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Macroeconomic Surveillance Department
Monetary Authority of Singapore
# Preface

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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 report, the following country groupings are used:

- Euro zone comprises Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain.
- “G3” refers to the euro zone, Japan, and the United States.
- “G20” 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).
- “Asia-7” comprises India, Indonesia, Korea, Malaysia, the Philippines, Taiwan and Thailand.
- “SEA-5” comprises Indonesia, Malaysia, the Philippines, Singapore and Thailand.
- “NEA-3” comprises Hong Kong, Korea and Taiwan.

Abbreviations used for financial data are as follows:

- Currencies: Chinese Renminbi (RMB), Euro (EUR), 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), US Dollar (USD)
- 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

ACU  Asian Currency Unit
ADB  Asian Development Bank
ADM  Asian Dollar Market
ASEAN Association of Southeast Asian Nations
AUM  Assets Under Management
BCBS Basel Committee on Banking Supervision
BEA  Bureau of Economic Analysis
BI  Bank Indonesia
BIS  Bank for International Settlements
BNM  Bank Negara Malaysia
BoE  Bank of England
BoJ  Bank of Japan
BoK  Bank of Korea
BoT        Bank of Thailand
BSP       Bangko Sentral ng Pilipinas
CAR       Capital Adequacy Ratio
CBRC      China Banking Regulatory Commission
CCB       Countercyclical Capital Buffer
CCP       Central Counterparty
CDS       Credit Default Swap
CI        Contagion Index
CM        Chairman’s Meeting
COE       Certificate of Entitlement
CPF       Central Provident Fund
CPI       Consumer Price Index
CPSS      Committee on Payment and Settlement Systems
DBU       Domestic Banking Unit
DOS       Department of Statistics
EBA       European Banking Authority
EBIT      Earnings Before Interest and Tax
EC        European Commission
ECB       European Central Bank
EDB       Economic Development Board
EMEAP     Executives’ Meeting of East Asia Pacific Central Banks
EU        European Union
FDI       Foreign Direct Investment
FHA       Federal Housing Administration
FI        Financial Institution
FMC       Fund Management Company
FMI       Financial Market Infrastructure
FSB       Financial Stability Board
FSC       Financial Stability Committee
FSI       Financial Soundness Indicator
FSR       Financial Stability Review
GDP       Gross Domestic Product
GFC       Global Financial Crisis
GLS       Government Land Sales
HDB       Housing Development Board
HKMA      Hong Kong Monetary Authority
IAS       Interest Absorption Scheme
IMF       International Monetary Fund
IOL       Interest-Only Loan
IOSCO     International Organisation of Securities Commissions
IPTO      Insolvency and Public Trustee’s Office
JGB       Japanese Government Bond
LIBOR     London Interbank Offered Rate
LCR       Liquidity Coverage Ratio
LTD       Loan-to-Deposit
LTRO      Long Term Refinancing Operations
LTV       Loan-to-Value
MAS       Monetary Authority of Singapore
MBS       Mortgage-Backed Security
MEP       Maturity Extension Programme
MIPM      Monetary and Investment Policy Meeting
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<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>MMF</td>
<td>Money Market Fund</td>
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<td>MOF</td>
<td>Ministry of Finance</td>
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<td>MSD</td>
<td>Macroeconomic Surveillance Department</td>
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<tr>
<td>NAR</td>
<td>National Association of Realtors</td>
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<td>NBFI</td>
<td>Non-Bank Financial Institution</td>
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<tr>
<td>NEER</td>
<td>Nominal Effective Exchange Rate</td>
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<tr>
<td>NIM</td>
<td>Net Interest Margin</td>
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<td>NPL</td>
<td>Non-Performing Loan</td>
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<tr>
<td>NPV</td>
<td>Net Present Value</td>
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<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
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<td>OIF</td>
<td>Offshore Insurance Fund</td>
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<td>OIS</td>
<td>Overnight Indexed Swap</td>
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<td>OMT</td>
<td>Outright Monetary Transaction</td>
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<tr>
<td>OTC</td>
<td>Over-the-Counter</td>
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<tr>
<td>PBoC</td>
<td>People's Bank of China</td>
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<td>PPI</td>
<td>Property Price Index</td>
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<td>QE</td>
<td>Quantitative Easing</td>
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<tr>
<td>RBA</td>
<td>Reserve Bank of Australia</td>
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<tr>
<td>RBI</td>
<td>Reserve Bank of India</td>
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<tr>
<td>RBNZ</td>
<td>Reserve Bank of New Zealand</td>
</tr>
<tr>
<td>ROA</td>
<td>Return on Assets</td>
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<tr>
<td>RRR</td>
<td>Required Reserve Ratio</td>
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<tr>
<td>S&amp;P</td>
<td>Standard &amp; Poor's</td>
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<tr>
<td>SAAR</td>
<td>Seasonally Adjusted Annualised Rate</td>
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<tr>
<td>SGS</td>
<td>Singapore Government Securities</td>
</tr>
<tr>
<td>SGX</td>
<td>Singapore Exchange Ltd</td>
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<tr>
<td>SIBOR</td>
<td>Singapore Interbank Offered Rate</td>
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<td>SIF</td>
<td>Singapore Insurance Fund</td>
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<tr>
<td>SLOOS</td>
<td>Senior Loan Officer Opinion Survey</td>
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<tr>
<td>SME</td>
<td>Small and Medium-Sized Enterprise</td>
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<td>SMX</td>
<td>Singapore Mercantile Exchange</td>
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<tr>
<td>SOR</td>
<td>Swap Offer Rate</td>
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<tr>
<td>TR</td>
<td>Trade Repository</td>
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<tr>
<td>TSC</td>
<td>Transport, Storage and Communication</td>
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<tr>
<td>URA</td>
<td>Urban Redevelopment Authority</td>
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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. Section 2 outlines key developments in Singapore’s macroeconomic environment and financial system. This is followed by an analysis of the banking sector, which plays a dominant role in Singapore’s financial landscape; and the corporate and household sectors, which banks have large exposures to. Finally, a review of the non-bank financial sector, which includes the insurance sector and capital market infrastructure and intermediaries, is also provided.

The production of the FSR was coordinated by the Macroeconomic Surveillance Department (MSD) team which comprises Chan Lily, Ng Heng Tiong, Cheok Yong Jin, Patricia Chua, Foo Suan Yong, Gay Bing Yong Kenneth, Ho Ruixia Cheryl, Lam Mingli Angeline, Lee Jia Sheng Harry, Lim Ju Meng Aloysius, Lim Weilun, Ong Boon Chye, Qiu Qiaoling Angeline, Tan Si Jie, Teo Yongxin Byron, Teoh Shi-Ying, Yam Yujian, Yoe Xue Ting Selene and Zhong Kemin under the general direction of Dr Lam San Ling, Executive Director (MSD). Valuable statistical and charting support was provided by members of the MSD Statistics Unit. The FSR also incorporates contributions from the following departments: Banking Departments I, II & III, Capital Markets Department, Capital Markets Intermediaries Department, Economic Analysis Department, Economic Surveillance and Forecasting Department, Insurance 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 may be accessed in PDF format on the MAS website:
OVERVIEW

Sovereign weakness, faltering economic growth and banking system vulnerabilities continue to beset the G3 countries, particularly the euro zone.

Euro zone-wide developments and their likely implications for the troubled peripheral countries remain the key focus of concerns. At the same time, there are pressures on the US to embark on a credible fiscal consolidation path for the longer term, while still supporting its economic growth in the near term.

European and US leaders have taken bold measures over the past year, and recent progress has been encouraging. However tail risks remain, sentiment continues to be volatile, and sustained confidence is contingent on further progress.

In this context, the stalling of economic growth momentum across the G3 in recent quarters poses stiff challenges. The euro zone is weighed down by the ongoing sovereign debt crisis and austerity measures in many countries. Economic growth in the US is tepid, and continues to be affected by multiple headwinds. Japan’s growth has turned negative, with export performance weakening against the backdrop of more sluggish global growth.

Strains related to sovereign debt sustainability have been most pronounced in the euro zone. Since 2008, debt burdens have risen sharply while fiscal deficits have doubled. Risks of political instability given opposition to tough reforms in the troubled peripheral euro zone countries continue to weigh on market confidence. In the US, an improvement in the debt trajectory is by no means certain given the stark political divisions, and the fiscal cliff could lower growth substantially in 2013, with spillovers to the financial system and global economy.

Given these downside risks, financial fragmentation has increased. Home bias in holdings of government bonds has risen in the euro zone as well as Japan. Deposit outflows remain a risk for banks in Greece, Spain and Portugal; these banks are under more stress than banks in other euro zone countries, and are largely shut out from private funding sources.

The financial system therefore remains fragile. The risk of adverse feedback effects between sovereigns and banks, with potential knock-on impact on the economy, has also risen.

Looking further ahead, the increased reliance on secured funding and collateral usage in Europe and the US, prompted by continued uncertainty over bank funding in general, poses considerable risks. While collateral usage reduces counterparty risks in financial transactions, increased encumbrance of banks’ high-quality assets and the possibility of large and sudden changes in collateral valuations do introduce new risks to the global financial system, including impaired access to unsecured funding as well as adverse effects from large and sudden changes in collateral valuations.

Given these exceptionally difficult conditions, credit provision to corporates and households, especially in Europe, remains strained.

Meanwhile, in an environment where low yields, contained market volatility and ample liquidity are being sustained by extraordinary policy measures, there has been a discernible move down the creditworthiness ladder in a renewed reach for yield. This raises the question whether investors have sufficiently considered the possibility of a substantial rise in default rates and widening of credit spreads should economic and financial conditions worsen.

Finally, important steps which G3 policymakers have taken to address vulnerabilities of banks and sovereigns carry risks themselves. These include weakening incentives to repair balance sheets, distorting credit allocation, and even jeopardising general price stability when the time to exit from the support measures comes. It is thus important to maintain focus on correcting longer-term financial and economic imbalances across G3 countries.
Turning to Asia, sovereign strength remains a key anchor of stability. This is despite the intensification of the global financial crisis (GFC) in 2012 and the marked slowdown of economic growth in China and parts of the region. Strong government balance sheets have enabled several countries to take or plan further fiscal stimulus measures to bolster their economies. Some have received credit rating upgrades during the past year. Sovereign bond markets have performed well.

However, countries that have larger debts or which are more reliant on external funding (especially at shorter maturities) could face greater refinancing challenges should investor sentiment turn sharply. This could happen if, for instance, strains on troubled euro zone countries were to intensify or if the already-sluggish global economic growth momentum were to slow further.

The degree of indebtedness of Asian countries’ corporate sectors has remained broadly stable, but there are pockets of vulnerability. In a few countries, foreign-exchange risk exposure remains significant, and firms could be adversely affected if local currencies were to depreciate sharply in response to stress events.

Household debt in most of Asia grew faster than the broader economy between 2009 and 2011, before the pace moderated in recent quarters.

For some countries, elevated or rising levels of household debt could limit the scope for policymakers to stimulate domestic demand in order to support growth. Meanwhile, property prices have continued to rise in some countries, while mortgages account for a substantial share of household debt across the region. Further stresses in the global financial system or economy would have adverse consequences. These could include significant increases in unemployment rates, reductions in incomes and substantial falls in property prices. Banks, facing loan quality deterioration, could tighten credit availability or raise the cost of credit, adding further stress on households.

Bank credit growth in Asia has slowed in response to more subdued economic conditions, though it remains fairly buoyant. While capital buffers and funding profiles remain generally sound, signs of loan-quality deterioration have emerged. As a result, some authorities have taken measures to moderate credit growth while providing support for certain borrowers.

The impact of adverse external developments on Asia’s banking systems warrants close monitoring. Euro zone banks have deleveraged in Asia as financial fragmentation increases within Europe. The impact has been contained so far. Banks from Asia and elsewhere, with strong capital- and liquidity buffers, have stepped in to fill the gap left by euro zone banks. However, credit conditions could tighten further should the GFC escalate, and there is further pullback of lending by banks from the euro zone or other regions.

Compared to the strong sentiment which underlined the run-up of capital inflows to emerging markets in 2010, investor sentiment over the past year has clearly been more volatile.

Volatility in net capital flows to Asia has been driven by several factors. These include abundant global liquidity alongside quantitative easing in key advanced countries, China’s growth slowdown, as well as shifts in global risk appetite and investor sentiment towards Asia.

In the year ahead, further escalation of the GFC could cause a sudden and sharp reversal of risk appetite and Asia’s attractiveness to investors, and capital outflows are possible.

A more likely scenario is that abundant global liquidity and continued accommodative monetary policy in advanced countries lead to a resumption of exuberant capital inflows. This could cause a further build-up of risks in Asia in the form of excessive leverage and credit growth or formation of asset bubbles. Should capital inflows reverse and asset prices correct, the adjustments can be painful.

Sudden surges and reversals in capital flows could lead to greater volatility in financial markets and risk premia, and sharp fluctuations in exchange rates. Trade activity and current-account balances could be adversely affected, and confidence could be substantially dampened or destabilised. This would undermine economic growth.
Singapore’s economy and financial system have been resilient through the GFC. Growth has slowed markedly but is still expected to be positive this year and next. Financial markets have remained stable despite financial fragilities and persistent macroeconomic uncertainties globally. Concerns over liquidity and counterparty credit risks have been muted in the domestic interbank market, while confidence in Singapore Government Securities (SGS) remains high.

Interest rates in Singapore have remained low for a prolonged period of time. This is in line with global trends, which are expected to continue as policymakers in advanced countries have committed to keep monetary policy accommodative over the medium term. There is therefore a risk that expectations of low interest rates for the foreseeable future will become entrenched.

The need for vigilance is clear.

It is notable that while overall bank loan growth has decelerated since the turn of the year, non-bank loan growth has remained firm, underpinned by the growth of both corporate and household loans in the Domestic Banking Unit (DBU).

The Singapore banking system’s funding profiles and asset quality remain sound, and local banking groups have continued to be well capitalised. These strengths have enabled the banking system’s overall loan base to continue growing.

However, if economic conditions worsen or interest rates rise from current low levels, bank loan quality could deteriorate substantially.

Banks should continue to manage their risks, including maintaining prudent underwriting standards, pricing risks appropriately and managing credit concentration risks effectively. Banks’ business strategies should be commensurate with their risk appetite and risk management controls. While Singapore Dollar (SGD) funding for domestic lending remains adequate, non-SGD funding risk should be closely monitored as non-SGD loan growth has outpaced non-SGD deposit growth over the past year.

A sudden spike in global risk aversion could trigger stresses in global US dollar liquidity, with adverse knock-on effects on the Singapore banking system.

Corporate balance sheets remain on a firm footing at this juncture, but profitability has dipped in line with the weakening of the Singapore economy amid the global slowdown. Corporates are more leveraged today than they were a year ago as low borrowing costs may have prompted some corporates to borrow more than they would have otherwise. Corporates appear well-positioned to cover their interest expense, but this could change if interest rates rise significantly.

Fund-raising activity in other corporate finance markets has also increased. In the first three quarters of this year, large firms issued twice the amount of debt as they did in the same period last year.

The volume of loans to small and medium-sized enterprises (SMEs) has continued to expand robustly, although the pace has moderated. An increasing amount of outstanding SME loans is collateralised.

Looking ahead, the corporate sector as a whole needs to guard against multiple headwinds. Weak external demand could weigh heavily on the more external-oriented industries, while further dampening of business and consumer confidence could also weigh on more domestic-oriented sectors and the services sector. The experiences in previous downturns, where severe stresses materially weakened the corporate sector’s profitability and debt-servicing capacity, should be borne in mind.

Singapore’s household balance sheets are resilient. As at Q3 2012, household net wealth was four times Gross Domestic Product (GDP), having increased significantly from Q3 2011. The household sector’s total cash and deposits have continued to exceed aggregate household debt.

However, caution is in order.
While household leverage has remained relatively low, the growth of household debt has outpaced household assets since Q2 2011, with the key driver being a rise in the volume of housing loans alongside continued increases in property prices. Expectations of continued low interest rates could lead to some households overextending themselves. Should interest rates rise in future or the unemployment rate increase, households that are highly leveraged and affected by retrenchments would come under pressure. Lower-income households, especially those with small financial buffers, could be adversely affected.

Macroeconomic Surveillance Department
Monetary Authority of Singapore
28 November 2012
GLOBAL ENVIRONMENT

1.1 G3 Macroeconomic Environment and Financial System

Economic and financial developments in the G3 have important implications for Singapore. G3 countries are major trading partners of Singapore. Many large financial institution (FI) groups from or based in the G3 have sizeable operations in Singapore. Financial flows between the G3 and Singapore are significant.

Sovereign weakness, faltering economic growth and banking system vulnerabilities continue to beset G3 countries, especially the euro zone

Sovereign weakness, faltering economic growth and banking system vulnerabilities continue to beset G3 countries, especially the euro zone. Euro zone-wide developments and their likely implications for the troubled peripheral countries in particular, as well as rising contagion risk within the periphery, remain the key focus of market concerns. Meanwhile, there are considerable pressures on the US to embark on a credible fiscal consolidation path for the longer term while still supporting its economic growth in the near term.

In response, European and US leaders have taken bold measures over the past year, continuing to seek credible solutions to ease immediate market concerns and address longer-term challenges.

While recent progress has been encouraging, tail risks with potentially serious consequences remain. Sentiment remains fragile, and sustained confidence is contingent on further progress ahead.

