

WHAT DRIVES PROPERTY PRICES IN HONG KONG?

This paper presents an empirical model of property prices that combines fundamental variables with speculative bubbles. The estimates suggest that about half of the swings in property prices since the early 1990s can be attributed to changes in the fundamental variables. The remainder is explained by the build-up of a bubble and its subsequent collapse.

The “fair” value of property prices rose strongly in the early part of the 1990s, reflecting a combination of factors including booming economic activity, low interest rates, strong increases in the number of households, and moderate growth in public housing supply. The fair value dropped following the Asian financial crisis, as economic activity contracted, real interest rates rose, and growth in the number of households slowed. Thus, while interest rates played a role, they were only part of the demand-side factors that contributed to the property price swings.

I. Introduction

The sharp decline in property prices in the past few years has contributed significantly to general price deflation and weak economic activity. It has also affected the fiscal balance through declines in land revenue and stamp duties from property sales transactions.¹ This paper extends the earlier empirical work by examining the determination of residential property prices in Hong Kong. This issue is of interest for at least two reasons. First, it is often argued that the Currency Board arrangements contributed importantly to the formation and subsequent burst of the bubble. Specifically, the very low (negative) real interest rate in the early part of the 1990s, which was due to a combination of relatively low nominal interest rate and high domestic inflation, was often viewed as a driving force behind the run-up in property prices. The high real interest rate in the wake of the Asian financial crisis also helped trigger the sharp set-back in the sector. This study examines the relative importance of the factors that may have influenced the property prices. Secondly, it should shed light on the present situation in the property market. In particular, it is important to

gauge whether the continued weakness reflects “fundamental” economic factors or weak investor sentiment towards the sector following the bursting of the bubble. The two sets of factors could have different implications for the outlook.

The rest of the paper is organised as follows. The next section reviews some stylised facts about the demand and supply-side factors of the property market. Section III tests for property price bubbles using the present-value hypothesis. Section IV presents an alternative model that allows for decomposition of property price changes into that driven by economic and demographic forces and that resulting from speculative demand. The final section concludes.

II. Demand and Supply Factors

It is useful to think of the evolution of property prices as being determined by changes in the demand and supply-side factors, just as for prices of other goods and services. However, a number of special factors need to be kept in mind. First, housing has the dual function as both a commodity – yielding a flow of consumer services

¹ An earlier study reviews the impact of property price falls on other macroeconomic variables including consumption, investment, price, banking sector performance and the Government fiscal position, see Peng, Cheung, Fan and Leung (2001).

– and an investment asset. For a homeowner, housing return is the sum of the implicit value of rental services and investment return (capital gains or losses). In Hong Kong, the residential rental

index and the property price index seem to move together, but with a number of episodes of significant divergences (Chart 1). Secondly, the supply of the housing stock tends to adjust slowly

