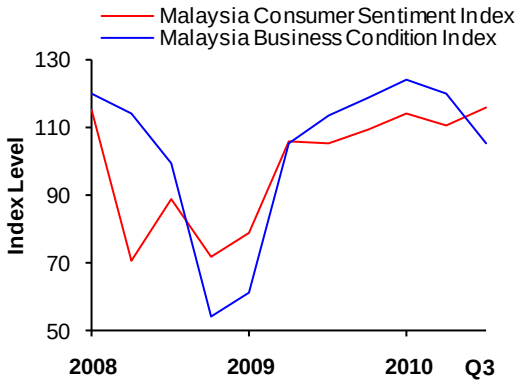
In the meantime, the multispeed recovery is attracting substantial foreign capital inflows to Asian economies.

In the meantime, while Asia's economic rebound continues, the multispeed nature of the global economic recovery entails several risks for the region. Some of these are associated with substantial capital inflows which have been building up over the past year.

Accommodative monetary policy in both the G3 and EM regions has brought about abundant global liquidity. Combined with the return of risk appetite, this has resulted in a search for yield among investors globally. Some of this liquidity has been attracted to Asia given the region's higher actual and expected growth and interest rates compared to the G3, as well as perceptions that asset quality risks in Asia may be well contained.

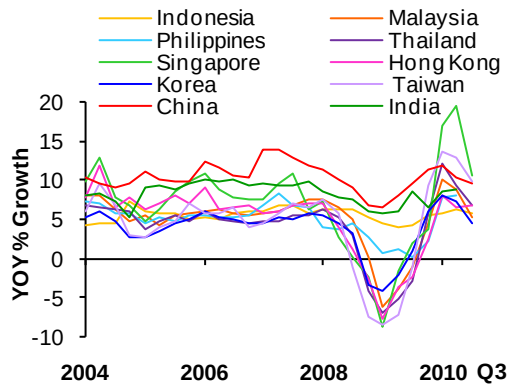
Between Q2 2009 and Q2 2010, over US$600 billion of foreign capital flowed into the region (Chart 1.40). The inflows were substantial, though still significantly smaller than inflows at various times in the past, for instance, most recently during 2007. Initially, these inflows were predominantly portfolio investments, with equity portfolio flows recovering before debt

Chart 1.34 (Continued)
Consumer and Business Sentiment Indices: Selected Asian Economies



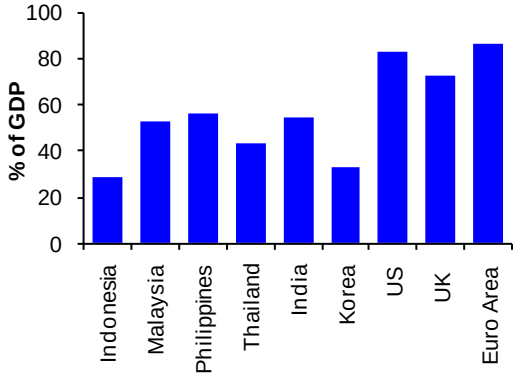
Source: CEIC and National Sources

Chart 1.35
GDP Growth: Asia-10



Source: CEIC

Chart 1.36
Gross General Government Debt to GDP Ratio: Selected Asian Economies and Advanced Economies



Source: CEIC, OECD

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flows. "Other investment" flows[46], which formed a significant part of capital inflows to Asia before the crisis, have been slower to recover but are now returning to the region (Chart 1.40). These financial flows are generally considered to be of a more short-term nature than foreign direct investment (FDI), which remained relatively resilient through the crisis.

On the whole, a large proportion of the capital flowing into Asia now represents the return of capital that left the region during the crisis. However, inflows have begun to exceed the outflows experienced during the crisis in some economies. At the same time, Asian investment abroad has not picked up to the same extent as foreign investment in Asia (Chart 1.41). As a result, Asian economies as a group have experienced sizeable net capital inflows over recent quarters (see Box F for more details on capital flows to Asia post-crisis).

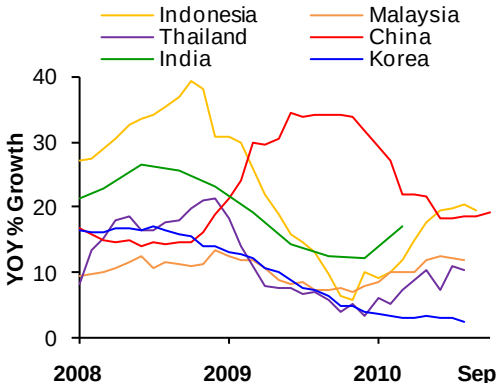
If capital inflows persist or increase, there may be further upward pressure on asset prices.

Continued large capital inflows persisting for an extended period could present challenges to overall price and financial stability. Large capital inflows could also trigger exchange rate volatility and introduce additional complexity to monetary policy management, particularly in light of emerging inflationary pressures and risks to recovery in some regional economies (Table 1.42).

Asset prices in many Asian economies have been increasing alongside pressures from rising capital inflows and domestic liquidity. Market contacts suggested that some investors now see high Asian growth prospects in an even more favourable light compared to before the crisis, but could be underestimating the downside risks for Asian growth and asset values. This could contribute to asset price volatility should investor sentiment turn suddenly.

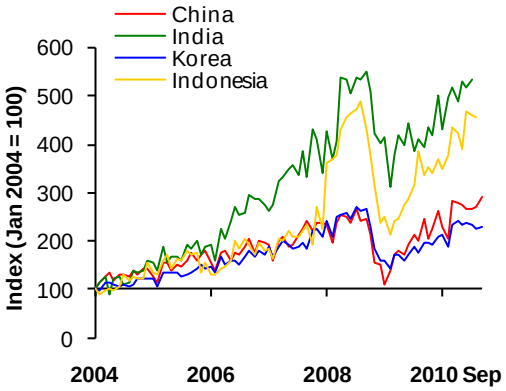
Over the past year, Asian equity prices have continued to trend upward strongly following the rally last year (Charts 1.43 and 1.44). Price-earnings (PE) ratios increased sharply across several markets

Chart 1.37
Loan Growth: Selected Asian Economies



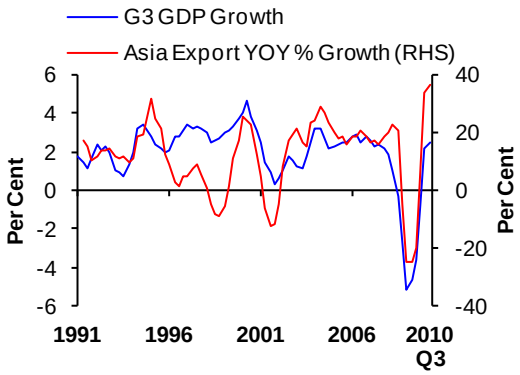
Source: CEIC
Quarterly frequency for India data; monthly for others.

Chart 1.38
Imports from Asia-10 (Indexed): Selected Asian Economies



Source: CEIC and MAS calculations

Chart 1.39
G3 GDP Growth & Asia-10 Export Growth



Source: CEIC, Datastream
Singapore data excludes exports to Indonesia.
Q3 2010 data excludes the Philippines.

[46] These refer to foreign investors' bank deposits and loans to domestic banks and non-banks.

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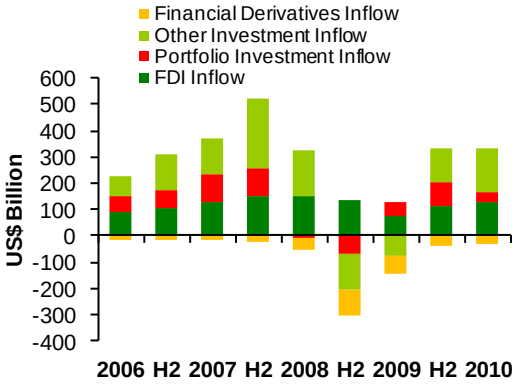
between March and December 2009 before retracting somewhat as earnings outlooks were revised. While PE ratios are currently in line with historical averages for most markets, upward pressures seem to have resumed in recent months (Chart 1.45). This could continue if economic growth in the region continues to hold up well and the outlook for the corporate sector remains positive.

In bond markets, some sovereign spreads narrowed sharply between March and the end of 2009, and also tightened further this year (Chart 1.46). Corporate bond spreads have also tightened in tandem (Chart 1.47). To some extent, the decline in credit costs from unusual highs seen during the most severe phase of the crisis is due to the easing of extremely high risk aversion. Investors could also have factored in some stabilising effects on credit quality as well as some confidence-anchoring effects arising from sound sovereign balance sheets.

Nonetheless, there is some concern that strong investor interest in Asian credits in the current search for yield may lead to excessive yield compression in markets that are not sufficiently deep or liquid, and that this could subsequently reverse and create market volatility if sentiment turns. In this regard, it is worth noting that strong growth of bond issuances in both domestic and foreign currencies (Chart 1.48) has been accompanied by increasing bond holdings by foreigners in several economies (Chart 1.49). This suggests that foreign investors have played some part in driving the generally bullish sentiment in bond markets. Should foreign capital flows to regional bond markets ease substantially or reverse (e.g. if economic growth for certain countries disappoint), exchange rate volatility and a rise in borrowing costs through higher bond yields could result. There is also the possibility of losses for banks on account of their holdings of sovereign and corporate debt.

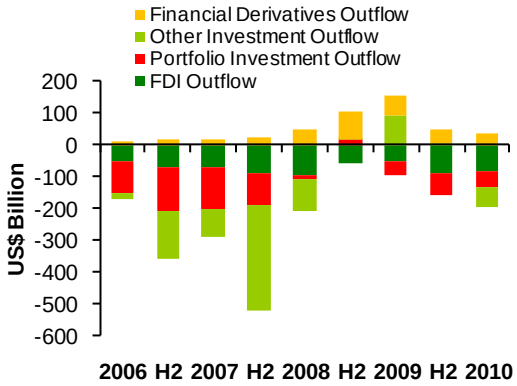
Residential property prices have also rebounded in some economies (Chart 1.50). Initially, momentum gathered alongside the sharp recovery of economic growth and considerable improvements in the outlook for employment and incomes. However, the continued run-up in prices in some economies in the second half of this year risks developing into a dynamic of its own that could push prices away from

Chart 1.40
Gross Capital Inflows to Asia-10 ex Malaysia



Source: IMF Balance of Payments

Chart 1.41
Gross Capital Outflows from Asia-10 ex Malaysia



Source: IMF Balance of Payments

Table 1.42
Consensus Forecasts of Inflation Rates for 2010 and 2011: Asia-10

YOY %	2010	2011
India	9.4	6.8
China	3.0	3.0
Hong Kong	2.5	3.1
Taiwan	1.1	1.5
Korea	2.9	3.1
Indonesia	5.1	6.1
Malaysia	1.7	2.5
Thailand	3.4	2.9
Philippines	4.0	4.0
Singapore	2.8	2.5

Source: Consensus Economics
Forecasts as of November 2010.
Fiscal year for India.

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fundamentals. This would pose significant asset quality risk for Asian banks, given their sizeable direct property exposures and property collateral. A property market correction could also lead to a deceleration in a broader range of economic activity, with knock-on effects on the banking system.

In sum, the low interest rate environment and the flows of both domestic and foreign capital in search of higher yields could lead to excessive optimism and/or shortened investment horizons. These could, in turn, drive prices away from fundamentals for a range of asset classes, with the risk of disorderly corrections should capital flows reverse.

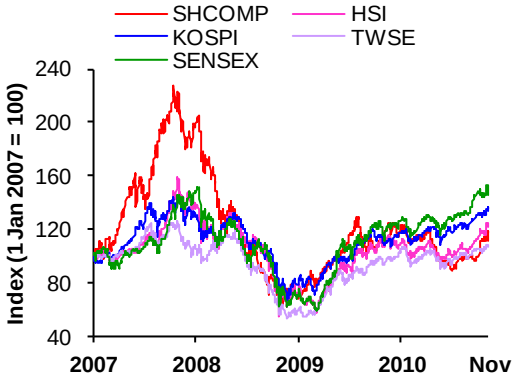
To address such risks before they build up further, several authorities in the region have implemented often targeted measures to deter or divert capital flows without discouraging capital inflows altogether.

For example, Bank Indonesia has imposed a one-month minimum holding period on its short-term paper (SBIs), rather than an outright ban on foreign holdings of SBIs. More recently, it also announced that it would suspend regular auctions of its three-month SBI debt and offer one- and two-month term deposits as replacements. It also dropped its one-month SBI, replacing it with a six-month tenor. The Thai Finance Ministry has re-introduced a 15% withholding tax for interest income and capital gains on foreign investments in bonds issued by Thai government agencies (including the Bank of Thailand). In Taiwan, the authorities have prohibited foreign investors from investing in local currency time deposits, which were being used to deposit funds for short periods of time.

In addition, some Asian authorities are also lifting restrictions on domestic investment abroad, which should encourage capital outflows. For example, earlier this year, the Bank of Thailand removed limits on foreign direct investment by Thai companies and raised limits on investment in foreign equity and debt securities by Thai securities and mutual fund companies.

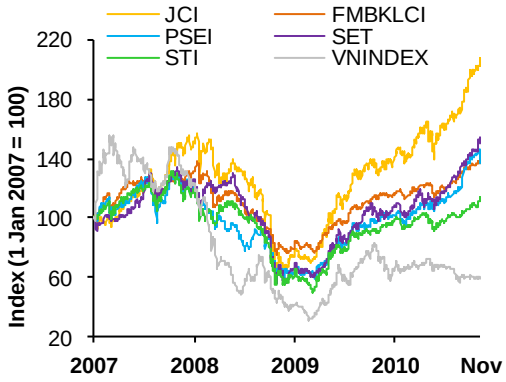
As for property markets, authorities in China, Hong Kong, Korea, Malaysia, Singapore and Taiwan have taken a range of measures to keep in check upward price pressures, particularly those arising from

Chart 1.43
Asia Equity Indices: India and Selected Northeast Asian Economies



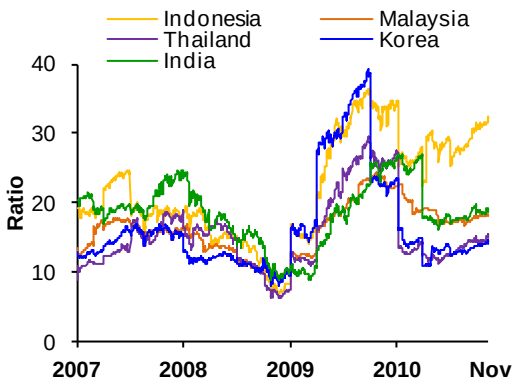
Source: Bloomberg

Chart 1.44
Asia Equity Indices: Selected Southeast Asian Economies



Source: Bloomberg

Chart 1.45
Asia Equity Market Price-Earnings Ratios: Selected Economies



Source: Bloomberg

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potentially speculative activity, and to moderate the impact of fluctuations in market conditions where appropriate. While adjustments in loan-to-value ratios have been common, measures to boost the supply of housing units and other administrative tools have also been used.

Given that economic growth has been robust and asset prices have held up well, Asian banking systems appear resilient at this juncture…

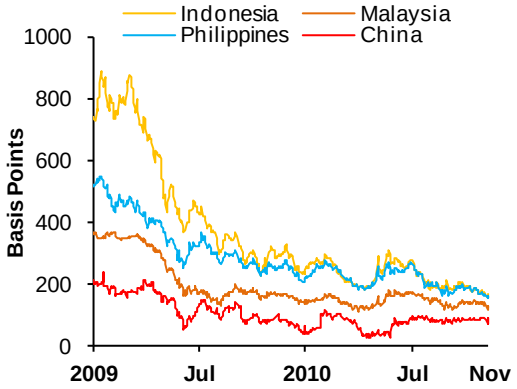
Meanwhile, given that economic growth has been robust and asset prices have held up well, Asian banking systems appear resilient. NPL ratios continue to be low while CARs have increased after a dip during the most severe phase of the crisis (Table 1.51). Indeed, some Asian banks have taken advantage of favourable financing conditions to raise capital in both debt and equity markets. For example, major Chinese banks had reportedly raised about US$10 billion of equity and about US$15 billion of debt in the first half of 2010, while Korean banks had reportedly raised about US$7 billion in the first nine months this year. With capital buffers in place, most Asian banks are generally expected to be able to meet the new Basel III rules from a capital raising standpoint (see Box C).

… but risks to bank asset quality remain and some authorities have taken measures to address these.

However, given the magnitude and speed of the pick-up in loan growth in certain jurisdictions and the rebound in asset prices, there are risks to bank asset quality. Asset quality could deteriorate if economic growth turns out to be weaker than expected and/or asset prices adjust suddenly.

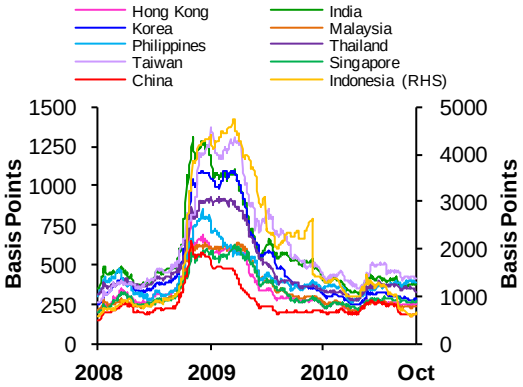
Some authorities have taken actions to manage emerging banking-system risks. For example, in Korea, over the past two years, banks were required to assess and categorise borrowers according to type and credit quality, and take risk-mitigating measures including loan workout arrangements. A bank recapitalisation fund was also set up. The state-run Korea Asset Management Corporation has purchased high risk real estate project financing loans from some banks.

Chart 1.46
Asia Sovereign Bond Spreads



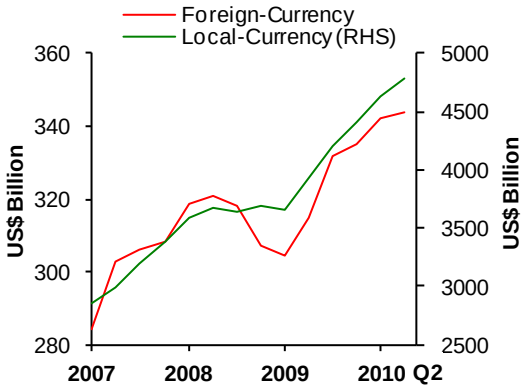
Source: JP Morgan Chase

Chart 1.47
Asia Corporate Bond Spreads



Source: JP Morgan Chase

Chart 1.48
Asia Local Currency and Foreign Currency Bonds Outstanding



Source: ADB Asian Bonds Online

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The People's Bank of China raised the reserve requirement ratio several times between January and November 2010, both for the entire banking system and for selected banks. The China Banking Regulatory Commission also required banks to assess the quality of loans extended to local government financing vehicles and to conduct stress tests on different loan portfolios, including incorporating the possibility of a sharp fall in property prices. The various measures taken to cool property markets noted above also served to keep in check risks to banks' mortgage loan portfolios.

Banking systems could also be vulnerable to a pullback in cross-border lending by foreign banks.

Apart from credit quality risks, Asian banking systems could be vulnerable to another pullback in cross-border lending by foreign banks. As noted earlier, cross-border banking flows were slower to return to Asian economies than portfolio flows, but have now recovered to close to their pre-crisis peaks. The risk of another pullback in cross-border lending by foreign banks, such as the contraction in external lending seen in Q4 2008 and Q1 2009[47], cannot be discounted (Chart 1.52). In this regard, banks domiciled in some G3 economies may pose a greater risk than banks from other regions, due to their significant funding needs over the next three years. Moreover, if the G3 economic recovery stalls, these banks' losses could increase, which may prompt them to cut back on cross-border lending.