Economic growth has stalled across G3 countries

The stalling of economic growth across the G3 in recent quarters (Chart 1.1.1) poses stiff challenges, and prospects remain dim.

The euro zone slipped into recession in early 2012, weighed down by the ongoing sovereign debt crisis and austerity measures in many countries. Q3 Gross Domestic Product (GDP) growth was negative,
coming in at a -0.2% q-o-q seasonally adjusted annual rate (SAAR) (Chart 1.1.1). Modest growth in Germany and France was not sufficient to offset deepening recessions in other euro zone countries, particularly those in the troubled periphery (Chart 1.1.2). Recent composite Purchasing Manager’s Index (PMI) readings have pointed to the likely prospect of continued contraction (Chart 1.1.3). Labour market conditions have weakened further, with the unemployment rate rising to 11.6% in September.

In the US, economic growth has remained tepid throughout 2012 so far (Chart 1.1.4), reflecting sluggish domestic demand. The housing sector has continued to be weak, although moderate increases in house prices and substantial reductions in inventories in recent months point to an incipient recovery (Chart 1.1.5). Employment conditions remain anaemic, with the recent fall in the unemployment rate to a still high 7.9% attributed mostly to a drop in the labour force participation rate. With efforts at fiscal consolidation likely to be stepped up, both federal and local government spending are set to offer little support for growth (Chart 1.1.4).

In Japan, GDP growth turned negative again in Q3 2012, at a -3.5% q-o-q SAAR. An important factor was the weakening of export performance against the backdrop of more sluggish global growth.

Concerns over sovereign debt sustainability have been most pronounced in the euro zone, and are likely to continue weighing on confidence

Concerns over sovereign debt sustainability have been most pronounced in the euro zone. The euro zone’s aggregate government debt-to-GDP ratio increased sharply from 70.2% in 2008 to 87.3% in 2011, while the aggregate fiscal deficit almost doubled from 2.1% to 4.1% of GDP over the same period. Heightened risks of political instability given popular opposition to tough reforms in the troubled peripheral countries have continued to weigh on market confidence. This has been reflected in periodic increases in sovereign bond yields (Chart 1.1.6). More recently, the European Central Bank (ECB)’s announcement of the Outright Monetary Transactions...
(OMT) bond purchase programme\(^1\) has calmed markets, but pressures remain as concerns over long-run debt sustainability persist. Looking ahead, more countries in the periphery, including larger ones, may need troika\(^2\) programmes.

Meanwhile, the US’ fiscal deficits are expected to persist over the next few years. In a baseline scenario, where economic and financial-system conditions are quite benign, the public debt-to-GDP ratio is projected to rise before stabilising and then falling gradually over the latter half of the decade (Chart 1.1.7). This improvement in debt trajectory is by no means certain given the stark political divisions. The threat of political gridlock has raised the risk of reaching the “fiscal cliff”\(^3\); this could lower growth substantially in 2013, with spillovers to the financial system and global economy.

### Increasing financial fragmentation, including home bias in government bond holdings, poses risk of further adverse feedback effects between sovereigns and banks

Even as economic growth has stalled and fiscal challenges remain daunting, there has been an increase in financial fragmentation\(^4\), including rising home bias in holdings of government bonds. This is most apparent in the euro zone, particularly in Spain (Chart 1.1.8), where resident credit institutions increased their holdings of Spanish government debt by 19% as of June 2012 compared to end-2011, even as foreign investors cut their holdings by 7%.

In Japan, Japanese FIs have increased their holdings of Japanese Government Bonds (JGBs) by 23% over the past year.

The risk of adverse feedback effects between sovereigns’ fiscal solvency and the strength of banks,

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\(^1\) This is a new asset purchase programme, introduced by the ECB in September 2012. It involves secondary market purchases (without limit) of euro zone sovereign bonds, subject to a troika-like programme adherence by the relevant countries.

\(^2\) The troika comprises the European Commission (EC), European Central Bank (ECB) and the International Monetary Fund (IMF), who jointly administer the reform programmes of euro zone countries which have sought financial bailouts.

\(^3\) The “fiscal cliff” represents a combination of various spending cuts and tax increases that are scheduled to occur starting at the end of 2012 and early 2013. Should all of these materialise, it is estimated that a 2-3% point drag on real GDP growth could occur. This would likely push the US economy into recession.

\(^4\) Refers to the de-integration of the global financial system, observed via reduced cross-border financial activity and increased home bias within a country’s financial system.
with potential knock-on impact on the economy, has therefore risen.

For instance, a shock to markets such as further heightening of concerns over a sovereign’s creditworthiness or general worsening of investor sentiment due to reform uncertainty, could send sovereign bond yields higher. As the market valuations of sovereign bonds drop, banks’ balance sheets could come under more pressure. Banks could become even more risk averse, and further tighten lending conditions to an already credit-constrained economy. In turn, this could add yet more strains on government finances.

**Given the sovereign-bank feedback loop and continuing lack of investor confidence, the financial system remains fragile**

Meaningful progress has been made on bank capital bridging efforts in the European Union (EU). EU banks shored up their capital after the European Banking Authority (EBA) Capital Exercise completed in the first half of 2012. Spanish authorities also conducted separate stress tests, and sought funding to recapitalise banks. However, concerns remain over whether the recapitalisation carried out so far would be sufficient to meet additional write-downs arising from a potential further deterioration in economic or sovereign funding conditions.

Bank credit default swap (CDS) spreads narrowed following actions by the ECB to alleviate bank funding strains, including the provision of two allotments of three-year funding via the Long Term Refinancing Operations (LTRO) (Chart 1.1.9). Reflecting the tight link between banks and sovereigns, the OMT has also helped reduce sovereign funding costs, and in turn further eased strains on banks.

However, banks in Greece, Spain and Portugal remain under more stress than banks in other euro zone countries. Deposit outflows remain a risk for banks in these countries (Chart 1.1.10), another sign of financial fragmentation within the euro zone. Furthermore, these banks are largely shut out from private funding sources, apart from brief periods immediately following major policy actions when market sentiment has tended to improve somewhat.
From another cross-border perspective, US money market funds (MMFs) have reduced their aggregate exposure to euro zone banks sharply by about 70% since May 2011, even though this exposure has increased slightly in recent months following the OMT announcement.

Increased risk aversion and continued uncertainty over bank funding in general has contributed to greater reliance on secured funding and an increase in collateral usage in Europe and the US. While collateral usage reduces counterparty risks in financial transactions, the increased encumbrance of banks’ high-quality assets and the possibility of large and sudden changes in collateral valuations do introduce new risks to the global financial system, including impaired access to unsecured funding as well as adverse effects from large and sudden changes in collateral valuations (see Box A).

**Strains in credit provision, especially in Europe, continue to pose difficulties for the corporate and household sectors**

Strains in credit provision, especially in Europe, continue to pose difficulties for the corporate and household sectors.

The October ECB Bank Lending Survey showed that banks continued to tighten lending standards (Chart 1.1.11), with the trend being particularly pronounced in Italy and Portugal over the past year.

In the US, the July and October Senior Loan Officer Opinion surveys (SLOOS) indicated continued general easing of credit standards across different types of loans (Chart 1.1.12). Banks reported that their standards for approving applications for Federal Housing Administration (FHA)-insured purchase mortgage were about the same as in 2006 for borrowers with credit scores above a certain threshold, but standards had tightened for borrowers with lower credit scores. Banks also reported tightening standards on loans to European banks and affiliates.
There are some signs of renewed reach for yield in an environment where low yields, contained market volatility and ample liquidity are being sustained by extraordinary policy measures.

Meanwhile, in an environment where low yields, contained market volatility and ample liquidity are being sustained by extraordinary policy support measures, there has been a discernible move down the creditworthiness ladder in a renewed reach for yield.

For example, there has been a marked increase in demand for US and European corporate bonds over the past year. US investment-grade corporate issuance stood at US$752 billion as at end-September 2012, up 20% from the same period last year, while yields have fallen through the year to a historic low of about 3% (Chart 1.1.13). Speculative-grade bond yields have also fallen sharply, to about 7%, their lowest since mid-May 2011 (Chart 1.1.13). The picture is similar in Europe, where peripheral corporate debt issuance has increased significantly following the ECB’s OMT announcement.

These developments raise the question whether investors have sufficiently considered the possibility of sharp and sudden spikes in market volatility, accompanied potentially by a substantial rise in default rates and widening of credit spreads, should economic and financial conditions worsen.

Policymakers have taken steps to address growth, sovereign and bank vulnerabilities, but these steps themselves carry risks.

G3 policymakers have taken steps to address the vulnerabilities of banks and sovereigns.

In the US, the Federal Reserve extended its maturity extension programme (MEP)5, and purchased additional agency mortgage-backed securities (MBS), while committing to continue policy accommodation until economic conditions and the labour market outlook improve substantially. These are important steps because the US growth outlook will remain adversely affected by continued strains in Europe and slower economic growth in other parts of the global economy, as well as potential further increases in food and gasoline prices.

However these policy measures, including both conventional and unconventional monetary easing, carry risks themselves (see Box B).

In Europe particularly, there is a limit to how many more policy measures can be implemented. Indeed, disagreements over what the appropriate monetary policy actions should be have arisen in some parts of Europe, alongside concerns over rising sovereign exposures to stressed European countries (Chart 1.1.14).

Perhaps even more importantly, there are potential financial stability implications. For example, the prospect of extraordinary support measures being in place for a very long time may weaken incentives to repair balance sheets, distort credit allocation, and even jeopardise general price stability when the time comes to exit from the support measures. The transmission channels and spillover effects of unconventional monetary stimulus are also not as well understood as those of conventional policy measures, and could give rise to

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5 Under this programme, the Federal Reserve purchased longer-term Treasury securities and sold an equivalent amount of shorter-term Treasury securities, with the aim of putting additional downward pressure on longer-term interest rates and further ease overall financial conditions.
yet more risks, including impairing certain funding markets due to negative real returns for investors.

**The need to press on with structural reforms remains, and there should be no let-up**

The need to press on with structural reforms remains, and there should be no let-up.

Although policy action has brought some respite to G3 financial markets, it is important not to lose sight of the need to correct longer-term financial and economic imbalances across the G3 countries. Fiscal positions need to be strengthened. More structural reforms need to be implemented at a measured pace to address various challenges related to macroeconomic imbalances and low productivity growth within the euro zone – factors which have all contributed to debt overhangs in the peripheral countries.

Policymakers recognise the pressing need to strike an appropriate balance between fiscal austerity, structural reforms and economic growth which suit their respective fiscal and economic conditions.

**Similarly, global regulatory reform needs to continue, with keen involvement of international standard-setting bodies**

Finally, while taking steps to strengthen their economies and taking near-term measures to stabilise their financial systems, policymakers in Europe and the US will continue to pursue regulatory reforms – domestically and as part of a broader global effort, with the keen involvement of international standard-setting bodies. Some of these reforms, including reform of the over-the-counter (OTC) derivatives markets, will have far-reaching effects on financial markets globally (see Box C).
Box A

Increased Collateral Usage: Drivers and Risks

Following the GFC, the use of collateral in financial transactions has increased, particularly in Europe and the US. This trend is driven by a combination of market forces and regulatory reforms. While greater collateral usage increases the safety of financial transactions that are now collateralised and can lead to a sounder credit environment, it creates potential risks for the financial system as a whole.

Key drivers behind increased collateral usage in the US and Europe

The increased usage of collateral comes from two main channels: (i) increased collateralised borrowings from repurchase agreements (repos) and secured bonds; and (ii) the impact of regulatory reforms.

Increased collateralised borrowings

- **Repo markets**: Repos are an important utility in the financial system which facilitates liquidity. In general, repos are used to buy and sell groups of securities, traditionally Treasuries and agency instruments, usually overnight. There are indications that repo markets are on a rebound following a decline during the GFC. From June 2010 to June 2012, the size of the US tri-party repo market (where a tri-party agent acts as an intermediary between the two parties to the repo) rose from US$1.6 trillion to US$1.8 trillion. In the euro zone, repo volumes rose from €2.4 trillion at end-2008 to €2.8 trillion in June 2012. Heightened risk aversion, regulatory initiatives and shifting market practices to restrict re-hypothecation rights on collateral posted are likely to increase the demand for high-quality assets for funding in repo markets.

- **Secured bonds**: Besides repo markets, which are shorter-term in nature, there has also been an increase in longer-term funding through instruments such as covered bonds (debt instruments secured by collateral pool, usually consisting of mortgage loans). Issuance in this segment has been strong recently, especially in Europe. In 2011, about 45% of all bonds issued by euro area banks were collateralised. Most of this was due to issuance by banks in countries most severely affected by the euro zone crisis.

Impact of regulatory reform

- **OTC derivatives market reform and margining requirements for uncleared derivatives**: Collateral usage is expected to increase due to OTC derivatives market reforms, due particularly to the requirement for mandatory central clearing of standardised derivatives contracts through central counterparties (CCPs). The introduction of initial margining and default fund contributions under the clearing process is likely to add to demand for collateral assets. A second complementary element is changes to margining requirements for derivatives transactions that are not centrally cleared. Estimates of incremental collateral usage arising from these requirements vary widely, ranging from about US$500 billion to US$2.6 trillion. These estimates are sensitive to assumptions about netting efficiency, degree of fragmentation of central clearing arrangements, applicable haircuts and restrictions on re-hypothecation.

- **Banking and insurance reforms**: The Liquidity Coverage Ratio (LCR) requirement under the Basel III liquidity framework requires compliance by January 2015, and has been estimated by the IMF to increase banks’ demand for safe assets by US$2 trillion to US$4 trillion globally. In addition, the EU's Solvency II reforms for insurers are expected to result in changes in European insurers’ asset allocation due to preferential capital treatment of shorter-duration and higher-rated securities. These reforms could increase safe asset demand by US$2.2 trillion.
Potential financial stability implications of increased collateral usage

Negative feedback loop arising from increased asset encumbrance

Greater reliance on secured funding and the collateralisation of derivatives exposures is likely to result in increased encumbrance of banks' high-quality assets. Investors could become increasingly unwilling to fund banks on an unsecured basis, as fewer unencumbered assets would be available to them in the event of insolvency. This would in turn raise banks' unsecured funding costs and force weaker banks to rely more on secured funding and encumber their assets further, thereby perpetuating an adverse feedback loop.

Cliff effects arising from large and sudden changes in collateral valuations

With increased collateral requirements for bank funding and derivatives transactions, the risk of cliff effects due to large and sudden changes in collateral valuations is heightened. These changes are driven by a combination of heightened credit, liquidity, operational risks and increased interconnectedness.

- **Credit risk**: Increased collateral usage has contributed to lower yields on government securities, with some short-end yields even turning negative. These lower yields have in turn led to a shift in bond and money market fund allocations into riskier, lower credit-quality investments to seek higher yields. Collateral shortages have also led to recipients of collateral (such as CCPs) widening the pool of acceptable collaterals (to include collaterals of lower credit quality), in a bid to maintain or increase market share. Under market stress scenarios, the yields on these lower-quality investments and collaterals could spike.

- **Liquidity risk**: Investments and collaterals with lower credit quality tend to be more illiquid. For instance, there are signs that banks are funding repo borrowings with structured-finance securities. In a stressed market, there could be significant liquidity risks for both repo borrowers (banks) and the underlying assets should margin requirements increase in a sudden and disorderly fashion.

- **Operational risk**: To meet the demand for the required collaterals, some market participants have created collateral transformation services for their clients, whereby they provide access to high-quality collaterals in exchange for lower-grade collaterals (such as corporate debt) and associated fees. The conversion of collaterals under these services is complex and relatively untested, and could pose operational risks during periods of heightened market volatility.

- **Increased interconnectedness**: Collateral transformation services can pose systemic risks, as they increase and complicate financial linkages among large FIs. The triparty repo market is also typically highly concentrated; for instance, in the US market, where two players form the bulk of triparty repo transactions. Concentration risks could lead to significant funding disruptions in times of market stress.

Collateral usage in Asia

Different factors are at play in Asia

Asia, including Singapore, has relatively low levels of collateral usage in financial transactions compared to Europe and the US. This is a result of strong fiscal positions and low levels of outstanding government debt, as well as limited corporate debt issuance due to the predominance of bank-based funding. Bank creditworthiness in Asia remains strong, anchoring the cost of unsecured interbank funding. Therefore balance sheets in Asia have remained relatively unencumbered.
Looking ahead, demand for good quality collateral is likely to rise

The demand for high-quality assets will increase in Asia, to meet liquid asset requirements and collateral needs for financial transactions. In addition, current account surpluses and domestic saving rates in Asia are expected to fall as populations age. This could reduce domestic liquidity and increase banks’ reliance on wholesale funding, including repo market funding.

Mitigating the risks of increased collateral usage

Some measures, while not entirely eliminating financial stability risks from increased collateral usage, can help mitigate these risks and address the potential scarcity of collateral:

- **Improve processes and technology:** Industry observers have identified margining processes and centralised management of collateral requirements as two key technological challenges that need to be addressed in the face of increased collateral usage. Market participants can consider adopting automated margin collateral management processes, that would enable centralised management of margining collateral usage, so as to address potential operational risks.

- **Exercise caution in respect of collateralised transactions:** Market participants should be mindful of risks when engaging in collateralised transactions so as to minimise the risks arising from asset encumbrance, cliff effects and increased interconnectedness. The characteristics of the collateral being exchanged should be well understood, as should the credit standing and operational robustness of counterparties.