Chart 1
Real Residential Property Prices and Rents

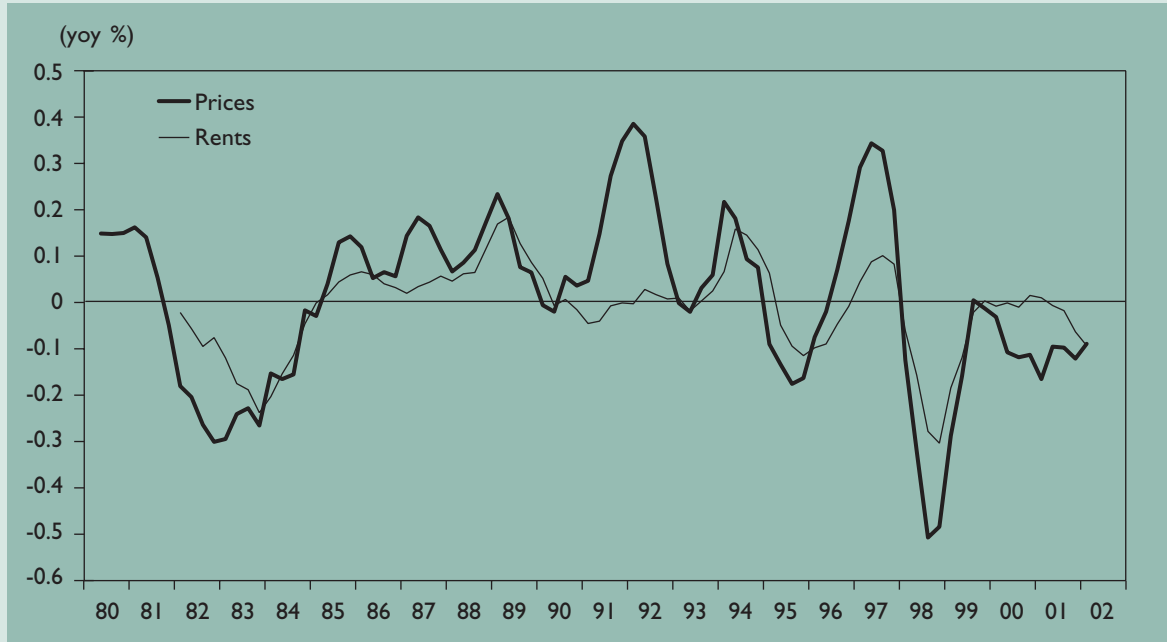
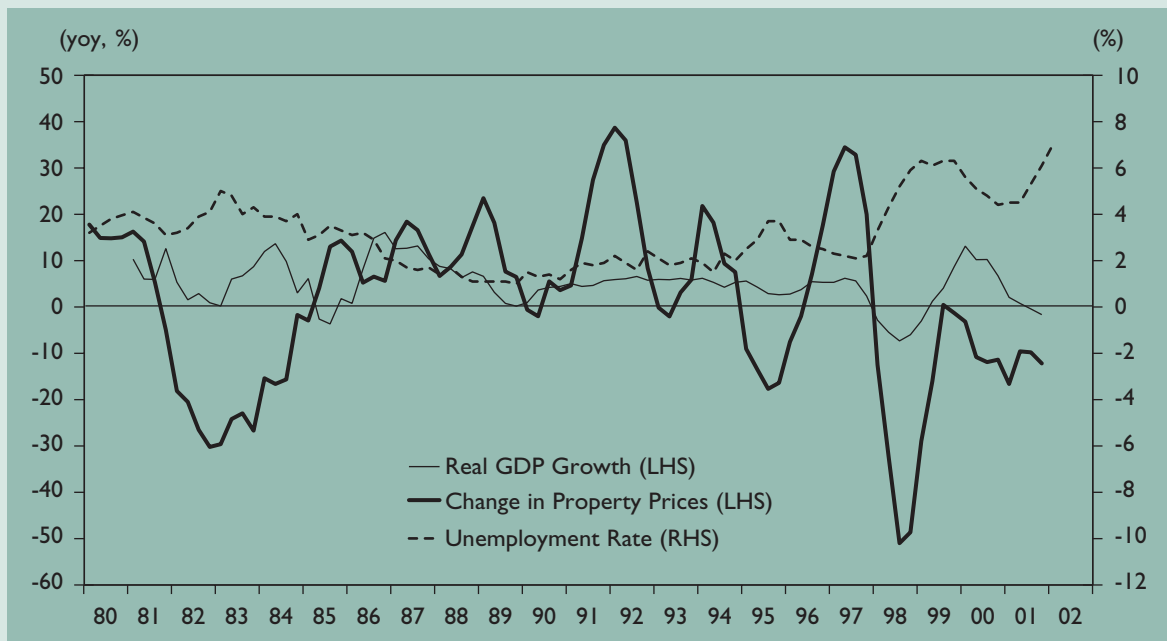