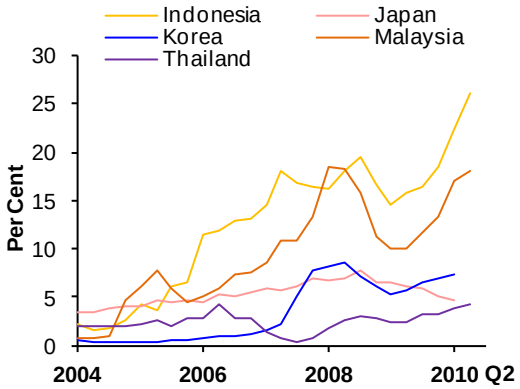
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Structural reforms over the medium term would help mitigate risks.

In summary, over the past year, Asian economies have rebounded strongly. While near term risks associated with capital flows and asset quality are building up, they have been mitigated in part by various measures that authorities in the region have taken.

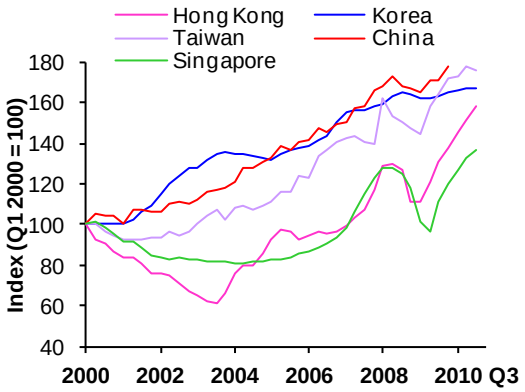
There is scope for structural reform to further address these risks. A key priority would be

Chart 1.49
Foreign Holdings of Government Bonds as Percentage of Total Outstanding: Selected Asian Economies



Source: ADB Asian Bonds Online

Chart 1.50
Residential Property Price Indices: Selected Asian Economies



Source: CEIC

Table 1.51
Banking System Capital Adequacy Ratio and Non-Performing Loan Ratio

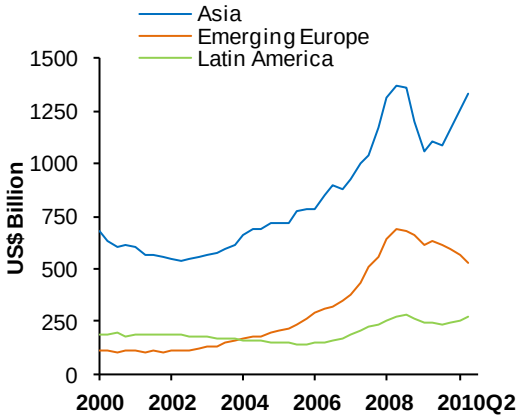
	08 Q4	09 Q1	09 Q2	09 Q3	09 Q4	10 Q1	10 Q2
NPL Ratio (%)							
SEA	3.8	4.1	4.0	3.9	3.5	3.4	3.3
NEA	1.0	1.2	1.2	1.2	0.9	1.0	0.9
CAR (%)							
SEA	14.2	15.1	15.7	16.1	16.1	16.5	16.2
NEA	12.6	13.3	13.7	14.0	14.3	14.4	15.2

Source: CEIC, National Sources
Northeast Asia comprises Korea, Hong Kong and Taiwan; Southeast Asia comprises Indonesia, Malaysia and Thailand.
CAR Q2 2010 data excludes Taiwan.

[47] It should be noted, however, that Asian banks and non-bank borrowers remained largely resilient during the period.

broadening and deepening Asian financial markets to enable better intermediation of large capital inflows. Such reforms would help provide more avenues for capital inflows to be channelled to economic sectors which need longer term financing and investment.

Chart 1.52
External Bank Loans to Borrowers in Asia-10 and Other Emerging Regions



Source: BIS

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Box F: Post-Crisis Capital Flows to Asia

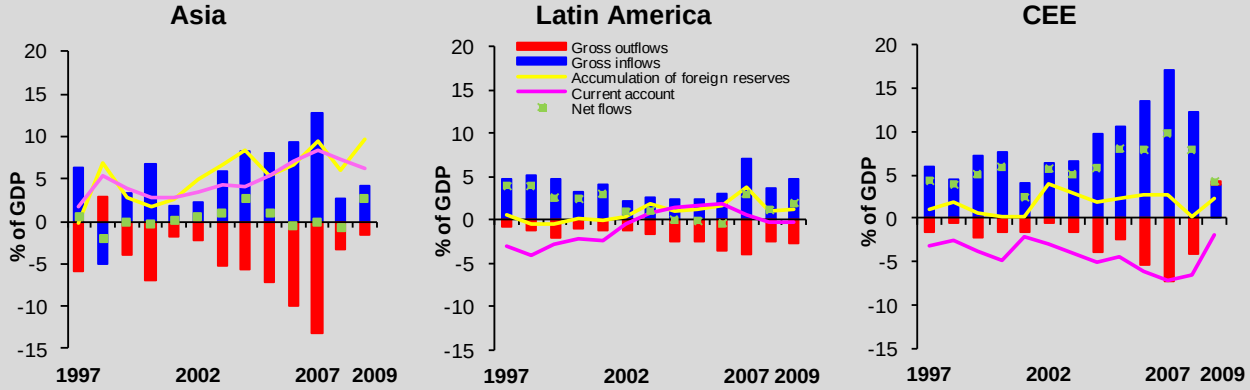
The global financial crisis triggered a sharp contraction in capital flows to EMEs in 2008, ending a relatively long period of foreign capital inflows from the early 2000s onwards.[48] This box examines how Asian capital flows evolved post-crisis.

Capital flight through the crisis

Flows of foreign capital to EM regions contracted sharply at the onset of the global financial crisis in 2008. As global risk aversion rose, investors fled from higher-return, more "risky" assets, such as EM bonds and equities, towards "safer" G3 assets. Asia, which had received the most foreign capital in the run-up to the crisis, saw the biggest contraction in foreign capital inflows in both absolute terms and as a percentage of GDP (Charts F1 and F2).

The impact was softened somewhat by Asian investors switching out of foreign assets into domestic assets. The sharp contraction in foreign capital flowing to Asia ("gross capital inflows") was accompanied by a reduction in Asian capital invested abroad ("gross capital outflows"), which left the financial account broadly in balance for Asia as a whole. This was in contrast to the Asian financial crisis, when capital flight by Asian investors added to foreign capital outflows. Nonetheless, some economies experienced foreign capital outflows that far exceeded returning domestic capital. In these cases, policymakers used official reserve holdings to cushion to some degree the considerable downward pressure on local currencies.

Chart F1
Gross Capital Flows to/from EM Regions as a Percentage of Regional GDP



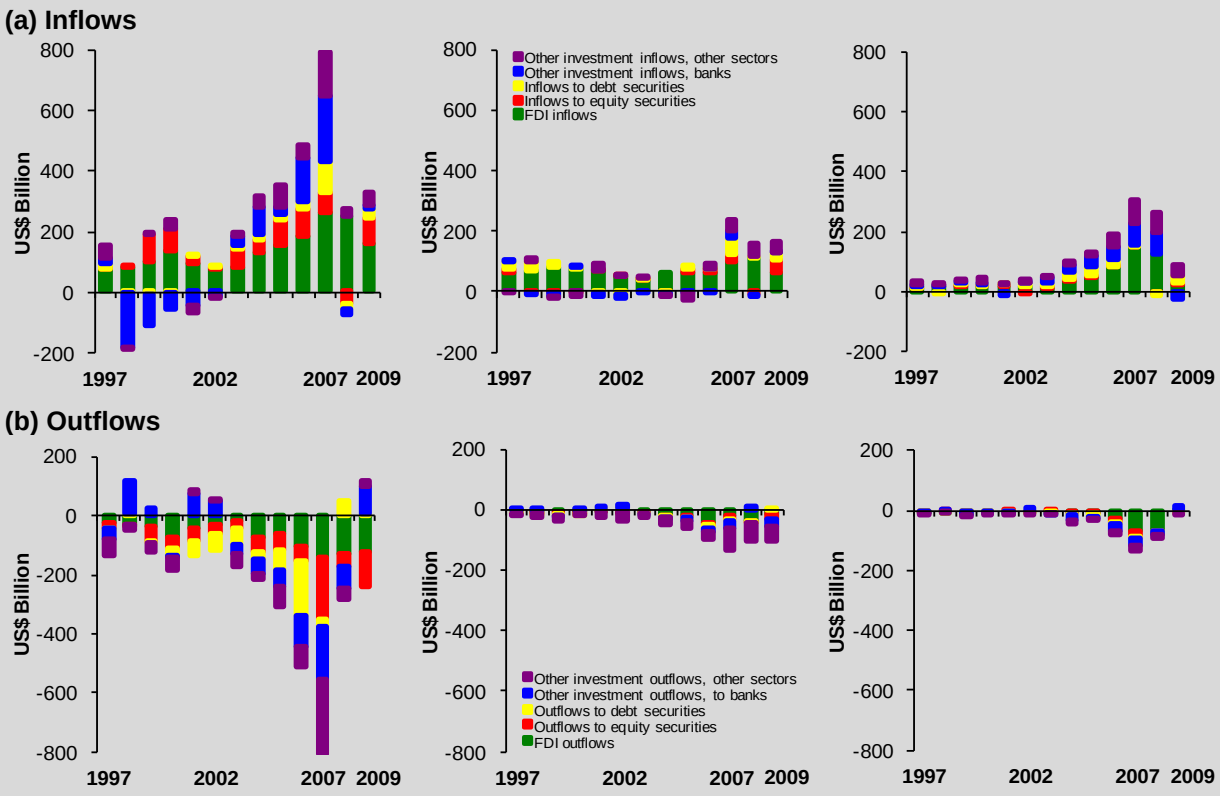
Source: IMF Balance of Payments and MAS estimates
Asia: China, Hong Kong, Korea, Taiwan, Indonesia, the Philippines, Singapore and Thailand; Latin America: Argentina, Brazil, Chile, Colombia, Mexico, Peru. Venezuela; CEE: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovenia, Turkey
Gross inflows represent inward FDI, net purchases by foreign investors of local debt and equity securities, and foreign deposits in and loans to local banks. A negative inflow indicates a reduction in foreign ownership of local assets. Gross outflows represent outward FDI, net purchases by local investors of foreign debt and equity securities, and local deposits in and loans to foreign banks. A positive outflow indicates a decrease in domestic ownership of foreign assets.
Charts exclude derivatives flows, which are not disclosed for all countries on a gross basis.

Capital re-accumulation post-crisis

From Q2 2009 onwards, the emergence of the first "green shoots" of economic recovery and slowly returning global risk appetite prompted a return of foreign capital to EM regions. However, this has not been distributed evenly across regions. Asia and Latin America have been favoured over the CEE, where the economic recovery has been much slower and public and private sector balance sheets generally weaker. Furthermore, foreign capital has not been invested evenly across different types of EM assets. A large proportion of incoming foreign capital has been invested in equity and debt securities.

[48] Capital flows through the crisis were described in detail in Box E of the 2009 FSR.

Chart F2
Composition of Gross Capital Flows to/from EM Regions



Source: IMF Balance of Payments and MAS estimates
Gross inflows and outflows as defined in Chart F1.

Portfolio inflows led the recovery in Asian capital inflows

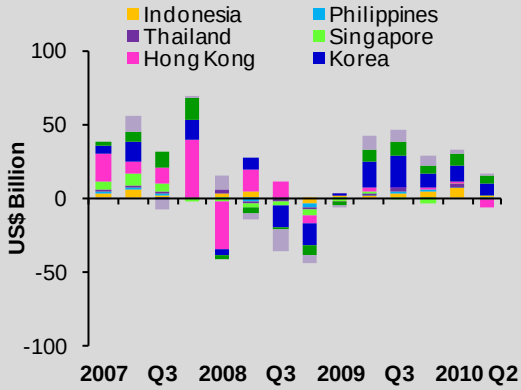
Much of the foreign capital flowing into Asia from Q2 2009 onwards has been invested in equity and debt securities, especially equities. Gross portfolio inflows to Asia totalled over US$115 billion in 2009, contrasting sharply with 2008 when the same flows were negative as foreign investors became net sellers of Asian assets. Portfolio inflows have been sustained into 2010, although inflows to Asia were somewhat lower between April and June, as rising concerns about sovereign credit risk in the euro area dampened global investor risk appetite.

Initially, portfolio inflows represented the return of capital that left Asia during the crisis. However, inflows have begun to exceed the outflows experienced during the crisis in some economies (Chart F3).

Cross-border banking flows to EM regions have been slower to recover. These flows, which previously formed a significant part of capital inflows to Asia, contracted sharply at the height of the crisis and began to return only towards the end of 2009. Despite the lagged recovery relative to portfolio investment, cross-border banking flows have rebounded quickly. In Q1 2010, cross-border loans to Asian economies were close to reaching their pre-crisis peak in Q2 2008.

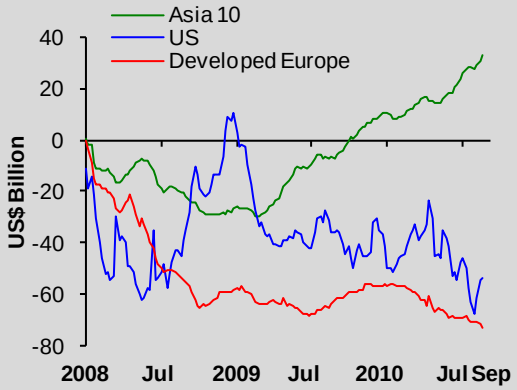
Conversely, gross inflows of FDI to Asia, which remained resilient through the crisis, contracted slightly in 2009. This contraction appears to have been temporary, likely driven by foreign investors postponing new investment plans in 2008 and early 2009 whilst uncertainty around the economic outlook remained high. FDI inflows started to return to pre-crisis levels in most Asian economies from end-2009.

Chart F3
Gross Portfolio Inflows to Selected Asian Economies



Source: IMF Balance of Payments

Chart F4
Cumulative Global Equity Fund Flows to Selected Regions, 1 Jan 2008 Onwards



Source: EPFR Global
Includes exchange-traded fund (ETF) flows
Developed Europe includes the euro area (exc. Slovakia, Slovenia, Cyprus, Luxembourg and Malta), Switzerland, Sweden, UK, Iceland and Denmark

Higher relative returns and lower perceived risk are attracting foreign capital to Asia

Both advanced and EM policymakers responded to the crisis with accommodative monetary policies. The resultant abundant liquidity, combined with the return of risk appetite globally, led to a renewed search for yield among investors.

The risk-return profile of Asian assets relative to G3 assets has improved post-crisis. Compared to low growth and interest rates in the G3, Asia offers higher growth prospects and higher debt and equity returns. Further, the strength of public finances in many Asian economies and the prospect of credit rating upgrades contrast with the sovereign credit risk concerns in advanced economies. These shifts in the relative returns and perceived riskiness of Asian assets have attracted foreign capital towards Asia.

There is some evidence that investors are switching out of G3 assets into Asian assets, at least in equities. From 2009 onwards, global equity mutual funds reduced their exposure to the US and Europe while increasing their exposure to Asia (Chart F4). It should be noted though, that the foreign capital flowing into Asia remains below levels seen prior to the crisis in both absolute terms and relative to GDP.

Gross capital outflows from Asian economies have been slower to recover

In the recent past, Asian investors have tended to offset foreign capital inflows by investing abroad. Currently, however, gross capital outflows have not increased to the same extent as inflows.

While gross portfolio outflows have picked up post crisis, they remain on average slightly smaller than gross portfolio inflows, resulting in net portfolio inflows. This contrasts with net portfolio outflows that were usually observed between 2006 and 2008, i.e. domestic investors invested more abroad than foreign investors did in domestic debt and equity markets. Domestic investors may be investing increasingly in home markets. Meanwhile, cross-border banking ("other investment") outflows, which previously formed a significant part of gross capital outflows from Asian economies, have been slow to recover post-crisis across many Asian economies.

Conclusion

Conditions should continue to remain favourable for Asian capital inflows in the near- to medium-term, with economic growth in the G3 remaining sluggish and normalisation of monetary policy likely to be delayed. However, Asia's economic outlook remains closely tied to the G3. As long as uncertainty continues to surround the strength of G3 economic recovery, capital flows to Asia are likely to experience heightened volatility, albeit around an upward trend.

Box G: Domestic Adjustments to Address Global Imbalances

At the recent Seoul Summit, G20 leaders committed to achieve strong, sustainable and balanced growth in a collaborative and coordinated way. A key element of this commitment is for countries to pursue structural reforms to boost and sustain global demand, foster job creation and increase growth potential. This box examines the policy implications for Asian economies.

Altering the composition of growth towards a greater consumption share will make Asia more resilient....

Export-led growth has been a key driver of the Asian growth story. Indeed, this model has been embraced by multinational companies from advanced economies, which have often been at the forefront of investing in Asia. These companies have provided the technological and intellectual capital, while leveraging on the well-trained labour forces and cost advantages in the region. The model has also allowed consumers in advanced economies to import goods more cheaply than they would have been able to produce domestically.

While the export-led growth model has contributed to robust growth for Asia, there are good reasons for Asian and other emerging economies to move towards a broader-based growth model. Authorities in these countries recognise that a broader-based model would make their economies more resilient since domestic consumption is generally more stable than trade, which depends critically on growth in the advanced economies.

...but will take time and will not be without difficulties

However, bringing about this domestic rebalancing would take time. A variety of factors, both economic and structural, but also social and demographic, contribute to the high savings and low consumption rates in Asia. For example, relatively less developed financial markets make it more challenging to smooth consumption over time, and may have contributed to higher precautionary savings in Asia. Inadequate social safety nets are another oft-cited reason.

While consumption-to-national output ratios can change over time, they do so very slowly for most economies (Chart G1). Therefore, efforts to raise this ratio are likely to yield results only gradually. Another reason why consumption growth may be slow in Asia is that the marginal propensity to consume tends to be lower in countries where consumption is a smaller share of national output, such as in Asia.[49] As a result, the consumption multiplier effect is weaker than in most advanced economies, where consumption forms a larger part of aggregate demand. Indeed, even as Asian consumption grows, the initial increase in total output could be relatively moderate.[50] To illustrate, impulse response functions derived from simple bivariate vector autoregressive models suggest that a unit increase in national income translates to an increase in household consumption after four quarters of 0.06 units on average in six Asian economies, compared with an increase of 0.49 units in six advanced economies (Chart G2).[51]

Therefore, policymakers need to be prepared that the initial benefits of structural reforms and other policies

[49] The marginal propensity to consume tends to be similar to the average propensity to consume in the long run. See Sloman, J (1999) *Economics* (updated 3rd edition).

[50] To illustrate, consider the textbook example of an economy where every agent spends 90% of the increase in his/her disposable income i.e. a marginal propensity to consume of 90%. Assume in this economy that Person A sees a rise in disposable income of $1. He will save 10 cents and give 90 cents to Person B in exchange for some goods or services. B will spend 90% x 90 cents = 81 cents on goods and services provided by Person C, who will spend 90% x 81 cents on goods and services provided by D and so on. In aggregate, the rise in aggregate income in the economy resulting from the initial $1 increase is 1+0.9+0.81+… = $10, the sum to infinity of the geometric progression. If, however, only 50% of the rise in disposable income was spent each time, the increase in aggregate income would be just $2. Of course, in reality, some income is also allocated to taxes and to purchasing imported goods and services, which reduces the multiplier.

[51] Advanced economies studied were the US, UK, Canada, Germany, France and Italy. Asian economies studied were Korea, Taiwan, Thailand, Singapore, Philippines and Indonesia. VARs of C (household consumption expenditure) and Y (GDP) utilise quarterly data in real terms from Q1 2000 to Q1 2010, with 4 lags for all countries. Impulse responses are after 4 quarters.

aimed at rebalancing growth, in terms of increases in output and consumption, may not be large. Rather, domestic rebalancing will require a sustained effort to boost incomes and to address the various factors that keep savings rates high. As they gain traction, these domestic adjustments will allow countries to derive greater benefit from their efforts to address external imbalances – including moving towards greater exchange rate flexibility.

