

Assessing the potential impact of a shock from the US and the euro zone on the Hong Kong economy

by the Research Department

The world outlook has turned gloomier in the past few months, as the sustainability of the recovery in major economies once again looks doubtful and the European sovereign debt problem continues to frustrate and threaten global financial markets. Against this backdrop, this study assesses the potential impact of a major shock from the US and the euro zone (the G2 economies) on the Hong Kong economy. An in-house forecasting model is used to quantify the potential impact through trade linkages under a baseline scenario of Europe managing to muddle through the debt crisis. The study then looks at the adverse scenario that the European debt problem degenerates into a financial crisis and how the shocks could be magnified through various financial channels to exacerbate the downturn.

Introduction

Worries about the global economic prospect have escalated over the past few months. The pace of recovery in the G2 economies has been much weaker than expected, triggering repeated downgrades of their output growth projections. Market confidence has also become fragile, following the downgrade of the US sovereign rating and the slow progress in resolving the intensifying debt crisis in the euro area.

The global growth outlook now depends much on Europe's ability to defuse the sovereign debt problem. In particular, two scenarios can be identified for the global economy:

1. In the baseline scenario, European policymakers manage to muddle through with the rescue plan announced after the EU summit in late October and a global recession is avoided. Nevertheless, growth in the G2 will still be sluggish in the face of fiscal consolidation and continued de-leveraging.
2. In the adverse scenario, the measures fail and the European sovereign debt problem degenerates into a global financial crisis, resulting in a recession of great depth and scale.

In either case, Hong Kong's economy is bound to be affected. In the first scenario, the impact of a G2 slowdown on the local economy will operate mainly through the trade channel, but domestic demand in the economy may provide some buffer for growth. In the second scenario, however, Hong Kong's growth is expected to be much more sensitive to the external slowdown. Experiences during the 2008 global financial crisis suggest that financial distresses will compound any impact through the trade channel.

This feature article will study these two scenarios in turn.

Baseline scenario: impact mainly through the trade channel

To study the potential impact of a G2 slowdown on Hong Kong's economic growth, we use the projections of our in-house small forecasting model

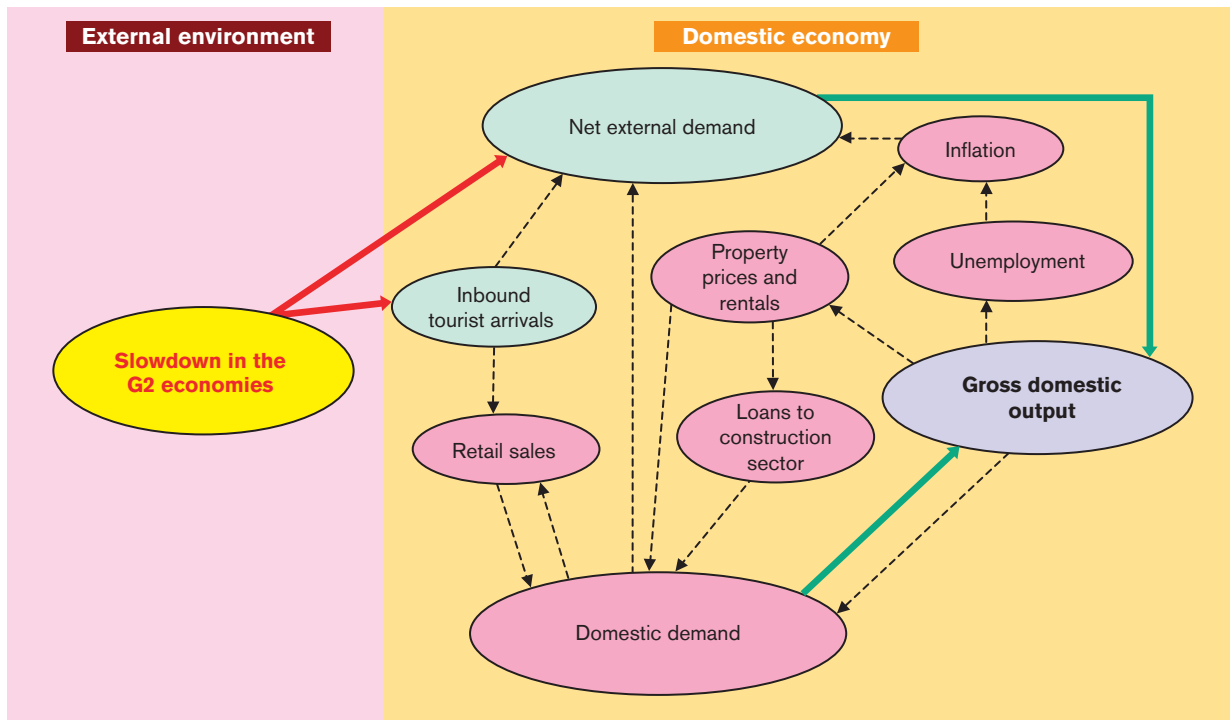
that captures the spillovers through trade linkages. Over the years, the model has been enhanced, making it possible to conduct scenario analysis in a more comprehensive manner (see Appendix for details). Under our model setting, a slowdown in the G2 economies in the baseline scenario will be transmitted to the Hong Kong economy initially via reduced exports. Thereafter, the disturbance will spread through the economy according to the linkages set in the model, affecting other key components, such as property prices, domestic demand and ultimately output growth (Chart 1).

