A graphical framework for monitoring the property market in Hong Kong

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This article presents a graphical framework for monitoring property market conditions and vulnerabilities in Hong Kong. It summarises the evolution of five key indicators (property prices, property transaction volumes, new mortgage loans, the income-gearing ratio, and the buy-rent gap) and compares the current situation with the boom-and-bust cycles of the past decade. The analysis using this framework suggests that the risk of a property bubble remains low at this point of time, despite the sharp rebound in prices since the summer of 2003. However, market conditions may change rapidly. It is thus important to monitor these indicators closely.

I. Introduction

The property market plays an important role in the Hong Kong economy. Housing is the most important form of savings for many households, and mortgage loans are the largest component of household indebtedness. The banking sector is significantly exposed, as mortgage loans and loans for property development and investment take up more than half the domestic credit. In addition, properties are widely used as collateral for consumer and business credit. Land sales, taxes on profits from the real estate industry, and stamp duties on property transactions have also been a significant source of government revenue. Indeed, the sharp decline in property prices in the years following the Asian financial crisis contributed to depressed consumption and investment, weak demand for bank credit, and persistent fiscal deficits. After reaching a trough in July 2003, property prices have rebounded sharply in recent quarters. While the recovery is from a very low base, the speed of the rise has raised concerns about the risk of another bubble in the property market.

This article presents a graphical framework to summarise developments in some key property market indicators. It provides an overview of property market conditions, aimed specifically at assessing the risk of overheating pressures. The latest developments suggest that the risk of a property bubble is low, despite the sharp rebound in prices since the summer of 2003. The rest of the article is organised as follows. The next section explains the main indicators included in the framework. Section III presents the graphical framework that illustrates the evolution of those indicators in the previous and current cycles. The final section summarises the conclusions and notes some caveats to the framework.

II. Selected indicators

Many indicators are potentially useful for gauging the vulnerabilities in the property sector. The first step is to decide what indicators are to be included in this graphical framework. Based on our analysis, we include five key indicators that provide an overview of property market conditions from different angles.[1] These are residential property prices, property transaction volumes, new mortgages, the income-gearing ratio, and the buy-rent gap. Details of the indicators and the rationale for including them are given below. Their developments in the past two decades are plotted in the Appendix.

[1] For an analysis and description of available indicators on the property market, see Peng and Fan (2004), "Real Estate Indicators in Hong Kong", *HKMA Quarterly Bulletin*, March 2004.

Property prices are the most direct and simple indicator of market conditions. Property prices used in this framework refer to the price index for private domestic premises compiled by the Rating and Valuation Department (R&VD). This is a territory-wide index covering Hong Kong Island, Kowloon and the New Territories. The index measures price changes by reference to the factors of transaction prices divided by rateable values instead of reference to the average price per floor area. The transaction prices are those scrutinised by the R&VD for stamp duty purposes. The rateable value of a property is an annual rental value assessed by the R&VD as the basis for charging rates. In assessing the rateable value of a property, reference is made to open market rents for similar properties in the locality, with adjustments to reflect differences in size, location, facilities, standards of finish, and management. By utilising the rateable values in compiling the price index, allowance is made for qualitative differences between properties.[2] The overall price index is weighted using the number of transactions in the current and previous 11 months of each property class.

As property prices generally move upwards when the economy grows, there are limitations to comparing the levels of property prices over the long term. As a result, this framework uses real property prices, which are obtained by deflating the nominal property price index by the Composite Consumer Price Index (CCPI). After declining for a number of years, property prices have rebounded sharply since the summer of 2003. By December 2004, the real property price index had risen 42% compared with the trough in July 2003. However, it remained 46% below the peak in mid-1997.

While the recovery is broad-based, price increases at the high-end of the market have been particularly strong (Chart A in the Appendix). As noted above, the price index is weighted using the number of transactions of each property class. Since both prices and transactions for the relatively high-end properties have increased faster than the low-end properties in recent quarters, the increase in the overall price index could be overstated due to composition changes. However, an alternative price index constructed using housing stocks as weights, shows an almost identical trend compared with the official index. This suggests that the effect of composition changes on the overall price movement remains insignificant, reflecting the small proportion of the high-end properties in the housing stock and transaction volumes.