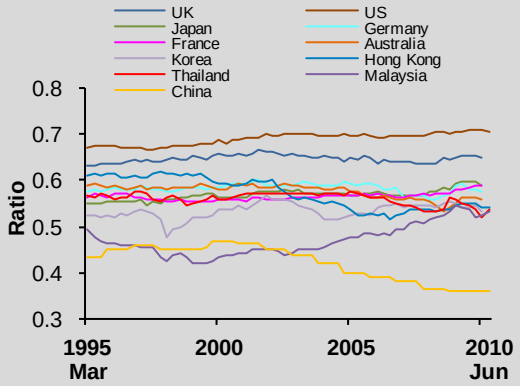
Global rebalancing carries risks that need to be managed

The Seoul Summit also noted that global rebalancing would require advanced economies to formulate and implement clear, credible, ambitious and growth-friendly medium-term fiscal consolidation plans. These measures would likely lead to a moderation in consumption within the advanced economies over time. Given the asymmetric significance of consumption in advanced economies and in Asia, a demand vacuum could form if consumption levels adjust abruptly. For example, comparing the largest economies in each region - the US and China - a one percentage point fall in the expected rate of growth of US private consumption expenditure (PCE) in 2011 would require Chinese PCE to grow by an incremental 5 percentage points to attain the same level of aggregate global consumption.[52] In reality, of course, rebalancing will involve more countries where asymmetries may not always be as stark. Nevertheless, authorities will need to monitor the progress of rebalancing efforts to ensure that these risks are managed and do not create frictions or result in protectionist action.

Conclusion

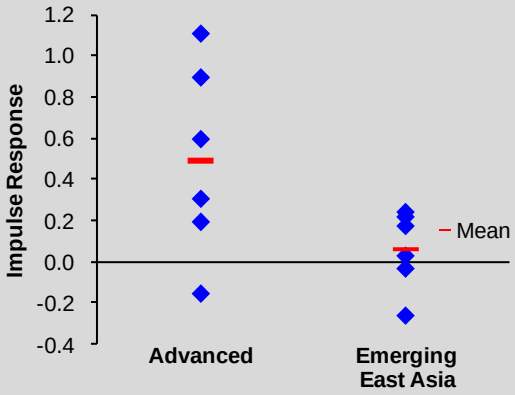
Consumption is unlikely to emerge in the near future as a dominant driver of growth in Asia as it currently is in advanced economies. But that is not to say that Asian economies are not making progress in that direction. Spending patterns have started to shift, particularly among urban dwellers and the growing middle class. Until the global economy finds its new sustainable balance, policymakers may well have to be patient and maintain policies that are supportive of rebalancing, resisting the temptation to resort to quicker but less sustainable solutions that could impinge on economic growth and financial stability.

Chart G1
Consumption / National Output Ratios



Source: IMF, CEIC, MAS calculations

Chart G2
Impulse Response from Bivariate VARs



Source: IMF, MAS calculations

[52] For a quick approximation, US consumption in 2011 is estimated to be 70% x US$15 trillion = US$10.5 trillion, 1 percent of which is US$105 billion. Chinese consumption is estimated to be 36% x US$6 trillion = US$2.16 trillion; as a percentage of this amount, US$105 billion is about 5%.

2 SINGAPORE'S MACROECONOMIC ENVIRONMENT AND FINANCIAL SYSTEM

2.1 Macroeconomic Developments

Growth momentum has slowed but full year growth is expected to be resilient.

After a buoyant H1 2010, the global economic recovery has lost some momentum in recent months. The deceleration has been largely due to the scaling back of massive stimulus injections and the fading of inventory restocking effects.

On a q-o-q SAAR basis, the Singapore economy grew 45.9% and 27.3% in Q1 2010 and Q2 2010 respectively. GDP contracted by 18.7% in Q3 2010. This was largely due to a fall in manufacturing value-added of 53.6% q-o-q SAAR (Chart 2.1), and stemmed from a sharp pullback in pharmaceuticals output due to a switch in the product mix for the quarter as well as some plant maintenance shutdowns. The construction sector also declined by 10.4%. Growth in the services sector slowed significantly, to 1.6% q-o-q SAAR, after two quarters of double-digit sequential gains.

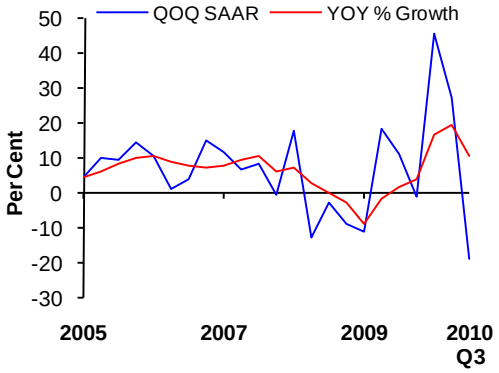
The outlook for Asia ex-Japan economies is positive although final demand in the developed economies is expected to remain sluggish. While growth in the region will likely slow, it should continue to be supported by firm domestic demand.

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Against this backdrop, the level of economic activity in Singapore is projected to remain high across a broad range of industries. For 2010 as a whole, GDP is on track to grow by around 15% while in 2011, the domestic economy will continue to expand at a more sustainable rate of between 4% and 6%.

Following the sharp turnaround in the domestic economy and the attendant rise in resource utilisation, cost and price pressures have emerged. Headline CPI inflation on a y-o-y basis has risen significantly since the start of 2010, averaging 2.4% in the first three quarters of 2010 (Chart 2.2). CPI

Chart 2.1
Singapore's GDP Growth

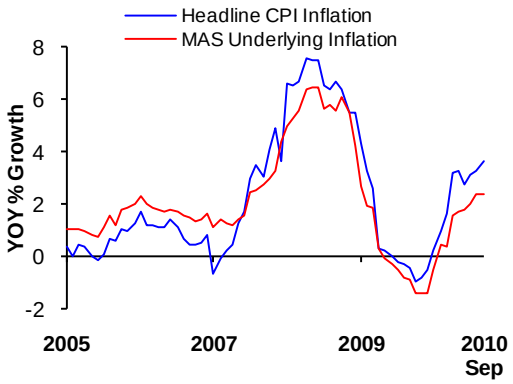


Source: Department of Statistics

inflation in Q2 2010 was driven mainly by private road transport costs, while rising costs of domestic non-tradable items, including accommodation and services, contributed to CPI inflation in Q3 2010.

For the rest of 2010, CPI inflation is expected to be driven by private road transport costs and oil, food and commodity costs. The main drivers in 2011 are expected to be the domestic non-tradeables, namely services and accommodation, as well as food prices. In light of the upward price pressures, the MAS further tightened monetary policy in October this year. This policy stance will remain supportive of economic growth while seeking to cap headline CPI inflation at 2-3% in 2011 from 2.5-3% in 2010.

Chart 2.2
Headline CPI and MAS Underlying Inflation



Source: MAS

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2.2 Financial Markets

Singapore's financial markets have recovered strongly.

Conditions in Singapore's financial markets have continued to improve in line with the comparatively robust performance of the domestic economy and the Asia-Pacific region as a whole.

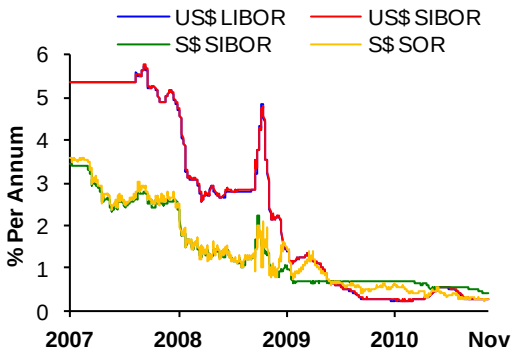
Like other major US dollar funding centres, the Asian Dollar Market (ADM) experienced some strains between May and July 2010. The key concern then was over the ability of European banks, particularly those from peripheral euro area economies, to obtain funding. Nonetheless, the impact on the ADM was minimal, mainly because peripheral euro area banks were not significant ADM participants. The extension of ECB liquidity and restarting of US dollar swap lines with the US Federal Reserve also helped ease funding pressures among the affected banks. With US monetary policy maintained at an accommodative stance, US$ SIBOR soon returned to levels seen in Oct 2009 (Chart 2.3).

In the S$ money market, the S$ SIBOR and S$ SOR have continued to adjust lower in line with US$ rates and in expectation of S$ appreciation. The S$ SIBOR-OIS spread and the S$ TED spread have remained low and stable in the absence of liquidity and counterparty default concerns among the banks in Singapore (Chart 2.4).

The domestic equity market came under pressure briefly in the first half of this year as the reappraisal of sovereign risk tempered the swift turnaround in global equity markets since March 2009 (Chart 2.5). There were also fears of a negative demand shock arising from direct trade linkages to Europe and of a global double-dip recession. On the other hand, the prospect of further monetary easing in the advanced economies prompted a renewed search for yield. Continued confidence in the strength of Singapore's recovery also helped. The Straits Times Index (STI) increased by 23% since Oct 2009, while the average turnover value rose by 48%.

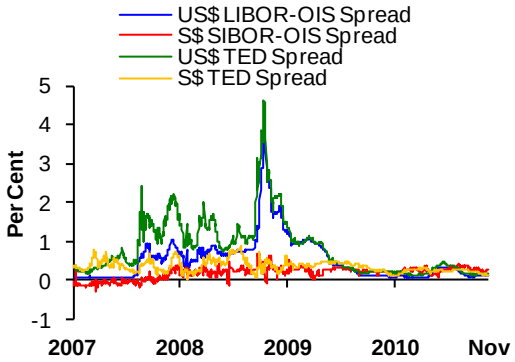
In line with global trends in bond markets and quantitative easing in the US, yields on 2-year and

Chart 2.3
3-month Interbank Rates



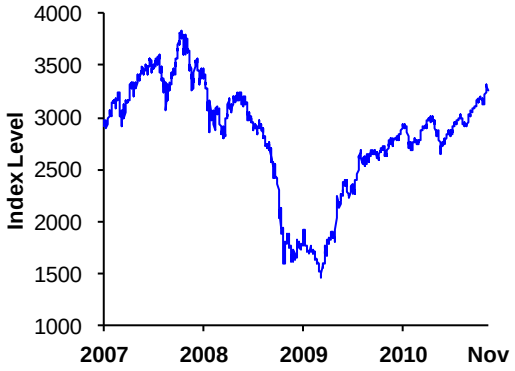
Source: Bloomberg

Chart 2.4
Money Market Spreads



Source: Bloomberg

Chart 2.5
Straits Time Index



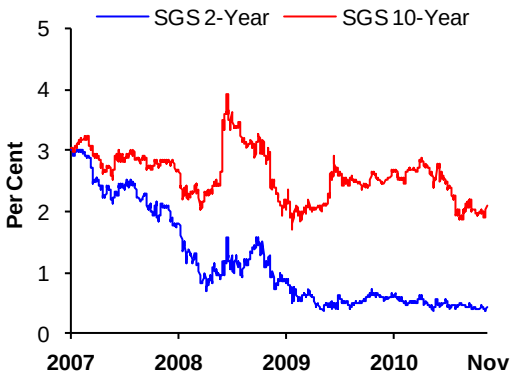
Source: Bloomberg

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10-year Singapore Government Securities (SGS) have declined around 15 and 45 bps respectively from a year ago and the yield curve has flattened (Chart 2.6). The flattening of the yield curve has occurred alongside a global recovery that is expected to moderate in pace.

Going forward, the still-uncertain global macroeconomic outlook and financial conditions in the advanced economies could weigh on risk sentiment in the near term and may be a source of occasional market volatility in the domestic financial markets.

Chart 2.6
SGS 2- and 10-year Benchmarks



Source: Bloomberg

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2.3 Corporates[53]

Corporate balance sheets have continued to strengthen amidst improving economic conditions.

Corporates in Singapore have weathered the economic downturn relatively well and are generally on the road to recovery. Corporate earnings have recovered in tandem with improving economic conditions since Q2 2009 (Chart 2.7). For instance, corporates in the construction sector collectively registered their highest return on assets (ROA) for the past six years in Q4 2009, in part supported by increases in public sector construction activity. However some sectors like the transport, storage and communication (TSC) sector, particularly the ship building industry, are still lagging in recovery. The lacklustre performance in the TSC sector over the past two years was partly attributable to the slowdown in global trade during the crisis and a supply overhang of ships.

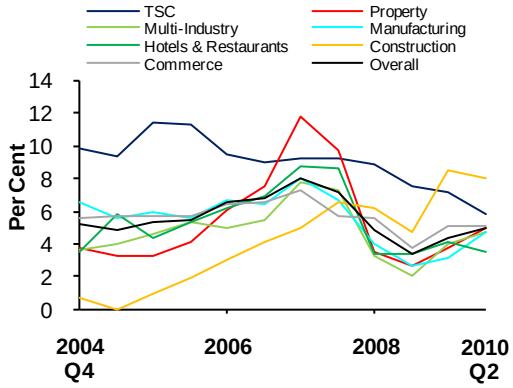
Higher profitability for most corporates has also brought about improvement in interest coverage, although this is not uniform across all sectors (Chart 2.8). Leverage (as measured by the ratio of total debt to equity) has fallen to its lowest level in the past six years (Chart 2.9).

Corporate liquidity (as measured by the current ratio) has remained sound and is improving for most sectors (Chart 2.10). Current assets exceed current liabilities for over 90% of firms covered.

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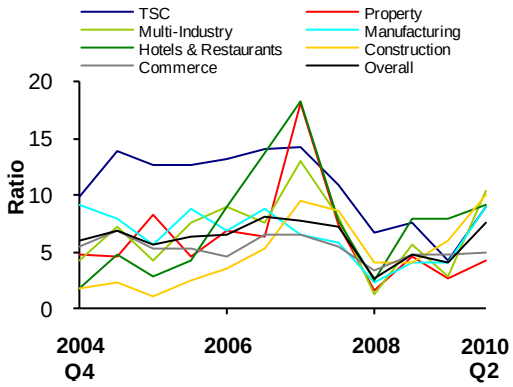
In aggregate, domestic corporates appear well-positioned to cover their interest expense and other liquidity needs. Nonetheless, financial strength varies across sectors and individual corporates depending on their particular recovery prospects and funding profiles. Specifically for real estate investment trusts listed on the Singapore Exchange (S-REITs), easing

Chart 2.7
Return on Assets (Median)



Source: Thomson Financial

Chart 2.8
Interest Coverage Ratio (Median)



Source: Thomson Financial
Interest coverage ratio refers to EBIT divided by interest expense.

[53] All corporate financial data cover only corporates that are listed on SGX as of October 2010. The latest data point provided is Q2 2010 as most of the companies that are required to report earnings on a half-yearly basis tend to do so in Q2 and Q4.

liquidity pressures and recovering rentals in the first nine months of 2010[54] boosted performance. Many S-REITs have begun seeking new asset acquisitions to improve portfolio quality.[55]

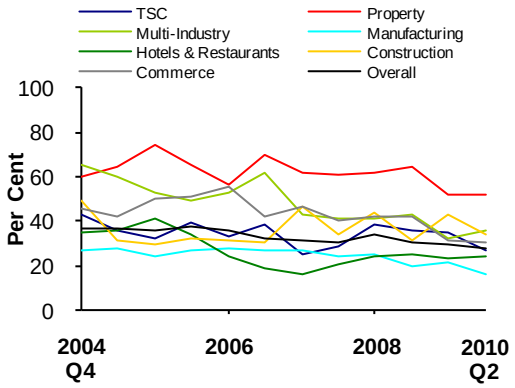
Access to financing for large corporates and small and medium-sized enterprises (SMEs) has improved.

Buoyed by improving economic sentiment in H1 2010, bank corporate lending has begun picking up. Business lending, which was generally lacklustre for most of 2009, grew 9% between October 2009 and September 2010. Market contacts noted that bank lending to SMEs had also increased, and that fewer SMEs were taking up loans under the Government's risk-sharing initiatives this year compared to last year. Meanwhile, business sentiment amongst SMEs appears moderately positive with more SMEs contemplating expansion in Q4 2010 and Q1 2011.[56] Market contacts also expected demand and supply of credit for SMEs to continue improving into Q1 2011.

Fund raising activity in other corporate funding markets rose as well. Corporate debt issuance by Singapore-based corporates increased to S$38.8 billion in the first nine months of this year, compared with S$19.5 billion over the same period in 2009 (Chart 2.11). Corporate bond issuance started picking up in Q3 2009 while new bank loans to corporates were still contracting. This suggests that bond markets helped mitigate partially the impact of bank credit tightening during the downturn by serving as an alternative source of funding, especially for larger corporates (Chart 2.12). The low interest rate environment also played a role by encouraging some corporates to re-finance and lock in longer term funding. In addition, the total number of initial public offers (IPO) listed on the SGX Mainboard and Catalist in the first ten months of this year increased from 16 to 32 listings and the amount raised surged

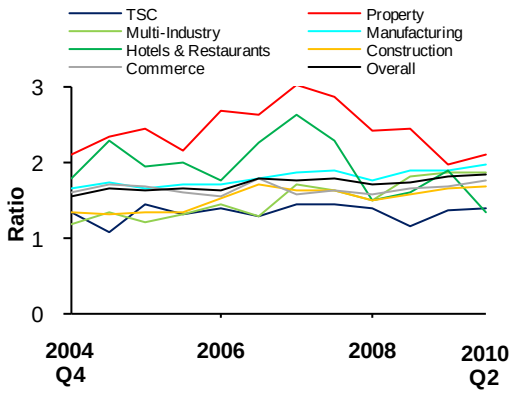
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Chart 2.9
Debt to Equity Ratio (Median)



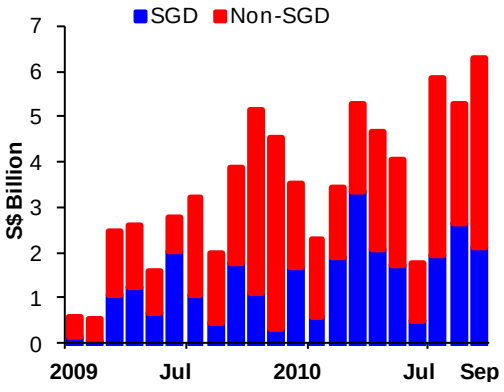
Source: Thomson Financial

Chart 2.10
Current Ratio (Median)



Source: Thomson Financial
Current ratio refers to current assets divided by current liabilities.

Chart 2.11
Corporate Debt Issuance



Source: MAS

[54] The office rental index compiled by Urban Redevelopment Authority rose from 141.6 in Q4 2009 to 152.3 in Q3 2010. The shop rental index and all industrial rental index also increased from 111.3 to 114.7 and 92.1 to 99.5 respectively over the same period.
[55] Examples of acquisition activities in 2010 include i) Ascott Residence Trust acquiring a S$1.39 billion portfolio of Asian and European properties; ii) Mapletree Logistics Trust acquiring three properties in Japan for S$200 million; and iii) Parkway Life REIT acquiring 11 properties in Japan for S$107 million.
[56] According to the SBF-DP SME Index compiled by Singapore Business Federation and DP Information Group, SME's business expectations improved from 5.91 in Q1 2010 to 6.52 in Q3 2010.

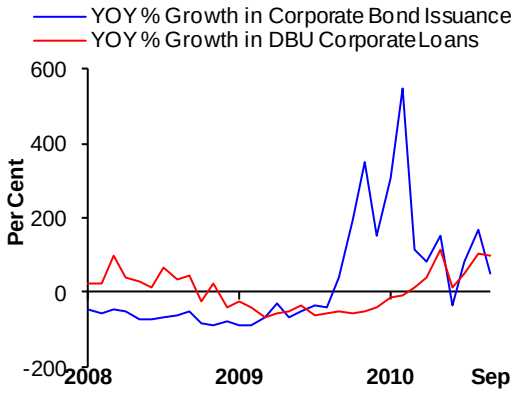
from S$0.3 billion to S$6.0 billion compared to the same period last year (Chart 2.13).

Uncertainty about the global economy continues to overshadow the recovery and firms need to watch against risk of over-leveraging.

Nonetheless, uncertainties remain in the economic outlook. Overall, fewer business owners were upbeat about business conditions in Q4 2010 and Q1 2011 compared to Q3 2010.[57] Although corporate bankruptcies have remained low, the number of petitions filed is rising (Chart 2.14). Market contacts expect credit conditions to improve for the next six months, but note that concerns of a slowdown in the global recovery may dampen credit growth. A stalled recovery would also hurt corporate earnings and repayment ability.