Simulations of the model suggest that a decline in the growth of G2 will proportionally translate into a similar

decline in Hong Kong’s growth. Through simulations under different magnitudes of the slowdown in the G2 economies, a relatively stable relationship emerged from our small forecasting model: each percentage-point drop in the G2 economies’ output growth rate will lead to about a 0.3 percentage-point drop in Hong Kong’s output growth rate, closely reflecting the trade weight (of about 29%) of the G2 economies in Hong Kong’s trading basket.¹ Judging from the magnitude alone, the above relationship is plausible since Hong Kong, as a small open economy with a close interaction with the global environment, is likely to be closely affected by any external slowdown.²

CHART 1

Transmission of a G2 shock to the local economy via trade linkages



Source: HKMA.

¹ The trade weight of partners in the Hong Kong trading basket is derived from the data on direct trade in goods and services of Hong Kong with its trading partners.

² This relationship is also found to hold in a slowdown scenario of any other trading partner. As such, the relationship could be shown in a more general form: *each percentage-point drop in the trade-weighted output growth of Hong Kong’s major trading partners will lead to roughly the same percentage-point drop in the local economic growth.*

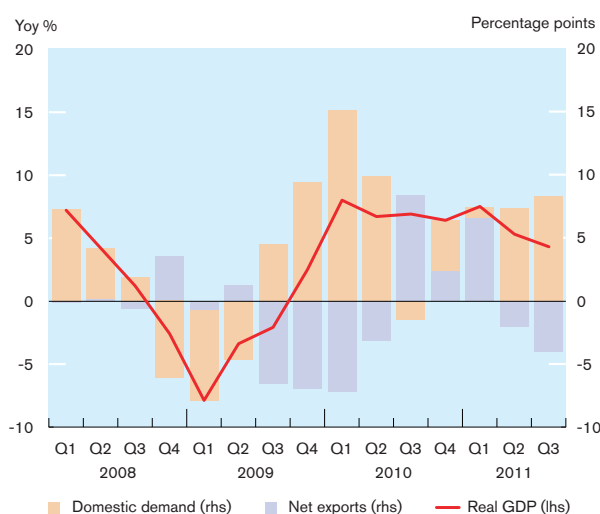
Adverse scenario: magnification of shocks through financial channels

In the adverse scenario, in which the slowdown in the G2 economies is a result of both economic and financial crises, the impact from the interactions between real and financial sectors on the local economy could be significant. However, given that the financial channels are yet to be integrated into the small forecasting model, the impact arising from the trade channel alone is likely to be underestimated in the event of a severe global slowdown.³

Indeed, the 2008/09 global financial crisis highlighted the potency of shock transmission through financial channels. Based on that episode,

CHART 2

Domestic demand dragged the economy into a deep recession during the global financial crisis



Sources: Census and Statistics Department (C&SD) and HKMA staff estimates.

the impact of a severe slowdown in the G2 economies on Hong Kong could be as large as 1.7 percentage points for each percentage-point drop in the trade-weighted output growth of Hong Kong's major trading partners.⁴ Hong Kong's recession during 2008/09 was primarily driven by a fall in consumption and investment rather than net exports (Chart 2). The experience suggests that macro-financial factors dictating the domestic demand dynamics may have the same important bearing on Hong Kong's economy as the trade channel during times of extraordinary external shocks. Several financial channels particularly relevant to Hong Kong are discussed in the following sections.