- **More can be done to improve supply of collateral in the corporate bond market:** Expansion of the eligibility of domestic issuers accepted at the central banks’ discount window could be considered. More measures could be introduced to bring in high-grade foreign issuers.

- **Various measures have been adopted to increase collateral supply in Asia** to meet the projected increase in demand. These include measures to develop local currency bond markets, such as the Asian Bond Market Initiative to promote bond market development in the Association of Southeast Asian Nations (ASEAN)+3\(^6\) region, and the regional Asian Bond Fund 2 launched by the Executives’ Meeting of East Asia Pacific Central Banks (EMEAP)\(^7\) to promote the development of bond markets in the region. In 2011, MAS introduced short-term MAS bills as part of its money market operations, so as to meet greater demand for government and central bank securities.

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\(^6\) ASEAN+3 consists of Brunei, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

\(^7\) The Executives Meeting of East Asia-Pacific Central Banks (EMEAP) comprises the central banks of eleven economies: Reserve Bank of Australia (RBA), People’s Bank of China (PBoC), Hong Kong Monetary Authority (HKMA), Bank Indonesia (BI), Bank of Japan (BoJ), Bank of Korea (BoK), Bank Negara Malaysia (BNM), Reserve Bank of New Zealand (RBNZ), Bangko Sentral ng Pilipinas (BSP), Monetary Authority of Singapore (MAS) and Bank of Thailand (BoT).
Monetary Authority of Singapore

Macroeconomic Surveillance Department

Financial Stability Review, November 2012

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Box B

G3 Monetary Policy Risks

Over the past year, central banks in major G3 countries have taken conventional and unconventional monetary policy easing measures in response to the weaker growth outlook. While previous central bank measures proved effective in stimulating growth and/or mitigating systemic risks, there is less clarity over whether the recent continuation of past measures or introduction of new measures would be just as effective. Prolonged monetary stimulus, in particular the use of unconventional measures, also pose potential risks for financial stability; some of these may not be fully understood.

Earlier central bank actions were beneficial

Earlier actions by central banks were beneficial for stimulating economic growth and/or mitigating systemic risks. For instance, forceful action by major central banks in the aftermath of the 2008 collapse of Lehman brothers was instrumental in averting a depression for the global economy. In addition, the ECB's provision of two allotments of three-year funding to banks via the LTRO in late-2011 and again in early-2012 was a key factor in thawing interbank funding markets as well as indirectly supporting sovereign bond markets.

G3 central banks have continued to ease monetary policy...

With G3 policy rates already close to zero, further monetary policy accommodation adopted by G3 central banks over the past year has focused on the extension or renewal of unconventional monetary policies targeting government bonds and other high-quality assets, as well as increased liquidity support for their banking systems. In the US, the Federal Reserve announced a second MEP to extend the maturity of its Treasury holdings in June 2012, and subsequently announced a third round of quantitative easing (QE3) in September 2012 involving additional purchases of agency mortgage-backed securities at a pace of US$40 billion per month. In the euro zone, the ECB lowered its policy rate by 25 bps in July 2012, and also reduced the interest rate on its deposit facility to zero. In September, the ECB also introduced the OMT, a new asset purchase programme involving secondary market purchases (without limit) of euro zone sovereign bonds, subject to relevant countries adhering to a troika-like programme. Elsewhere in the EU, in July 2012, the Bank of England (BoE) increased the size of its Asset Purchase Facility by £50 billion and introduced a new Funding for Lending scheme to provide funding to banks on the condition that bank on-lend to non-banks. In Japan, the Bank of Japan (BoJ) expanded its Asset Purchase Program by 10 trillion yen in September 2012 and a further 11 trillion yen in October 2012, and also removed minimum yield requirements for its monthly government-bond purchases.

... but the effectiveness of current measures is unclear

Unconventional stimulus measures have been deemed necessary because the nature and depth of the crisis mean that conventional measures cannot achieve desired effects on financial and economic conditions.

Real economy: Conventional monetary policy transmission to the real economy remains impaired. For instance, despite an environment of prolonged low interest rates, average bank lending rates remain at elevated levels in the US and Europe, as do unemployment rates (Chart B1).

Asset markets: While unconventional monetary policy has thus far appeared to boost sentiment, there are also signs that the impact of successive unconventional monetary policy measures on asset markets is having diminishing returns. For instance, the drop in bond yields following each successive round of bond purchases by the US Federal Reserve has become more modest (Chart B2). This could be due to the following factors:

- The novelty and surprise elements of asset purchase measures have waned;
- Policy rates are already close to zero, and it is therefore less likely that further asset purchases would continue to have substantial impact on future interest rate expectations; and
- The maturity of outstanding public debt has continued to lengthen over the past few years. For central banks’ unconventional purchases to have the same impact in terms of lowering yields, they would need to increase the maturity of their government bond holdings at an even higher rate.
There are significant potential financial stability implications
While an accommodative policy stance by G3 central banks remains appropriate in the current environment of very low economic growth and continued strains in financial systems, the extension of extraordinary monetary stimulus poses several potential risks:

- Incentives for the private sector to repair and/or strengthen its balance sheets are weakened in an environment where near-zero policy rates are combined with abundant liquidity support;
- Similarly, incentives for governments to limit their borrowings are curtailed;
- Asset prices may be inflated in a way which is inconsistent with downside risks to economic growth and credit quality, placing increased burdens on supervisors and oversight authorities as well as potentially supporting borrowers which are effectively insolvent;
- The credit allocation process may be distorted, as banks may be incentivised to roll over marginal loans, and the private sector may undertake projects that have positive net present values (NPV) only because of very low interest rates; and
- Once it is time to tighten monetary policy, the sheer size and scale of unconventional measures may prevent a timely exit from monetary stimulus, thereby jeopardising general price stability.

Furthermore, the transmission channels and spillover effects of unconventional monetary stimulus are less well understood compared to conventional policy, and could give rise to the following additional risks:

- Unusually low, zero or even negative nominal rates could lead to distortions in funding markets. For instance, in the EU, money market strains have emerged as some MMFs have stopped accepting new investments, because negative nominal interest rates have made it difficult for them to deliver positive returns to investors.
- Central banks’ balance sheets in the US, euro zone, UK and Japan have expanded post-GFC, and with the exception of the US Federal Reserve, continue to increase (Chart B3). There are some signs that comparative central bank balance sheet expansion may be linked to currency depreciation. For instance, a comparative expansion of the ECB’s balance sheet relative to that of the Federal Reserve appears to have been associated with a depreciation of the euro against the US dollar (Chart B4). This in turn suggests that continued central bank balance sheet expansion could lead to questions over central bank credibility or independence.
Policymakers must remain alert to risks

The continuation of loose monetary policy, including unconventional measures, reflects the immense difficulties faced by policymakers in supporting stressed financial systems and addressing structural economic problems in a low-growth environment. Nevertheless, deleveraging, balance-sheet repair and structural adjustment must continue, so that conditions may be in place for an orderly unwinding of extraordinary monetary stimulus at an appropriate juncture – for instance, when the growth outlook has improved.

In the interim, policymakers must remain alert to any escalation of presently-identified risks posed by extraordinary monetary stimulus measures as well as any new risks that may arise in this regard.
In 2009, G20 leaders agreed to enhance regulation of the OTC derivatives market by end-2012, to address risks arising from weaknesses identified during the GFC. The Financial Stability Board (FSB) subsequently made 21 recommendations, covering the following areas: (i) standardising OTC derivatives; (ii) requiring all standardised OTC derivatives to be cleared through CCPs; (iii) reporting all OTC derivatives transactions to trade repositories (TRs); and (iv) encouraging the trading of standardised OTC derivatives contracts on exchanges or electronic trading platforms, where appropriate.

Good progress has been made, but more needs to be done
Since then, good progress has been made on OTC derivatives reform. However, this process has been slower than expected. According to the Third Progress Report by the FSB, while a number of jurisdictions have made encouraging progress to implement OTC derivatives reform – the EU, Japan and the US expect to have regulatory frameworks in place by end-2012 – other jurisdictions are at varying stages of preparation of legislative frameworks.

Need to ensure consistent implementation of reforms
As jurisdictions develop and adopt their regulatory regimes, consistency of implementation and interaction of national frameworks has become an issue facing the global regulation of OTC derivatives. A case in point is the difference in the scope of exemptions with regard to central clearing requirements in major OTC derivatives markets. Such inconsistencies across jurisdictions increase the risk of regulatory arbitrage.

Conflicting regulatory requirements across jurisdictions should be addressed
Concerns about the possibility of conflicting regulatory requirements among home jurisdictions and the major derivatives market have also been raised. Given the global scope of the OTC derivatives markets, in which market participants can easily redirect their activities to other jurisdictions, major derivatives markets such as the US and the EU have proposed regulations which have an extraterritorial element, so as to minimise regulatory arbitrage. For example, under the US Dodd-Frank Act, non-US entities that enter into swap transactions with US entities in an aggregate notional amount above the \textit{de minimis} threshold will be required to register and comply with regulations as swap dealers. This creates a situation where market participants may be subject to regulatory requirements under more than one national framework. Conflicting or overlapping frameworks can lead to unintended consequences, such as increasing market fragmentation and unduly increasing the compliance burden on the industry and regulators.

... and implementation lead-time for market participants should be calibrated
The readiness of market participants and market infrastructures to meet the new regulations also presents challenges to the regulatory reform efforts. As the legislative and regulatory process advances in a number of jurisdictions, the focus has shifted to the role of market infrastructure and market participants in implementing the reforms. One significant challenge pertains to access to CCPs for non-clearing members, as smaller financial entities and non-financial corporates may not have access to central clearing arrangements. While CCPs have started to offer indirect clearing solutions for market participants, more work needs to be done through close cooperation among CCPs, market participants and regulators to ensure that appropriate risk management procedures are in place to safeguard both the CCPs and market participants. In addition, policymakers recognise that the level of readiness among market participants varies widely, with non-financial entities being less prepared to comply with the new regulations. Therefore a number of jurisdictions have opted to provide exemptions for non-financial corporates using OTC derivatives for commercial hedging purposes from clearing requirements.

Interaction with other regulatory standards is critical
When fully implemented across jurisdictions, OTC derivatives reform measures will improve transparency in the OTC derivatives markets and reduce systemic risks arising from activities in such markets. However, with a
large number of jurisdictions yet to finalise their regulations and wide-ranging financial reforms still ongoing, regulatory uncertainty in the interim could lead to greater financial instability. While most of the G20 commitments are being achieved through ongoing OTC derivatives reform, the commitment to impose higher capital requirements to reflect higher counterparty credit risk of non-centrally cleared derivatives is expected to be met through the Basel III standards, which will likely be adopted in 2013. In addition, policymakers will also impose margining requirements for non-centrally cleared derivatives to incentivise central clearing as part of the OTC derivatives reform. However, as international standards for the capital and margining requirements are still being developed, market participants may encounter difficulties in assessing the cumulative costs of these regulatory reforms. Further, the interaction of OTC derivatives reform with ongoing reforms surrounding a wide-range of financial regulations further adds to regulatory complexity and uncertainty, which could prove detrimental to the reform efforts.

Looking ahead
While jurisdictions may not meet the end-2012 deadline for OTC derivatives market reforms, it is important for jurisdictions to continue pushing ahead. In doing so, laws and regulations should be developed with due care and with the benefit of thorough analysis. This is necessary to ensure sound implementation that addresses regulatory conflicts and potential overlaps across jurisdictions. Some examples of potential avenues to address regulatory conflicts and overlaps are set out below:

Assessing comparability/equivalence: There is a lack of details on how major jurisdictions would assess the comparability or equivalence of other jurisdictions’ regimes with their own. Given differences across jurisdictions’ markets, participant profiles and product characteristics, an outcome-based approach would be more tractable than a rule-by-rule approach. An example of an outcome-based approach would be one based on equivalence, where host supervisors could leverage on home supervisors for day-to-day supervision of market participants’ compliance with regulations and requirements which have been assessed to be comparable or equivalent. At the same time, host regulators may need to exercise a limited form of supervision, such as having inspection powers (if needed) and appropriate data access.

Timing/scope: Given that more work needs to be done to resolve extraterritorial issues, policymakers should consider calibrating the timing and scope of OTC derivatives markets reforms by providing temporary exemptive relief for foreign market participants, or flexible transitional arrangements. These would help to minimise any market disruption or fragmentation arising from the extraterritorial rules.
1.2 Asian Macroeconomic Environment and Financial System

With the intensification of the global financial crisis in 2012, economic growth has slowed markedly in China and parts of Asia

With the intensification of the GFC in 2012 and continued sluggish growth in G3 countries, economic growth has slowed markedly in China and parts of Asia (Chart 1.2.1). Faced with falling external and domestic demand, China’s growth decelerated more than expected. This in turn affected its imports of both intermediate goods and primary commodities, thereby reducing its support for growth in the rest of the region.

The growth deceleration in China has been felt most acutely in Hong Kong, Taiwan and Korea, reflecting these economies’ greater trade reliance on China. Retrenchment of investments in tandem with the weakening of exports has also contributed to the impact on these economies.

In contrast, growth has remained robust in Indonesia, Malaysia, the Philippines and Thailand relative to historical outturns, with buoyant domestic demand offsetting the slump in exports. Investment activity has taken off since the beginning of this year, underpinned by strong business confidence and government spending on infrastructure. Private consumption has also been strong, boosted by employment gains, low real interest rates and the augmentation of household income due to governments’ redistributive measures.

For most of Asia, sovereign strength remains a key anchor of stability, due to fairly low debt ratios and sound funding profiles

Sovereign strength remains a key anchor of stability for Asia, at a time when the global outlook remains highly uncertain, with G3 countries beset by stresses on multiple fronts.

Public debt-to-GDP ratios in most of Asia remain fairly low and – with a few exceptions – are expected to trend downward over the next few years (Chart 1.2.2). In most countries, more than half of outstanding debts have maturities longer than three
years (Chart 1.2.3). Domestic investors remain the primary source of demand for sovereign papers, although there has been a pronounced increase in foreign interest (Chart 1.2.4).

These strengths have underpinned economic and financial resilience in the region, rating upgrades and falls in refinancing costs

Strong government balance sheets have enabled several countries – including China, Korea, Indonesia, Malaysia and Thailand – to take or plan fiscal stimulus measures to bolster their economies. They have also underpinned several sovereign rating upgrades in the past year, including for Korea, Indonesia, Thailand and the Philippines.

Asian sovereign bonds have performed well given resilient fundamentals and favourable investor perceptions. Notwithstanding some increase in investor uncertainty in the later part of 2011 and first half of 2012, most Asian countries’ sovereign yields have fallen in recent months (Chart 1.2.5) while CDS spreads have remained narrow (Chart 1.2.6).

Countries with larger debts or more reliance on external and shorter-term funding could face refinancing challenges if sentiment turns

However, pockets of potential vulnerability remain.

While the increase in foreign ownership of Asian sovereign debt reflects rising investor interest, increased reliance on external funding carries risks.

Countries with a substantial share of their sovereign debt held by foreign investors, could face greater refinancing challenges should market sentiment turn sharply, especially if these foreign holdings have shorter maturities. This could happen if, for instance, strains on troubled euro zone countries were to intensify, or if the already-sluggish global economic growth momentum were to slow further.

Policymakers have taken measures to address vulnerabilities and risks

Policymakers in Asia have taken measures to address potential vulnerabilities and risks.
Korea’s Ministry of Strategy and Finance has said that the government will step up its monitoring of foreign ownership of won-denominated sovereign debt, and could intervene if sudden outflows were to occur.

In a similar vein, Indonesia has set up a fund that would buy domestic debt in order to stabilise the market should foreign investors exit suddenly.

The Philippine authorities have indicated that the country plans to gradually reduce the share of foreign-held debt in its total outstanding public debt; in October, they issued 25-year bonds – the longest tenure ever offered – to lengthen funding maturities.

Malaysia has plans to further improve its budget balances over the next several years, and will press ahead with medium-term fiscal consolidation efforts.

India has indicated that it will unveil a credible and feasible plan for fiscal consolidation over the next five years (2012-2017).

Corporate-sector debt as a ratio to GDP has been generally stable, but foreign-exchange risk remains significant for a few countries

Asian countries’ corporate debt\(^8\)-to-GDP ratios have been generally stable (Chart 1.2.7). In Hong Kong’s case, low interest rates coupled with the Hong Kong dollar’s peg to the US dollar might have induced some firms to borrow more to take advantage of attractive (re)financing costs. This could have accounted for the increase in its corporate debt-to-GDP ratio.

The bulk of bank credit to Asian corporates is denominated in local currencies. In the bond space, corporate sectors in most Asian countries have also gradually reduced their reliance on foreign-currency funding (Chart 1.2.8). These developments have helped Asian corporates to reduce their exposure to foreign-exchange risk. However, in a few countries, this exposure remains substantial, and firms could be adversely affected if local currencies depreciate sharply in response to stress events.

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8 Corporate debt comprises both loans and bonds.
The level and pace of increase of household debt in some countries, and the share accounted for by mortgages, pose risks

Household debt in most parts of Asia grew faster than the broader economy between 2009 and 2011 (Chart 1.2.9) before the pace moderated in recent quarters.

For some countries, elevated or rising levels of household debt could limit the scope for policymakers to stimulate domestic demand to help offset sluggish export growth.

Property prices have continued to rise in some countries, while mortgages account for a substantial share of household debt across the region (Chart 1.2.10). Further stresses in the global financial system or a sharp slowdown in economic growth could have adverse consequences. These include significant increases in unemployment rates, reductions in incomes and substantial falls in property prices. Banks, facing loan-quality deterioration, could tighten the supply of credit or raise the cost of credit to households, thereby adding further stress on households.