Chart 2
Real GDP Growth, Unemployment Rate and Change in Real Property Prices



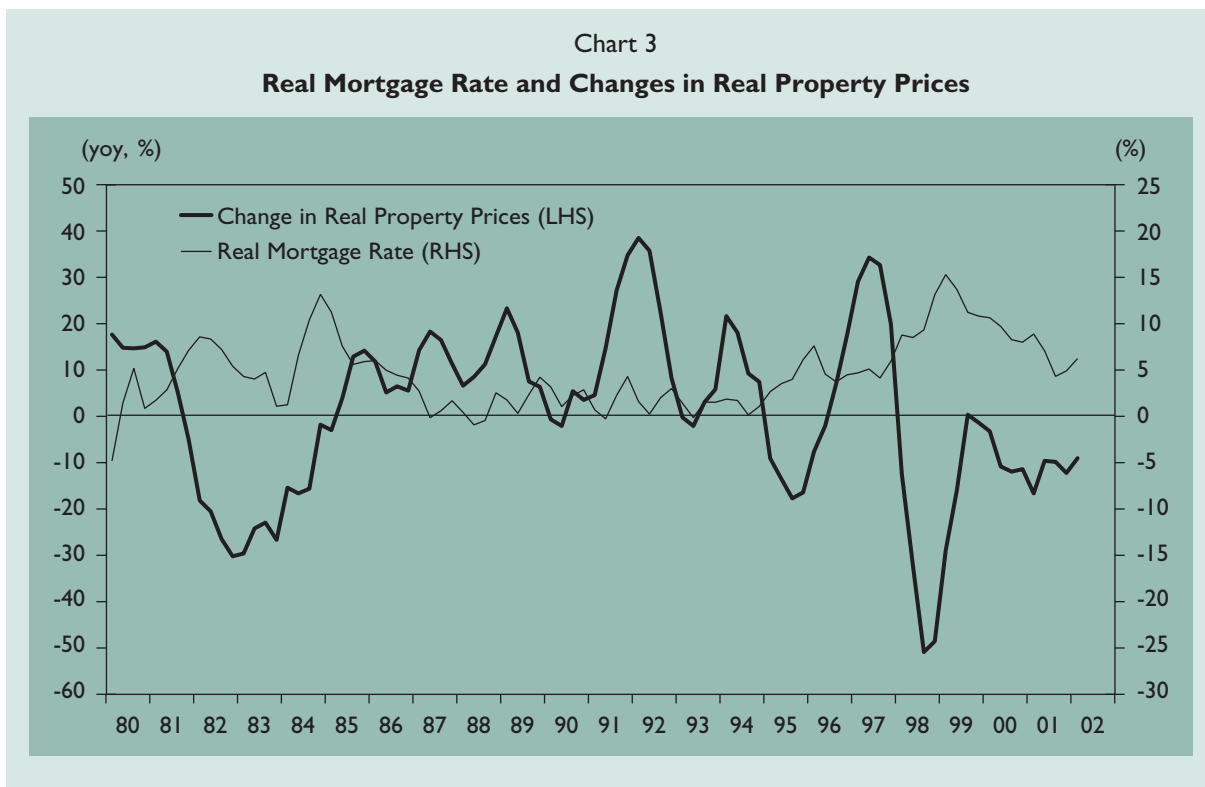
to price movements, and shocks to demand are mostly borne by price changes in the short run. This is one of the factors that explains the observed high volatility in property prices relative to prices of other goods and services. The situation is complicated further by the extensive involvement of the Government in the sector. Finally, the property market is susceptible to speculative bubbles as self-fulfilling expectations by investors drive price dynamics. This section presents some stylised facts about these elements.

Demand-side factors

It is generally agreed that macroeconomic conditions – as reflected by income growth, unemployment rate, and interest rates, etc – have significant effects on property price movements. Strong income growth and low unemployment seem to have raised demand for residential properties and contributed to the booming market in the second half of the 1980s and the first part of the

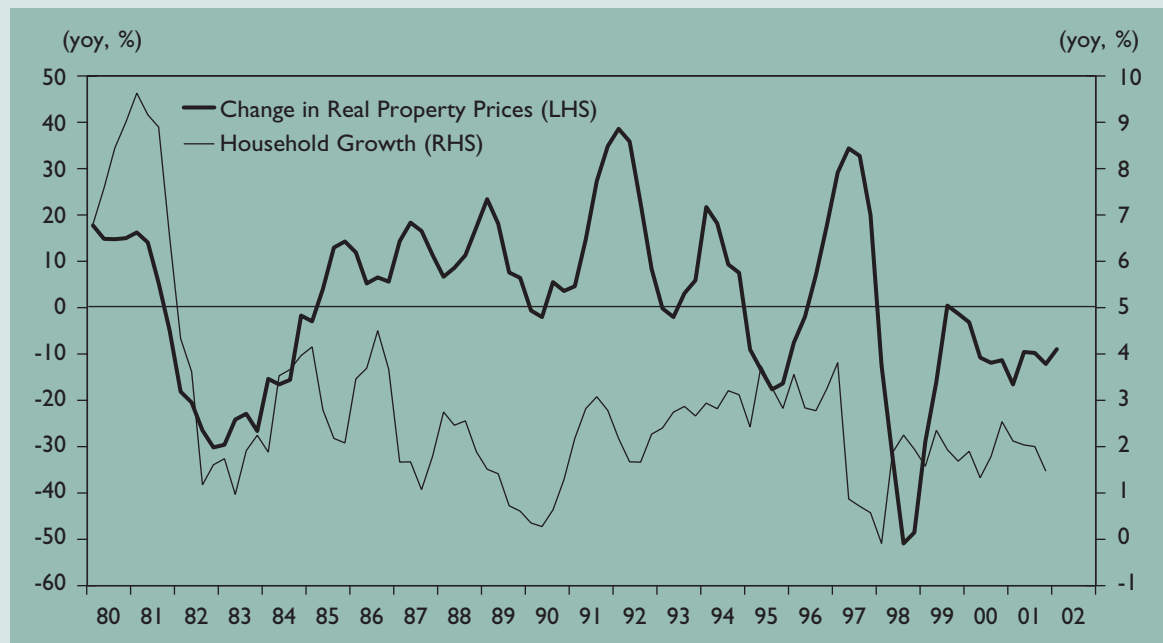
1990s (Chart 2). The downturn in economic activity and the associated rise in unemployment have impacted on the demand for housing service in more recent years. Interest rates have also played a role (Chart 3). In particular, during the episodes of sharp price declines in the past two decades, real interest rates were at relatively high levels.