Fund flow pressures

In a period of severe global stress, the need for international investors and banks to shed risks and secure liquidity could trigger a rapid and sizeable fund flow reversal across borders. With Hong Kong being a major financial hub in the highly interconnected global markets, such fund flow pressures could have a substantial impact on domestic monetary and financial conditions as well as asset markets.

³ While real sectors are adequately presented in the model, the transmission channels between the financial and real sectors are not explicitly modelled in the framework. The absence is largely due to the difficulties inherent in the nonlinearities and structural instabilities of the relation between the real and financial sectors (see Bank for International Settlements, 2011). For instance, the transmission channels of the interaction between the two sectors appeared to operate differently during tranquil and crisis episodes, entailing nonlinearity in the relation

(see Balke, 2000; Calza and Sousa, 2006; and Levin et al., 2004). Such characteristics pose a challenge to integrate the financial sector into this small forecasting model.

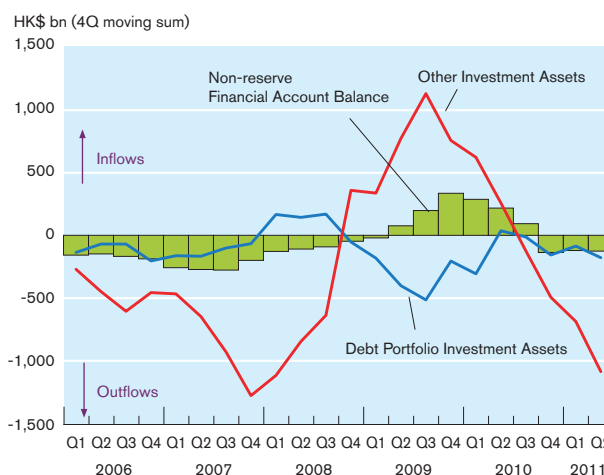
⁴ In the model by the International Monetary Fund (2011), an illustrative scenario involving a three percentage-point decline in global growth is estimated to cause a 4 - 4^{1/2} percentage-point fall in Hong Kong's growth. The implied elasticity of 1.3 - 1.5 is similar to the experience in the 2008/09 crisis.

In the main, a surge in global distress caused by a G2 shock could lead to widespread risk aversion and mounting redemption pressures faced by investment funds. In these conditions, international capital markets tend to experience intense de-leveraging pressure, and a hasty flight to safe-haven and highly liquid assets. An abrupt liquidation of investor positions built up since the recovery from the 2008/09 global financial crisis could lead to a disorderly fund flow reversal in Hong Kong. In particular, the pro-cyclicality of foreign capital inflows in Hong Kong as well as many emerging market economies often contributes to higher volatilities and a greater fall in the asset markets at signs of global unease. In the 2008/09 crisis, Hong Kong saw large-scale capital outflows in some segments of the financial account, particularly in the form of heavy purchases by local residents of foreign debt securities, notably US Treasuries. The domestic stock market also experienced strong sell-off pressure from foreign investors liquidating their local positions, with the Hang Seng Index, at one stage in late 2008, falling over 50% in less than three months. However, the overall net investment flows into Hong Kong during the period rose reflecting, in part, fund repatriation by local firms to meet their domestic liquidity needs and the attraction of the strong government guarantees for bank deposits (Chart 3).