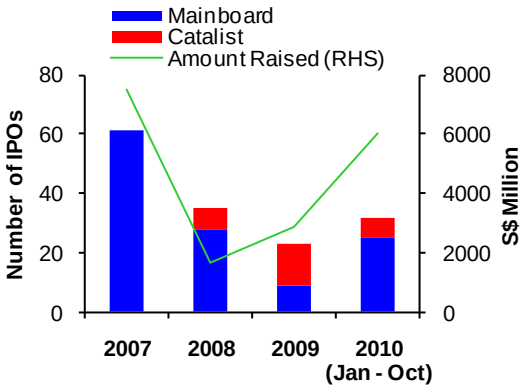
Against this uncertain backdrop, there are concerns that borrowing decisions by individual corporates may be distorted by assumptions of a sustained low interest rate environment. Corporates, particularly those in sentiment-sensitive sectors and those with significant exposures to asset markets, will need to guard against over-gearing to avoid renewed strains on their finances should interest rates and/or asset prices turn around sharply.

Chart 2.12
Growth of DBU New Corporate Loans & Corporate Bond Issuance



Source: MAS

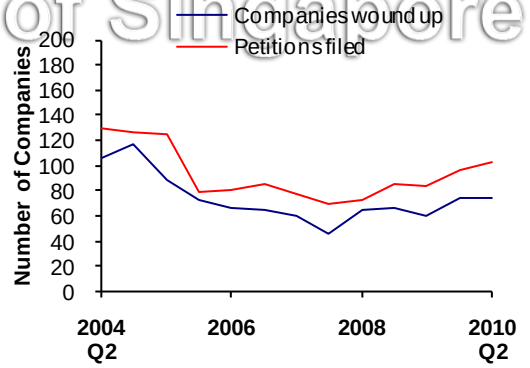
Chart 2.13
Number of Initial Public Offerings



Source: SGX, Bloomberg

Chart 2.14
Corporate Bankruptcies

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Source: Ministry of Law, Insolvency and Public Trustee's Office

[57] Survey of Business Expectations of the Manufacturing Sector, Q4 2010, Economic Development Board; Business Expectations Survey Services Sector, Q4 2010, Department of Statistics.

Box H: Contingent Claims Analysis as a Surveillance and Stress Testing Tool

Contingent Claims Analysis (CCA) began with Robert C. Merton's seminal paper in 1974 - "The pricing of corporate debt: the risk structure of interest rates". The key insight was that by viewing shareholders as having a call option on a firm's profits, it is possible, alongside other simplifying assumptions, to derive risk-neutral probabilities of default (PDs) for the firm from its stock price, balance sheet data, and risk-free interest rates[58].

This box first looks at the utility of CCA as a surveillance tool for credit risk by examining its performance as a leading indicator of Asian corporate credit risk during the 2008/09 financial crisis. It then briefly discusses the use of CCA as a stress testing tool.

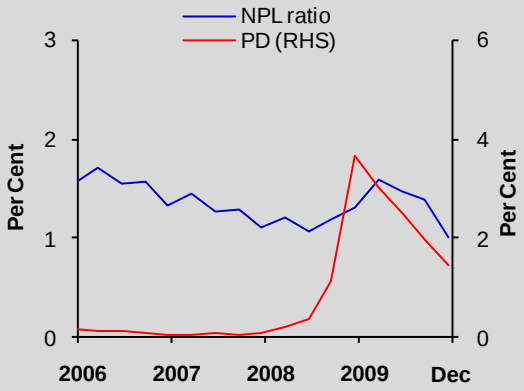
1. CCA as a surveillance tool…

… as a leading indicator of aggregate credit risk

Liabilities-weighted[59] aggregate probabilities of default (PDs) were calculated for the 200 largest listed firms by asset size for each of 7 Asian economies.[60] These were then compared to system-wide NPL ratios, to see if their trends before and during the crisis corresponded. For PDs to be leading indicators of aggregate credit risk, they should either lead or at least be contemporaneous with NPL trends.

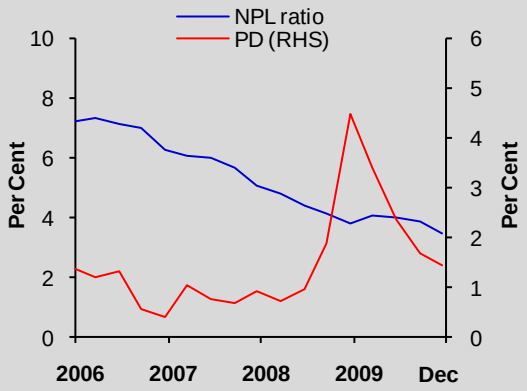
NPL ratios and PDs both exhibited a fairly stable downward trend until Q4 2008. However, CCA-derived PDs rose sharply after the collapse of Lehman Brothers in September 2008. This preceded the increase in NPL ratios in Q4 2008, across Northeast Asia (NEA), Southeast Asia (SEA) ex Singapore, and Singapore (Charts H1, H2 and H3). In this simple analysis, rising PDs appear to point to the subsequent deterioration in asset quality – in part because NPL data are less timely – and appear to have promise as a leading indicator of aggregate credit risk.

Chart H1
Average NPL Ratios and PDs in NEA Economies



Source: CEIC, Thomson Financial, MAS Estimates
Note: NPL data is for all loans, except South Korea where they pertain to corporate loans only.

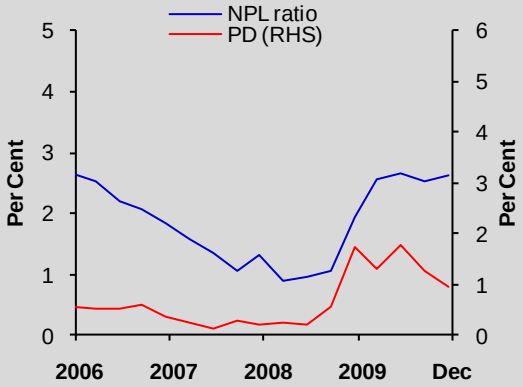
Chart H2
Average NPL Ratios and PDs in SEA Economies ex Singapore



Source: CEIC, Thomson Financial, MAS Estimates

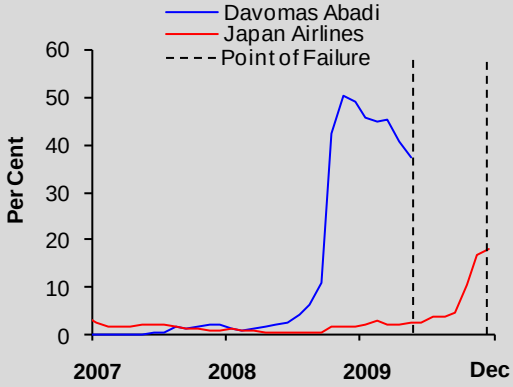
[58] Please also see the 2006 MAS FSR special feature for a full explanation of the CCA methodology.
[59] Using liabilities as weights as opposed to market capitalisation may better reflect the underlying credit exposure.
[60] Hong Kong, Korea and Taiwan comprising Northeast Asia (NEA), and Malaysia, Indonesia, Thailand and Singapore comprising Southeast Asia (SEA). In the case of Singapore, 100 listed firms were chosen on the basis of the length of their historical balance sheet data record.

Chart H3
Average NPL Ratios and PDs in Singapore[61]



Source: CEIC, Thomson Financial, MAS Estimates

Chart H4
PDs of Individually-Failed Firms in Asia



Source: CEIC, Thomson Financial, MAS Estimates

The CCA approach can likewise be validated at the individual firm level. Using two large corporate failures over the last two years as an illustration, there is evidence that the eventual default of the firms were preceded by a sharp rise in their respective CCA-derived PDs (Chart H4).

… and as an early signal of a potential downturn in the credit cycle.

Rising credit risk can be seen as a precursor of credit tightening as well, since current and anticipated loan losses would induce banks to preserve capital through loan cutbacks. This is one half of the adverse feedback loop that can develop between the economy and the banking system, as described in various papers covering the recent financial crisis[62]. It is thus worth investigating if there is a relationship between changes in PDs and credit growth.

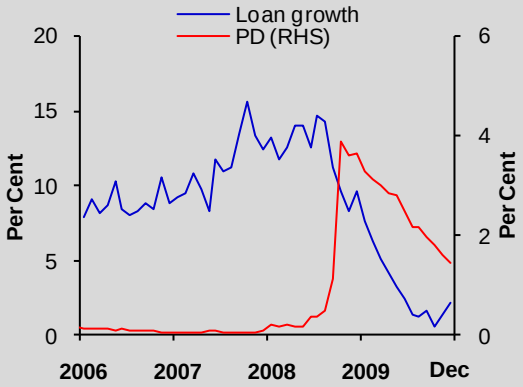
During the crisis, CCA-derived PDs spiked up ahead of the credit downturns for NEA, SEA ex-Singapore, and Singapore (Charts H5, H6 and H7). This suggests that changes in PDs may offer information about the subsequent trend in credit growth; more specifically, sharp increases in PDs may signal a subsequent slowdown in credit growth or even an outright credit contraction. Since PDs are available on a more timely basis than NPL data, increases in PDs at the turn of a credit cycle may offer an early read on one factor – credit risk – affecting credit growth.

There are three important caveats to the above analysis. First, only one crisis experience is considered here, so any relationship should rightly be read as tentative and in need of further empirical study. Second, there are other factors such as interest rates, credit demand and bank funding conditions that may pull in opposite directions from the credit risk factor. Third, the symmetry of the relationship has not been explored here, so the converse may not be true – that decreases in PDs also signal an upturn in the credit cycle and asset quality.

[61] Note that the CCA-derived PDs in Singapore during the crisis were on average lower than the average PDs in SEA ex-Singapore, but higher than the average PDs in NEA. The higher average PDs seen among listed corporates in Singapore during the crisis was largely due to a handful of property tickers that saw sharp sell-offs when property prices fell initially.

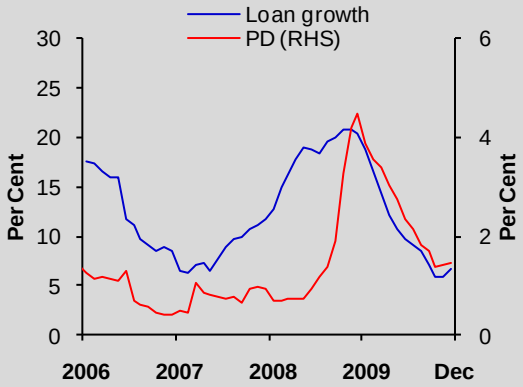
[62] See Bayoumi, T and Melander, O (2008), "Credit Matters: Empirical Evidence on US Macro-Financial Linkages", *IMF Working Paper 08/169*, for example.

Chart H5
Average Credit Growth and PDs in NEA Economies



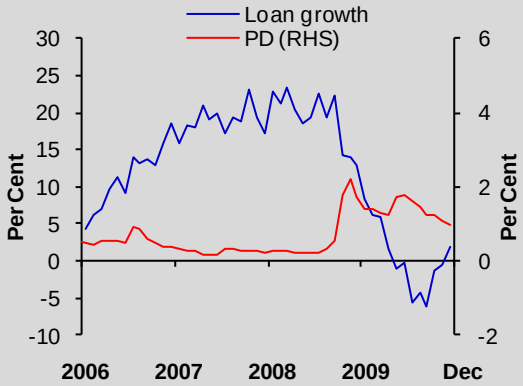
Source: CEIC, Thomson Financial, MAS Estimates

Chart H6
Average Credit Growth and PDs in SEA Economies ex Singapore



Source: CEIC, Thomson Financial, MAS Estimates

Chart H7
Average Credit Growth and PDs in Singapore



Source: CEIC, Thomson Financial, MAS Estimates

2. CCA as a stress testing tool…

A number of ways of using CCA as a stress testing tool have been put forward. For instance, Gray and Walsh (2008) constructed a VAR model incorporating a distance-to-default measure (DTD) along with macroeconomic variables. This model allowed them to shock the variables and examine the impact on credit risk via the impulse response of DTD. Drehmann (2005) linked stock returns to macroeconomic and financial variables, using the channel of stock returns to examine the impact of macro-financial scenarios on PDs.

A modified version of the Drehmann methodology was employed in this study. Quarterly returns of the STI and two market-value weighted indices of manufacturing (MFG) and property (PPTY) firms included in our CCA study were selected as dependent variables. These were regressed against the q-o-q changes in GDP, CPI, and real effective exchange rate (REER), the real 3-month SGS yield, a yield curve variable (2-year minus 3-month SGS yield), and the Chicago Board Options Exchange Volatility Index (VIX) as a proxy for global risk aversion. Table H1 reports the results of the regressions.

Table H1: Regression of Stock Index Returns against selected Macroeconomic and Financial Variables[63]

Dependent Variable	STI		MFG		PPTY	
Independent Variables						
GDP	2.16	***	2.26	***	3.60	***
CPI	-3.46		-1.58		-4.76	
REER	0.96		0.97		1.30	
Real 3 month interest rate	-0.81		-0.53		-1.07	
Yield Curve	1.17		7.63		5.81	
VIX	-0.45	**	-0.38	*	-0.76	**
Adjusted R^2	**0.26**		**0.29**		**0.34**	
# of Observations	80		59		59	

*** significant at 1%, ** significant at 5%, * significant at 10%.

The regression coefficients had expected signs, but only the GDP and VIX coefficients were significant. These results allow for a very simple stress test, taking as input a scenario with a decline in q-o-q GDP growth and/or a rise in risk aversion, which can then be expressed as a negative shock in terms of stock returns and plugged into individual firms' CCA calculations to forecast stressed PDs.

Two stress tests were conducted. The GDP and VIX inputs used to generate these shocks were taken to be worst outcomes observed between 1990 and 2009, both of which occurred in late 2008 following the collapse of Lehman Brothers. Table H2 reports the results.

Table H2: Stress Test Results using GDP and VIX as shocks

Scenario	Fall in stock prices (%)	Market-weighted PD (%)	Change from actual end-2009 (% point)	Average Debt-to-Market Capitalisation Ratio	Average Market Capitalisation Volatility
All sectors					
Actual end-2009	-	0.265	-	1.02	0.50
Stress scenario	16.6	0.472	+0.207	1.27	0.57
Property sector					
Actual end-2009	-	0.880	-	0.69	0.53
Stress scenario	27.2	1.535	+0.655	0.92	0.58

In the first stress test, the estimates from the STI regression were used to generate negative stock return shocks to firms in all sectors[64], which produced as output stressed PDs for each firm. Under the stress scenario, the liabilities-weighted average PD could rise to 1.46% from the 0.96% observed at end-Dec 2009. This corresponds to a rise in the average debt-to-market capitalisation ratio (from 1.02 to 1.27), as well as a rise in the average market capitalisation volatility (from 0.50 to 0.57). Comparing the results of this stress test to the actual change in PDs observed during the recent crisis, the increase in PDs under the stress scenario is smaller because the forecasted decline in stock prices is less than the observed decline during the crisis, and corporate balance sheets have also strengthened post-crisis[65].

The second stress test focused only on property firms. Negative stock return shocks were generated using

[63] Note that the regressions shown in Table E1 have not differentiated between 'stressed' and 'benign' states of the world because of data limitations, unlike in the Drehmann methodology.

[64] Negative stock returns for individual firms were calculated using the CAPM formula ($r = R_f + Beta * (R_M - R_f)$). Individual betas were based on monthly returns over the past 3 years (2006 - 2009). R_f refers to the risk-free rate and R_M the return of the stock index.

[65] The average PD rose from 0.56% to 1.80% between Sep 2008 and Oct 2008. The forecasted decline in stock prices of 16.6% compares to the 28.3% decline between Sep 2008 and Oct 2008. The improvement in balance sheet fundamentals can be seen from the debt levels: the average debt-to-market capitalisation ratio was 1.22 in Sep 2008, compared to 1.02 in Dec 2009.

the regression for PPTY. Under the stress scenario, the liabilities-weighted average PD of property firms could increase to 4.24% from 2.82% at end-Dec 2009. The larger increase in the average PD for property firms in comparison with the wider corporate sector suggests that property firms' stock returns may be more sensitive to changes in GDP and risk aversion than the market in general.

The use of CCA in this study represents but a first step towards a more rigorous application of CCA in stress testing. One should, however, recognise the limitations to this approach, including the reliance on historical relationships, which may evolve with structural changes to the economy over time. The use of regression estimates sampled from periods of stress would also make the results of the stress test analysis more robust[66].

Caveats and Conclusion

The use of stock prices as the key input and driver of PDs generated using CCA is both its chief advantage and limitation. It is a limitation because only listed firms can be tracked, which leaves out large but unlisted firms. Further, a fundamental assumption one must accept in employing CCA using stock prices is the efficient market hypothesis. This can be seen as a limitation depending on the extent to which one considers stock prices to be driven by non-firm specific fundamental factors (e.g. funding liquidity or herding) at various points in time.

On the other hand, stock prices are available at a much higher frequency than balance sheet data, and can offer an earlier indication of *current* or *future* credit conditions. The use of stock returns also has the advantage of potentially linking credit risk stress testing with market risk stress testing.

Using the recent financial crisis as an example, CCA has shown promise as a surveillance and stress testing tool for Asia corporate credit risk. As financial markets in Asia develop, so should the richness of information embedded in asset prices. Developing robust ways to use CCA in the Asian context can add useful tools to central banks' surveillance and stress testing toolkits going forward.

References

Drehmann, M (2005), "A Market Based Macro Stress Test for the Corporate Credit Exposures of UK Banks", *Bank of England Working Paper*.

Gray, D and Walsh, J P (2008), "Factor Model for Stress-testing with a Contingent Claims Model of the Chilean Banking System", *IMF Working Paper 08/89*.

Monetary Authority of Singapore (2006), "Assessing Default Risk for the Corporate Sector: Application of the Merton-KMV model", *MAS Financial Stability Review Dec 2006 Special Feature*.

[66] It is reasonable to expect the size of the regression coefficients to be larger and more significant during periods of stress, which would in turn result in larger stock return shocks and higher stressed PDs.

2.4 Households[67]

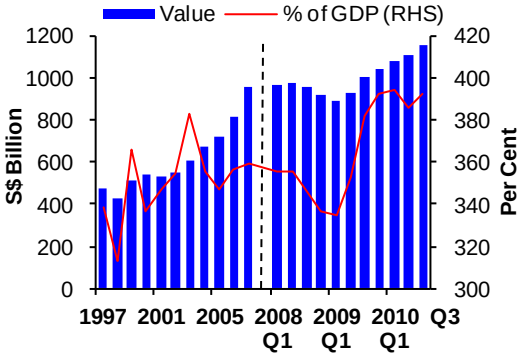
Household balance sheets remain strong, bolstered by Singapore's economic recovery.

Household balance sheets have on the whole remained strong, supported by the continued broad-based recovery of the Singapore economy.

Household net wealth, defined as household assets less household debt, stood at an estimated S$1,156 billion in Q3 2010. This represents a 29% improvement from the trough in Q1 2009 (Chart 2.15). The gain was largely due to the higher value of property holdings as the property market continued its upward trajectory after bottoming out in Q1 2009. Property holdings have reached an estimated S$651 billion in Q3 2010, up 21% from S$537 billion in Q3 2009. Another contributing factor to rising household net wealth was larger holdings of equity and managed funds, owing to the turnaround in global equity markets in Q3 2010 (Chart 2.16).