Transaction volume provides an indication of the buoyancy of market activity. It refers to the monthly number of Sale and Purchase Agreements expressed in per cent of the total private housing stock, that is, the turnover rate. The rise in prices has been associated with a significant increase in transactions since the third quarter of 2003, with the high-end of the market being particularly active. The number of Sale and Purchase Agreements increased to a seven-year high in 2004, but was still 40% lower than in 1997. Its ratio to the total private housing stock also rose to 0.6%-0.8% in 2004, compared with a high of 2% in the second quarter of 1997 (Chart B in the Appendix).

New mortgages refer to the amount of new loans for private residential properties provided by authorized institutions.[3] Similar to property prices, real mortgage loans are used in the analysis and are obtained by deflating the nominal values by the CCPI. Experiences in Hong Kong and elsewhere suggest that bank credit can accelerate property price swings. In the past few quarters, real new residential mortgage loans have increased significantly along with the recovery in the property market (Chart C in the Appendix).[4]

[2] A box in Peng and Fan (2004) discusses in detail how the rateable value can be used to adjust the transaction prices for quality difference.

[3] Because of data limitations, new mortgage loans for the period before 1993 are projected based on an empirical model for the period of 1993-2003, which relates mortgage loans to property prices and transaction volumes.

[4] It is noted that the amount of new loans includes those for refinancing, which, in principle, should be excluded from the analysis. However, data for refinancing loans are only available for recent years and this limits comparison with the earlier periods. In any case, this is unlikely to lead to significant distortions as the amount of refinancing loans is small relative to new mortgage loans for property purchases in most months.

The income-gearing ratio compares mortgage repayment to household income. It measures housing affordability on the basis of debt-servicing burden. The mortgage repayment is estimated by assuming a 20-year mortgage on 70% of the purchase price of a representative 50 m^2 flat. The purchase price is estimated by applying the average unit price of a class B residential unit (flat of saleable floor area between 40 m^2 and 69.9 m^2).[5] The 75th percentile household income, instead of the median household income, is used in the calculation because it better reflects the income level of private housing owners.[6] This is because the median household income is based on the entire population and, therefore, includes low-income households that are unable to afford private home ownership.[7] The income-gearing ratio fell sharply in the past few years, reflecting a fall in housing prices relative to household incomes and reduced mortgage interest rates. The ratio rose modestly to 20% in the fourth quarter of 2004, but remains well below the 50% ceiling generally observed by banks when marking residential mortgage loans (Chart D in the Appendix).[8]

The buy-rent gap compares the cost of purchasing and maintaining a flat with that of renting it. The gap is calculated as a ratio of mortgage repayment of a representative 50 m^2 flat to its rental. Similar to the mortgage repayment, market rents are estimated based on the average unit rental of a class B residential unit. If mortgage repayment is higher than rent, it would be cheaper to rent than buy a property for accommodation. Historically, the ratio was well above 100% in most of the past two decades. This is consistent with the general upward trend in prices before the property bubble burst. Having fallen sharply in the past six years, the ratio rose moderately in recent quarters (Chart F in the Appendix). However, mortgage rates, which are at a historically low level, may rise more sharply than currently expected, should the US interest rates increase further or the negative spreads of Hong Kong dollar interest rates narrow. This would raise the cost of buying a property relative to renting.

In addition to the above series, confirmor transactions could be a useful indicator of the extent of speculative activity in the market. Confirmor transactions are those in which a buyer re-sells the flat to a sub-purchaser before the legal completion of the original sale. Confirmors can be speculators obtaining short-term capital gains. The number of confirmor transactions as a share of total transactions jumped from about 1% in 2003 to 7% in May 2004 (compared with 8.4% in May 1997), before falling back to around 4% in the final quarter of 2004 (Chart E in the Appendix).[9] However, a rise in the number of confirmor transactions does not necessarily represent an increase in "active" speculation. For example, some confirmor transactions could be induced by an unexpected sharp rise in property prices rather than as a result of "active" speculation. It is possible that buyers, who initially purchase flats for their own use or long-term investment, sell them shortly after acquisition as prices increase much faster than earlier expected. As a result, confirmor transactions are monitored as a supplement to the five core indicators.