Bank credit growth in Asia has slowed in response to more subdued economic conditions, though it remains fairly buoyant

Overall bank credit growth in Asia has slowed in 2012 (Chart 1.2.11), representing in large part an adjustment to more subdued economic conditions.

In China, downward revisions to the official targets and private sector forecasts for GDP growth have been accompanied by a moderation of loan growth broadly in line with the People’s Bank of China's (PBoC’s) official target of 14% for 2012. The pace of growth of non-bank financing in the Chinese economy has also slowed (Chart 1.2.12).

Nevertheless, bank loan growth across Asia has continued to be fairly buoyant, remaining mostly in the double-digit range, partly due to strong loan demand (Chart 1.2.13). Even in Thailand, where loan growth dipped sharply after mid-2011 due to flood-induced disruptions to economic activity, credit growth has picked up again, driven by the tentative recovery of consumer and business confidence as...
well as loans to finance post-flood reconstruction.

While capital buffers and funding profiles remain generally sound, signs of loan quality deterioration have emerged.

Capital adequacy ratios (CARs) have remained stable over the past year (Table 1.2.14), although some banks in Asia may require additional capital injections to meet Basel III requirements. Funding conditions have also remained benign. Deposit growth has been significantly positive (Chart 1.2.15), while dollar funding rates have eased (Chart 1.2.16).

However, signs of loan quality deterioration have emerged.

In most parts of Asia, non-performing loan (NPL) ratios fell steadily from their highs during the most severe phase of the GFC (Chart 1.2.17); some of this was due to the rapid expansion of the loan base. From Q1 2012, NPL ratios started edging up in some countries.

In India, the deterioration in credit quality was clear from 2011 onward, with the bulk of the NPLs accounted for by loans to the priority sector\(^9\) and loans to the retail and real estate sectors. In response, the pace of asset restructuring has been stepped up over the past year. In China, the China Banking Regulatory Commission (CBRC) has instructed banks to review their NPLs. In Vietnam, the growth slowdown precipitated a marked increase in the official bank NPL ratio from 3.1% in December 2011 to 4.9% in September 2012. Authorities have acknowledged that the actual NPL ratio could be even higher, due to errors or inconsistencies in banks’ classifications of bad loans.

To address risks, some authorities have taken measures to moderate credit growth while providing support for certain borrowers.

For some countries, a pronounced deterioration in loan quality could lead to credit conditions tightening abruptly at a time when economic growth has slowed. Any sharp contraction in credit would likely have a

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9 The Reserve Bank of India (RBI) sets bank lending targets to the “priority sector” which includes agriculture, education and housing.
disproportionate impact on small and medium sized enterprises (SMEs), an important source of employment in Asian countries.

Authorities in some countries have taken various measures to moderate the pace of overall bank credit growth while providing support for certain segments of borrowers.

Korea has implemented measures to lower the banking system’s overall loan-to-deposit (LTD) ratio and rein in bank lending to the household sector. At the same time, a special support ceiling\(^\text{10}\) has been established to encourage banks to lend to SMEs which would otherwise have difficulty borrowing due to a lack of collateral.

In Hong Kong, alongside other measures to cool the property market, the authorities have introduced new regulations for bank credit to property. These include tightening underwriting criteria for property loans to borrowers with multiple mortgages and imposing a cap on the tenure for all new mortgage loans.

Indonesia has introduced measures to tighten requirements relating to downpayments for home and vehicle loans.

Such measures indicate that authorities are placing greater emphasis on the quality rather than pace of credit growth, and banks are entering a stage where there is a greater need to take appropriately-stringent approaches in managing their loan portfolio risks.

\[\text{Euro zone banks have deleveraged in Asia; the vulnerability of Asia’s banks and borrowers to external shocks warrants close monitoring}\]

The vulnerability of Asia’s banking systems and borrowers to adverse external developments warrants close monitoring.

Euro zone banks have deleveraged in Asia even as financial fragmentation increases within Europe. Between Q2 2011 and Q2 2012, outstanding euro zone bank loans to Asia fell by 25%, from US$407...
billion to US$306 billion (Chart 1.2.18). There was a significant pullback in trade finance, project finance, and specialist lending lines by several euro zone banks.

The impact has been contained so far. Banks from Asia and elsewhere, with strong capital and liquidity buffers, have stepped in to fill the gap left by euro zone banks.

However, should the euro zone crisis escalate, leading to further pullback of lending by banks from the euro zone or other regions, credit conditions could tighten further in Asia. This tightening would likely occur alongside greater stresses in financial conditions, as well as (increased) capital outflows, especially from countries whose current account deficits or short-term debts are sizeable relative to foreign-exchange reserves.

**With the global outlook beset by uncertainties, Asia remains vulnerable to sudden surges and reversals in capital flows**

With the global outlook beset by uncertainties, Asia remains vulnerable to sudden surges and reversals in capital flows.

Net capital flows to Asia were volatile over the past year. After turning negative in H2 2011, net capital inflows resumed in Q1 2012 but were not sustained through Q2 (Charts 1.2.19, 1.2.20 and 1.2.21).

The volatility in capital flows was driven by global liquidity conditions alongside quantitative easing in key advanced countries, China’s growth deceleration, as well as shifts in global risk appetite and investor sentiment towards Asia from time to time.

**Capital flows in the Asia-7 economies comprise mainly portfolio investments, generally seen as more volatile and sentiment-driven**

In most Asian economies – India, Indonesia, Korea, Malaysia, the Philippines, Taiwan and Thailand (hereafter referred to as the Asia-7 economies), capital flows in recent years have comprised mainly portfolio investments. These flows are generally seen as more volatile and sentiment-driven. As

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*Chart 1.2.15 Deposit Growth: Selected Asian Economies*

*Chart 1.2.16 FX Swap Implied Funding Rate: Selected Asian Economies*
heightened risk aversion triggered by the collapse of Lehman Brothers subsided, Asia-7 were recipients of net capital inflows between Q2 2009 and Q2 2011. This was followed by two consecutive quarters of net outflows, as the euro zone crisis escalated rapidly (Chart 1.2.19). Net inflows subsequently resumed, totalling US$19.7 billion in Q1 2012 and US$6.1 billion in Q2.

Foreign direct investment inflow to China has held up well, while Hong Kong and Singapore have experienced mild net flows

For China, capital flows have been less driven by portfolio flows compared to the Asia-7 economies. Foreign direct investment (FDI) inflows to China, seen as more stable, held up relatively well through H1 2012 despite the slowing of overall net capital inflows from Q4 2011 (Chart 1.2.20).

Hong Kong and Singapore continue to have large gross capital flows due to their credit-intermediation role as financial centres, but net flows are small (Chart 1.2.21). In particular, net inflows to Hong Kong and Singapore have been negative over most of the past several quarters.

Search for yield and diversification has contributed to yield compression; refinancing conditions could deteriorate

Equity markets in Asia have mostly edged up from the lows seen towards the end of last year (Chart 1.2.22), with the region’s economic and financial resilience anchoring investor confidence. The growth slowdown in China and the possibility of further weakness in its economy continue to weigh on Northeast Asian equity markets, while Southeast Asian markets have generally been more resilient.

Corporate bond markets have remained buoyant, with spreads having tightened slightly (Chart 1.2.23) despite economic growth having slowed. There are several reasons for this. Firstly, as highlighted previously, sound sovereign balance sheets have enabled governments to take or plan measures to support economic growth. Secondly, bank credit conditions have remained supportive although loan

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growth has slowed. Thirdly, there is a general investor perception that Asian bond yields are attractive given the risk profiles.

Given these factors, investors looking for yield and diversification over the past year would likely have contributed to the bond yield compression in Asia. At the same time, some corporates could have taken the opportunity to issue (more) debt.

Investors should carefully weigh the risks posed by different types of issuers. Issuers need to be mindful of the possibility of further growth slowdown or intensification of the GFC, which may lead to a substantial increase in refinancing difficulties.

Sudden capital-flow surges or reversals could have substantial negative effects on financial markets and economic activity

Compared to the strong sentiment underlining the run-up of capital inflows to emerging markets in 2010, investor sentiment over the past year has clearly been more volatile (Chart 1.2.24).

In the year ahead, further escalation of the GFC could cause a sudden and sharp reversal of risk appetite and Asia’s attractiveness to investors. Capital outflows are possible.

However a more likely scenario is one where abundant global liquidity and continued accommodative monetary policy in advanced countries lead to a resumption of exuberant capital inflows. This could cause a further build-up of risks in the form of excessive leverage and credit growth or formation of asset bubbles. Should capital inflows reverse and asset prices correct, the adjustments could be painful.

Sudden surges and reversals in capital flows could lead to greater volatility and risk premia in financial asset prices and sharp fluctuations in exchange rates.

Under such conditions, trade activity and current-account balances could be adversely affected, and consumer and business confidence could be substantially dampened or become unstable. This would undermine economic growth in Asia.
Chart 1.2.22
Equity Market Indices: Selected Asian Economies

Chart 1.2.23
Corporate Bond Spreads: Selected Asian Economies

Chart 1.2.24
Cumulative Monthly Fund Flows: Asia-10 Economies

Source: Bloomberg

Source: JP Morgan Chase

Source: EPFR
Box D
China’s Growth-Support Measures as Crisis Response: The 2008 and 2012 Experiences and Risk Implications

As China’s growth momentum decelerated in 2012 due to weakening external- and domestic demand, the Chinese authorities implemented monetary- and fiscal stimulus measures to cushion the slowdown. The recent round of measures has evoked comparisons with the stimulus package launched at the end of 2008. The generally accepted view – including among Chinese policymakers – is that while the 2008 package undoubtedly boosted China’s growth, the resultant pockets of debt overhang and stresses related to elevated property prices laid the ground for a build-up of risks to financial stability. This box assesses the financial stability risks arising from the growth-support measures taken in 2012.

Comparison between the 2008 and 2012 growth-support measures
As with the 2008 package, the 2012 measures have thus far been a combination of monetary easing and fiscal measures in the form of direct government spending and transfers (i.e. subsidies and tax reductions). As in 2008, the centrepiece of the package in 2012 appears to be direct government spending on investment projects. Table D1 summarises and compares key aspects of the two packages.

Table D1
Comparing the 2008 and 2012 Stimulus Packages

<table>
<thead>
<tr>
<th>Mode of Stimulus</th>
<th>2012</th>
<th>2008/2009</th>
</tr>
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</table>
| Fiscal – Direct Spending | • The State Council urged early execution of construction projects.  
                            • The National Development and Reform Commission approved over RMB1 trillion of investment projects. The government may also increase direct spending if necessary. | • The government introduced a RMB4 trillion stimulus package, with a significant portion of the spending directed to major infrastructure projects. Analysts estimated that including bank lending, the total size of the package amounted to about RMB11 trillion. |
| Fiscal Transfers – Tax relief                          | • Trade tariffs were cut for selected products and commodities.  
                            • Taxes were reduced for users of energy-saving cars and ships. | • Tax relief                                                                                                                   |
| Subsidies                                      | • The government announced RMB66 billion of subsidies to support the construction of public rental homes.  
                            • The government announced subsidies to households worth RMB30 billion and RMB6 billion for purchases of energy-saving appliances and small cars respectively. | • The government gave out subsidies equivalent to 13% of listed prices for rural household purchases of selected appliances.  
                            • Consumers in selected areas were given 10% discounts on new appliance purchases for trading in used electronic products. |
| Housing Assistance | • The government made one-off transfers to low-income households (RMB100 for rural dwellers and RMB150 for urban dwellers) amounting to RMB9 billion. | •                                                                                                                                   |

11 China’s real GDP growth was 9.2% in 2009 and 10.4% in 2010.
Monetary Interest Rate Revisions
- Between June and July 2012, the benchmark interest rate was cut twice by a total of 50 bps and banks were given more leeway to set their own interest rates, effectively narrowing their interest margins.

Required Reserve Ratio (RRR) revisions
- Between December 2011 and May 2012, the RRR was cut thrice by a total of 150 bps for all banks except rural credit cooperatives, for which the RRR was cut four times by a total of 250 bps.

RRR Revisions
- Between September and December 2008, the RRR for large banks was cut three times by a total of 200 bps, while the RRR for smaller banks was cut four times by a total of 400 bps.

Others Commercial Lending
- The PBoC raised the LTD ratio ceilings for a few large, state-owned banks.

<table>
<thead>
<tr>
<th>Commercial Lending</th>
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<tbody>
<tr>
<td>The PBoC increased the full-year lending quota for commercial banks by 15% from the 2008 quota.</td>
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</table>

Unintended consequences of the 2008 stimulus package
The 2008 stimulus package helped to avert a slump in domestic economic activity and likely provided support to regional economies. However, there were several unintended consequences, which posed risks to China’s financial stability. These provide insights for analysing the likely impact of the 2012 stimulus package.

The large-scale investment spending mandated in 2008 led to a surge in bank lending, notably to local governments for investment projects. Outstanding bank loans grew more than 50% over the course of 2009-10, with local-government bank debt reaching about RMB8.5 trillion by the end of 2010. While most of the loans to local governments were sound, some loans were characterised by maturity mismatches, or financed projects which were socially beneficial but had questionable commercial viability. As concerns over local-government debt and its impact on the banking sector’s asset quality built up over the course of 2011, the authorities allowed banks in early 2012 to roll over some local government loans as they matured, thus averting a potential wave of defaults. Even so, special-mention loan ratios continued to rise.

The 2008 stimulus package also added to inflation pressure. This, together with low interest rates and limited alternative investment options, encouraged more investments into the residential property market than would probably have occurred otherwise. By various official measures, Chinese’s residential-property prices rose 30-50% over the course of 2009-10, prompting concerns about a potential property bubble. Multiple rounds of cooling measures were implemented from early-2010 onward to slow the price increases and mitigate risks which these might pose to banks.

The 2012 stimulus package is unlikely to jeopardise China’s financial stability
In formulating and implementing the 2012 package, Chinese policymakers have been keenly aware of potential risks and unintended consequences of monetary and fiscal easing. Determination to avoid the pitfalls associated with the 2008 stimulus package has been apparent in public addresses by top Chinese leaders. For example, the state-run Xinhua News Agency reported in a news article on 29 May 2012 that “The Chinese government’s intention is very clear: It will not roll out another massive stimulus plan to seek high economic growth”.

The design of the 2012 growth-support measures itself reflects some of this cautiousness. First, the government has said it will be more selective in approving new investment projects. It will focus on strategically-important industries such as clean energy, and raise the bar for the commercial viability of projects approved for funding. Second, the government has encouraged the involvement of longer-term private sector capital, so as to increase the availability of more stable funding for projects with longer...
gestation periods, thereby mitigating the risk of maturity mismatches. Third, mindful that RRR cuts tend to stimulate real estate investment activity, the government has chosen to ease monetary conditions and inject liquidity into the banking system via reverse repo transactions instead.

Conclusion
While the 2012 support package is structured along broadly similar lines as the 2008 package, Chinese policymakers will strive to ensure that the design and implementation of the measures this time round strike a sounder balance between supporting growth and containing potential negative second-order effects on financial stability.

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2 SINGAPORE’S MACROECONOMIC ENVIRONMENT AND FINANCIAL SYSTEM

2.1 Macroeconomic Developments

Given strong external headwinds, Singapore’s economic growth has slowed, but is still expected to be positive this year and next.

Growth in the Singapore economy slowed in Q2 2012 as jitters over the euro zone sovereign debt crisis re-emerged and weighed on global demand. Reflecting the downturn in the external environment, economic activity in Singapore grew by a marginal 0.5% on a q-o-q SAAR basis in Q2, a marked decline in pace from the 10.1% sequential rebound in the preceding quarter.

The economy weakened further in Q3, with sectors reliant on regional demand also softening together with the more adversely-affected sentiment-sensitive and trade-related sectors. As a result, GDP contracted by 5.9% q-o-q SAAR in the third quarter (Chart 2.1.1).

The external-oriented sectors were the hardest hit in Q3 2012. Besides sentiment-sensitive activities, the domestic manufacturing sector also took a hit, with the fall in activity being particularly pronounced in the electronics sector. This could be attributed to the slowdown in demand for final IT products in key markets, such as the US and China, as corporate profit margins thinned and consumer sentiment became more subdued.

In comparison, there were pockets of strength within domestic-oriented activities, such as business and consumer lending, as well as professional services. There was also some support from domestic-oriented services, including education and healthcare.

Looking ahead, the immediate outlook continues to be beset by a high degree of uncertainty. Developments in the US and euro zone, as well as in China, will be critical to Singapore’s economic prospects over the next few quarters. GDP growth is expected to come in at around 1.5% for 2012 and between 1.0% and 3.0% for 2013.
Meanwhile, imported price pressures have generally been benign over the past year, in line with the weaker external economic environment and the appreciating Singapore dollar. Although domestic costs rose further amid a tight labour market, consumer price adjustments moderated in tandem with the sluggish economic climate. As a result, MAS Core Inflation\(^\text{12}\) eased from 3.1% in Q1 this year to 2.4% in Q3 (Chart 2.1.2). CPI-All Items Inflation fell from 5.3% in Q2 to 4.2% in Q3 (Chart 2.1.2), reflecting to a large extent the dissipation of base effects for accommodation costs.