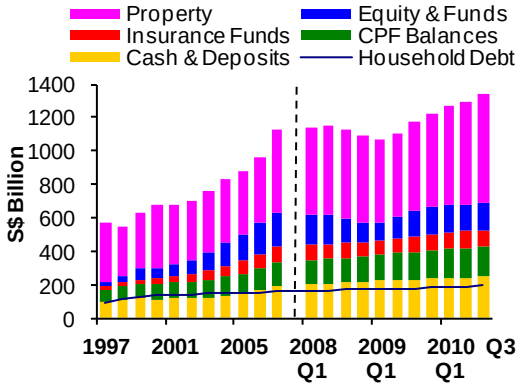
Aggregate household net wealth stood at 3.9 times GDP in Q3 2010, up from about 3.8 times GDP in Q3 2009 (Chart 2.15). the household debt-to-assets ratio remains relatively low with household debt at about 15% of household assets, below its long-term average of about 18% (Chart 2.17). Cash and deposits alone continue to exceed total household debt (Chart 2.16).

Chart 2.15
Household Net Wealth



Source: MAS estimates
Net household wealth= household assets-liabilities
Estimates of GDP are used for Q3 2009

Chart 2.16
Household Assets and Household Debt



Source: MAS estimates

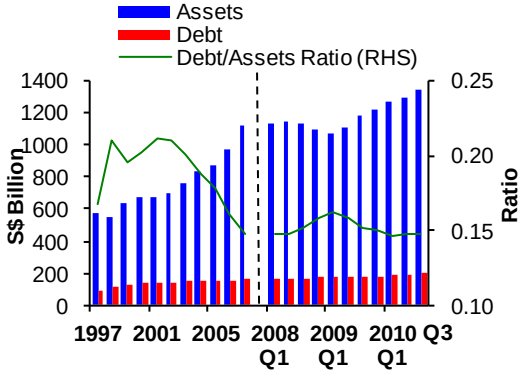
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Household debt has increased but growth has been outpaced by household assets.

Against the backdrop of a quick economic turnaround and prevailing low interest rates, growth in household debt increased in recent quarters, rising to 10.7% y-o-y in Q3 2010 (Chart 2.18).

The key driver of this growth has been housing loans, which account for the bulk of household borrowing. Indeed, reflecting the transaction activity

Chart 2.17
Household Debt-to-Assets Ratio



Source: MAS estimates

[67] Households play an important role in the banking system as depositors and borrowers. Household deposits make up around half of domestic non-bank deposits and loans to households account for about half of domestic non-bank loans.

seen in the property market, housing loans grew 23% y-o-y in Q3 2010, up from 8.8% at the trough of the property market in Q1 2009 (Chart 2.19). Recent property measures announced by the Government on 30 August 2010 may moderate the demand for housing loans in the months ahead. (See Box I for an update on recent developments in the Singapore private residential property market.)

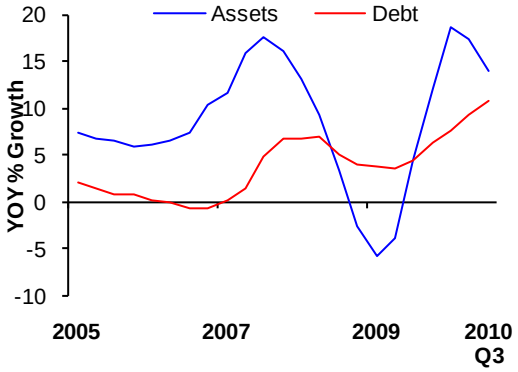
The share of outstanding housing loans with loan-to-value (LTV) ratios above 80% fell from a peak of 17.3% in Q3 2009 to 7.1% in Q3 2010, while that with LTV ratios above 70% decreased from 35.1% to 27.1% over the same period (Chart 2.20). While some of the decline could be due to rising property valuations, measures introduced by the Government since September 2009 have also played a part by constraining LTV for new housing loans.

In addition, the proportion of housing loans with negative equity has fallen from a peak of 2.9% in Q3 2009 to less than 1% since Q4 2009 (Chart 2.20). Housing loan asset quality remains robust, with the NPL ratio at less than 1% in Q3 2010. While the low NPL ratio could in part be due to the expansion in housing loans, the absolute amount of NPLs has been on a declining trend (Chart 2.21).

In tandem with the rebound seen in the domestic stock market since early 2009, share financing loans registered double-digit growth between Q3 2009 and Q2 2010. This has since moderated owing to the more subdued performance of the domestic stock market from Q2 2010 (Chart 2.19). Share financing loans growth can be expected to continue to be positive given investors' search for yield and the overall upward trajectory in the domestic and regional stock markets. Nonetheless as share financing represents less than 1% of total household debt currently, developments are not expected to materially impact on household balance sheets and the stability of the banking system. Over-extended individual households could, however, be at risk should equity markets become more volatile, especially if there are reversals of capital inflows or if economic growth falters and companies' earnings disappoint.

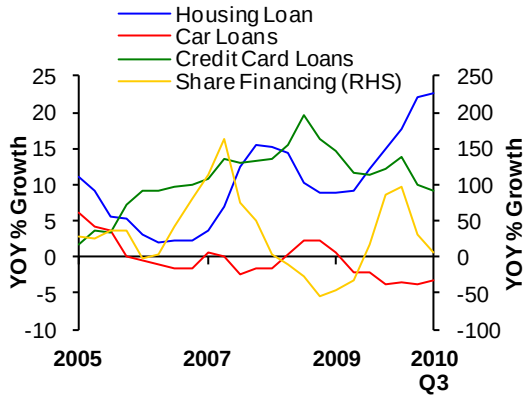
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Chart 2.18
Household Assets and Debt



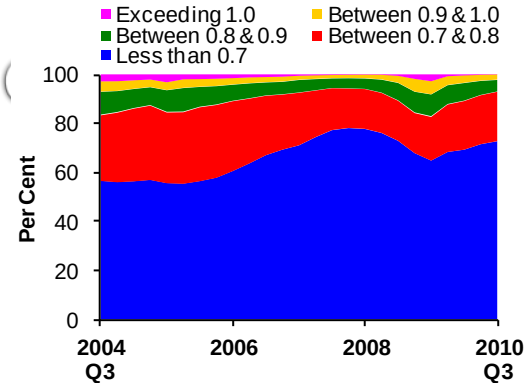
Source: MAS estimates

Chart 2.19
Housing and Other Household Loans



Source: MAS

Chart 2.20
Outstanding Housing Loans by LTV Ratios



Source: MAS

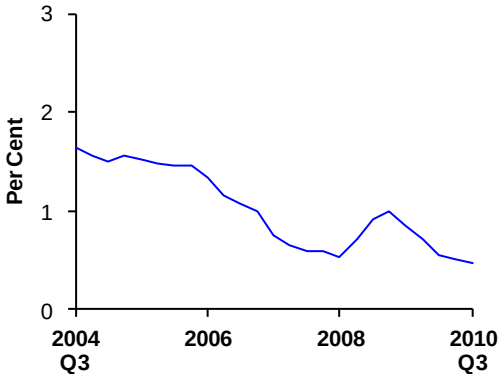
Other components of household debt showed subdued growth. Credit card loans growth moderated to 9.3% y-o-y in Q3 2010 after peaking at 19.5% in Q3 2008 (Chart 2.19). Indeed, other credit card related indicators such as rollover ratios have remained broadly stable while charge-off rates have declined. Nevertheless, the current low interest rate environment may encourage borrowers to take on more leverage than necessary for consumer-related expenditure. Thus, credit card related-lending bears close surveillance as the economy continues to recover. (See Box J for an update on credit card trends in Singapore.)

Car loans growth has been negative since Q2 2009 in line with falling car sales. This followed the Land Transport Authority's decision to reduce the Certificate of Entitlement (COE) quota for the fiscal year starting April 2009. Car loans contracted by 3.2% y-o-y in Q3 2010 compared with growth of 2.2% in Q3 2008 (Chart 2.19).

While household debt increased at a slower rate than household assets (10.7% compared with 13.9% y-o-y in Q3 2010 – see Chart 2.16), it outpaced household remuneration in 2009 as the downturn constrained wage growth. As a result, the household debt to remuneration ratio rose slightly from 1.5 times in 2008 to 1.6 times in 2009. However, the ratio still remains below its long-term average of 1.8 times (Chart 2.22). The ratio may remain stable or moderate slightly this year as wage growth is likely to pick up with the continued economic recovery and high participation in the labour force. Indeed, average monthly earnings have been on a rising trend, registering 5.8% y-o-y growth in June 2010 after contracting by 1.6% in December 2009.

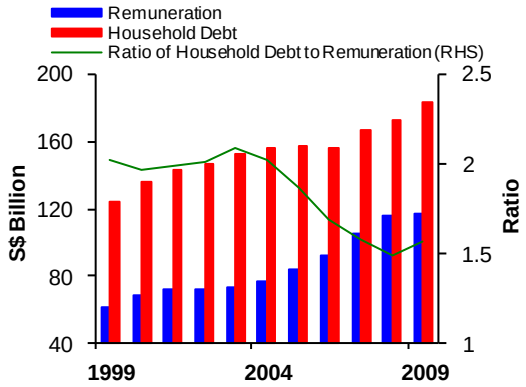
Due to strong household balance sheets, individual bankruptcy cases have remained subdued throughout the downturn, with just 2,058 cases in 2009 compared to the long term average of more than 3,200 cases. The number of individual bankruptcy cases will likely remain low, supported by improving economic conditions. Indeed, the number of individual bankruptcy cases has been on a declining trend, with fewer cases between January

Chart 2.21
Housing NPL Ratio



Source: MAS

Chart 2.22
Household Debt and Remuneration



Source: Department of Statistics, MAS estimates
Remuneration is used as a proxy for household income

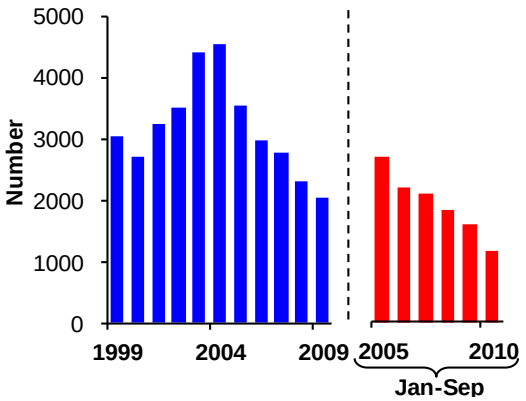
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and September 2010 than during the same period in previous years (Chart 2.23).

Growth of household credit bears close monitoring and careful management.

In sum, household balance sheets continue to be strong, supported by conducive economic conditions. Household credit growth could accelerate moving forward in view of the continued economic recovery and if expectations of a sustained period of low interest rates become ingrained. For now, the risk of households overextending themselves appears to be mitigated by supportive labour market conditions even as bank lending remains prudent. Nonetheless, household credit exposures need to be closely monitored and the risks appropriately managed. Borrowers, particularly households that are or could become financially over-stretched, should understand the risks associated with an eventual rise in interest rates. Banks on their part should conduct forward-looking assessments of their consumer credit exposures, including bank-wide and portfolio-specific stress tests, to evaluate such risks.

Chart 2.23
Number of Bankruptcy Orders Made



Source: Ministry of Law, Insolvency and Public Trustee's Office

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Box I: Update on the Singapore Private Residential Property Market

Demand for private residential property moderated towards the end of 2009, following the first round of property-related measures announced by the Government on 14 September 2009.[68] Resurgent transaction activity coupled with continued increases in private residential property prices led to further measures being announced on 19 February 2010[69] and 30 August 2010[70] to bring about greater stability and sustainability in the property market. This box updates on the impact of the various rounds of measures on the private residential property market to date.

Private Property Transactions and Prices

New sales of private residential property moderated from about 5,600 units in Q3 2009 to about 1,900 units in Q4 2009 following the September 2009 measures. However, transaction activity rebounded in 2010, with new sales peaking at more than 2,200 units in April despite a second round of measures in February 2010. New sales activity moderated slightly in August probably owing to the Hungry Ghost month, and declined further in September, following the latest measures announced at end-August 2010. Nonetheless new sales activity picked up in October. Cumulative new sales in the year to October 2010 reached 13,109 units, slightly lower than the 13,643 units sold over the same period last year. As a result, new sales for this year may potentially exceed the volume attained in 2009 (Chart I1).

Although it is still too early to assess the effectiveness of the latest round of measures, overall transaction activity in September moderated by over 30% compared to the monthly average seen in the first eight months of 2010. On a m-o-m basis, resale transactions slowed by about 43% in September (Chart I1) while new sales contracted 28% in September before recovering by about 16% in October.

Sub-sale[71] transactions as a share of total transactions, a proxy for speculative activity, was 8.4% in September 2010. This was lower than the monthly average of close to 11% observed since 2009. The number of subsale transactions was about 40% lower in September than the monthly average in the first eight months of 2010 (Chart I1).

The private property price index has showed some signs of moderation, with the q-o-q change in the index declining from 5.3% in Q2 2010 to 2.9% in Q3 2010 (Chart I2). Views from market contacts appear mixed. Some reported that buyers were becoming more price-sensitive and were staying on the sidelines in expectation of price declines while testing the holding power of potential sellers. Others were of the view that there was still underlying buying interest, with some expecting transaction volumes to pick up again next year.

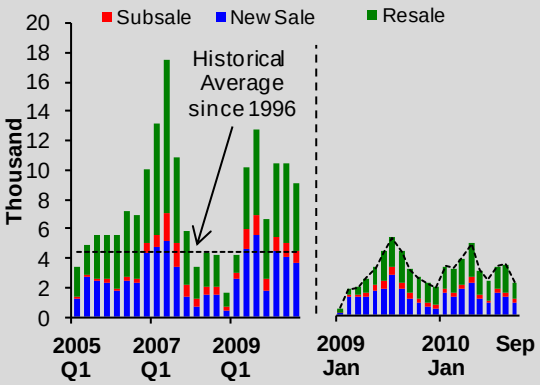
[68] The measures announced on 14 September 2009 were namely: (i) reinstating the Government Land Sale (GLS) Confirmed list in H1 2010; (ii) disallowing the Interest Absorption Scheme and interest-only loans; and (iii) non-renewal of assistance measures for property developers announced in the 2009 budget when they expire in 2010/2011.

[69] The measures announced on 19 February 2010 were namely: (i) introducing a Seller's Stamp Duty on all residential properties and residential lands sold within one year from the date of purchase; and (ii) lowering the LTV limit to 80% for all housing loans provided by financial institutions regulated by the MAS.

[70] On 30 August 2010, the holding period for the imposition of Seller's Stamp Duty was increased from one year to three years. For property buyers who already have one or more outstanding housing loans, the minimum cash down payment was raised from 5% to 10% and the LTV ratio was lowered from 80% to 70%. The Government also introduced or tightened some measures to ensure that public housing is primarily for owner occupation. On the supply side, the Government continued to focus on increasing the supply of housing for both the private and public residential property market.

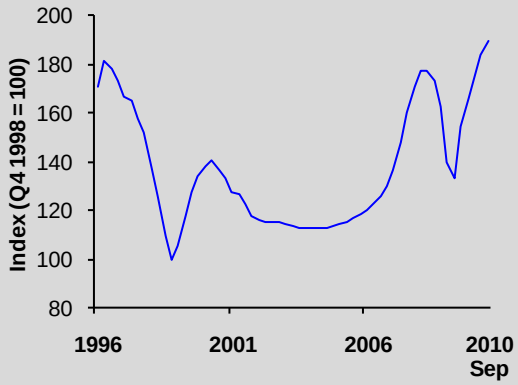
[71] A sub-sale is defined as the sale of a unit by one who has signed an agreement to purchase the unit from a developer or a subsequent purchaser before the issuance of the Certificate of Statutory Completion and the Subsidiary Strata Certificates of Title or the Certificates of Title for all the units in the development.

Chart I1
Number of Private Property Transactions



Source: URA

Chart I2
Private Property Price Index (PPI)



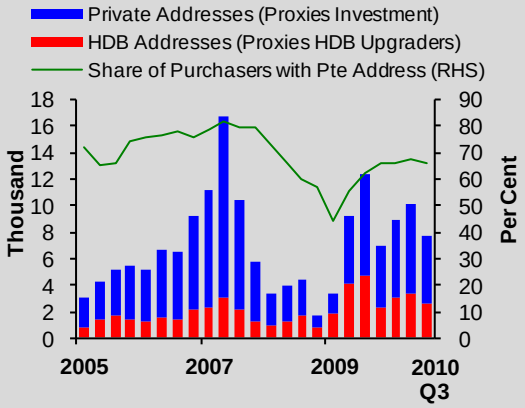
Source: URA

Demand Conditions

While the recovery in buying activity in 2009 appeared to have been driven mainly by Housing Development Board (HDB) upgraders [72], the share of private property purchases by buyers with private addresses[73] increased from 44% in Q1 2009 to about 66% since Q4 2009. (Chart I3).

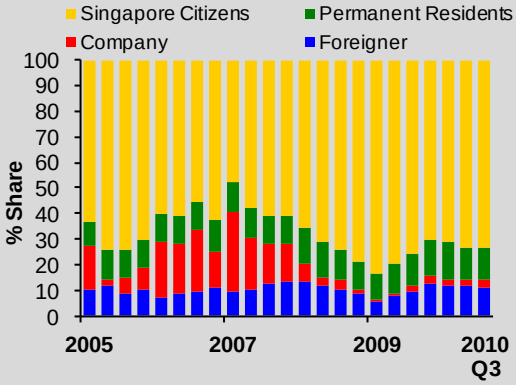
Singaporeans and Permanent Residents account for the bulk (more than 85% in Q3 2010) of private property purchasers. The share accounted for by companies and foreign individuals rose from a trough of 6.7%% in Q1 2009 to 15.4% in Q4 2009, but declined to about 14.5% in Q3 2010 (Chart I4).

Chart I3
Private Property Transactions by Purchaser Address



Source: URA

Chart I4
Private Property Transactions by Purchaser Type

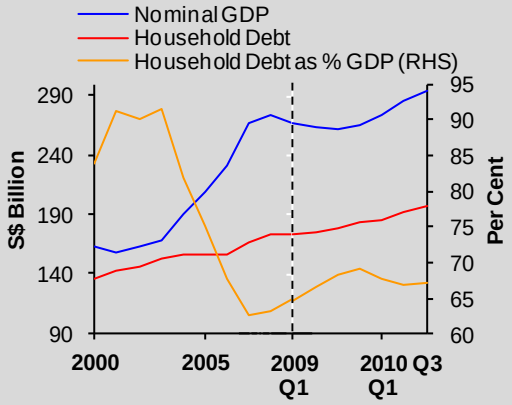


Source: URA

Singapore households continue to have healthy balance sheets, bolstered by the broad-based recovery of the economy. This has underpinned the recovery of the property market in the past two years, as household net wealth continued to improve from its trough in Q1 2009 (see section 2.4). The household debt to GDP ratio stood at about 67% in Q3 2010, below the long-run average of about 77%, implying that economic growth has outstripped growth in household debt (Chart I5). In addition, liquid assets have exceeded household debt since 2006 (Chart I6).

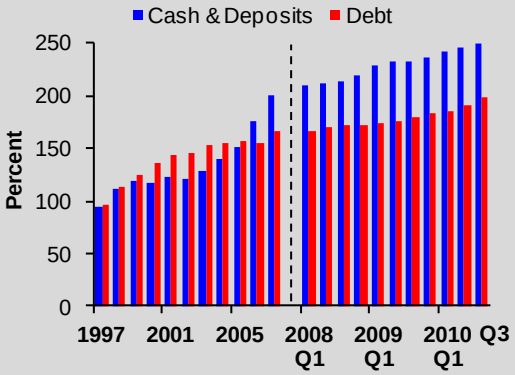
[72] In Q1 2009, about 56% of private property buyers had HDB addresses (a rough proxy for HDB upgraders), which was higher than the 36% quarterly average seen in 2008.
[73] Buyers with private addresses may represent buyers with investment intent, but this should be taken only as a rough proxy as such buyers could also be buying for owner-occupation.

Chart I5
Household Debt as Share of GDP



Source: MAS estimates
Estimates of GDP are used for Q3 2009.