Looking ahead, the risks of a rush out of the local market by foreign investors remain.⁵ The synchronised sharp fall in equity markets across Asia and other emerging market economies between August and November this year (Chart 4), triggered

CHART 3

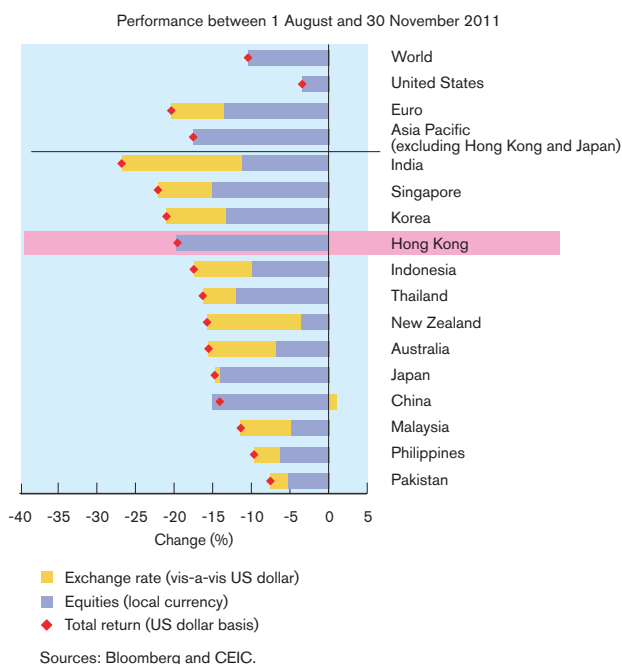
Heavy outflows to foreign debt securities were seen in 2008/09, although the overall net inflows rose as local firms repatriated funds from abroad



Sources: C&SD and HKMA staff estimates.

CHART 4

The sharp equity sell-offs across Asia from August to November was a reminder of the domestic market's sensitivity to swings in global sentiment



Sources: Bloomberg and CEIC.

⁵ With foreigners holding a sizeable amount of portfolio equity investment in Hong Kong (about HK\$3 trillion, according to the International Investment Position statistics for the second quarter of 2011), their portfolio allocation decisions could strongly affect Hong Kong's stock market performance.

by increased investor concerns about the European debt crisis, was a warning of the potential scale of fund flow pressures should the situation in Europe turn into a full-blown financial crisis.

Rise in funding costs and reduction in credit availability

Domestic credit conditions, i.e. funding costs and credit availability, could also be adversely affected in various situations associated with heightened global distress, such as sharp fund outflows from the Hong Kong dollar market, repatriation of funds by foreign banks and rising credit risk premium.

First, in the event where there is an abrupt reversal of fund flows, the Hong Kong dollar interbank interest rates could be tightened, while a reduction in the Hong Kong dollar deposit base could in turn lead to a rise in retail interest costs.⁶ Nevertheless, the technical refinements taken over the years to strengthen the operational framework of the currency board should ensure a continued orderly functioning of the interbank market⁷, as the fund outflows will be met by a corresponding release of the Aggregate Balance and the Exchange Fund Bills and Notes from the Monetary Base.

Secondly, European banks that face large losses at home may also cut back on their cross-border supply of funds, including to Hong Kong, in an effort to preserve liquidity and minimise disruptions to their headquarters' operations.⁸ This could take the form of asset sales, not rolling over maturing loans or a cut in credit lines in Hong Kong. Although the net external creditor position of the Hong Kong banking system⁹ and the supervisory measures taken by the HKMA provide important mitigations against the impact of any repatriation of funds by European banks on the funding cost of the local banking system, to the extent that domestic credit supply is affected, the credit conditions faced by domestic households and firms could potentially deteriorate.

Thirdly, under a global crisis situation, a channel that most often pushes up funding costs is the surge in counterparty risks in the global banking system. This would increase pressure on banks to de-leverage. Also, in a less favourable economic environment, banks may tighten their lending terms to factor in a higher credit risk premium. In the 2008/09 crisis, for instance, amid spikes in the interbank funding markets and deteriorating economic outlook, Hong Kong banks shrank their loan exposures and tightened credit conditions to preserve their funding and balance sheet space (Charts 5A - D).

⁶ See Wong and Wong (2011) for an analysis on how a higher loan-to-deposit ratio may translate into higher retail interest rates.

⁷ The measures include the formal establishment of two-sided convertibility undertakings and a convertibility zone, and the introduction of the discount window.