While the above indicators provide useful information, it is difficult to obtain an overview of property market conditions by looking at these measures separately. For example, if a rise in property prices is associated with an increase in transactions, this may suggest a positive price outlook. On the other hand, if higher prices are accompanied by a low transaction volume, it may suggest that price increases are not sustainable.

[5] The number of properties in this class accounts for about half the total private housing stock.

[6] According to the 2001 Population Census, the median monthly household income of those owning private residential properties and with mortgage loans was roughly equal to the 75th percentile household income of the entire population.

[7] About half the households are covered by the public housing programmes.

[8] A similar measure in the US, the new home affordability ratio, was 23% and 19% in October 2004 for fixed-rate and adjustable-rate mortgages respectively (*Economic and Mortgage Market Developments*, Fannie Mae, December 2004). In Hong Kong, an overwhelming majority of mortgages is on adjustable rates.

[9] Data on confirmor transactions refer to those estimated by Centaline Property Agency Limited based on statistics obtained from the Land Registry.

Another factor is whether a rise in property prices, accompanied by an increase in household income, affects the income-gearing (affordability) ratio. Therefore, a framework is needed to compare these indicators in a more systematic way.

III. A graphical framework for analysis

A simple framework of displaying the five indicators simultaneously in one chart is designed to offer an overview of market conditions. The values of the five indicators at a particular point of time are presented using a pentagon. The distance of each corner from its centre represents the magnitude of each indicator, and a larger size of the pentagon suggests a higher risk of overheating in the market. The magnitude of each indicator, that is, the risk projected by each indicator, is normalised against a benchmark period. The chosen benchmark is the six months to September 1997, when all five indicators reached their peaks and, with the benefit of hindsight, market conditions are assessed to be clearly out of line with the fundamentals. Specifically, all indicators are normalised to be 100 in April-September 1997.

Chart 1 (on page 10) illustrates the evolution of the indicators in the early 1990s, by comparing the position in April-September 1997 with those for 1990 and the fourth quarter of 1994 respectively. Studies conducted by the HKMA and the IMF suggest that property prices were broadly in line with the fundamentals in the early 1990s.[10] In particular, real property prices were relatively stable and mortgage repayment was roughly equal to rent in 1990. Property prices then rose and market activity increased, reaching an interim peak in the second quarter of 1994. The income-gearing ratio and buy-rent gap also rose markedly. Prices declined between mid-1994 and late 1995, mainly due to the implementation of a package of anti-speculative measures by the Government and increases in interest rates. Subsequently, prices and transaction volumes picked up in 1996 and rose to record highs in mid-1997. Associated with these movements, the indicators of income-gearing and buy-rent gap deteriorated further, but the increase in new mortgage loans was most pronounced. The latter factor suggests that bank financing became important in supporting property price increases in this period. It also points to increased household indebtedness and vulnerabilities to a decline in property prices.

Chart 2 (on page 10) describes the evolution of the indicators following the bursting of the property bubble. Property prices fell sharply, bottoming out in the second quarter of 2003. The deep fall was triggered by the Asian financial crisis, while the subsequent prolonged decline was against the backdrop of an economic downturn, deflation, rising unemployment, and the impact of SARS. The transaction volumes and new mortgage loans also shrank to low levels. Income and rentals dropped during the period, property prices recorded greater falls and mortgage interest rates declined owing to increased competition among banks and a decrease in general levels of interest rates. As a result, both the income-gearing ratio and the buy-rent gap showed a sharp improvement in fundamentals, supporting property prices. Since the summer of 2003, property prices have rebounded along with a pick-up in the transaction volume, and new mortgage loans have also risen.[11] However, the income-gearing ratio and the buy-rent gap increased only moderately from the second quarter of 2003. Overall, the size of the pentagon representing the three months ending December 2004 remained substantially smaller than that for April-September 1997. These factors suggest that vulnerabilities in the property market are not a major concern at this stage. Compared with the situation in 1990, the

[10] See Peng (2002), "What Drives Property Prices in Hong Kong", *HKMA Quarterly Bulletin*, August 2002, and Kalra et al (2000), "Property Prices and Speculative Bubbles: Evidence from Hong Kong SAR", *IMF Working Paper*, WP/00/2.