Imported inflation, while broadly weak, will be susceptible to temporary spikes in food prices due to weather-related disruptions. Domestic supply-side factors will become more binding. The persistent tightness in the labour market will induce slightly stronger wage increases in 2013, which will continue to be passed through to consumer prices. On the whole, MAS Core Inflation is expected to be broadly stable and average around 2.5% in 2012 and 2-3% next year.

CPI-All Items Inflation will remain elevated in Q4 2012 and Q1 2013, reflecting significant contributions from imputed rentals on owner-occupied accommodation (OOA) and car prices, before moderating gradually over the rest of 2013. For the full-year, CPI-All Items Inflation is expected to come in at slightly above 4.5% in 2012 and ease to 3.5-4.5% in 2013. OOA and car prices will account for slightly over half of CPI-All Items Inflation in both years.

Taking into account firm domestic cost conditions arising from the persistently tight labour market and pressures from global food prices, MAS maintained its monetary policy stance of a modest and gradual appreciation of the S$ nominal effective exchange rate (NEER) in October 2012. This policy stance will help to ensure medium-term price stability and keep the economy on a path of restructuring towards sustainable growth.

\(^{12}\) MAS Core Inflation excludes the costs of accommodation and private road transport.
2.2 Financial Markets

Singapore’s financial markets have remained resilient amid global uncertainties

Singapore’s financial markets have remained stable despite persistent macroeconomic uncertainties and financial fragilities globally.

Central banks in the G3 have eased monetary conditions, and have kept monetary policy accommodative. Interest rates have remained near historical lows in the SGD money market. The three-month SGD Singapore Interbank Offered Rate (SIBOR) and SGD Singapore Swap Offer Rate (SOR) have generally stayed below 0.40% since November last year (Chart 2.2.1).

In the Asian Dollar Market (ADM), the three-month USD SIBOR rose briefly to a two-year high towards the end of 2011 (Chart 2.2.1) as US dollar funding strains in the euro zone spilled over to major US dollar funding centres. Funding pressures eased at the start of the year, following actions by the US Federal Reserve to lower US dollar borrowing costs on its swap lines and by the ECB to provide longer term liquidity to euro zone banks through the three-year LTROs. The three-month USD SIBOR eased below 0.40% after the Federal Reserve’s latest round of monetary policy accommodation in September 2012, and has stayed around 0.31% as of November 2012.

In the domestic interbank market, concerns over liquidity and counterparty credit risks have been muted, with SGD and USD interbank overnight indexed swap (OIS) and Treasury-interbank (TED) spreads staying low and stable (Chart 2.2.2).

Movements in the domestic equity market have been mirroring global developments (Chart 2.2.3), driven by swings in global risk appetite amid ongoing uncertainty surrounding the euro zone sovereign debt crisis and a lacklustre growth outlook. The Straits Times Index (STI) dipped 9.4% between May and June 2012, giving up earlier gains in the year, but rebounded by 13.4% between June and September 2012 on the back of policy actions by central banks in Europe and the US (Chart 2.2.3). Since September, the STI has declined 2.3%
alongside weaker economic prospects for Asia and Singapore.

Yields on Singapore Government Securities (SGS) have remained low (Chart 2.2.4), reflecting sustained confidence in the resilience of the Singapore economy and the Government’s fiscal discipline. The SGS yield curve has flattened and the spread between two- and ten-year SGS has narrowed in line with movements in global sovereign bond yield curves. There was robust demand for the Government’s issue of its first 30-year SGS in March 2012, which was part of a broader initiative to develop the local debt market.

Looking ahead, volatility in domestic financial markets may increase if the macroeconomic outlook remains murky and global financial stresses persist. Policymakers in Europe and the US have so far demonstrated willingness to commit to extraordinary measures to prevent seizures in financial markets and sharp decelerations of economic activity. This may provide a measure of stability to financial markets. Nevertheless, the transmission channels and spillover effects of unconventional monetary stimulus are less well understood compared to conventional policy, and could well have unanticipated effects on financial market movements (see Box B).
2.3 Banking Sector

The operating environment for Singapore’s banking system remains highly challenging. The global economy remains sluggish and the euro zone remains beset by uncertainty over the resolution of sovereign weakness, banking system vulnerabilities and longer-term reforms.

Despite these tough conditions, Singapore’s banking system has remained resilient. Its exposure to euro zone countries is small at about 5% of total exposures. Funding profiles and asset quality have remained sound, while local banking groups have continued to be well capitalised. These strengths have supported the continued growth of the banking system’s overall loan base.

Overall loan growth has decelerated since the turn of the year, but non-bank loan growth has remained firm even as interbank loans have contracted

Overall loan growth has decelerated since Q4 2011. After reaching a three-year high of 12.8% y-o-y in Q3 last year, the pace slowed in consecutive quarters. Indeed, loan growth turned negative in Q3 this year at -2.3% y-o-y, though the slowdown was not as sharp as the -11.6% y-o-y rate observed in Q3 2009 (Chart 2.3.1). This recent moderation mirrors similar slowdowns in bank credit expansion across Asia, representing adjustment to more subdued economic conditions.

Importantly, the growth of non-bank loans has remained firmly positive at 9.7% y-o-y in Q3 2012, despite moderating from its recent peak of 25.5% in the same period last year.

The key driver of the negative total loan growth in Q3 was a substantial 7.9% y-o-y contraction in interbank lending, which mainly took place in the Asian Currency Unit (ACU).

13 Banking system exposure is defined as the sum of interbank loans, non-bank loans and investment exposure.
While the slowdown in interbank lending reflects global risk aversion, Asia’s rising share of cross-border interbank loans reflects greater confidence in the region

Interbank lending has slowed, and reflects continued risk aversion in the global interbank market. Outstanding ACU cross-border interbank loans fell 8.8% y-o-y in September 2012.

The retrenchment was broad-based across most regions, although interbank lending to Europe grew slightly by 2.2% after having contracted on a y-o-y basis every month between August 2008 and November 2011 (Chart 2.3.2).

The share of total ACU cross-border interbank loans going to Asia, now at 52%, is higher than during the pre-Lehman period at 43% (Chart 2.3.3). This is consistent with the broader and longer-term trend that Asia’s share in Singapore banking transactions has increased, reflecting confidence in the region. Singapore remains a net recipient of interbank deposits, which has contributed to Singapore’s overall net deposit position (see Box E).

ACU cross-border non-bank loan growth has fallen sharply and in a broad-based manner; euro zone banks are extending less credit but other banks have stepped in

ACU cross-border non-bank loan growth has fallen in a broad-based manner across different regions (Chart 2.3.4) amid subdued economic conditions in parts of Asia and across G3 countries. The y-o-y pace fell sharply from 17.9% in Q3 2011 to 1.0% in Q3 2012. Non-bank loans to Asia continue to account for the bulk of ACU cross-border non-bank loans (Chart 2.3.5).

The volumes of syndicated loans and trade finance facilities have continued to grow, albeit at a more subdued pace compared to a year ago. Total syndicated loans grew by 4.2% y-o-y in Q3 2012 compared to 15.4% in the same period last year. Trade finance facilities also grew by a much more modest 13% y-o-y in Q3 this year compared to 63.4% y-o-y in Q3 last year.

As pressures for euro zone banks to deleverage...
intensified towards the end of 2011 and their branches in Singapore extended less credit, other banks in the Singapore banking system stepped in by continuing to expand their loan portfolios (See Box F). Local banks and other Asian banks operating in Singapore now account for a larger share of the syndicated loan and trade finance markets than their euro zone counterparts (Chart 2.3.6).

Non-bank loan growth has continued to be driven by broad-based expansion in the DBU

Non-bank loan growth has continued to be driven by broad-based expansion in the DBU. While the pace has slowed markedly over the past year, it was still firm at 16.5% in Q3 2012. Furthermore, the expansion has been broad-based, led by property-related loans (housing and building and construction), manufacturing and non-bank financial institutions (NBFI) (Chart 2.3.7). The property sector continues to be a key source of banking system exposure. Banks should be mindful of the risk of asset quality deterioration if the economic outlook worsens further, especially if interest rates were to rise from their current low levels (see Box G).

Local banks’ earnings, asset quality and overall balance sheets remain healthy, but there is a need for vigilance in the current environment

The performance of the local banking groups has remained resilient. Their combined net profits exceeded S$2 billion in each of the first three quarters of 2012 (Chart 2.3.8). The growth in earnings was underpinned by higher net interest income due to the growth of non-bank loans. However, there was a slight compression in net interest margins (NIM) from 1.83% in Q3 2011 to 1.75% in Q3 2012 (Chart 2.3.9).

Amid weakening global growth, the asset quality of the local banking groups has remained healthy, despite a slight uptick in the local banks’ aggregate NPL ratio to 1.3% as at Q3 2012. Absolute NPL amounts rose from Q3 2011 (Chart 2.3.10), due to NPLs in the transport, storage and communication (TSC) sector and the building and construction (B & C) sector. The local banking groups’ non-bank LTD
ratio fell slightly from 87.3% in Q3 2011 to 86.1% in Q3 2012 (Chart 2.3.1), compared to the five-year average of 82%.

Local banks’ balance sheets and capital positions remain strong. With a Tier 1 CAR of 14.3% in Q3 2012 (Chart 2.3.2), well above MAS’ regulatory requirement of 6% from 1 January 2013 and 8% from 1 January 2015, local banks are well-placed to meet Basel III requirements earlier and at a higher standard.

Notwithstanding this, local banks should continue to manage their risks prudently. This would include maintaining adequate provisions and ensuring that business strategies are commensurate with their risk appetite and risk management controls.

Bank loan quality remains robust, but could deteriorate if economic conditions worsen or interest rates rise from current low levels

Non-bank loan quality remains robust. The overall NPL ratio has been stable over the past year and was 1.2% as at Q3 this year (Chart 2.3.3). In absolute terms, both total non-bank loans and NPLs have increased. The rise in NPLs has been concentrated in the TSC sector, which has been impacted by the slowdown in the global shipping industry, and which accounted for 9.1% of total non-bank loans as at Q3 2012.

Looking ahead, there is a material risk of bank loan quality deteriorating. Interest rates in Singapore have remained low for a prolonged period of time. This is in line with global trends, which are expected to continue because policymakers in advanced countries have committed to keep monetary policy accommodative over the medium term. There is a risk that expectations of low interest rates will become entrenched.

Furthermore, household and corporate-sector leverage have increased in recent years. This trend is clearly reflected in the ratio of DBU non-bank loans to GDP (Chart 2.3.4). The increase could well persist, given that growth of non-bank loans to both sectors has remained firm in recent quarters even with Singapore’s decelerating economic growth.
If economic conditions worsen or interest rates rise from current low levels, bank loan quality could deteriorate substantially, and show up with a lag in the form of increased NPL amounts and NPL ratios.

Banks should therefore continue to maintain prudent underwriting standards, which includes pricing risks appropriately and managing credit concentration risks effectively.

Non-SGD funding risk continues to warrant close monitoring, though SGD funding for domestic lending remains adequate

Meanwhile, non-SGD funding risk continues to warrant close monitoring. The growth of non-SGD loans outpaced the growth of non-SGD deposits in the past year. Hence, the non-SGD LTD ratio rose marginally from 124.0% in Q3 2011 to 124.9% in Q3 2012 (Chart 2.3.15). The non-SGD LTD ratio is well below the peak of 256.1% in Q2 1995, but above the five-year average of 99%.

In comparison, the growth of SGD non-bank loans also outpaced the growth of SGD non-bank deposits in the past year, leading to the SGD LTD ratio rising from 70% in Q3 2011 to 74.7% in Q3 2012 (Chart 2.3.16).

A sudden spike in global risk aversion could trigger stresses in global US dollar liquidity, with knock-on effects on the Singapore banking system. Banks should therefore continue to manage their foreign currency liquidity risks prudently. This includes monitoring their currency and cash flow mismatches closely, conducting robust liquidity stress tests as well as putting in place contingency funding plans. In this regard, local banks have implemented various measures to improve their USD funding profiles, such as raising USD term funding, diversifying USD funding sources and stepping up USD deposit-taking efforts. They have also issued USD commercial paper and established USD note issuance programmes.
Chart 2.3.16
Banking System SGD Non-Bank Loan-To-Deposit Ratio

Per Cent

Source: MAS
Box E
Banking System Trends: Pre- and Post-Lehman

A number of factors have had an impact on the Singapore banking system since the Lehman crisis. The major ones are: monetary easing in Europe and the US; the search for yield in a low-yield environment; risk aversion in the global interbank market; and banks’ preference for more stable funding sources. This box examines some of the key changes in the period from around 2006 (two years before the collapse of Lehman) to 2012, and their implications for the Singapore banking system.

Singapore has remained a net recipient of funds from the rest of the world

Notwithstanding a fall in net deposits (i.e. non-bank and interbank deposits less non-bank and interbank loans) into Singapore since early 2011, Singapore's banking system has remained a net recipient of funds from the rest of the world. Monetary easing and weaker economic growth in the G3 compared to Asia, as well as risk aversion to the G3 have redirected the search for yields from the “traditional” advanced markets towards Asia – including Singapore (Chart E1).

Asia remains Singapore’s key lending and funding source. Singapore continues to see positive net deposits from Asia, although the volume is now lower than that during the pre-Lehman period. Europe and the Americas have turned from net borrowers pre-Lehman to net depositors post-Lehman vis-a-vis Singapore (Figure E2). A decrease in gross lending to, coupled with an increase in gross deposits from Europe, has resulted in a net inflow of funds from Europe to Singapore’s banking system. A higher volume of gross non-bank deposits has underlined the net inflow of funds from the Americas to Singapore.

Figure E2
Singapore's Average Net Deposits from External Sources
Pre-Lehman (June 2005 – May 2008)
Banks in Singapore are increasing their intermediation role in Asia

Singapore’s banking system will increasingly be affected by developments in Asia. About 80% of the non-bank deposits intermediated by banks in Singapore are from Asia (including Singapore) (Chart E3), and a similar trend is observed in non-bank loans (Chart E4). Both locally-incorporated banks and Singapore-based foreign banks obtain deposits from Asia and deploy these funds as loans to the region. As Europe accounts for less than 5% of the Singapore banking system’s non-bank exposures and funding, banks in Singapore have been less affected by the ongoing sovereign debt crisis in Europe.

Interbank loans and deposits vis-à-vis Asia, including the domestic banking sector, account for about 60% of all interbank transactions originated by banks in Singapore (Charts E5 and E6). Compared to the pre-Lehman period, Asia’s share in Singapore’s interbank lending has increased, which reflects a greater confidence in the region.

Comparison is done for the three-year period before June 2008 (i.e. pre-Lehman), to allow for some buffer prior to the collapse of Lehman Brothers in September 2008, and for the three-year period after June 2009 (i.e. post-Lehman), when Singapore’s nominal GDP growth first turned positive since Lehman’s collapse.
Counterparty risk aversion in the global interbank market persists against a backdrop of sluggish growth and heightened uncertainty surrounding Europe’s sovereign debt crisis. Partly reflecting this, the growth of cross-border interbank funding for the Singapore banking sector has been driven by an increase in the volume of intra-group funding (Chart E7). The increased reliance on intra-group funding has also been manifested in the domestic interbank market, with top interbank borrowers in Singapore relying heavily on funding from related banks.

The greater role played by intra-group funding today compared to before the Lehman crisis – in cross-border as well as domestic interbank funding – highlights the increasing interconnectedness that could raise contagion risk within a banking group. This may require enhanced supervision of global systemically important banks (G-SIBs). The activities of these banks and the risks they pose to Singapore need to be closely monitored. This underscores the importance of cooperation between MAS as host supervisor and the home supervisors of the large banking groups operating here.

...even as banks in Singapore have shifted towards more stable non-bank deposit funding

Non-bank deposit funding has overtaken interbank deposits as a key funding source for banks in Singapore. The share of non-bank deposits in total liabilities increased from 41% in June 2008 to 46% in June 2012 (Chart E8). The increased reliance on non-bank deposits from Singapore depositors, reflects banks’ preference for a more stable funding base. This will support banks’ preparations to comply with the LCR requirements scheduled to come into force in 2015.

The relative increase (decrease) in the market share of residents (non-residents) deposit was in part due to the effect of a strengthening Singapore dollar vis-a-vis US dollar.
Banks have shifted back to their traditional role of funding economic activities
Singapore’s overall banking assets, including assets in and outside Singapore, resumed growth after the Lehman crisis to reach S$2.2 trillion in 2011, which represents approximately 680% of GDP (Chart E9).

The share of non-bank loans to both resident and non-resident borrowers in Singapore banks’ assets is growing. The proportion of non-bank loans in banking assets rose significantly from 32% in June 2008 to 42% in June 2012 (Chart E10), reflecting banks’ shift back towards their traditional role of funding economic activities. Property-related loans continue to form a significant proportion of non-bank loans (See Box G).

Banks have also shifted to safer investments such as government securities
On the investment front, banks have shifted to safer assets after the Lehman crisis (Chart E11). Debt securities remain the primary form of banks’ investments, but there has been a steep increase in banks’ holdings of SGS and foreign government debt, alongside a sharp fall in their holdings of foreign corporate debt. As at June 2012, SGS accounted for 38.4% of banks’ total investments, which is a significant increase from 24.4% in June 2006.
Box F

Euro Zone Bank Deleveraging – Has It Impacted the Singapore Banking System?