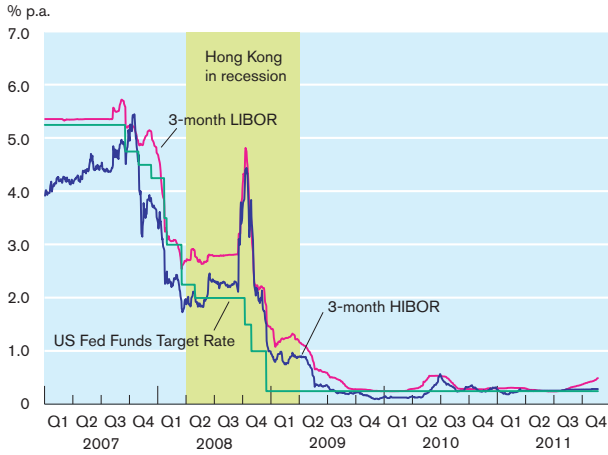
⁸ Asset exposures to Greece, Ireland, Italy, Portugal and Spain by Hong Kong banks are small, at less than 1% of their assets.

⁹ Also, many external claims of the Hong Kong banking system would be liquid enough for quick withdrawal to meet a pullback in external liabilities.

Potential impact of a G2 shock on Hong Kong through financial channels

CHART 5A

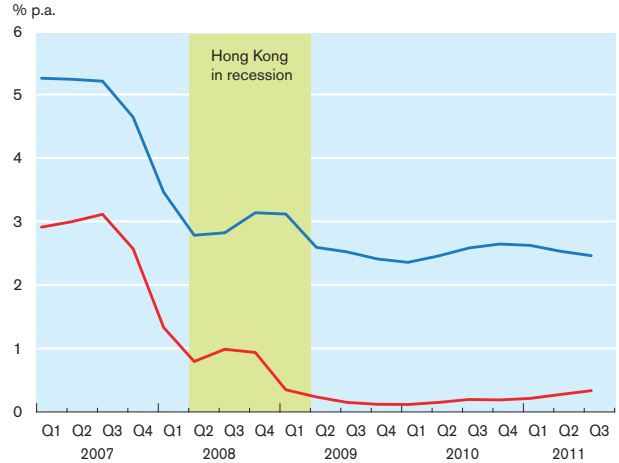
A surge in counterparty risks pushed up funding costs during the 2008/09 crisis...



Source: Bloomberg.

CHART 5B

... partly translating into higher retail interest costs

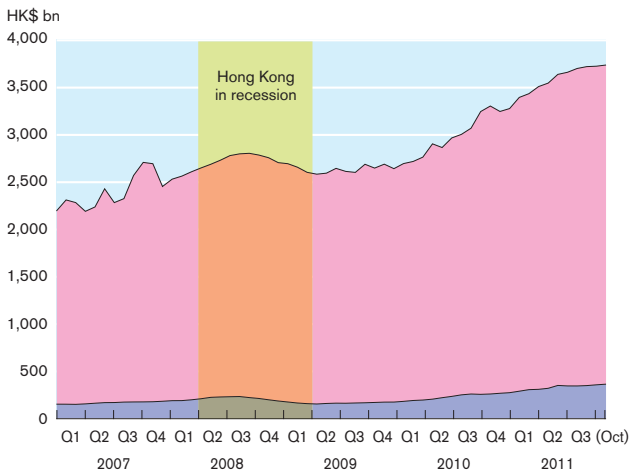


— Prime-based mortgage interest rate
— Composite interest rate

Source: HKMA.

CHART 5C

Domestic loans outstanding fell during the 2008/09 crisis...