For a city economy with significant migration, demographic developments are also an important factor on the demand side. Chart 4 shows that growth in the total number of households tends to have a lagged effect on property price changes.² A number of cycles in the growth of the number of households are worth noting. The number of households increased strongly in 1980-81, due to immigrations from the Mainland following its opening-up to the outside world. The growth slowed in the latter part of the 1980s – reflecting increased emigration – but returned to a higher level during most of the 1990s, in part because



2 There is a potential issue of endogeneity, as changes in property prices could also affect the formation of households. In Hong Kong, this is probably less of a concern than in the US, because of, for example, the difference in the way a household is defined. While the US definition measures households by structural units, the Hong Kong definition uses an economic unit (for example, whether meals are shared). Thus, a structural unit could accommodate more than one household in Hong Kong. The issue will be addressed in the empirical study by examining whether changes in the number of households have a lagged effect on or some contemporaneous relationship with movements in property prices. The latter could potentially be due to reverse causality.

Chart 4
Demographic Changes and Property Price Movements



emigrants returned as confidence in Hong Kong's future built up. The growth rate slowed down sharply in 1997, as the cycle of returning emigrants ended, and rebounded in more recent years to a relatively low level by the standards of the 1990s.

Supply-side factors and government policy

As noted earlier, housing supply tends to adjust slowly to price shocks, as the number of new completions is small relative to the total housing stock and is pre-determined by the volume of construction in progress. In Hong Kong, Government policies in the property sector have been an important influence on the total supply of housing stock for two reasons. First, a limit of an annual total of 50 hectares was imposed on land sales from 1985, as provided under the Sino-British Joint Declaration. The limit was relaxed from 1994, and was lifted following the transfer of sovereignty on 1 July 1997. It is often argued that the restricted supply of land may have restrained the adjustment of private housing supply to increased demand, thereby reinforcing price increases in the booming period (Chart 5). Subsequently, the increased supply of land following the relaxation of the restriction appears to have

resulted in an increase of housing units just when the market started a downturn.

Secondly, the Government runs a large public housing programme, which provides accommodation for about half of Hong Kong's population. The main elements of the programme are public rental units, and subsidised home ownership schemes, with the former accounting for about two-thirds of the total. It was designed to provide a minimum standard of housing for all residents. As conditions of public housing have improved over the years, it could have some substitution effect at the lower end of the private housing market. An increase in public housing supply could thus have a negative effect on property prices by affecting demand for private residential units. Chart 6 shows that growth in the supply of public housing units slowed in the 1990s. This, combined with the strong increase in the number of households in much of the 1990s, should have raised demand for private housing.