Pressures for euro zone banks to deleverage intensified towards the end of 2011, driven by a combination of factors: constrained access to funding, concerns over heightened sovereign risks, and their holdings of sovereign debt. Significant asset reductions by euro zone banks would have an impact on the real economy globally. This box provides an overview of the extent of deleveraging by euro zone banks in Singapore, and whether this deleveraging has impacted the Singapore banking system.

Global deleveraging by euro zone banks

The IMF in its October 2012 Global Financial Stability Report (GFSR)\(^\text{16}\), has estimated that deleveraging by 58 EU banks via asset reductions between the end of Q3 2011 and the end of 2013, under a “baseline policies” scenario\(^\text{17}\), will amount to US$2.8 trillion, equivalent to 7.3% of these EU banks’ total balance sheet size. Based on the IMF’s earlier estimate of US$2.6 trillion\(^\text{18}\) in the April 2012 GFSR, US$2 trillion will come from asset sales and reductions in interbank lending globally, while US$0.2 trillion and US$0.4 trillion will come from a reduction in credit extended within and outside the euro zone area respectively.

Data from the Bank for International Settlements (BIS) shows that euro zone banks reduced their total foreign claims globally by 14.7%, equivalent to an absolute reduction of about US$1.75 trillion, between Q2 2011 and Q4 2011. Of this, a relatively modest US$85.6 billion was attributed to reductions in euro zone banks’ claims on Asia-10, although this was equivalent to a substantial 21% reduction in their claims on Asia-10. In the same period, the reduction in euro zone banks’ claims on Singapore was US$11.7 billion, equivalent to a 20% reduction in their claims on Singapore.

Deleveraging by euro zone bank branches in Singapore

The reduction in euro zone banks’ claims on Singapore accounts for less than 1% of the Singapore banking system’s total assets. Between Q4 2011 and Q2 2012, euro zone banks’ claims on Singapore remained relatively flat, suggesting a slowdown in the pace of deleveraging.

The bulk of deleveraging by euro zone bank branches in Singapore was due to reductions in cross-border interbank loans – rather than non-bank loans (Chart F1). Firstly, in the event of a financial crisis, banks are likely to come under serious strains more quickly than non-financial corporates – thus they immediately pose much bigger counterparty risks. Secondly, interbank loans tend to be short-term in nature and exposures would be more easily reduced in crisis times. Thirdly, not only is it fairly common for non-bank loans to have maturities of up to several years, maintaining customer relationships with non-bank borrowers is often seen as important for business purposes. As a result, banks are generally much more hesitant to withdraw non-bank loans, but are more likely to consider reducing interbank exposures instead.

Nevertheless, a key concern arising from bank deleveraging is its impact on the real economy, one prime example being the curtailment of credit to finance trade and business activities. Euro zone banks have spread their lending activities across Asia (including Singapore) and are active in important niche markets including syndicated loans, trade finance and project finance. While euro zone bank branches in Singapore account for less than 7% of non-bank credit to residents, a concern is that deleveraging by these banks...
could lead to a reduction in the availability of trade financing in Singapore.

Globally, concerns have been expressed about the potential impact of euro zone bank deleveraging on trade finance and international trade. However, studies suggest that the direct impact of changes in the volume of trade financing on trade flows has thus far been limited: bank-intermediated trade finance explains no more than 20% of any decline in trade volume\textsuperscript{19}. This is consistent with other studies which have shown that demand and price factors account for 80% of the decline in trade volume\textsuperscript{20}.

Data on lending to non-banks in Singapore indicate that while euro zone banks have been deleveraging, other banks in the Singapore banking system have continued to increase the volumes of their loans, both to residents and non-residents. This has more than offset the reduction in credit extended by euro zone bank branches in Singapore. Asian banks (Chart F2), including Singapore banks, remain well-capitalised, making it possible for them to take up some of the slack created by euro zone banks’ pullback. The outstanding amount of trade finance facilities originating from the Singapore banking system continues to grow. Singapore banks and other Asian banks have gained a larger share of the syndicated loan and trade finance markets (see Section 2.3 – Banking Sector).

Nevertheless, Asian banks could face stiffer challenges if euro zone banks’ deleveraging continues. The foreign currency LTD ratios of some Asian banks are currently at elevated levels. This may limit their capacity to take on more trade financing business, which is primarily USD denominated. Given the high degree of uncertainty in the external economic environment, Asian banks may also become more selective about the risks they take on, or may be constrained by counterparty limits from taking over the trade finance lines of the larger euro zone banks. In addition, it will take time for Asian banks to build expertise and resources in areas such as structured trade finance.

On the whole, euro zone bank deleveraging has not had a large impact on the Singapore banking system. Asian banks, including the Singapore banks, continue to grow their loan books domestically as well as regionally. This does not mean that Singapore and the Asia region are immune to strains if stresses in the euro zone are prolonged.


\textsuperscript{20} Ahn, JaeBin, Mary Amiti, and David E. Weinstein. 2011. “Trade Finance and the Great Trade Collapse.” American Economic Review, 101(3): 298-302. Ahn et al. (2011) summarised several studies, ranging from econometric to theoretical models, which can explain 70 to 80 percent of the decline in world trade. These studies consistently neglect the role of trade finance. Ahn et al. argue that trade finance-based explanations have a role to explain some part of the rest of the world trade decline (20%).
Box G
Property Loans and the Singapore Banking Sector

The property sector is a key exposure for the Singapore banking system. For the system as a whole, property-related exposures, comprising housing loans and loans to the B&C sector, accounted for 28% of total outstanding ACU and DBU non-bank loans as at September 2012. In the DBU loan book, property-related exposures accounted for 46% of outstanding non-bank loans, lower than the average of 48% since 2004 (Chart G1).

The growth in property-related loans has moderated
Since 2009, the government has implemented six rounds of measures to pre-empt the formation of a property bubble21, including the 5 October 2012 announcement on the restriction of loan tenures granted by FIs for the purchase of residential properties.

One important result of these measures is that although housing loans continue to form a large part of all outstanding loans, there has been a noticeable slowdown in the pace of housing loan growth. As at September 2012, housing loans accounted for 30.7% of DBU non-bank loans, or 66.1% of total property-related loans. The bulk of housing loans (more than 70%) are for owner-occupied residential properties. The y-o-y growth of outstanding housing loans moderated from 22.9% in 2010 to 16.7% in 2011, and further to 14.5% in September 2012 (Chart G2). The average loan-to-value (LTV) ratio stood at 45% as at Q3 2012.

Similarly, the y-o-y growth of outstanding B&C loans has eased, from a high of 27.9% in January 2012 to 17.7% in September 2012 (Chart G2).

The banking system’s Section 35 ratio22 stood at 16% as at Q3 2012, well within the regulatory limit of 35% (Chart G4).

NPL ratios are low but warrant monitoring
The NPL ratios for property-related loans have remained low (Chart G3), and the amount of housing loans in negative equity is negligible (Chart 2.5.10). However, these trends warrant close monitoring. NPLs are lagging indicators of economic conditions and borrowers’ repayment capacities. Banks should be mindful of the risk of asset quality deterioration if the economic outlook worsens further, especially if interest rates were to rise from current low levels. Coupled with a slowdown in the growth of outstanding property-related loans in such a scenario, the banking sector could face a pronounced increase in NPL ratios.

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21 For instance, the lowering of loan-to-value (LTV) limits, depending on the number of outstanding loans which the borrower has.
22 Note: S35 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.
Chart G3
Property-related NPL ratios

- Building & Construction
- Housing & Bridging Loans

Chart G4
Banking System Section 35 Ratio

Source: MAS

Source: MAS
2.4 Corporates

Corporate balance sheets remain on a firm footing although economic uncertainty could weigh on earnings

The Singapore economy has weakened in recent quarters amid considerable slowdown in global economic activity. Reflecting the downturn in the external environment, corporate profitability has dipped. The median return on assets (ROA) fell from 5.8% in Q2 2011 to 4.3% in Q2 2012, below the medium-term average of 5.5% since 2004 (Chart 2.4.1). The decline in corporate earnings was observed across most sectors, with some sectors such as the commerce and manufacturing sectors experiencing a larger decline. Corporate earnings for the TSC sector have also showed some weakness, with the air and sea cargo segments in particular affected by weaker demand arising from slowdown in global exports.

Corporates are more leveraged today than they were a year ago. The aggregate debt-to-equity ratio edged up between Q2 2011 and Q2 2012 to reach 35%, though it remained broadly in line with the medium-term average since 2004, and below the peak of 38% in Q2 2006 (Chart 2.4.2). Most sectors’ debt-to-equity ratios rose except for some of the more domestic-oriented sectors such as the property sector as well as the hotels and restaurants sector.

A plausible reason for the increase in leverage is that low borrowing costs induced corporates to borrow more than they would otherwise. However, for the same reason, corporates appear well-positioned to cover their interest expense, but this could change if interest rates rise significantly. The median interest coverage ratio remained at a healthy 6.1 times in Q2 2012, below the medium-term average of 6.7 times (Chart 2.4.3). This is corroborated by the aggregate current ratio remaining broadly stable at 1.8 times, again in line with its medium-term average (Chart 2.4.4).

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23 All corporate financial data cover only corporates that are listed on the Singapore Exchange (SGX). The latest data point provided is for Q2 2012, as most of the companies that are required to report earnings on a half-yearly basis tend to do so in Q2 and Q4.
The volume of loans to SMEs has continued to grow, although the pace has moderated

The volume of loans to SMEs has continued to expand robustly, although the pace has moderated. Total SME loans rose by an annualised rate of about 8% over H1 2012, compared to 22% in 2011 (Chart 2.4.5), driven by an increase in the volume of trade finance facilities. The construction and commerce sectors account for the bulk of total outstanding SME loans, at 28% and 27% respectively (Chart 2.4.6). NIMs on SME loans narrowed to 2.1% in H1 2012 (Chart 2.4.7).

Overall, the credit quality of banks’ SME loan portfolios has improved. The NPL ratio for SME loans has continued to fall (Chart 2.4.8), with the slight increase in absolute amounts of NPLs being outweighed by the expansion of the loan base. In addition, an increasing amount of outstanding SME loans is collateralised, and mainly with commercial and industrial property (Chart 2.4.9). The trend is similar for new SME loans extended in H1 2012 – the level of collateralisation is higher than a year ago.

Fund-raising activity in other corporate finance markets has also increased. In the first three quarters of 2012, corporate debt issuance doubled from the same period in 2011 to S$103 billion (Chart 2.4.10). With the Singapore dollar having generally strengthened over the past year and equity markets having been quite volatile, there has been healthy demand for bonds issued by Singapore-based companies.

IPO activity on both the SGX Mainboard and Catalist has declined. IPO listings in the first three quarters of 2012 were valued at S$3.8 billion, which is less than half of the S$8.7 billion of IPO listings over the same period last year (Chart 2.4.11).

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24 The definition of SMEs has been standardised this year, in line with MAS Notice 637, and refers to a corporation, partnership, limited liability partnership, sole proprietorship or trust with reported annual sales of less than S$100 million.
The business outlook has become less favourable for some firms due to economic headwinds and financial stresses globally

Based on the Economic Development Board (EDB)'s Survey of Business Expectations of the Manufacturing Sector as well as the Department of Statistics (DOS)' Business Expectations Survey, business prospects in Q4 2012 and Q1 2013 have become less favourable for manufacturing firms, but improved slightly for service companies compared with the same period last year. A net weighted balance\(^{25}\) of 11% of manufacturing firms anticipated less favourable business conditions over the next two quarters, compared with 10% in the same period last year. In contrast, a net weighted balance of 1% of service companies expected business conditions to improve over the next two quarters, compared with a net weighted balance of 9% which anticipated less favourable conditions in the same period last year (Chart 2.4.12).

The more subdued business outlook is also reflected in an increase in the number of companies that have been wound up – 78 firms were wound up in H1 2012, nearly double that in H1 2011. The number of bankruptcy petitions filed also increased from 87 in H1 2011 to 98 in H1 2012 (Chart 2.4.13).

The corporate sector as a whole needs to guard against multiple headwinds, including weak external demand as well as fragile business and consumer confidence

Looking ahead, the corporate sector as a whole needs to guard against multiple headwinds. Weak external demand could weigh heavily on the more external-oriented industries including manufacturing, commerce and TSC. However, if business and consumer confidence were to become more subdued, it could also further dampen activity in the more domestic-oriented industry sectors as well as the services sector. The experiences in previous downturns, where severe stresses materially weakened the corporate sector's profitability and debt-servicing capacity, should be borne in mind.

\(^{25}\) A "net weighted balance" is used to indicate the likely overall direction of change of a particular activity or industry. The net weighted balance is calculated by taking the difference between the weighted percentages of “ups” and “downs”. A plus sign in the net weighted balance indicates a net upward trend and a minus sign indicates a net downward trend.
Chart 2.4.10
Corporate Debt Issuance

Source: MAS

Chart 2.4.11
Initial Public Offerings

Source: SGX, Bloomberg

Chart 2.4.12
General Business Outlook

Source: DOS, Business Expectations Survey; Economic Development Board (EDB), Survey of Business Expectations of the Manufacturing Sector

Chart 2.4.13
Corporate Bankruptcies

Source: Ministry of Law, Insolvency and Public Trustee’s Office (IPTO)
2.5 Households

Households play an important role in anchoring financial and banking sector stability in Singapore. For the banking system, households account for about half of non-bank deposits and 40% of domestic non-bank loans. Given the persistent uncertainties in the external environment, Singapore’s GDP growth in 2013 is likely to come in below the economy’s potential rate though the level of output should remain above its underlying potential. Given the increase in household indebtedness over the past few years, should global financial or economic conditions worsen sharply, some households could face difficulties with debt repayments and stresses on their balance sheets.

On an aggregate basis, household balance sheets are resilient

On an aggregate basis, Singapore’s household balance sheets are resilient. Household net wealth (defined as household assets less household debt) has trended up since 1997, growing at an average rate of 5.9% per annum in the last 15 years (Chart 2.5.1). As at Q3 2012, household net wealth stood at S$1.34 trillion – four times GDP, and up 7.3% from Q3 2011. Notwithstanding the increase in overall net wealth, the picture may not be uniform across all households. The aggregated nature of the household balance sheet data prevents a characterisation of the distribution of households across income groups.

The increase in household wealth has been driven largely by a rise in the value of property assets

Prior to the collapse of Lehman in 2008, the rise in household net wealth was driven by increases in the value of financial assets, comprising Central Provident Fund (CPF) balances and pensions, cash and deposits, shares and securities and insurance funds (Chart 2.5.2). After the Lehman crisis, the increase in household wealth has been driven primarily by a rise in the value of property assets.

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26 The assessment on the health of households in this section are based on aggregated household balance sheets and do not contain a characterisation of the distribution of households across income groups arising from a lack of disaggregated data.
On an aggregate basis, property holdings, estimated at $790 billion in Q3 2012, accounted for about half of household assets. The increase in the value of property holdings has averaged 15% y-o-y per quarter since Q1 2010, when it stood at a more modest $607 billion.

In comparison to several other countries, the share of total household assets accounted for by property in Singapore appears to be relatively high. While this undoubtedly reflects to a large extent high home ownership rates among Singapore households\(^{27}\), the rise in residential property prices between 2007 and 2012 has also been an important factor (Chart 2.5.3).

The higher concentration of Singapore households’ wealth in residential properties relative to other households in other countries implies that the strength of their balance sheets would likely be more affected by changes in property prices. Indeed, a 25% drop in the value of housing assets as experienced during the most severe phase of the GFC could result in a 15% decline in Singapore’s household wealth.

Financial assets, which made up the other half of household assets, increased by 10% from a year ago to $807 billion in Q3 2012. However, the pace of growth for financial assets, averaging 9.2% y-o-y per quarter since Q1 2010, has been markedly slower than for property assets. The value of shares and securities held by households in Q3 2012 was up 12% from a year ago, after having dipped on a y-o-y basis for four consecutive quarters due to weaker market sentiment arising from the global growth slowdown. The growth in the value of CPF and pensions, and currency and deposits remained strong at 11% and 9.1% y-o-y respectively in Q3 2012.

The growth of household credit warrants close monitoring and careful management by lenders

On an aggregate basis, household leverage (defined as household debt over assets) has remained relatively low, at about 16% as at Q3 2012, slightly below the average of 17% since 2004 (Chart 2.5.4).

\(^{27}\) DOS statistics show that home ownership rate among Singapore resident households stands at 88.6% in 2011.
However, household debt has grown more quickly than household assets since Q2 2011. Indeed, in the most recent quarter, total household debt grew by 10.4% y-o-y while assets grew by 7.8% y-o-y (Chart 2.5.5).

In tandem with the rise in property prices, the growth of household debt has been driven by housing loans, although the growth of outstanding housing loans extended by FIs has moderated to 14% y-o-y in Q3 2012 following successive rounds of property cooling measures by the Government (Chart 2.5.6) (see Box H). Housing loans account for 73% of household liabilities as at Q3 2012, broadly in line with other major countries (Chart 2.5.7).

After housing loans, other major components of household debt are motor vehicle loans and credit/charge card loans. Credit/charge card loans grew by 16% y-o-y in Q3 2012, similar to the pace in Q3 2011 (Chart 2.5.8). The value of motor vehicle loans fell by 2.9% y-o-y in Q3 2012, extending the trend of negative y-o-y growth since Q2 2009.

The decline in outstanding value of motor vehicle loans since Q1 2009 is consistent with the reduction in Certificate of Entitlement (COE) quotas and the number of newly-registered vehicles. Motor vehicle loans accounted for 5.5% of household liabilities in Q3 2012, below the average of 9.2% in the last 15 years. The proportion of non-performing motor vehicle loans remains low at less than 0.5%.