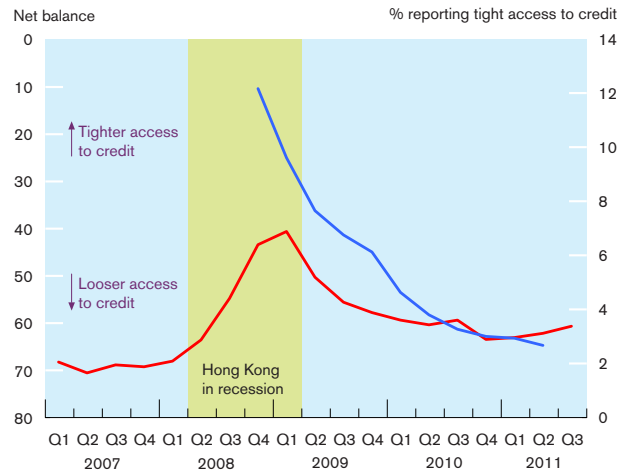


■ Other loans for domestic use
■ Trade finance

Source: HKMA.

CHART 5D

...driven by weaker loan demand and also a tightening in credit supply



— Quarterly Business Tendency Survey (lhs)
— SME consultation (rhs)

Source: C&SD.

Correction in property prices

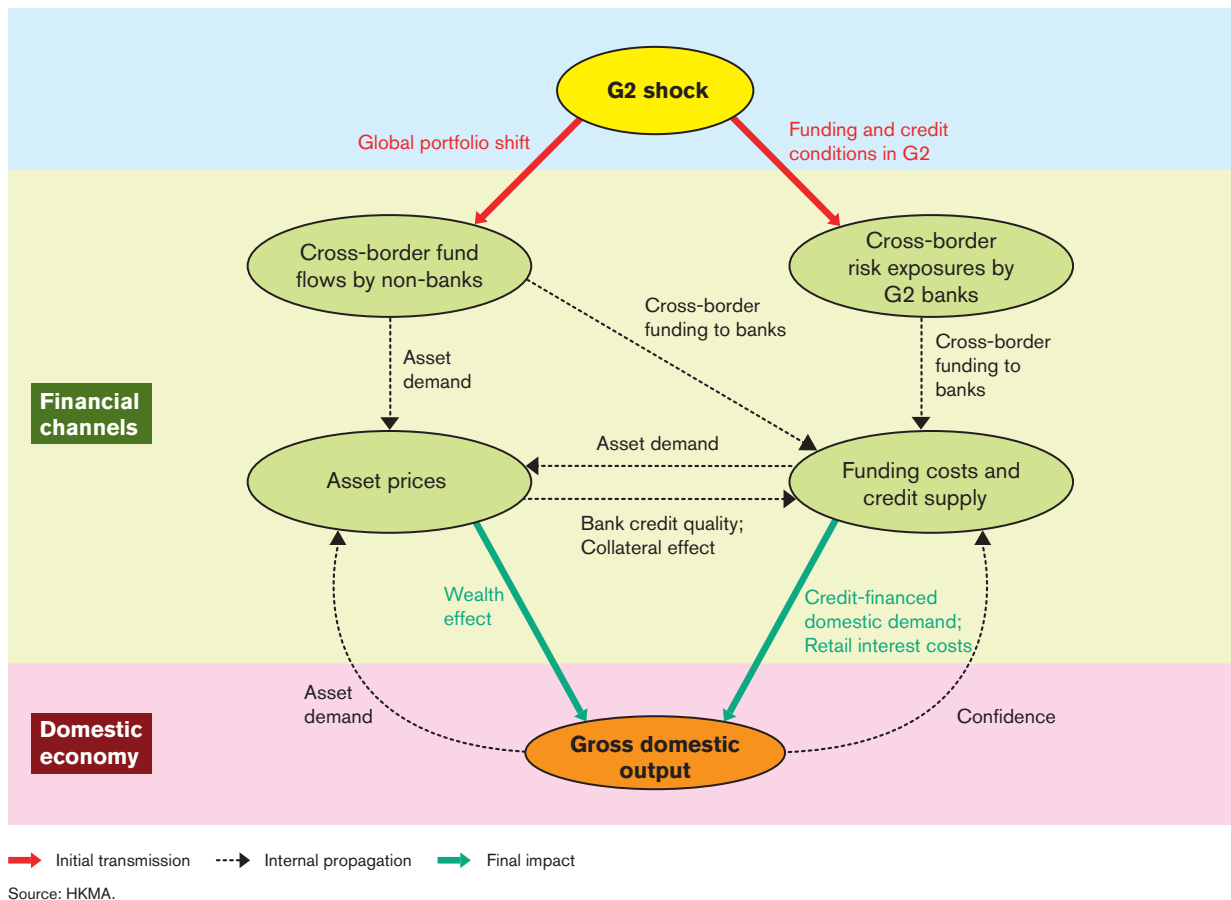
In the adverse scenario, worsening economic outlook and financial conditions could trigger a fall in investor confidence, leading to a correction in asset prices. The demand for real estate assets would be further weighed down by lower income growth, a deterioration in the labour market and higher borrowing costs.