Chart I6
Household Debt and Liquid Assets

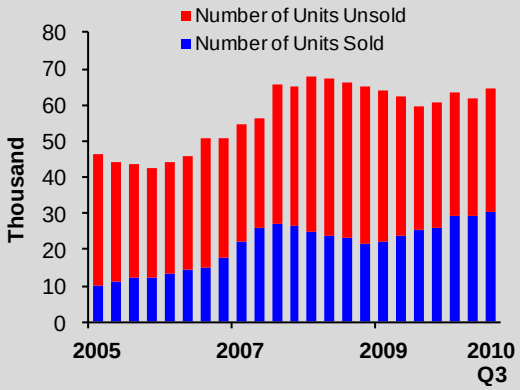


Source: MAS estimates

Supply Conditions

On the supply side, the pipeline supply of unsold units increased from 32,630 units in Q2 2010 to 33,771 units in Q3 2010, suggesting that the government land sales (GLS) programme was starting to replenish the pipeline (Chart I7). This is equivalent to about three years' of supply based on an average take-up of about 11,300 units per year over the last three years. Moreover, the Government had in May 2010 expanded the GLS programme for H2 2010, which can potentially yield another 13,905 private residential units.

Chart I7
Supply Pipeline



Source: URA

Conclusion

While the latest round of measures appears to have dampened activity in the private residential property market somewhat, there is a possibility that transaction activity and prices could pick up again given the current global conditions of flush liquidity and low interest rates. In addition, expectations of a sustained period of low interest rates may affect the borrowing decisions of individuals and encourage buyers to take on excessive leverage. Financial institutions may also be tempted to loosen lending standards in a bid to extend more loans in the face of thinning interest margins (see Section 2.5). As the property market is sentiment-sensitive, a pick-up in activity could lead to rapidly escalating prices. In turn, if economic recovery disappoints on the downside amidst continued uncertainties in the global economy and market confidence is dented, prices could fall. On the other hand, if the economic recovery continues apace, there could be widespread implications on buyers who overextended themselves when interest rates eventually rise. Arising from these concerns, the Government will continue to be vigilant in monitoring developments in the property market, and if necessary, adopt additional measures to promote a sustainable property market.

Box J: Credit Card Trends in Singapore

The number of credit and charge cards[74] issued per year has been growing steadily at approximately 12.4% y-o-y for the past four years to reach a total of 6.9 million cards in circulation as of Q2 2010. This growth has been supported by an increasing number of individuals with incomes of S$2,500 or greater[75], which rose at an average rate of 8.1% per year between 2004 and 2009 (Chart J1). The card penetration rate[76] and the average number of cards per cardholder[77] have also increased. These trends have been brought about in part by market innovation and competition, resulting in many different types of cards being issued to target different customer segments in recent years. As credit card billings account for the vast majority (97.7% as of Q3 2010) of total card billings in Singapore, this box will focus on trends in credit card usage.

Chart J1
Population of Individuals with an income of S$2,500 or greater



Source: "Report on Labour Force in Singapore, 2009", MOM
Data for 2005 and 2010 are not available as the Labour Force Survey was not conducted in these years due to the conduct of the Census and General Household Survey by Department of Statistics, MTI.

Card Billings and Outstanding Balances

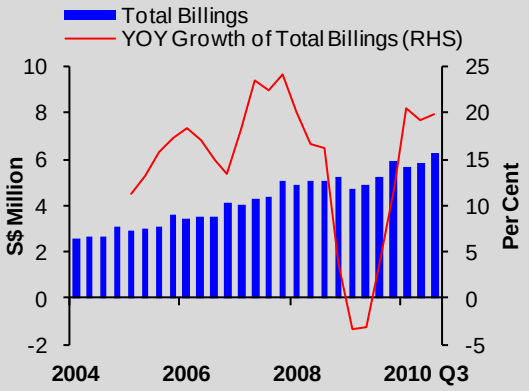
After contracting during the downturn, credit card billings have grown in line with the economic recovery and now exceed pre-crisis levels (Chart J2). Outstanding balances of credit cardholders have also been on a rising trend (Chart J3). In fact, total outstanding balances took only a slight dip in Q1 2009 before continuing to grow despite the economic downturn. After declining 3.9% in 2009, average billings per card grew at an annualised rate of 3.2% in H1 2010, resuming the growth trajectory before the crisis. In contrast, average outstanding balance per card has remained broadly stable (Chart J4).

The rising trend in total billings and total outstanding balances can be attributed to widening acceptance of credit cards as a mode of payment. Credit card payment accounted for 19.0% of private consumption expenditure (PCE)[78] in 2009, compared to 13.7% in 2004. Banks and credit card companies have also stepped up marketing and promotion campaigns to retain cardholders and attract new customers. Rewards and discounts have been offered to encourage cardholders to consolidate spending on their cards. In addition, specific tie-ups with retailers offering promotional discounts under various loyalty programmes are common. Incentives, such as waiver of annual subscription fees with minimum spending levels and low interest instalment plans, have also been used to encourage greater credit card expenditure and rolling over

[74] A charge card refers to any article, whether in physical or electronic form, and intended for use in purchasing goods or services and is (a) linked to a non-revolving credit facility; and (b) where the full amount of any credit utilised has to be settled by a specified date; whether or not the card is valid for immediate use.
[75] This is used as a proxy for the segment of the population eligible to apply for a credit card under MAS rules, which set a minimum annual income of $30,000.
[76] Defined as the total number of cards divided by the total number of economically active residents aged fifteen years and above. The penetration rate rose from 2.3 to 3.4 between 2004 and 2009.
[77] The average number of cards per cardholder increased from 5.1 to 5.9 from 2005 to Q2 2010.
[78] PCE refers to the purchases of goods and services by households, including private non-profit institutions serving households.

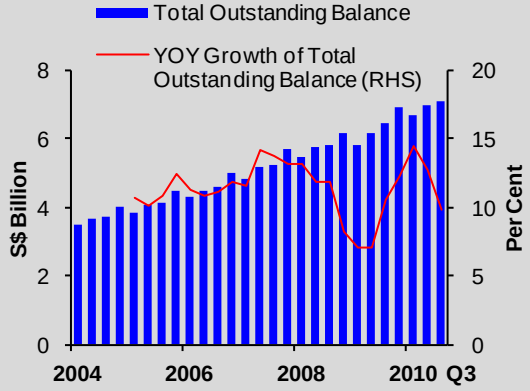
of credit card debt. As the Singapore economy recovers and consumers increase their expenditure, competition amongst banks and credit card companies is likely to intensify.

Chart J2
Total Credit Card Billings



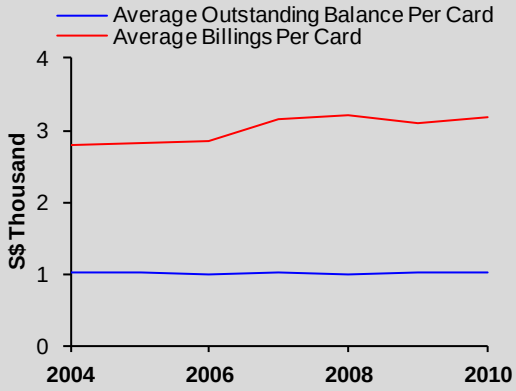
Source: MAS

Chart J3
Outstanding Credit Card Balances



Source: MAS

Chart J4
Average Billings Per Card & Average Outstanding Balances Per Card



Source: MAS

Asset quality maintained

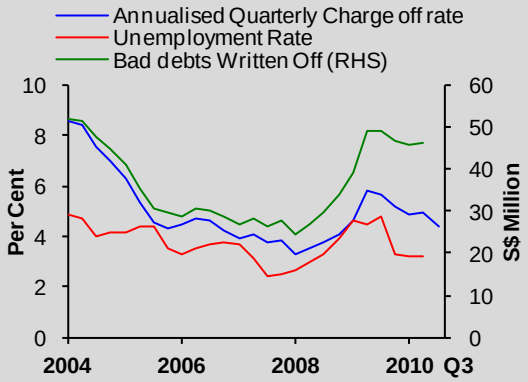
In general, greater use of credit cards and other forms of unsecured credit are indicative of an increasingly affluent and financially savvy society. Nonetheless, such a trend could be a cause for concern if it leads to a higher incidence of indebtedness and financially imprudent spending behaviour.

Asset quality has recovered with the economic rebound. Credit card charge-off rates[79] moderated to 4.4% as of Q3 2010, after hitting a peak of 5.8% in Q2 2009. The latest charge-off rate is below the average charge-off rate of 5.0% over the last six years (Chart G5).

The trend in the charge-off rate is largely attributable to changes in the levels of bad debts written off, which in turn closely tracks the unemployment rate (Chart J5). From 2004 to 2007, bad debts written off and charge-off rates declined in line with falling unemployment. Following the onset of the crisis, rising unemployment from Q3 2007 to Q3 2009 was accompanied by increased bad debts written off and higher charge-off rates. This relationship is intuitive since an unemployed cardholder would be more likely to face difficulty in meeting his or her credit card debt obligations.

[79] The charge-off rate refers to bad debts written off expressed as a percentage of total rollover balances.

Chart J5
Annualised Credit Card Charge-Off Rate,
Credit Card Bad Debts Written Off & Unemployment Rate

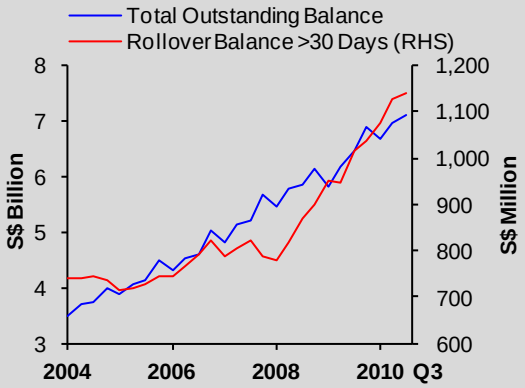


Source: MAS; Labour Force Survey (June 2010), MOM

... but more cardholders rolling over credit card debt for consecutive months

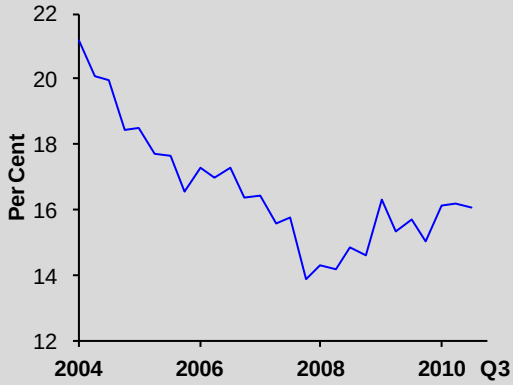
However, charge-off rates have fallen by much more than bad debts written off since Q2 2009, suggesting that rising rollover balances is another contributory factor. Indeed, rollover balances and the rollover ratio[80] have been increasing since early 2008 (Charts J6 and J7).[81] Rising rollover ratios in recent years could be indicative of repayment difficulties encountered by some cardholders during the economic downturn. However, marketing campaigns and schemes such as low interest instalments plans by banks and other card issuers could have played a role as well.

Chart J6
Rollover Balance



Source: MAS

Chart J7
Rollover Ratio



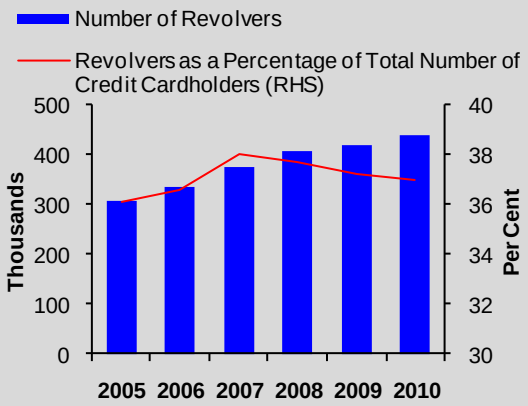
Source: MAS

Data from Credit Bureau (Singapore) Pte Ltd (CBS) show that the proportion of "revolvers"[82] has remained broadly stable at between 36-38% of all credit cardholders (Chart J8). However, the share of "frequent revolvers" has risen slightly in recent months after declining between 2007 and 2009.[83] The main contributors to the increase were credit cardholders in the 21-29 and greater than 50 age groups. Although these age groups represent a small portion of the total number of revolvers and frequent revolvers, their shares have grown slightly over the last few years (Table J9). In particular, revolvers now account for

[80] Rollover ratio refers to the ratio of total rollover balances of more than 30 days to total outstanding balances.
[81] The rollover ratio as of September 2010 is 16.1% compared to 15.1% at its trough in December 2007, but remains below the six-year average of 16.9%.
[82] "Revolvers" refer to credit cardholders who do not pay in full their outstanding credit card balances.
[83] "Frequent revolvers" refer to credit cardholders who rollover their outstanding balances for at least 3 consecutive months. Frequent revolvers accounted for 25.3% of all credit cardholders as of August 2010, up from 24.9% as of December 2009.

37.9% of all cardholders within the 21-29 age group, up from a trough of 33.6% four years ago (Chart J10). The 21-29 age group also forms the second largest group of new credit cardholders who are frequent revolvers (Chart J11). The increasing number of revolvers in the 21-29 age group has translated into this age group accounting for a rising share of the total number of defaulters, from 8.7% in 2005 to 15.1% at its peak in 2009 before declining to 13.2% as of August 2010 (Chart J12).

Chart J8
Revolvers among Credit Cardholders



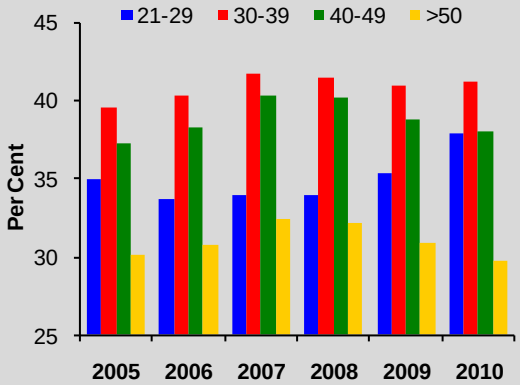
Source: CBS

Chart J9
Share of Revolvers and Frequent Revolvers by Age Group

	Revolvers		Frequent Revolvers	
Age Group	Aug 2005	Aug 2010	Dec 2005	Aug 2010
21-29	10.88	11.70	10.18	10.53
30-39	40.71	38.40	39.19	38.37
40-49	30.69	29.15	31.63	30.21
>50	17.71	20.75	19.01	20.90

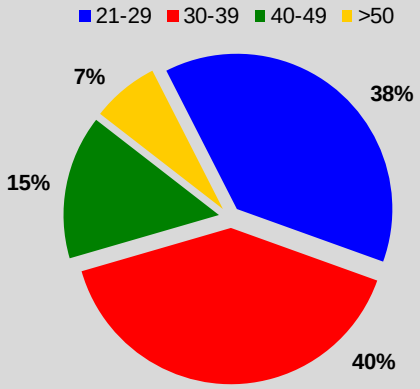
Source: CBS
Figures may not add up due to rounding.

Chart J10
Percentage of Each Age Group that are Revolvers



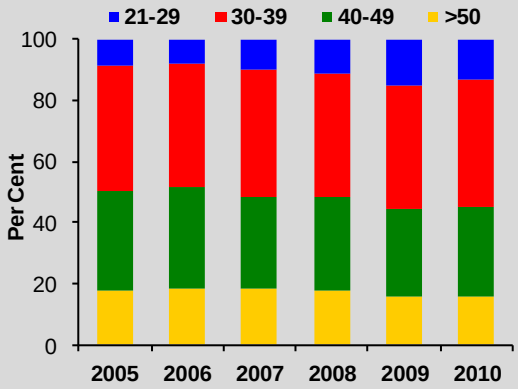
Source: CBS

Chart J11
New Credit Cardholders who are Frequent Revolvers



Source: CBS

Chart J12
Share of Defaulters by Age Group



Source: CBS

Conclusion

In sum, credit card spending is closely tied to the performance of the economy. Charge-off rates are improving with the economic recovery. However there is some evidence that more cardholders, particularly young adults and those over 50, are rolling over their credit card debts. This requires close monitoring, and also suggests a continuing need to educate different segments of the population on the responsible use of credit.

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2.5 Banking Sector

Loan growth has recovered at a healthy pace, but sustainability of recovery will be dependent on state of global economy.

Against the backdrop of robust domestic economic growth over the course of 2010, loan growth has emerged stronger after taking a hit during the recent economic downturn.

Overall Asian Currency Unit (ACU) lending rose 7% between its trough in October 2009 and September 2010, largely due to an expansion in non-bank loans (Chart 2.24). The y-o-y growth rate in ACU non-bank loans has been positive since March 2010, with loans to Europe catching up with the other regions in recent months (Chart 2.25). ACU interbank lending is showing signs of a turnaround due primarily to higher y-o-y growth in interbank lending to East Asia (Chart 2.26). There is evidence that Asian banks operating in Singapore have been directing more ACU interbank funds to the region, while reducing their exposures to Europe and the Americas.

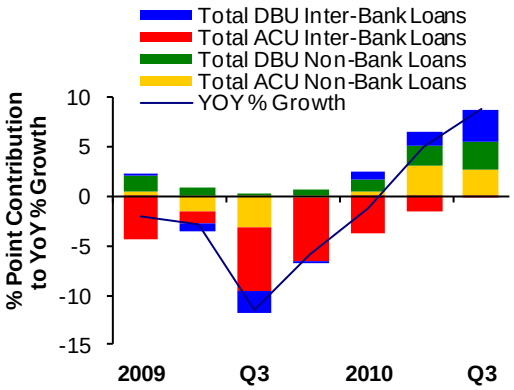
Increased exposure to Asia in recent months may reflect a broader change in banks' business strategies as they seek out opportunities for loan growth in Asian economies, which are recovering more strongly than the rest of the world. Banks would need to manage the new risks that may emerge from their increased exposure to the region.

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Total DBU lending grew 12% between October 2009 and September 2010, supported by both interbank and nonbank lending. DBU non-bank loan growth has been underpinned by strong growth in consumer lending, particularly housing loans (Chart 2.27), although growth in housing loans tapered off in August and September 2010. The slowdown suggests that recent property-related measures announced by the Government may be taking effect (see Box K). Banks' overall loan exposures continue to be well diversified.

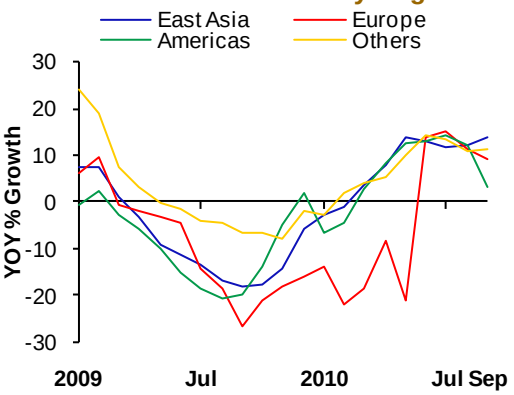
Business lending has recovered, albeit unevenly across sectors. Y-o-y growth in outstanding business

Chart 2.24
Components of Overall Loan Growth



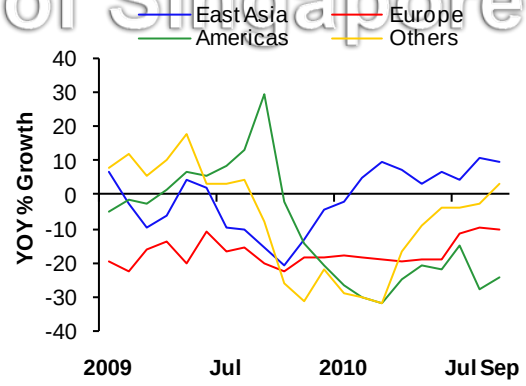
Source: MAS

Chart 2.25
ACU Non-Bank Loans by Region



Source: MAS

Chart 2.26
ACU Inter-Bank Loans by Region



Source: MAS

loans turned positive in April 2010 after nine consecutive months of negative y-o-y growth, primarily driven by loans to the general commerce, non-bank financial institutions (NBFIs) and the building and construction sectors. Outstanding loans to the manufacturing, business services and TSC sectors remained flat during this period, although new loans to business services picked up significantly in September 2010. The lending terms for government risk-sharing schemes for SMEs [84] were revised in 2010 in tandem with the economic recovery, but continued to help alleviate funding strains on some creditworthy SMEs. Market contacts reported that credit conditions were expected to continue improving going into Q4 2010 and Q1 2011.