The household debt-to-income ratio, estimated at 2.0 times in 2011, was below the average of 2.2 times over the ten-year period starting from 2001 (Chart 2.5.9). Notwithstanding this, the household-debt-to-income ratio has increased in the last three years, from a low of 1.9 times during the Lehman crisis.

On an aggregate basis, cash and deposits held by all households continue to exceed total household debt. However, this clearly does not apply to all households. Some households may have overextended themselves and more prudence would be in order. Interest rates look set to remain low over the next few years globally and in Singapore. For mortgage loans, this may have combined with stretched loan tenures to give rise to lower monthly repayments and therefore perceptions of greater...
affordability – which may not hold true when interest rates rise (see Box I).

For now, housing loan quality remains robust. The proportion of housing loans with negative equity remains negligible and the share of housing loans with LTVs above 80% has fallen from a high of 17% in Q3 2009 to 4.7% as at Q3 2012 (Chart 2.5.10). While the NPL ratio for housing loans remains low (Chart 2.5.11), close monitoring is warranted especially if the economic outlook and employment conditions worsen, or interest rates – and therefore mortgage repayments – increase.

Credit card charge-off rates\(^{28}\) increased from 4.2% in Q3 2011 to 5.1% in Q3 2012, slightly above the medium-term average of 4.9% since 2004 (Chart 2.5.12). The rollover ratio\(^{29}\) also showed a slight uptrend over the same period, reaching 16% as at Q3 2012 but remaining in line with its medium-term average since 2004 (Chart 2.5.13).

The proportion of credit card holders who are “revolvers”\(^{30}\) increased slightly from 36% last year to 37% this year (Chart 2.5.14). In particular, a higher proportion of credit cardholders who are in the 30-49 age group rolled over their balances. 41% of credit card holders aged 30-49 rolled over their credit card balances in Q3 2012 compared to 31% in the other age groups. While credit card charge-off rates remain low, the quality of unsecured credit extended via credit cards warrants close monitoring, as it could be sensitive to changes in financial or economic conditions.

The number of individual bankruptcies, 1,527 cases in 2011, remained relatively unchanged from the 1,537 cases in 2010 (Chart 2.5.15). There were 1,287 individual bankruptcy cases over the first three quarters of this year, an increase of 12% over the same period in 2011.

\(^{28}\) The charge-off rate refers to bad debts written off expressed as a percentage of total rollover balances.

\(^{29}\) The rollover ratio refers to the ratio of total rollover balances of more than 30 days to total outstanding balances.

\(^{30}\) “Revolvers” refer to credit cardholders who do not pay in full their outstanding credit card balances.
Overextended households could be vulnerable to sudden worsening of economic and financial conditions, including weaker employment prospects and increase in interest rates.

Singapore’s marked growth slowdown reflects the fact that our economic conditions remain closely tied to the global outlook. Meanwhile, there continues to be considerable uncertainty over how policymakers in the G3, especially the euro zone, may meet stiff challenges related to sovereign weakness, faltering economic growth and banking system vulnerabilities.

While the aggregate Singapore household balance sheet remains resilient, individual household credit exposures warrant close monitoring. Expectations of continued low interest rates could lead to some households overextending themselves. Should interest rates rise in future or the unemployment rate increase, households that are highly leveraged and affected by retrenchments would come under pressure. Lower income households, especially those with small financial buffers, could be adversely affected.
Demand in the private residential property market has remained resilient. As part of the Government’s broader aim of pre-empting the formation of a property bubble and fostering long-term macroeconomic stability, MAS announced on 5 October 2012 measures to restrict the tenure of loans granted by FIs for the purchase of residential properties\(^{31}\). The latest measures came after five rounds of Government measures implemented since 2009, including the Additional Buyer Stamp Duty (ABSD)\(^{32}\) announced on 7 December 2011.

**Private property prices and transactions**

The rate of increase in the private residential property price index (PPI) has moderated from a year ago. Following q-o-q increases for ten consecutive quarters, the PPI recorded a fall of 0.1% in Q1 2012 (Chart H1), before edging up by 0.4% and 0.6% in the second and third quarters respectively. This is lower than the average q-o-q increase of 3.6% in private home prices between Q3 2009 (the start of the post-Lehman recovery in home prices) and Q3 2012. The PPI in Q3 2012 was 17% above its previous peak in Q2 2008, before the onset of the Lehman crisis.

Overall transaction activity\(^{33}\) in the private residential property market has remained strong. The average number of monthly transactions moderated to 2,900 units in 2011 from 3,300 units in 2010 (Chart H2). A drop in foreign purchases following the implementation of the ABSD resulted in a sharp drop in transactions to 1,600 units and 2,300 units in December 2011 and January 2012 respectively. However there was a pick-up in activity from February 2012 onward, with monthly transactions averaging 3,400 units between February and October 2012.

The pick-up in transaction activity was underpinned by developer sales. Cumulative new sales for the first ten months of the year reached 20,200 units, higher than the average take-up of around 16,000 units per year for the last three years. In contrast, average monthly resale transactions in the first ten months of 2012 fell by 11% from the same period last year. The share of sub-sale transactions in total transactions, a proxy for speculative activity, was about 6% in the first ten months of the year, down from about 8% in the same period last year, and a high of 11% in 2009.

\(^{31}\) The maximum tenure of all new residential property loans has been capped at 35 years and applies to both individual and non-individual borrowers, as well as refinancing loans. In addition, MAS has lowered the LTV ratio for new residential property loans to borrowers who are individuals if the tenure exceeds 30 years or if the loan period extends beyond the retirement age of 65 years. For these loans, the LTV limits are 40% for a borrower with one or more outstanding residential property loans; and 60% for a borrower with no outstanding residential property loan.

\(^{32}\) Foreigners and non-individuals (corporate entities) buying any residential property will pay an ABSD of 10%. Permanent Residents (PRs) owning one and buying the second and subsequent residential property will pay an ABSD of 3%; and Singapore Citizens owning two and buying the third and subsequent residential property will pay an ABSD of 3%.

\(^{33}\) Comprising new sale, sub-sale and resale transactions.
**Demand conditions**

While the recovery in buying activity in early 2009 was driven mainly by purchasers with HDB addresses, buying activity since then has been driven by purchasers with private addresses. Private property purchasers with private addresses accounted for 60% of total transactions in 2011 and the first ten months of 2012, compared to 44% in Q1 2009 (Chart H3).

The ABSD has had a significant impact on foreign demand. The share of foreign purchases in total transactions declined from 20% in Q4 2011, to 7% in Q3 2012 (Chart H4).

**Supply conditions**

The pipeline supply of private residential units has continued to rise as a result of the ramp up in supply through the Government Land Sales (GLS) Programme. As at Q3 2012, there was a total supply of about 84,000 uncompleted private residential units from projects in the pipeline. Of these uncompleted units, about 44% remained unsold (Chart H5). There was an additional supply of 9,800 Executive Condominium (EC) units in the pipeline. In total, the pipeline supply of 93,800 units, including ECs, was the highest ever recorded.34

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34 In addition, another 10,000 units are expected to be added to the pipeline supply soon. These units are from GLS sites that had been awarded to developers, but for which planning approvals had not been obtained yet as at Q3 2012, as well as from Confirmed List sites from the H2 2012 GLS Programme that have not been awarded yet.
**Conclusion**
The demand for private residential property has remained resilient, especially for developer sales. The ramp up in supply, as well as Government measures to rein in speculative activity and encourage more prudent credit practices, have already had a moderating effect on residential property prices. The government will continue to monitor the market closely, and will not hesitate to step in, if and when necessary, to promote a stable and sustainable property market.
Expectations that interest rates, and thereby the cost of borrowing, will remain low for a prolonged period of time are likely to continue spurring demand in the residential property market, with households looking to buy properties for either owner-occupation or investment.

Mortgage loans account for some three quarters of total household liabilities, and could be a significant source of risk for households. While the balance sheet of Singapore's household sector remains healthy in aggregate, certain segments could be vulnerable to adverse changes in economic and financial conditions. Simulations show that the current mortgage-servicing burden (mortgage payment as a share of total income) among households is manageable. However, should mortgage rates increase significantly, households which have over-extended themselves could be adversely affected. For instance, in a scenario where mortgage rates rise by 400 bps, the mortgage-servicing ratio for the average household is estimated to increase by about 13% points. Lower-income households will likely be more adversely affected than the higher-income, because their mortgage-servicing burden is likely to comprise a larger share of their income.

Besides the mortgage rate, a borrower's decision to take a mortgage loan to purchase a property also depends on other factors such as the tenure of the loan and the amortisation structure within the term of the loan.

Longer loan tenures coupled with low mortgage rates may give buyers a false impression of “improved affordability” given the smaller monthly repayments for any given loan size, although the long-term mortgage servicing burden is in fact larger. For example, at a 2% mortgage rate, a purchaser with a monthly fixed budget outlay will be able to “afford” a property which is priced 40% higher if he stretches the home loan from 30 to 50 years. However, at a 7% mortgage rate, he would only be able to “afford” a purchase property which is priced 11% higher (Chart I1). This increased “affordability” may result in more home buyers purchasing more expensive properties, and also attract into the market new entrants who previously could not afford to purchase the properties. A lengthening of mortgage loan tenures, if widespread, could therefore increase the demand for properties, possibly beyond what is prudent.

Since 1 March 2012, financial institutions are required to provide consumers with a Residential Property Loan Fact Sheet before they commit to a residential mortgage loan. The fact sheet includes information essential to a consumer’s decision to take up a residential property loan, and highlights the implications of possible future increases in interest rates and other considerations (e.g. associated fees and charges) so that borrowers do not underestimate their loan obligations.
Furthermore, as the vast majority of mortgage loans offered by financial institutions ("FIs") in Singapore are floating-rate packages, households who have overextended themselves could be vulnerable should interest rates revert to higher levels. Simulations show that monthly repayments for mortgage loans with longer tenures are more adversely affected by interest rate shocks, compared to loans with shorter tenure (Chart I2).

The Government's recent announcement of restrictions on loan tenure for residential mortgage loans granted by FIs aims to encourage a greater degree of financial prudence among property buyers, and stabilise the property market. The new rules will limit demand for residential properties by credit-constrained buyers. In addition, they could curtail the supply of mortgage credit as FIs factor into their credit assessment of borrowers, the rise in mortgage-servicing ratios resulting from the higher monthly repayments due to shorter tenures.
2.6 Non-Bank Financial Sector

2.6.1 Insurance Sector

The domestic insurance industry remains well-capitalised

The insurance industry in Singapore remains resilient against a more challenging macro environment in 2012 than in 2011.

The insurance industry is well capitalised. Both life- and general insurers’ CARs are well above the minimum regulatory level of 120% (Chart 2.6.1.1). Insurers are well positioned to weather the euro zone sovereign debt crisis due to their negligible exposures to the troubled euro zone countries and generally diversified investment portfolios.

However continued uncertainty in financial markets and a more subdued economic outlook may constrain business growth

However continued uncertainty in financial markets and a more subdued growth outlook globally and in Singapore is being felt in new business generated. Over the first three quarters of 2012, direct life insurers’ new business premiums for investment-linked products fell significantly by 15.2% y-o-y (Chart 2.6.1.2). The contraction in new business can be explained by policyholders’ risk aversion towards investment-linked policies whereby investment losses are borne by them. In contrast, direct life insurers’ new business premiums for non-investment-linked products only fell by 0.4% y-o-y. This is because the fall in the sales of single premium participating endowment plans was roughly offset by a robust growth in the sales of universal life products as well as protection-oriented products, such as term and accidental & health insurance, during the same period.

Gross premiums for direct general insurers’ Singapore and Offshore Insurance Funds (SIF and OIF respectively) in Q1-Q3 2012 increased by 4.6% y-o-y and 16% y-o-y, respectively (Chart 2.6.1.3). This pace, especially for the OIF, is lower than the growth over the same period in 2011. Motor
Insurance continued to account for the largest share of total general insurance premiums, at 23%.

**A high degree of uncertainty is expected to persist in global financial markets, posing risks to insurers’ balance sheets**

Looking ahead, a high degree of uncertainty in global equity and bond market is expected to persist. This would include difficulty in anticipating when low interest global interest rates may begin to rise, as well as how this and related developments impact may affect insurers’ investment returns. Furthermore, while interest rates remain low, they will also negatively affect insurers’ balance sheets by affecting the rate at which liabilities are discounted.

In this regard, the recent annual stress test exercise conducted by MAS, using a macro scenario common across the banking and insurance sectors, have indicated that widening of corporate credit spreads, rising yields and falls in equity prices would generally have the greatest impact on direct life and general insurers in the near term.

In addition, MAS also conducted a stress test using a prescribed medium-term scenario which included persistently low interest rates, equity price falls and widening corporate spreads. The results showed that low interest rates were not a major stress factor relative to the others. This is not surprising as the level of investment guarantees within the insurance products sold in Singapore is not high, and insurers also sell a significant amount of investment-linked and pure protection products.

**For now, life- and general insurers’ profits remain robust, reflecting in large part prudence in investment portfolios**

For now, both life insurers’ and general insurers’ profits remain robust, reflecting in large part prudence in investment portfolios.

Direct life insurers’ net investment incomes in Q1-Q3 2012 totalled $8 billion, a substantial improvement over the same period last year (Chart 2.6.1.4). Direct general insurers’ net investment incomes in Q1-Q3 totalled $200 million, also an improvement over $11 million in the same period last year. A contributing factor is that their investment portfolios consist of significant amounts of highly-rated liquid assets, including investment-grade corporate bonds and SGS.

Direct general insurers made an underwriting profit of $450.6 million in Q1-Q3 2012, compared to a profit of $31.7 million over the same period last year (Chart 2.6.1.5). The lower profit in 2011 was largely due to losses in OIF property business arising from the natural disasters in Japan, Australia, New Zealand and Thailand.
2.6.2 Capital Markets Sector

Capital market intermediaries continue to maintain sound financial positions as capital markets remain orderly

MAS monitors the financial strength of capital market intermediaries and maintains close engagement with exchanges and clearing houses responsible for frontline oversight of their members.

Securities and derivatives members of the Singapore Exchange (SGX) and the Singapore Mercantile Exchange (SMX) have maintained adequate financial resources to meet regulatory requirements, and remain vigilant in monitoring customer exposures.

SGX and SMX have not experienced any member default, and hence have not had to draw on their clearing funds.

The investment management industry has remained stable amid continued volatility in global financial markets

Assets under management (AUM) dipped slightly by 1.2% y-o-y to $1.34 trillion as at end-2011, as uncertainty surrounding the euro zone sovereign debt crisis weighed on investor sentiment globally. Hedge fund AUM grew by 5% from a year ago to reach $71.8 billion as at end-2011. In the first eight months of 2012, the larger investment managers increased their AUM.

Hedge funds in Singapore continue to account for only a small share of the trading activities in the local markets across various asset classes and instruments, including SGX-listed equities and the bond market. Due to the consolidation of smaller hedge fund managers, the total number of hedge fund managers decreased to 311 as at end-2011 from 392 a year ago. On the whole, the portfolios are liquid and hedge fund managers have reported that they do not expect any difficulty liquidating their portfolios to satisfy investor redemptions.

In August 2012, MAS implemented the enhanced regulatory regime for fund management companies (FMCs), which aims to enhance supervisory oversight and raise the quality of players entering the fund management industry. All FMCs have to meet enhanced business conduct and capital requirements. These include independent custody and valuation of investor assets, an adequate risk management framework and a base capital commensurate with the type of FMC.

More initiatives have been put in place to improve the functioning of markets

MAS initiatives:
To deepen financial markets in Singapore, MAS has worked with the financial industry on several initiatives relating to the corporate bond market.

Firstly, MAS will conduct back-to-back basis swaps with primary dealer banks who are arranging Singapore dollar debt issuance for foreign corporates. Although the pricing mechanism in the foreign exchange and cross-currency swap market is efficient, swap markets have a tendency towards one-way flow because of Singapore’s excess savings over investments. This can occasionally lead to uncertainty in the pricing process of the bond issuance. MAS will therefore support swap transactions at market-determined prices, which will ultimately enable swap market liquidity to build in the longer tenors.

Secondly, MAS will partner the industry to create a Singapore dollar corporate debt securities lending facility, from which key players will be able to borrow securities for market making. By providing greater assurance that banks will be able to deliver any given security, this platform will reduce the risk of market makers being squeezed in the event they are unable to short-cover the bonds they have sold. Improved market liquidity will mean that asset managers can be more certain of their ability to enter...
and exit their positions with minimal price slippage.

Thirdly, MAS has worked with the industry to facilitate the formation of a corporate bond pricing platform to facilitate price discovery, where market participants will contribute end-of-day prices for a universe of Singapore dollar corporate bonds. This initiative will significantly improve transparency in the corporate bond market and provide reliable mark-to-market prices for the industry and asset managers alike. Bloomberg & Markit introduced their platforms at the start of June and July 2012 respectively.

**SGX’s regulatory initiatives:**

SGX has proposed margining for securities cleared by the Central Depository (CDP), in line with principles for financial market infrastructures (PFMI) established by the Committee on Payment and Settlement Systems (CPSS) and the Technical Committee of the International Organisation of Securities Commissions (IOSCO). The margin framework will enable SGX to enhance its risk management practices and provide SGX with additional financial resources to call upon before drawing on its clearing fund.