[11] Developments in transaction volumes and new mortgage loans are measured on a three-month rolling basis, as monthly figures of the two indicators tend to be volatile. Thus, the latest situation is represented by averages of transaction volumes and new mortgage loans in the three months ending December 2004.

income-gearing ratio was closer to the centre, while the buy-rent gap was about the same, implying a relatively small risk of overheating. Although the amount of new mortgage loans in recent months was larger than in 1990, this mainly reflects higher property valuations.

In addition to these five core indicators, it is useful to consider supplementary property market activity. Chart 3 (on page 11) expands Chart 2 by including the number of confirmor transactions as a share of the overall total. As mentioned above, the rise in the share of transactions was pronounced in the earlier part of 2004. It reached a level not far below that of mid-1997, but declined in more recent months.[12] The chart shows that the rise in confirmor transactions was more significant than those in other indicators. Caution is required in interpreting the increase, but it is important to monitor this indicator closely in the period ahead.

While recovery in the property market is broad-based, the prices for large flats have rebounded more sharply than indicated by the overall price index (Chart A in the Appendix). For example, flats with a saleable floor area of 160 m^2 or more rose by 73% in real terms from the trough in 2003 to December 2004, compared with the increase of 42% in the overall index during the same period. Nevertheless, prices were still about 30% (in real terms) below the peak in 1997. Confirmor transactions of luxurious flats have also been more active. Their share of total transactions of properties valued at over HK$7 million rose sharply to 24% in the second quarter of 2004, although this dropped to 9% in the fourth quarter, compared with 14% in mid-1997 (Chart E in the Appendix). However, transaction volumes in this segment are very thin and volatile, and the share can be affected by small changes. Therefore, caution is required in interpreting the development of this indicator. The latest movement in prices and confirmor transactions in the high-end of the market is shown by the dotted line in Chart 3.[13]

IV. Conclusion and caveats

This paper presents a graphical framework for assessing property market conditions in Hong Kong. The analysis based on the framework suggests that the risk of a property bubble remains low at this point of time, despite the sharp rebound in prices since the summer of 2003. Nevertheless, rises in confirmor transactions in recent periods should be monitored closely. One important limitation of this framework is that all the indicators are treated with equal importance in the diagram. It is possible that some indictors are more informative about overheating pressure than others. While it is theoretically appealing to assign different weights to the individual series and derive a composite indicator, it is difficult to do so in practice. Overall, the framework offers a useful, yet simple, tool for monitoring property market conditions.

[12] Data on confirmor transactions are available only from mid-1995, limiting comparison with the earlier periods.

[13] The other four indicators for this segment of the market cannot be constructed because of data limitations.

CHART 1

Evolution of the five indicators before the property bubble burst

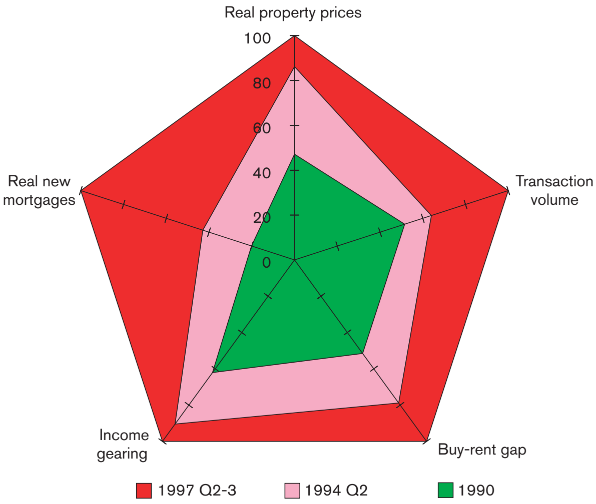
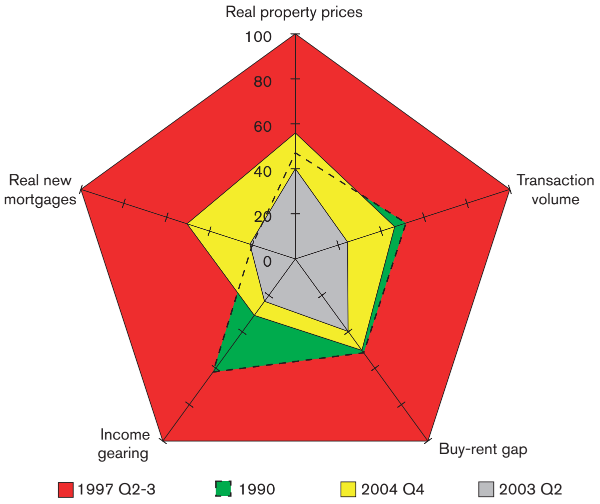