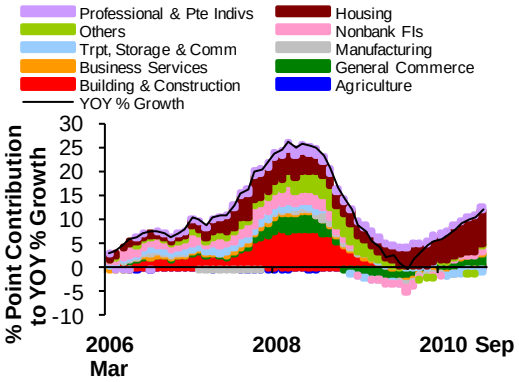
Asset quality improved over the first three quarters of 2010, with the domestic banking system's NPL ratio falling from a peak of 2.64% in Q4 2009 to 1.99% in Q3 2010, in line with the improving outlook for the economy (Chart 2.28). But this should also be seen in light of an expanding loan base over the course of 2010. As loan growth recovers, banks will need to continue to ensure lending activity remains prudent and sustainable.

Local banks have seen steady growth in earnings and improving asset quality.

The performance of the local banking groups improved significantly over the first three quarters of 2010. Total net profit for the local banks before provisioning amounted to about S$2 billion in each of the first 3 quarters of 2010. Q-o-q earnings growth has been positive since Q3 2009 excluding one-off provision charges. This was on the back of higher non-interest income, which made up for declining net interest margins and relatively flat net interest income given the lingering low interest rate environment. (Charts 2.29 and 2.30).

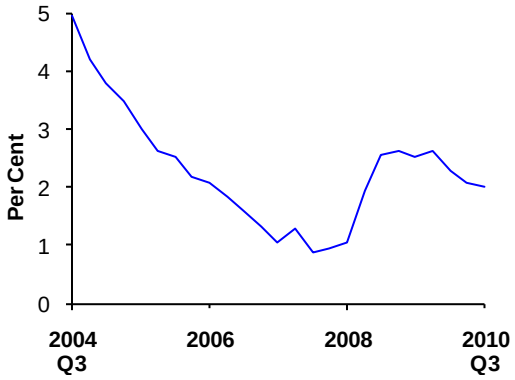
Gross loan-to-deposit ratios remain healthy at 85%, having inched up in Q3 2010 (Chart 2.30). Meanwhile, asset quality for the local banks has consistently improved since Q4 2009 (Chart 2.28). The local banks' aggregate NPL ratio stood at 1.77%

Chart 2.27
DBU Non-Bank Loans by Sector



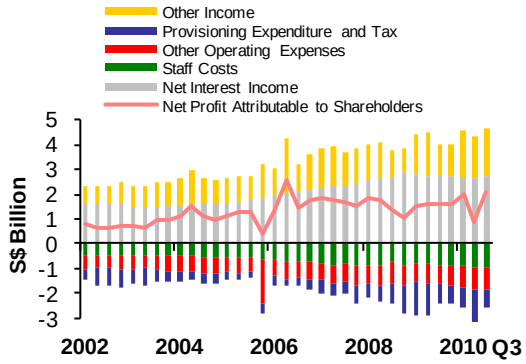
Source: MAS

Chart 2.28
Overall NPL Ratio



Source: MAS

Chart 2.29
Local Banks' Profit Components



Source: Local Banks' Financial Statements

[84] The lending schemes were introduced in early 2009 to facilitate lending to SMEs.

as of Q3 2010 (Chart 2.31), while provisioning coverage has remained robust.

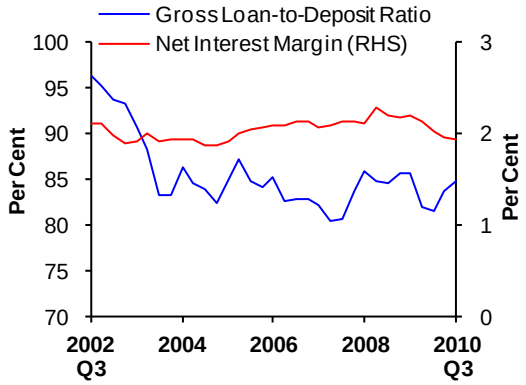
Amidst continued uncertainty surrounding global growth prospects, bank share prices have been relatively flat in the first 10 months of 2010, after posting strong recovery in 2009. CDS spreads of the local banks have stayed within a range of 60 to 100 basis points during the first 10 months of 2010, significantly lower than levels seen in the first half of 2009, though moderately above levels prior to August 2007.

Going forward, the global operating environment could present some challenges for the local banks. Some margin pressure may persist as interest rates are likely to remain low in the near term. Key short-term risks include heightened volatility in regional financial markets and asset prices. A protracted slowdown in G3 economies could drag on Asian and domestic economic growth, and affect the quality of the banks' loan exposures.

Nonetheless, local banks' balance sheets and capital positions remain strong. Their combined Tier 1 Capital Adequacy Ratio (CAR), which has been steadily rising over the past 11 quarters, averaged 14.2% in Q3 2010 – well above MAS' regulatory requirements (Chart 2.32). The local banks are also well placed to meet the new Basel III capital requirements. Owing to their high starting capital base and healthy loan-to-deposit ratios, the higher capital requirements that will be required are not likely to have a significant impact on local banks' supply of credit to the economy. Nonetheless, as the local banks take stock of the proposed Basel III rules, it will be critical to ensure that any shifts in business strategies are commensurate with the banks' risk appetite and risk management controls.

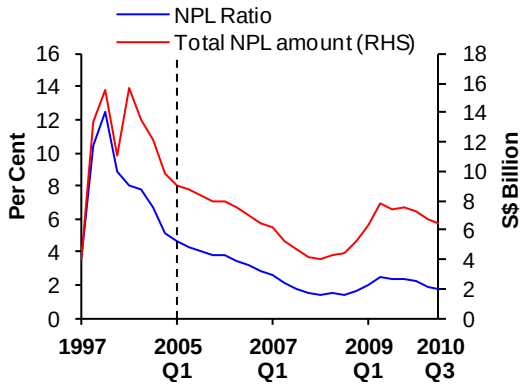
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Chart 2.30
Local Banks' Loan-to-Deposit Ratio and Net Interest Margin



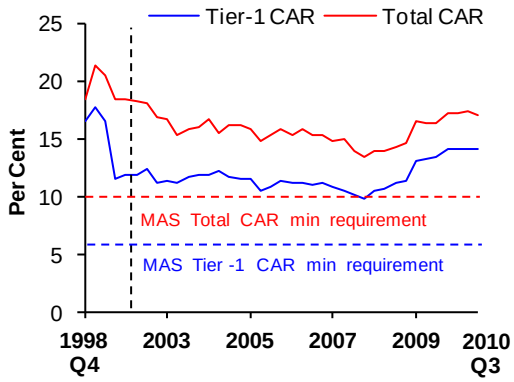
Source: Local Banks' Financial Statements

Chart 2.31
Local Banks' NPLs



Source: Local Banks' Financial Statements

Chart 2.32
Local Banks' CAR



Source: Local Banks' Financial Statements

Box K: Banks' Property Exposures

Housing Loans

The private residential property market has rebounded sharply since Q1 2009 with the take-up of uncompleted private residential units reaching about 14,600 units for the whole of 2009. This is just slightly shy of the record 14,800 units seen in 2007. Market momentum continued to be buoyant this year, with cumulative new sales to October reaching more than 13,100 units, slightly lower than the 13,643 units sold over the same period last year.

In tandem with these trends, housing loan growth has been rising since hitting a trough in early 2009, averaging some 20% on a y-o-y basis in 2010. While it is premature to assess the full impact of the measures announced at end-August 2010[85], outstanding housing loan growth has moderated slightly on both a y-o-y and q-o-q basis in September 2010 (Chart K1).

Given the strong growth since early 2009, housing loans now account for about 34.5% of DBU non-bank loans as of September 2010, slightly above the average of 32.1% since 2004 (Chart K2). The bulk of housing loans (more than 70%) are for owner-occupied residential properties, which tend to have a lower risk profile. Negative equity housing loans represented less than 1% of outstanding housing loans as of September 2010, down from a peak of close to 3% in September 2009. Similarly, the share of housing loans with LTV above 80% fell from a high of 17.3% in September 2009 to 7.1% as of September 2010. The asset quality of housing loans remains robust with NPL ratios at well below 1% as of Q3 2010 (Chart K3).

The series of measures announced by the Government since September 2009, such as disallowing the Interest Absorption Scheme (IAS) and Interest-Only Housing Loans (IOL), lowering the LTV limit and raising the minimum cash down payment, were taken in part to encourage financial prudence among buyers. These measures were intended to prompt prospective home-buyers to consider more carefully the longer term implications of their ability to afford properties, notwithstanding the current low interest rate environment, and are expected to have a tempering effect on housing loan growth.

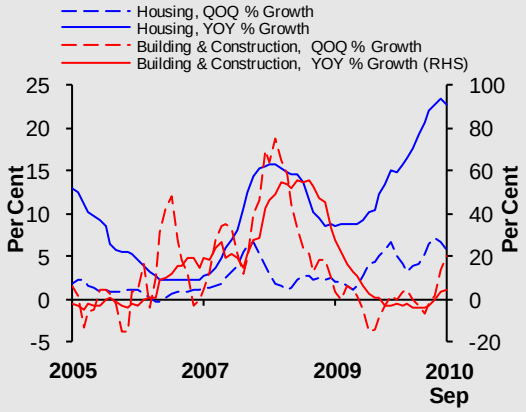
Building & Construction (B&C) Loans

After 10 consecutive months of contraction, y-o-y growth of outstanding B&C loans just turned positive in August 2010 (Chart K1). The banking system's Section 35 ratio stood at 15.8% as of Q3 2010, well below the regulatory limit of 35% (Chart K4).

Lending to the B&C sector accounted for about 17% of total DBU non-bank loans as of September 2010. (Chart K2). The NPL ratio for B&C loans remained low through the downturn, almost reaching 1% in Q2 2009, but moderating to well below 1% as of September 2010 (Chart K3). The relatively robust asset quality of B&C loans is largely due to the recovery of the property market and the improving financial conditions of B&C firms. B&C loans growth could rise moving forward owing to continued land sales and more construction of HDB Build-to-Order projects. While B&C NPLs appears benign at this juncture, developments should be closely monitored in view of likely stronger loan growth and the risk that borrowing decisions may be distorted by assumptions of a sustained low interest rate environment.

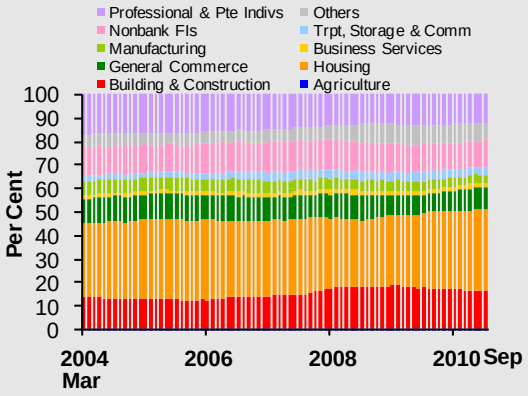
[85] The holding period for the imposition of Seller's Stamp Duty (SSD) was increased from one year to three years; the minimum cash down payment for housing was raised from 5% to 10%; and the LTV ratio for borrowers seeking to purchase property and who already have one or more outstanding housing loans was lowered from 80% to 70%. The Singapore Government also introduced or tightened some measures to ensure public housing is put to the use it is intended for (i.e. for owner occupation).

Chart K1
Property-Related Loans Growth



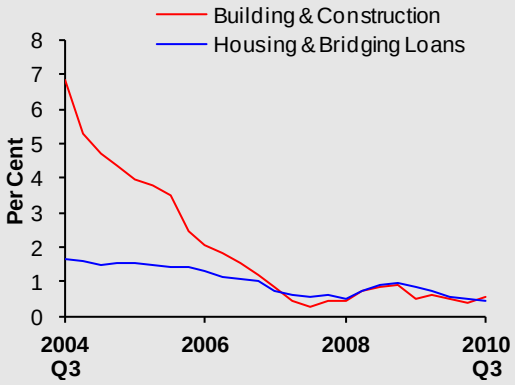
Source: MAS

Chart K2
DBU Non-Bank Loans by Industry



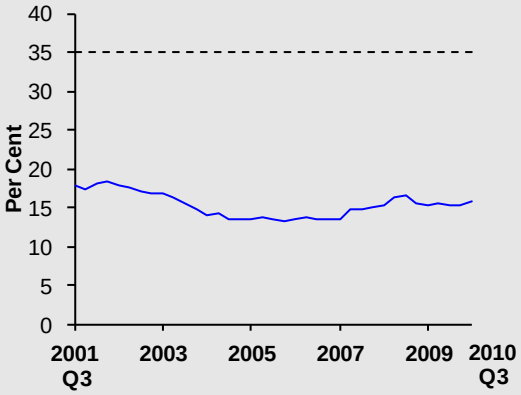
Source: MAS

Chart K3
Property-Related NPL Ratios



Source: MAS

Chart K4
Banking System Section 35 Ratio



Source: MAS
Property exposures include loans to property and non-property corporations, housing loans for investment purposes, property-related debt instruments, guarantees, performance bonds, qualifying certificates and other contingent liabilities.

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2.6 Non-Bank Financial Sector

2.6.1 Insurance Sector

Globally, insurers' balance sheets are under pressure from persistently low interest rates.

Globally, insurers have so far been spared the financing strains facing banking systems. This is in part due to insurers having a different funding structure from banks – premiums are received upfront or at regular intervals, investments are usually held to maturity or for extended periods of time, and cash outflows are experienced only when payouts fall due. While improving conditions in the investment environment have helped insurers, recent strains arising from concerns over sovereign debt in some euro area economies have highlighted the risk of falling asset valuations. Furthermore, unusually low interest rates have resulted in lower returns on insurers' assets, while negatively impacting liabilities by affecting the rate at which they are discounted.

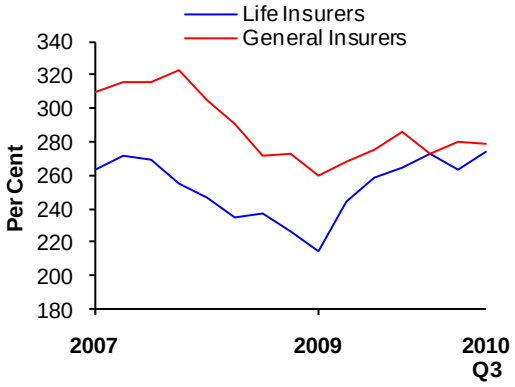
Domestic insurance industry has seen premiums grow and has remained well-capitalised though investment incomes have fallen.

Against this backdrop, the insurance industry in Singapore has remained well-capitalised. Life and general insurers' CARs have continued to remain well above the regulatory warning level of 120% (Chart 2.33).

Life insurers have seen new business premiums of both investment-linked and non-investment-linked products grow over the first three quarters of 2010 relative to the first three quarters of 2009 (Chart 2.34). Premiums for non-investment linked policies grew at a moderate pace, as the Singapore economy recovered. Premiums for new investment-linked policies increased more rapidly due to improvements in the investment environment, which drove demand for such policies.

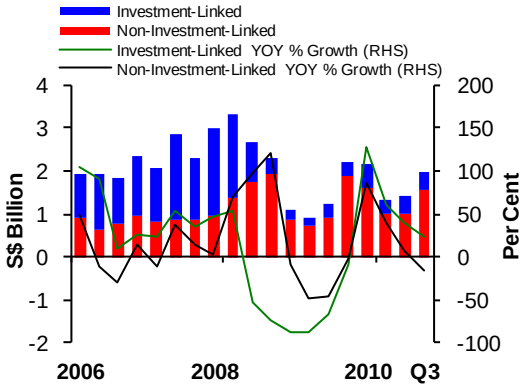
On the investment front, buoyancy in equity

Chart 2.33
Capital Adequacy Ratios



Source: MAS

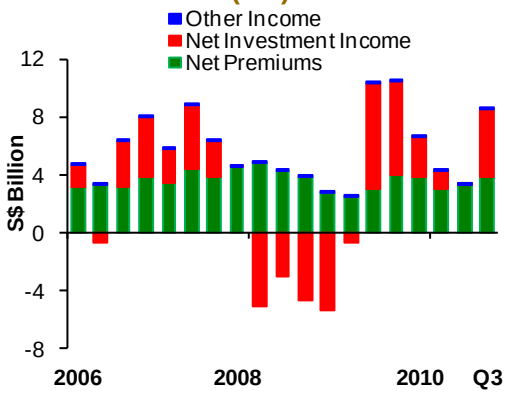
Chart 2.34
Direct Life Insurance: New Business Premiums (Linked vs. Non-Linked) (SIF)



Source: MAS

National Archives of Singapore

Chart 2.35
Direct Life Insurers' Income by Source (SIF)



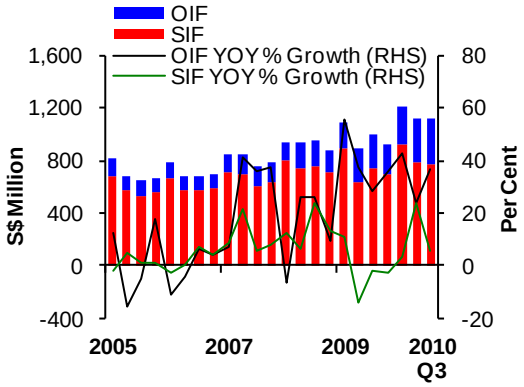
Source: MAS

markets between January and April this year led to an increase in the value of the industry's holdings of equities. However, price falls following the onset of the euro area sovereign debt crisis in May resulted in some unrealised losses for the first three quarters of 2010. Overall, direct life insurers experienced a 54% y-o-y drop in net investment income during this period, to about S$6.0 billion (Chart 2.35).

Gross premiums for general insurers increased by 15.6% y-o-y in the first three quarters of 2010 (Chart 2.36), with both the Singapore and Offshore Insurance Funds (SIF and OIF respectively) contributing to the growth. Motor insurance continued to remain the dominant insurance class in Singapore, and saw some increases in premium rates. Growth in OIF business was driven by marine and aviation hull business as well as business written by newly registered insurers. Generally, there has been greater emphasis on pricing discipline as insurers responded to the underwriting losses sustained previously for some lines of businesses such as motor insurance and work injury compensation insurance. As a result, underwriting profits for general direct insurers rose 23.6% to S$207 million in the first three quarters of 2010 from S$167.5 million over the same period last year (Chart 2.37).

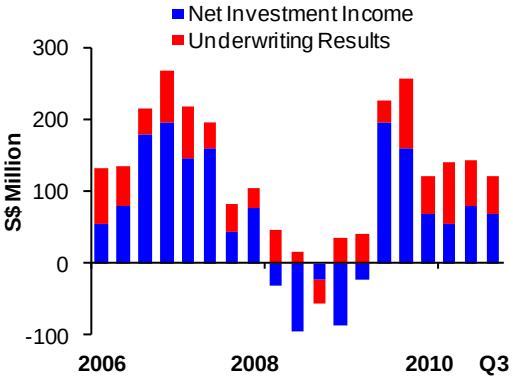
General direct insurers also made investment gains, largely from interest income and unrealised gains from debt securities, which more than offset unrealised losses from equities. Net investment income totalled S$201.3 million in the first three quarters of 2010, compared to S$332.8 million for the corresponding period a year ago (Chart 2.37).

Chart 2.36
General Direct Insurance: Gross Premiums (SIF & OIF)



Source: MAS

Chart 2.37
General Direct Insurance: Operating Results (SIF & OIF)



Source: MAS

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Uncertain economic conditions and soft insurance markets pose considerable underwriting and investment risks for insurers.

Overall, the Singapore insurance industry has remained resilient over 2010. However the macro operating environment continues to be a challenging one. Considerable uncertainty surrounds global economic conditions, and interest rates could remain unusually low over a prolonged period. Therefore, insurers will need to continue

taking robust measures to mitigate underwriting risks in the face of soft insurance market conditions while striking a balance between seeking investment returns and managing their vulnerability to fluctuations in the values of their assets and liabilities.