The impact of a downward correction in property prices on the real economy would mainly work through negative wealth effects on consumption. Relative to a fall in stock prices, a decline in property prices would have more dramatic and far-reaching effects on the Hong Kong real economy – as

illustrated in the aftermath of the 1997 property bubble burst – given that property investment is more highly leveraged and represents the bulk of household assets. In addition, the financial accelerator could force a further hampering of the credit creation process by bringing into play the “collateral effect”. A fall in the value of households and firms’ property holdings would reduce the value of collateral they could pledge to secure credit, hence aggravating the constraint on their financial access. Adverse feedback loops entailing falling asset prices, deteriorating balance sheets, tightening credit conditions and declining real activity could eventually take hold, putting the economy under yet greater strains (Chart 6).

CHART 6

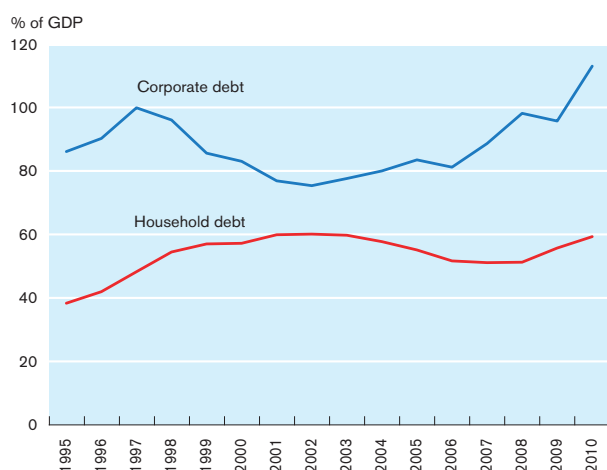
Transmission of a G2 shock through selected key financial channels



It should be noted that greater vulnerabilities might have built up in the private sector balance sheet this time. While the ultra-low interest-rate environment has boosted households' mortgage repayment ability over the past three years, their leverage has become high, particularly as property prices are already at an elevated level relative to income. In fact, household debt in Hong Kong, which largely reflects borrowing for housing, rose to 60% of GDP by the end of 2010, a level close to the record peak of 2002 and likely to have increased further this year (Chart 7). However, low interest rates would not last forever.¹⁰ A deepening in households' repayment burden would inevitably further dampen consumption, asset prices and real activity.

CHART 7

The rise in households and firms' leverage in the past three years might have increased their vulnerabilities to shocks



Note: Only borrowings from the banking system are covered.
Sources: C&SD, HKMA and HKMA staff estimates.

Positioning for increased downside risks

According to our forecasting model, a G2 slowdown in the baseline scenario would proportionally translate into a similar decline in Hong Kong's economic growth via trade linkages. However, in the adverse scenario where the financial channels are set in motion, the domestic economy could be thrown into a much deeper downturn. Judging from recent developments in the European sovereign debt crisis, the adverse scenario could not be dismissed lightly, and the risks of severe global economic and financial market fallout have risen considerably.

Nevertheless, the 2008/09 crisis provides a useful lesson on how to prepare for, and manage, a materialisation of such a risk. During the crisis, stress emerged in Hong Kong's economic and financial conditions, contributing to the steep slide in the economy. However, Hong Kong's financial system remained robust, and the impact on the labour market was much less severe than that experienced during the Asian financial crisis because financial institutions and the private sector in the region entered the recent crisis with strong balance sheets. In contrast, on the eve of the Asian financial crisis, the property market in Hong Kong was experiencing a bubble, and there were excessive borrowings by the private sector. When the Hong Kong economy was hit by the external shock, corporate and personal bankruptcies rose sharply and non-performing loans increased significantly.