CHART 2

Evolution of the five indicators following the bursting of the property bubble

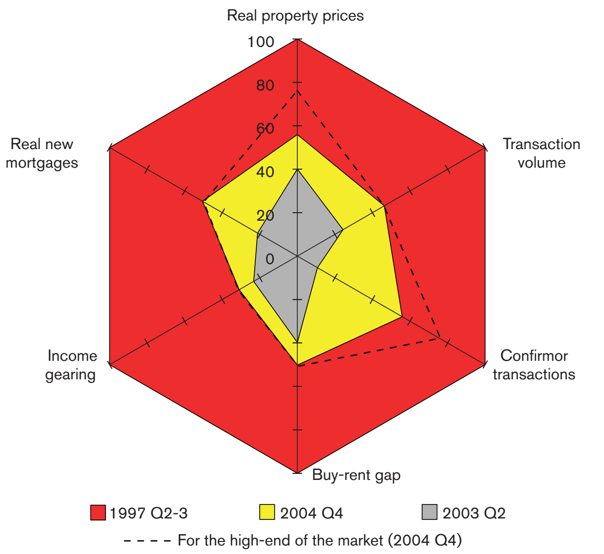


- All indicators are normalised to 100 in 1997 Q2-3.
- Property prices rose in the early 1990s, before a brief correction in 1994-95.
  - The residential property price index rose by 170% (or 80% in real terms) between 1990 Q1 and 1994 Q2, while increases in the other indicators were smaller.
  - The correction in 1994-95 was mainly due to the implementation of anti-speculative measures by the Government and increases in interest rates.
- Prices resumed increasing from 1996 and rose to record highs in mid-1997.
  - Property prices and transaction volumes rose by about 50% (in real terms) and 150%, respectively, between the previous low in 1995 Q4 and 1997 Q2.
  - The boom was in part due to the restricted land supply in earlier years which restrained the adjustment of housing supply in response to the increase in demand.
  - The rises in prices and transactions were associated with a threefold increase in new residential mortgage loans.
- By construction both the numerator and denominator of the income-gearing ratio and the buy-rent gap are affected by developments in the property market and the general economy. As a result, these two indicators increased more moderately than prices, as both income and rentals rose markedly during the period.

- Following a sharp correction after the Asian financial crisis, residential property prices continued to fall, bottoming out in mid-2003.
  - The price index deflated by the CCPI fell by 62% between May 1997 and July 2003 against the backdrop of a weak economy, deflation, rising unemployment and the impact of SARS.
  - The increased supply of land following a relaxation of restrictions in 1994 and their final lifting in mid-1997 appear to have led to a rise in housing supply, which reinforced a decline in prices.
  - New mortgage loans and transaction volumes also shrank to low levels.
  - The income-gearing ratio and buy-rent gap declined sharply, indicating much improved affordability and incentives for buying properties.
- The property market has rebounded since the summer of 2003. Given volatility in monthly figures, the latest situation is represented by averages in the fourth quarter of 2004.
  - Property prices rose by 42% in December 2004 from the trough in 2003 in real terms, but were still more than 46% below their peak level in 1997.
  - The transaction volume and new mortgage loans also rose markedly, but remained low relative to the peak levels in 1997.
  - The income-gearing ratio and the buy-rent gap rose more moderately than prices during the period, suggesting that the rises in prices were accompanied by increases in household income and rentals.