Speculative activity

Excess movements in property prices – relative to fundamental demand and supply-side influences – are sometimes attributed to speculative activity. A

Chart 5
Land Sales and New Completion of Private Residential Units

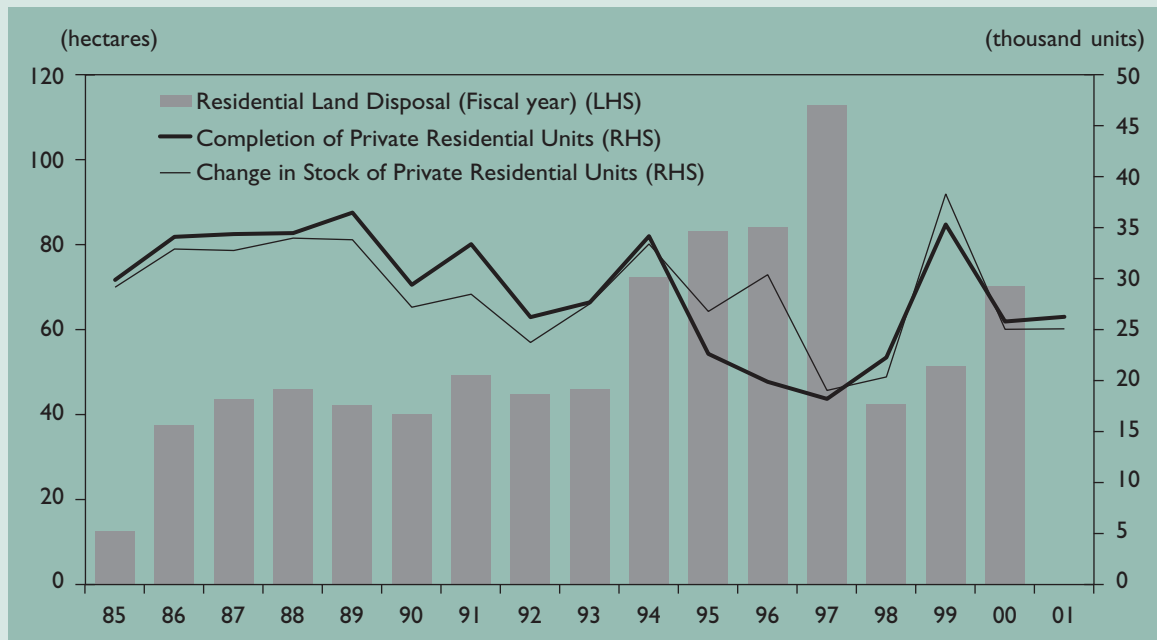
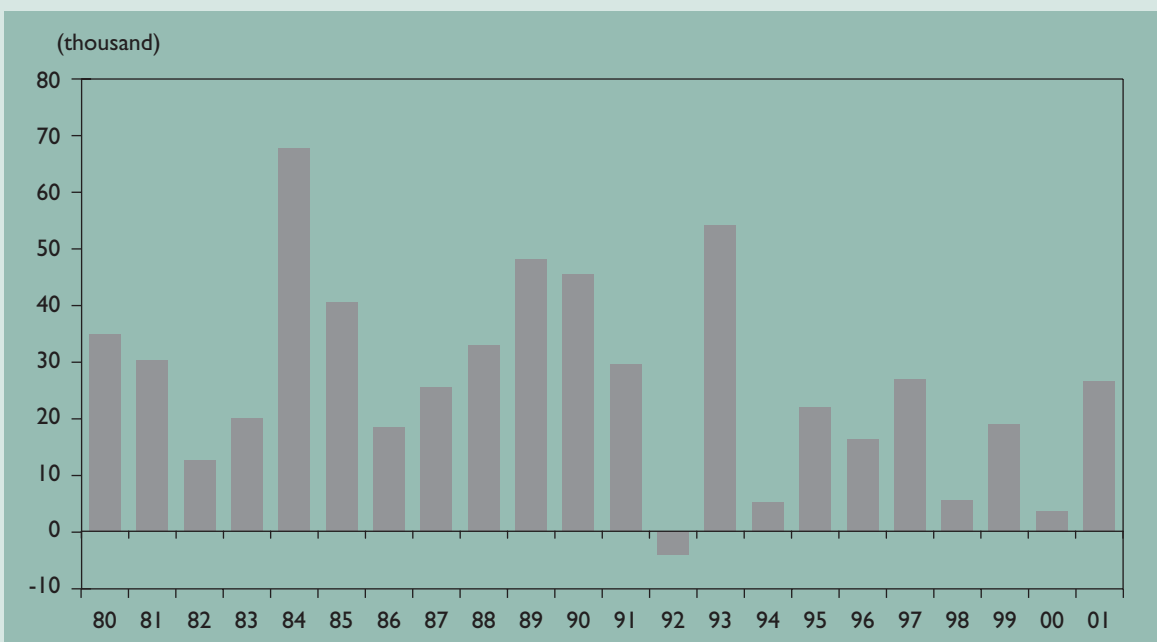