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2.6.2 Capital Markets Sector

Capital market intermediaries have maintained sound financial positions.

Capital market intermediaries account for a comparatively smaller proportion of financial sector assets vis-à-vis banks and insurance companies. Nevertheless, MAS and SGX monitor their financial positions closely as they are vital to the smooth functioning of Singapore's markets. SGX securities and derivatives members are an important group of intermediaries. In the wake of the global crisis, these members have remained vigilant in monitoring customer exposures and have maintained adequate financial resources to meet regulatory requirements.

Regulation of OTC derivatives market to be enhanced in line with global initiatives.

Proposed global regulatory reforms have, among other things, called for changes to the current landscape for OTC derivatives trading. The G20 has called for increased standardisation in OTC-traded products; for standardised derivatives to be cleared through CCPs; and for all OTC derivatives contracts to be reported to trade repositories.

In Singapore, SGX will be commencing clearing for OTC-traded financial derivatives such as interest rate swaps and foreign exchange forwards. This initiative is expected to reduce counterparty risks. SGX, under its AsiaClear brand name, had already been providing clearing for OTC-traded energy derivatives and forward freight agreements since 2006. In addition, the newly formed Singapore Mercantile Exchange (SMX) launched its first four commodities derivatives contracts in August 2010.

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The investment management industry continued to recover and grow, with enhanced supervisory measures to be put in place.

Between H2 2009 and H1 2010, most investment managers saw an increase in assets under management (AUM), which reflected a continuing trend in AUM growth for the industry. Due to improvements in investor sentiment, investment managers reported more subscriptions than

redemptions during this period. The hedge fund industry also experienced an increase in AUM between H2 2009 and H1 2010, and the number of fund closures during this period remained relatively low.

The trading activities of hedge fund managers based in Singapore presently do not constitute a significant proportion of the total turnover in domestic markets. Hedge fund activity remains relatively low in SGX-listed equities and the domestic corporate bond market. These funds typically engage in OTC derivatives trading, with a greater focus on equity, FX, and interest rate derivatives. Available data suggests, however, that their activity constitutes a small fraction of the trading volumes in these markets as well. The credit exposure of the Singapore banking system to the domestic hedge fund industry is relatively small.

MAS has undertaken a holistic review of the regulatory regime for fund management companies (FMCs) as part of its continuous effort to align with international best practices. In April 2010, MAS consulted the industry on the proposed policy proposals, which are aimed at enhancing supervisory oversight of FMCs, by mandating licensing for larger FMCs and FMCs which manage retail monies, and imposing admission and on-going business conduct rules on all FMCs. MAS published its response to the industry's feedback in September 2010, and will be issuing legislation to implement the policy changes in 2011.

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STATISTICAL APPENDIX

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Table B.6: General Direct Insurers: Composition of Net Premiums of Singapore Insurance Fund

Table B.7: General Direct Insurers: Incurred Loss Ratio of Singapore Insurance Fund

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SINGAPORE NON-FINANCIAL SECTOR

Table A.1: Corporate Sector's Financial Ratios and Insolvency

	H2 2006	H1 2007	H2 2007	H1 2008	H2 2008	H1 2009	H2 2009	H1 2010
Median Return on Assets (Per Cent)								
Transport, Storage & Communications	9.4	9.0	9.2	9.2	8.9	7.5	7.2	5.9
Property	6.0	7.6	11.7	9.7	3.5	2.7	3.7	5.0
Multi-Industry	5.0	5.5	7.8	7.3	3.2	2.1	4.0	4.7
Manufacturing	6.7	6.5	8.0	6.7	4.1	2.7	3.1	4.7
Hotels & Restaurants	6.2	7.0	8.7	8.6	3.4	3.4	4.2	3.5
Construction	3.0	4.2	5.0	6.5	6.2	4.7	8.5	8.1
Commerce	6.4	6.6	7.3	5.8	5.5	3.8	5.1	5.1
Median Current Ratio (Ratio)								
Transport, Storage & Communications	1.4	1.3	1.4	1.5	1.4	1.2	1.4	1.4
Property	2.7	2.6	3.0	2.9	2.4	2.4	2.0	2.1
Multi-Industry	1.4	1.3	1.7	1.6	1.5	1.8	1.9	1.9
Manufacturing	1.7	1.8	1.9	1.9	1.8	1.9	1.9	2.0
Hotels & Restaurants	1.8	2.3	2.6	2.3	1.5	1.6	1.9	1.3
Construction	1.5	1.7	1.6	1.6	1.5	1.6	1.7	1.7
Commerce	1.6	1.8	1.6	1.6	1.6	1.7	1.7	1.8
Median Total Debt/Equity (Per Cent)								
Transport, Storage & Communications	33.5	38.1	25.2	29.1	38.7	35.9	35.0	26.8
Property	56.8	70.1	61.6	61.3	62.3	64.5	51.7	51.6
Multi-Industry	52.4	61.5	42.9	41.3	41.4	43.4	32.3	35.5
Manufacturing	27.8	26.7	26.8	24.5	24.8	19.7	21.3	16.2
Hotels & Restaurants	24.6	18.6	16.3	20.5	23.9	25.0	23.1	24.5
Construction	31.4	30.7	46.8	34.1	43.7	31.6	42.7	34.1
Commerce	55.4	41.7	46.2	40.2	42.1	41.8	31.1	30.9
Median Interest Coverage Ratio * (Ratio)								
Transport, Storage & Communications	13.1	14.1	14.2	11.0	6.7	7.5	4.2	9.0
Property	6.8	6.4	18.0	7.4	1.7	4.6	2.7	4.2
Multi-Industry	9.0	7.5	13.0	8.1	1.2	5.6	2.9	10.4
Manufacturing	6.9	8.8	6.5	5.8	2.4	4.0	4.0	9.0
Hotels & Restaurants	9.0	13.6	18.2	7.8	2.5	7.9	7.8	9.2
Construction	3.5	5.3	9.5	8.6	4.0	4.1	6.0	10.1
Commerce	4.5	6.6	6.5	5.4	3.3	4.7	4.7	4.9
Insolvency								
Companies Wound-up	64	60	46	65	67	60	75	74

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Source: Thomson Financial, Ministry of Law

* Earnings before interest and tax divided by interest expense

Note: A revised list of firms (all SGX-listed firms as of October 2010) was included in the computation of ratios for H2 2009 and H1 2010 in the table above.

Table A.2: Household Sector's Financial Indicators

	Q2 2008	Q3 2008	Q4 2008	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
Per Cent (unless otherwise stated)										
Household Assets (S$ billion)	1149.6	1131.5	1093.8	1068.3	1104.7	1180.0	1224.4	1268.1	1296.8	1353.8
Residential Property Assets as % of Total Assets	46.1	47.3	48.0	46.3	44.5	45.5	46.0	46.5	48.0	48.0
Household Liabilities (S$ billion)	169.3	171.2	172.7	173.0	175.4	178.8	183.6	186.1	191.8	198.0
Household Liabilities to Assets Ratio (%)	14.7	15.1	15.8	16.2	15.9	15.2	15.0	14.7	14.8	14.6
Household Liabilities as % of GDP	61.5	61.8	63.1	64.7	66.6	68.2	69.3	67.8	67.0	67.1
Per Cent (unless otherwise stated)										
Credit Card Charge-Off Rate *	3.5	3.8	4.1	4.6	5.8	5.7	5.2	4.9	5.0	4.4
Housing & Bridging Loan NPL	0.6	0.5	0.7	0.9	1.0	0.9	0.7	0.6	0.5	0.5
Professional & Private Individuals Loan NPL	0.7	0.9	3.2	5.2	3.2	2.7	1.7	1.4	1.3	1.2
Number of Individual Bankruptcy Orders	586	648	502	579	657	358	464	306	389	471

Source: MAS estimates, Ministry of Law, Ministry of National Development, Urban Redevelopment Authority and Singapore Department of Statistics.
* Charge-off rate for the quarter is calculated by annualising the ratio obtained from dividing bad debts written off for the quarter by the average rollover balance for the same quarter.

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SINGAPORE FINANCIAL SECTOR

Table B.1: Banking Sector* Financial Soundness Indicators

	2007**	2008**	2009**	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
Loan Concentrations (% of Total Commercial Bank Loans)										
Bank Loans	61.2	57.0	53.8	56.8	55.8	54.3	53.8	54.5	53.1	52.9
Non-Bank Loans	38.8	43.0	46.2	43.2	44.2	45.7	46.2	45.5	46.9	47.1
Loans through the Asian Dollar Market (% of Total Commercial Bank Loans)										
Total ADM Loans	70.7	67.9	65.2	67.1	67.5	67.0	65.2	64.7	65.8	64.1
Of which to (% of Total Asian Dollar Market Loans):										
United Kingdom	12.8	9.7	9.3	8.8	9.8	10.3	9.3	9.4	7.8	7.8
Japan	9.7	11.4	11.3	10.0	12.5	11.7	11.3	11.0	10.4	10.1
Hong Kong	8.5	7.0	8.1	7.2	7.6	7.5	8.1	8.7	9.1	8.8
USA	7.0	7.0	6.0	7.6	7.0	7.3	6.0	5.8	5.7	5.2
Switzerland	7.0	5.5	5.4	6.2	6.5	5.9	5.4	4.6	4.4	4.0
Banks	71.3	67.6	64.4	66.8	66.7	65.7	64.4	64.3	63.1	63.2
Non-Bank	28.7	32.4	35.6	33.2	33.3	34.3	35.6	35.7	36.9	36.8
Loans through Domestic Banking Units (% of Total Commercial Bank Loans)										
Total DBU Loans	29.3	32.1	34.8	32.9	32.5	33.0	34.8	35.3	34.2	35.9
Of which to (% of Total DBU Loans):										
Manufacturing	2.8	2.8	2.5	2.8	2.8	2.9	2.5	2.4	2.5	2.4
Building & Construction	10.1	12.0	11.5	12.0	12.3	12.2	11.5	10.9	10.8	10.8
Housing	19.8	19.1	21.5	19.0	20.4	21.8	21.5	21.1	22.5	22.6
Professionals & Private Individuals	9.5	9.1	9.3	8.8	9.5	9.6	9.3	8.7	8.8	8.6
Non-Bank Financial Institutions	8.5	8.0	7.6	7.6	7.8	8.1	7.6	7.0	7.4	7.6
Banks	36.9	34.8	33.8	36.3	33.1	31.1	33.8	36.4	34.0	34.7
Profitability (Per Cent)										
DBU Net Interest Income to Total DBU Loans	2.1	2.1	2.0	2.0	2.1	2.1	2.0	1.8	1.8	1.7
Liquidity (Per Cent)										
Liquid DBU Assets to Total DBU Assets	10.1	9.9	10.3	10.3	10.4	10.6	10.3	9.8	9.7	9.2
Liquid DBU Assets to Total DBU Liabilities	10.8	10.8	11.2	11.2	11.2	11.5	11.2	10.7	10.6	9.9
All DBU Loans to All DBU Deposits	96.1	94.9	93.5	93.5	91.0	91.2	93.5	95.3	95.5	97.2
DBU Non-bank Loans to DBU Non-Bank Deposits	74.1	78.3	71.9	74.3	73.1	73.1	71.9	71.3	73.3	74.0
DBU Non-Bank Loan Growth (YOY)	19.9	16.6	3.4	8.6	4.2	1.1	3.4	5.8	9.0	12.1
DBU Non-Bank Deposit Growth (YOY)	15.6	10.3	12.7	10.2	11.7	10.5	12.7	10.2	8.7	10.9

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Source: MAS
* Data relates to all commercial banks, Singapore operations only
** Annual figures are as at Q4

Table B.2: Local Banks* Selected Financial Soundness Indicators

	2007**	2008**	2009**	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
Capital Adequacy (Per Cent)										
Regulatory Capital to Risk-Weighted Assets	13.5	14.7	17.3	16.7	16.5	16.5	17.3	17.3	17.4	17.0
Regulatory Tier I Capital to Risk-Weighted Assets	9.8	11.5	14.1	13.1	13.3	13.5	14.1	14.1	14.2	14.2
Shareholders' Funds to Total Assets^	9.2	8.3	9.9	9.0	9.5	9.8	9.9	9.9	9.7	9.6
Asset Quality (Per Cent)#										
Non-Bank NPLs to Non-Bank Loans	1.5	1.7	2.4	2.0	2.5	2.4	2.4	2.2	1.9	1.8
Total Provisions to Non-Bank NPLs	113.6	108.5	90.8	95.8	82.7	90.3	90.8	98.2	105.0	106.1
Specific Provisions to Non-Bank NPLs	39.3	43.4	40.0	40.0	34.3	37.7	40.0	43.9	44.9	41.3
Loan Concentration (% of Total Loans)										
Bank Loans	16.2	13.8	14.1	14.9	17.2	17.0	14.1	13.0	12.9	14.1
Non-Bank loans	83.8	86.2	85.9	85.1	82.8	83.0	85.9	87.0	87.1	85.9
Of which to (% of Total Loans):										
Manufacturing	9.2	9.2	8.3	9.0	8.1	8.2	8.3	8.4	8.3	7.8
Building & Construction	11.4	13.2	12.4	13.0	12.5	12.1	12.4	12.1	11.9	12.0
Housing	20.6	20.3	22.2	20.0	20.0	20.8	22.2	22.7	22.9	22.8
Professionals & Private Individuals	8.6	8.5	8.7	8.3	8.4	8.4	8.7	9.6	9.2	9.0
Non-Bank Financial Institutions	12.3	11.7	11.2	12.1	11.7	11.3	11.2	10.9	11.3	11.4
Profitability (Per Cent)										
ROA (Simple Average)	1.3	1.0	1.1	1.0	1.1	1.1	1.1	1.3	1.2	1.2
ROE (Simple Average)	12.9	10.7	10.8	11.4	11.2	11.0	10.8	12.6	12.3	12.3
Net Interest Margin (Simple Average)	2.1	2.2	2.2	2.3	2.2	2.2	2.2	2.1	2.0	2.0
Non-Interest Income to Total Income	39.1	32.2	34.9	37.0	37.9	35.7	34.9	42.0	40.1	40.6

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Source: Local Banks' Financial Statements, MAS calculations
* Local Banks' consolidated operations
** Annual figures are as at Q4
^ Figures revised to include assets of Great Eastern Holdings
# Figures reflect updated data

Table B.3: Direct Life Insurers: Total New Business Gross Premiums

	2007	2008	2009	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
Year-on-Year % Change										
Policies	17.3	4.5	-3.3	-36.3	3.3	10.5	14.6	30.3	-11.4	-5.1
Annual Premiums	31.4	23.0	-3.6	-22.4	-8.5	-7.6	26.6	32.9	11.1	36.3
Single Premiums	27.6	-11.6	-34.6	-76.6	-59.7	-3.3	114.6	47.5	17.2	-17.0
Sum Insured	24.1	26.8	-10.4	-0.5	5.8	-37.0	7.3	-5.1	-3.1	44.7

Source: MAS

Table B.4: Direct Life Insurers: Asset Distribution of Singapore Insurance Fund (Non-Linked Assets)

	2007	2008	2009	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
S$ Million (% of Total Assets)										
Debt Securities	47,857 (59.7)	47,139 (63.2)	52,751 (62.3)	46,280 (62.8)	47,700 (61.5)	50,885 (61.2)	52,756 (61.9)	54,308 (62.3)	55,417 (62.8)	57,886 (62.8)
Equity Shares	19,450 (24.3)	12,763 (17.1)	19,072 (22.5)	12,731 (17.3)	15,554 (20.0)	18,132 (21.8)	19,010 (22.3)	19,362 (22.2)	18,792 (21.3)	19,885 (21.6)
Cash & Deposits	3,428 (4.3)	4,882 (6.5)	3,946 (4.7)	5,246 (7.1)	4,684 (6.0)	4,187 (5.0)	3,960 (4.6)	4,251 (4.9)	4,795 (5.4)	4,700 (5.1)
Loans	3,633 (4.5)	3,971 (5.3)	4,186 (4.9)	4,064 (5.5)	4,041 (5.2)	4,069 (4.9)	4,187 (4.9)	4,283 (4.9)	4,184 (4.7)	4,098 (4.4)
Land & Buildings	3,319 (4.1)	2,987 (4.0)	2,659 (3.1)	2,997 (4.1)	2,996 (3.9)	2,900 (3.5)	2,659 (3.1)	2,578 (3.0)	2,583 (2.9)	2,582 (2.8)
Other Assets	2,426 (3.0)	2,800 (3.8)	2,091 (2.5)	2,361 (3.2)	2,601 (3.4)	2,971 (3.6)	2,622 (3.1)	2,324 (2.7)	2,506 (2.8)	2,985 (3.2)
Total Assets	80,114 (100)	74,542 (100)	84,704 (100)	73,679 (100)	77,576 (100)	83,145 (100)	85,193 (100)	87,105 (100)	88,277 (100)	92,137 (100)

Source: MAS

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Table B.5: General Direct Insurers: Gross Premiums

	2007	2008	2009	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
S$ Million										
Total Operations	3,224.5	3,686.7	3,943.5	1,090.0	898.5	991.2	921.5	1,205.2	1,113.1	1,125.8
SIF	2,621.9	2,962.5	2,940.8	892.1	634.9	734.3	691.8	923.5	786.7	774.6
OIF	602.6	724.2	1,002.7	197.9	263.6	256.9	229.7	281.7	326.4	351.2

Source: MAS

Table B.6: General Direct Insurers: Composition of Net Premiums of Singapore Insurance Fund

	2007	2008	2009	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
S$ Million										
Marine & Aviation										
- Cargo	117.0	124.0	83.6	25.9	19.4	22.6	19.7	23.1	22.0	23.1
- Hull & Liability	72.1	76.0	84.3	14.4	19.4	23.9	21.8	15.9	19.3	26.4
Fire	119.1	123.1	134.7	39.3	38.9	30.2	27.6	41.0	39.9	35.0
Motor	710.9	817.7	980.7	265.7	241.2	246.0	242.3	311.1	258.0	252.6
Work Injury Compensation	178.9	224.0	217.6	73.6	58.6	53.3	38.4	76.5	58.1	60.5
Personal Accident	188.9	211.8	164.9	56.6	30.2	40.0	38.2	47.0	47.9	45.7
Health	165.0	198.2	41.2	71.4	-64.6	28.1	8.3	58.8	30.5	31.7
Miscellaneous	277.6	312.7	300.6	76.0	85.2	79.3	65.8	84.0	88.0	81.6
Total	1,829.5	2,087.5	2,007.6	622.9	428.3	523.4	462.1	657.4	563.7	556.6

Source: MAS

Table B.7: General Direct Insurers: Incurred Loss Ratio of Singapore Insurance Fund

	2007	2008	2009	Q1 2009	Q2 2009	Q3 2009	Q4 2009	Q1 2010	Q2 2010	Q3 2010
Per Cent										
Marine & Aviation										
- Cargo	27.3	30.0	15.8	30.5	23.8	23.0	-4.0	7.4	21.6	21.4
- Hull & Liability	41.4	53.2	71.1	95.6	69.1	60.6	59.7	45.4	56.1	46.1
Fire	20.0	18.7	22.0	33.1	19.9	7.9	29.0	26.8	27.3	26.6
Motor	88.8	92.2	74.6	81.5	79.0	72.1	69.2	70.8	75.3	70.2
Work Injury Compensation	74.0	70.4	75.2	66.6	73.3	73.2	95.1	66.5	69.0	77.8
Personal Accident**	30.2	27.3	31.2	34.4	25.2	20.2	29.8	26.8	26.9	29.3
Health**	60.1	60.0	63.0	48.9	74.0	64.1	65.0	62.5	67.1	58.6
Miscellaneous	25.1	27.9	32.8	37.7	49.2	30.4	26.5	29.1	36.7	44.0
Total	58.1	60.6	58.3	61.7	62.5	55.1	56.5	54.3	58.6	57.8

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Source: MAS