With growing downside risks, past experiences can serve as a timely reminder of the continued importance of avoiding any further build-up in financial vulnerabilities, and the need to strengthen the private sector balance sheet against the possibility of new severe shocks. In times of market strain, the Government and the HKMA will be prepared to undertake proactive and credible measures to maintain confidence and forestall the development of any downward spiral in domestic financial conditions.

¹⁰ Mortgage rates have risen at least 140 basis points for new loans this year due to banks' funding pressures.

APPENDIX

A description of the current in-house small forecasting model

The current in-house small forecasting model is a quarterly macro-econometric model descending from Kong and Leung (2004).¹¹ In that model, behavioural equations are estimated for the following eight variables: (1) private consumption; (2) private investment; (3) domestic exports of goods; (4) re-exports of goods; (5) exports of services; (6) retained imports less inventory accumulation; (7) inflation; and (8) the unemployment rate. These behavioural equations cover a wide range of macroeconomic variables like domestic and external demand, inflation and employment in the labour market, accounting for major activities in different sectors of Hong Kong's economy. On the other hand, some variables such as property prices, inventory accumulation and the Hang Seng Index were set to be exogenous in the model, meaning that the dynamics of these variables are not driven internally by the small forecasting model, and instead had to rely on assumptions that are totally external to the model. A number of identities were then used to complete the small forecasting model to provide insights on other variables not mentioned above, such as the real output and the real effective exchange rate.

While the model of Kong and Leung (2004) facilitated our assessment of the economy in the past, we are fully aware of the need to refine the model from time to time, to better capture the latest developments in the structure of the Hong Kong economy. Therefore, a number of extensions and enhancements have been made in recent years to improve the model's structure:

1. The local inflation process is now studied in greater detail, by separately modelling the basic food, rental and other components of the composite consumer price index (CCPI). A more detailed account of the inflation process gives us more understanding of the source and the dynamics of the underlying inflation.
2. Property prices and rentals now evolve according to behavioural equations, thus allowing them to be determined simultaneously with other price and macroeconomic variables within the model rather than by ad hoc assumption.
3. The influence of tourists' spending on local retail sales and exports of services are now taken into account, reflecting the importance of the surge in Mainland visitors to the local economy in recent years.
4. Private property-related investment and private machinery and equipment investment are now modelled separately, with the former more explicitly related to the growth in loans to the building and construction sector. Such disaggregation of private investment provides greater flexibility to more accurately capture the specific change in individual items.
5. Inventory accumulation and the Hang Seng Index are now treated as endogenous variables. The behavioural equation of these variables, however, is still primitive and may need further investigation, as the inherent high volatilities of these variables make the modelling work difficult.
6. Exchange rate pass-throughs are also featured in the current model by modelling explicitly the dynamics of import prices of fuels and other commodities and their relationships with exchange rates.

¹¹ See Kong and Leung (2004).

With these changes, the small forecasting model now consists of 20 behavioural equations for the following variables: (1) private consumption; (2) private investment in machinery and equipment; (3) private property-related investment; (4) domestic exports of goods; (5) re-exports of goods; (6) exports of services; (7) retained imports of goods and services; (8) inventory accumulation; (9) inflation of the basic food component in the CCPI; (10) inflation of the rental component of the CCPI; (11) inflation of other CCPI components; (12) inbound tourist arrivals; (13) retail sales; (14) property prices; (15) property rentals; (16) the Hang Seng Index; (17) import prices of fuel; (18) import prices of other commodities; (19) loans to the building and construction sector; and (20) the unemployment rate, supplemented by a number of identities for completing the model.

Despite the changes, the modelling strategy underlying the current version of the small forecasting model still follows that of Kong and Leung (2004), with each behavioural equation being estimated separately, rather than in a system manner. On the other hand, most of the behavioural equations in the model are estimated using the most recent quarterly data, and are cast in error-correction forms, capturing both the short-run and long-run dynamics among these economic variables.

With the improvements, the current enriched model structure makes it possible to conduct scenario analysis in a more comprehensive manner, therefore strengthening our analytical power to assess the Hong Kong economy.

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