CHART 3

Supplementary indicators

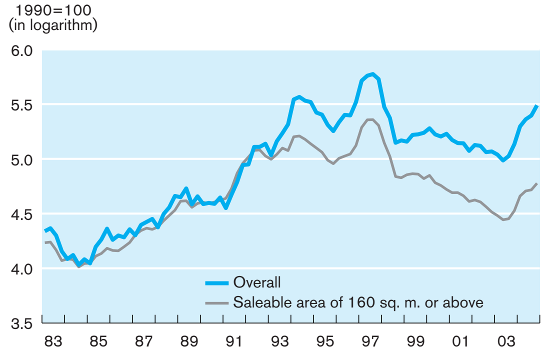


- Confirmor transactions are measured as a share of the total transactions in the residential property market.
- The dotted line represents positions of the indicators for the high-end of the market. This is defined as flats with a saleable floor area of 160 m^2 or above for measuring property prices and those valued at over HK$7 million for measuring confirmor transactions.

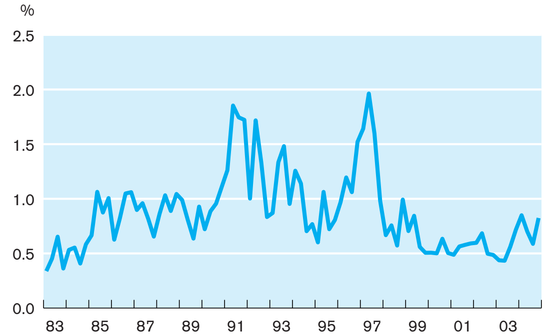
APPENDIX

Developments in selected indicators over the past 20 years

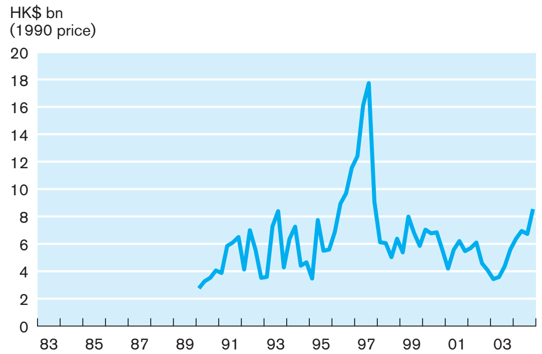
A. Real residential property prices (deflated by the Composite CPI)



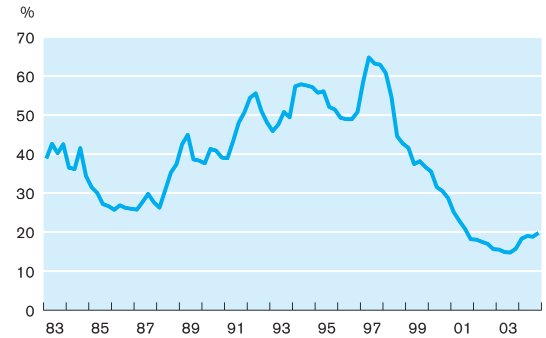
B. Transaction volumes (in per cent of private housing stock)



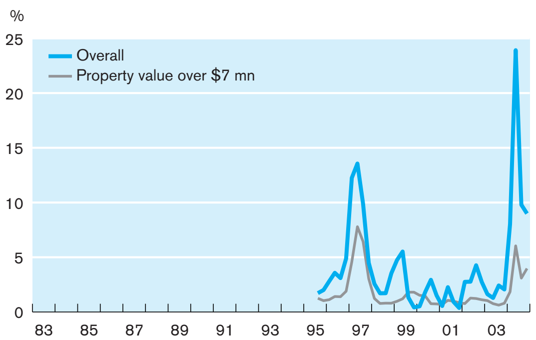
C. Real new residential mortgage loans (deflated by the Composite CPI)



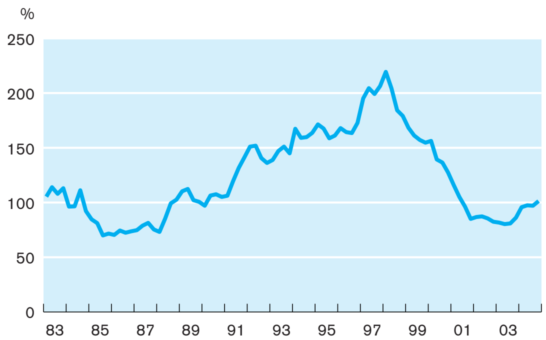
D. Income-gearing ratio



E. Confirmor transactions (in per cent of total transactions)



F. Buy-rent gap



Sources: Rating & Valuation Department, Land Registry, Census & Statistics Department, Centaline Property Agency Limited, and staff estimates.