SGX has incorporated IOSCO’s Principles for Direct Electronic Access (DEA Principles) in its securities market trading rules. The DEA Principles require market operators to manage the risks posed by direct market access, including setting requirements on minimum customer standards and the ability to identify direct market access customers for market surveillance and risk management purposes.

SGX launched the ASEAN trading linkage with Bursa Malaysia in September 2012. The Stock Exchange of Thailand joined the linkage in October. This linkage is a private-sector initiative driven by seven ASEAN exchanges, and complements the ASEAN Capital Markets Forum’s initiatives. It aims to promote the growth of ASEAN capital markets by creating an infrastructure for more efficient intra-ASEAN trading. The linkage uses direct market access by routing orders from brokers in one country to sponsoring brokers in the country of the home exchange before they are submitted to the home exchange.

MAS is committed to meet the objectives set by G20 leaders on the regulation of OTC derivatives.

MAS issued a consultation paper on 13 February 2012 on the proposed regulation of OTC derivatives. The proposals included expanding the scope of the Securities and Futures Act, Chapter 289 (SFA) to:

- extend the current regulatory framework to OTC derivatives for clearing facilities;
- introduce a new regulatory framework for TRs; and
- implement mandatory clearing and reporting obligations.

To give effect to the above policy proposals, MAS consulted on the proposed legislative amendments to the SFA in May and August 2012. The Amendment Bill was introduced in Parliament in October 2012, and is expected to be passed by the end of the year.

The industry supports MAS’ efforts to enhance regulation of OTC derivatives, and has contributed positively to the OTC derivatives reform process. The Singapore Foreign Exchange Markets Committee (SFEMC) has committed to increase standardisation of OTC interest rate derivatives in the Singapore market to support the implementation of OTC derivatives reforms. MAS will continue to engage the industry on suitable initiatives to advance the reform process.

Certain issues such as the treatment of cross-border trades and margining requirements are pending international consensus. MAS participates actively in various international workstreams and will continue to work with other regulators to address relevant cross-border issues (See Box C).
2.7 Special Feature

Special Feature
Singapore’s Macroprudential Surveillance Framework

Following the GFC, macroprudential policy has been given a greater focus by policymakers globally. Macroprudential policy targets systemic risk, which is the risk of a large-scale breakdown of financial services provision that leads to severe macroeconomic outcomes. The focus of macroprudential policy is the financial system as a whole, as well as linkages between the financial and real sectors (i.e. macro-financial linkages). The FSB, BIS and IMF advocate that macroprudential policy should primarily constitute prudential instruments used to mitigate systemic risk.

Two key elements in a macroprudential policy framework are: (i) the identification and surveillance of systemic financial risk; and (ii) the design and calibration of policy instruments for macroprudential purposes. Institutional and associated governance arrangements, which are tailored to national circumstances and which recognise the occasional trade-off between macroprudential policy and other policies, are another necessary element for effective macroprudential policy-making. Figure S1 illustrates MAS’ macroprudential surveillance framework.

Singapore’s approach to macroprudential surveillance
MAS takes a system-wide perspective in its macroprudential surveillance efforts. MAS identifies potential risks arising from developments in the global and domestic financial systems, and traces their transmission channels and potential impact on macroeconomic and financial stability. As a small and open economy that is highly integrated with the rest of the world, the risk to Singapore of contagion from abroad is material. The domestic financial system affects the wider economy through its credit intermediation role and the provision of other financial services.

Since the Lehman crisis, MAS has developed and enhanced its macroprudential surveillance framework to guide policy formulation. Systemic risk is monitored in the time dimension such as pro-cyclicality of the financial system, as well as in the cross-sectional dimension such as risk concentrations, common exposures, financial linkages (i.e. linkages among financial entities and between financial entities and financial markets) and macro-financial linkages.

Risk concentration and common exposures
One source of systemic risk in Singapore is the property market. Property accounts for half of household assets, and mortgage liabilities account for three-quarters of household liabilities. Property exposure, in particular housing loans, is a significant and common exposure among banks, notably the locally-incorporated banks and Qualifying Full Banks (QFBs), which have wide access to the household sector. Banks lend to both property buyers (mostly households) and sellers (i.e. property firms) – mortgage loans account for 31% of DBU non-bank loans while B&C loans account for another 16%. Despite its small share (4%) in overall value-add, the construction sector has a large multiplier effect on other sectors in the economy. Box I in MAS’ November 2011 FSR analysed the systemic linkages among households, the property market and the financial system.

To mitigate systemic risks in or arising from the housing market, MAS has actively pursued a policy of capping LTV ratios. The LTV ratio caps address risks related to credit or leverage growth by encouraging financial prudence among borrowers and by creating a buffer against asset price correction for lenders. The LTV policy also tempers credit-driven asset price inflation. Other property-related measures taken by MAS are changes in

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36 Cross-border surveillance is important since besides being a trade-driven economy, Singapore is an international financial centre that has large amounts of capital flows, hosts a large number of foreign FIs and has locally-incorporated banks with significant overseas operations.
the minimum cash downpayment, and discontinuation of the Interest Absorption Scheme (IAS) and Interest-Only Loan (IOL). Section 35 of the Banking Act limits concentration of banks’ portfolios in property. More recently, MAS announced new rules on the maximum loan tenure for residential properties, and on LTV ratios for loan tenures exceeding 30 years or extending beyond the retirement age of 65 years.

Where necessary, MAS engages other government agencies on the use of non-prudential instruments to target systemic risks. In the case of Singapore’s property sector, the employment of a suite of measures that include transaction taxes and housing supply reflects a whole-of-government response to addressing systemic risks. While not under MAS’ ambit, these instruments are macroprudential in nature since they contribute to financial stability. Collectively, the property-related policies of MAS and the other government agencies aim to dampen the cyclicity of the property market.

Financial and macro-financial linkages
As host to a large number of FIs that intermediate funds into and out of the economy, Singapore closely monitors cross-border financial transactions as part of its macroprudential surveillance framework. Box J of the November 2011 FSR illustrates the surveillance framework for cross-border interbank transactions. A Contagion Index (CI) was used to measure the strength of cross border interbank linkages while network analysis methods were employed to identify the most interconnected or systemic institutions in the domestic interbank market. An assessment of the impact of cross border interbank contagion on Singapore’s banking system was also carried out using a self-constructed simulator.

Box M of MAS’ November 2011 FSR elaborates on the macroprudential surveillance framework which MAS has put in place to trace the systemic impact that the insurance sector may have on other sectors. A similar framework is already in place for the banking sector, and another is being developed for the capital markets sector. Together, these surveillance frameworks map out the linkages between and among FIs (e.g. interbank linkages, and linkages between banks and insurance companies), financial markets, financial infrastructure and the real economy, and their potential impact on Singapore’s macro-financial landscape.

The assessment of the local banks’ systemic importance to Singapore partly underlies the higher capital requirement that will be imposed on Singapore-incorporated banks in 2013. QFBs that are systemically important to Singapore will be required to locally incorporate their retail operations. The analytical findings of banks’ systemic importance in the macroprudential framework are an important consideration when MAS plans its supervisory resources to devote to each bank.

Procyclicality
One macroprudential policy instrument MAS will be putting in place to address procyclicality is the counter-cyclical capital buffer (CCB). The CCB is a broad-based instrument aimed at increasing the banking sector’s resilience by building up a buffer of capital in each bank during periods of excessive credit growth. The buffer can be released during periods of financial stress to support the flow of credit to the economy. This reduces the probability of negative feedback from an under-performing economy to the banking sector through increased credit losses. A potential side-benefit of the CCB is the restraint on excessive credit growth which may fuel an asset price boom or lead to a build-up of other financial system vulnerabilities.

Operationalising the CCB policy requires indicators that provide information about the build-up of risks and can help guide the level of CCB to be imposed, as well as indicators that signal when the buffer ought to be released. For Singapore, the credit-to-GDP ratio gap (i.e. the indicator recommended by the Basel Committee on Banking Supervision (BCBS)) does not work well. This is because as a small open economy, Singapore’s GDP growth can be volatile, and procyclicality could be exacerbated if the CCB policy were anchored on the credit-to-GDP ratio gap alone. A suite of indicators, as opposed to a single indicator, may provide a more holistic view and work better for Singapore, given that different indicators often contain different information. Furthermore, the CCB would interact with monetary policy and other economy-wide policies.
Surveillance tools
To carry out macroprudential surveillance, MAS employs a variety of tools. IMF-recommended Financial Soundness Indicators (FSIs) play a part in MAS’ surveillance efforts. FSIs tend to be backward-looking, and are supplemented by forward-looking indicators such as market-based indicators. More recently, the IMF has initiated a review of FSIs although changes will only be implemented when the relevant regulatory reforms such as Basel III capital rules come into effect. Insights from FSIs and other indicators are complemented by intelligence from market and industry participants as well as international experience gleaned from financial stability fora such as those organised by the FSB, BIS and IMF.

MAS also conducts regular stress-tests of key FIs based on plausible scenarios of stressed macroeconomic and financial conditions, in order to assess the resilience of the financial system. Credit, market, liquidity and interbank contagion risks are covered in these stress-tests. Bottom-up stress-tests can reveal areas of vulnerabilities in terms of banks’ exposures and risk management practices, while top-down stress-tests provide a benchmark to compare results of bottom-up stress-test against. Top-down stress tests also enable assessment of inter-linkages (e.g. interbank and macro-financial linkages), which bottom-up stress tests are unable to allow for.

The ongoing institution-specific monitoring by MAS’ financial supervision departments complements the top-down surveillance efforts to identify the risks and vulnerabilities of Singapore FIs and the financial system as a whole.

Institutional and governance arrangements
MAS is the macroprudential authority in Singapore, given its financial stability mandate and powers over prudential instruments. When needed, MAS will continue to reach out to other government agencies on the use of policy instruments under their administration, to achieve financial stability objectives.

While Singapore’s macroprudential policy framework has been in place for some years now, MAS has formalised internal governance arrangements to better serve its financial stability mandate. The Chairman of MAS presides over the Board-level Chairman’s Meeting (CM), which is the designated forum for major policy decisions relating to the objective of financial stability, in addition to its oversight of major changes to microprudential policies. Vesting CM with duties for both microprudential policy and macroprudential policy facilitates holistic prudential policy-making, integrating macro- and micro-prudential perspectives. The overlapping membership of CM and the Monetary and Investment Policy Meeting (MIPM) – the MAS Board-level forum responsible for monetary policy – allows for coordination of MAS’ functions while preserving the autonomy of policies in different areas.

CM, in its macroprudential policy role, is supported by the MAS Management Financial Stability Committee (FSC). The FSC is chaired by the Managing Director of MAS, with members comprising senior management overseeing the surveillance, supervisory, prudential policy, markets and investments, and economic policy functions. The wide range of department representation on FSC facilitates access to relevant information and expertise, and allows for coordination required to address financial stability issues.

Crisis management is another key aspect of financial stability. MAS holds regular meetings with the Ministry of Finance (MOF) to discuss emerging macroeconomic and financial stability risks and to collaborate on crisis management preparations.

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37 CM is responsible for major microprudential policies. Day-to-day supervisory matters such as licensing, inspection, sanctions against financial institutions, etc remain the responsibilities of another forum, the Management Financial Supervision Committee (MFSC).
Conclusion
New sources of systemic risk will emerge. Surveillance and analytical approaches to systemic risks will need to constantly evolve to allow for proper assessments of the likelihood and impact of new risks, as well as to guide policy formulation. New policy instruments will also be needed. MAS’ mandate for macroprudential policymaking to achieve financial stability means that it will continue to proactively monitor and respond to emerging risks.

References
Figure S1
Singapore's Macroprudential Surveillance Framework

DOMESTIC FINANCIAL SYSTEM

Financial Institutions
- Insurers
- Capital Market Intermediaries

Banks

Inter-sectoral linkages

Intra-sectoral linkages

Common exposures and risk concentration

DOMESTIC ECONOMY
- Corporates
- Property
- Households

FINANCIAL MARKETS
- Equity
- Debt
- FX
- Commodities
- Derivatives

Financial Infrastructure
- Exchanges
- Payment & settlement systems

Common exposures and risk concentration

For e.g. property-related measures such as LTV ratio cap, section 35 limit, minimum cash downpayment, limit on maximum loan tenure.

Macro-financial linkages

Part of the analyses underlying higher capital requirements for local banks and requirement for QFBs to locally incorporate retail operations.

Pro-cyclicality

Counter-cyclical capital buffer

Credit

GDP

REAL ECONOMY

GLOBAL MACRO-FINANCIAL ENVIRONMENT

Pro-cyclicality

Counter-cyclical capital buffer

Credit

GDP

COMMON EXPOSURES AND RISK CONCENTRATION (CROSS-BORDER LINKAGES)

For e.g. property-related measures such as LTV ratio cap, section 35 limit, minimum cash downpayment, limit on maximum loan tenure.

COMMON EXPOSURES AND RISK CONCENTRATION (HORIZONTAL LINKAGES)

Part of the analyses underlying higher capital requirements for local banks and requirement for QFBs to locally incorporate retail operations.

For e.g. property-related measures such as LTV ratio cap, section 35 limit, minimum cash downpayment, limit on maximum loan tenure.
STATISTICAL APPENDIX

SINGAPORE NON-FINANCIAL SECTOR

Table A.1: Corporate Sector’s Financial Ratios and Number of Companies Wound Up
Table A.2: Household Sector’s Financial Indicators

SINGAPORE FINANCIAL SECTOR

Table B.1: Banking Sector’s Financial Soundness Indicators
Table B.2: Local Banks’ Selected Financial Soundness Indicators
Table B.3: Direct Life Insurers: Total New Business Gross Premiums
Table B.4: Direct Life Insurers: Asset Distribution of Singapore Insurance Fund (Non-Linked Assets)
Table B.5: General Direct Insurers: Gross Premiums
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
### SINGAPORE NON-FINANCIAL SECTOR

**Table A.1: Corporate Sector’s Financial Ratios and Number of Companies Wound up**

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**Insolvency**

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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 2012) was included in the computation of ratios for H2 2011 and H1 2012 in the table above.
Table A.2: Household Sector’s Financial Indicators

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<td>50.5</td>
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<td>Household Liabilities (S$ Billion)</td>
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<td>402</td>
<td>382</td>
<td>416</td>
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Source: DOS, MAS and Ministry of Law.

* 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.
# SINGAPORE FINANCIAL SECTOR

## Table B.1: Banking Sector’s* Financial Soundness Indicators

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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

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<td><strong>Profitability (Per Cent)</strong></td>
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<td>ROA (Simple Average)</td>
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Source: Local banks’ financial statements, MAS calculations
* Local banks’ consolidated operations.
** Annual figures are as at Q4.
^ Figures include assets of Great Eastern Holdings.
### Table B.3: Direct Life Insurers: Total New Business Gross Premiums

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<td>16.4</td>
<td>64.3</td>
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<td>Sum Insured</td>
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Source: MAS

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

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<tr>
<td>Debt Securities</td>
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<td>56,988 (61.4)</td>
<td>61,041 (63.2)</td>
<td>57,633 (60.6)</td>
<td>58,546 (60.7)</td>
<td>60,728 (63.0)</td>
<td>61,097 (63.3)</td>
<td>62,533 (61.9)</td>
<td>64,317 (63.4)</td>
<td>69,188 (65.5)</td>
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<td>Equity Shares</td>
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<td>21,683 (23.4)</td>
<td>19,218 (19.9)</td>
<td>21,666 (22.8)</td>
<td>21,707 (22.5)</td>
<td>18,799 (19.5)</td>
<td>19,192 (19.9)</td>
<td>21,495 (21.3)</td>
<td>20,811 (20.5)</td>
<td>21,003 (19.9)</td>
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<td>5,378 (5.6)</td>
<td>7,011 (7.3)</td>
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<td>3,896 (4.0)</td>
<td>3,785 (3.7)</td>
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<td>3,466 (3.3)</td>
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<td>Land &amp; Buildings</td>
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<td>3,056 (3.2)</td>
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<td>2,889 (3.0)</td>
<td>2,889 (3.0)</td>
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<td>2,963 (2.9)</td>
<td>2,963 (2.9)</td>
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<tr>
<td>Other Assets</td>
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<td>2,721 (2.9)</td>
<td>2,164 (2.2)</td>
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<td>3,018 (2.9)</td>
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<td>Total Assets</td>
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<td>92,812 (100)</td>
<td>96,537 (100)</td>
<td>95,138 (100)</td>
<td>96,417 (100)</td>
<td>96,419 (100)</td>
<td>96,552 (100)</td>
<td>101,055 (100)</td>
<td>101,470 (100)</td>
<td>105,602 (100)</td>
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Source: MAS

### Table B.5: General Direct Insurers: Gross Premiums

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<td>Total Operations</td>
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<td>4,572.6</td>
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<td>3,423.6</td>
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<td>762.3</td>
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<td>397.6</td>
<td>460.9</td>
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Source: MAS
### Table B.6: General Direct Insurers: Composition of Net Premiums of Singapore Insurance Fund

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<tr>
<td>Marine &amp; Aviation</td>
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<tr>
<td>- Cargo</td>
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<td>22.6</td>
<td>21.4</td>
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<td>- Hull &amp; Liability</td>
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<td>113.3</td>
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<td>Personal Accident</td>
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Source: MAS

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

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<tr>
<td>Marine &amp; Aviation</td>
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<tr>
<td>- Cargo</td>
<td>15.8</td>
<td>11.4</td>
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Source: MAS