Chart 6
Change in Public Housing Stock



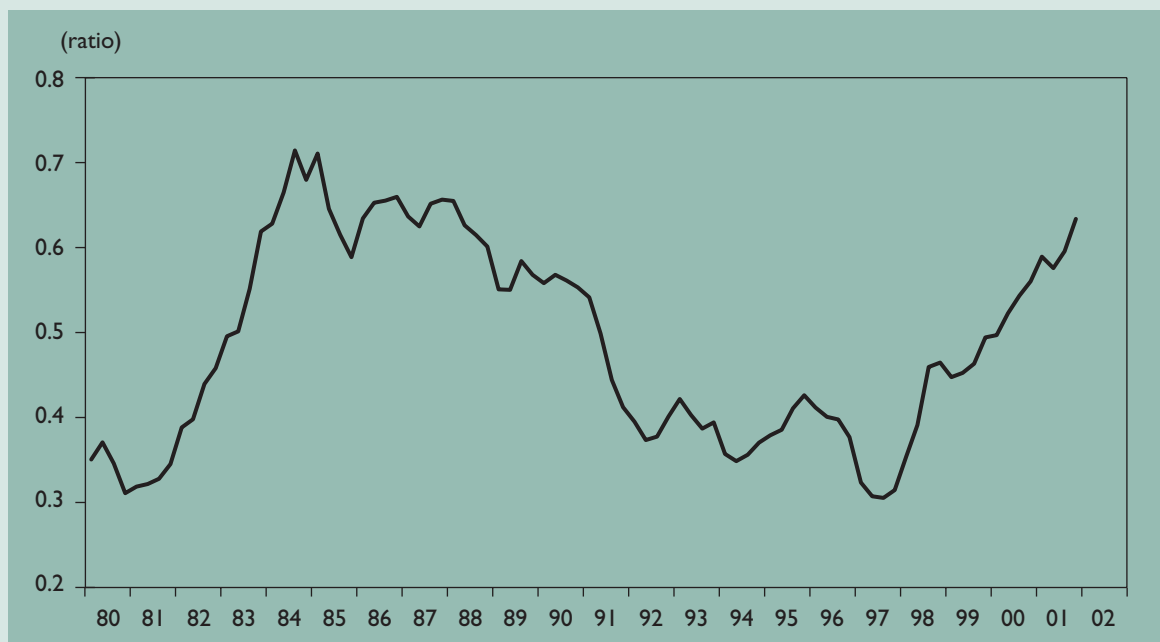
particular type of speculative investor is the so-called feedback trader whose demand is based on price expectations formed by past values of price as opposed to expected market fundamentals such as income and interest rate. Another type of speculative investor bases price forecasts on expected economic conditions, and would be more likely to purchase a home when prices are deemed low relative to expected fundamentals and sell when the converse is believed. These two types of traders may be contrasted with the conventional homebuyer who compares the cost of renting a home to the cost of purchasing and maintaining a home. Both types of speculative activities could lead to bubbles in which price is influenced in an important way by pure demand for future capital gains. In Hong Kong, a long period of sustained price increases before the mid-1990s and increasing optimism about economic prospects may have provided incentives for investors/speculators to buy properties on expectations that the price of housing will continue to rise.

A couple of indicators support the argument that a property bubble developed and burst in the 1990s. One is affordability, of which the simplest measure is the ratio of per capita GDP to property prices. This dropped sharply from the mid-1980s, and reached a trough in 1997 (Chart 7). The scale of the subsequent rise was large, bringing the ratio back to its level in the late 1980s. The speculative demand around 1997 was also evidenced by the significant rise in the number of confirmor transactions (Chart 8).³

III. A Test for Price Bubbles Using the Present-Value Hypothesis

Given signs of excessive increases in property prices before the Asian financial crisis, empirical tests for price bubbles are conducted. There is a vast literature of theoretical and empirical work on asset price bubbles.⁴ Tests based on the present value relationship – as proposed by Campbell, Lo and McKinlay (1997) were employed.⁵ This is

Chart 7
Ratio of Per Capita GDP to Property Price (Nominal)

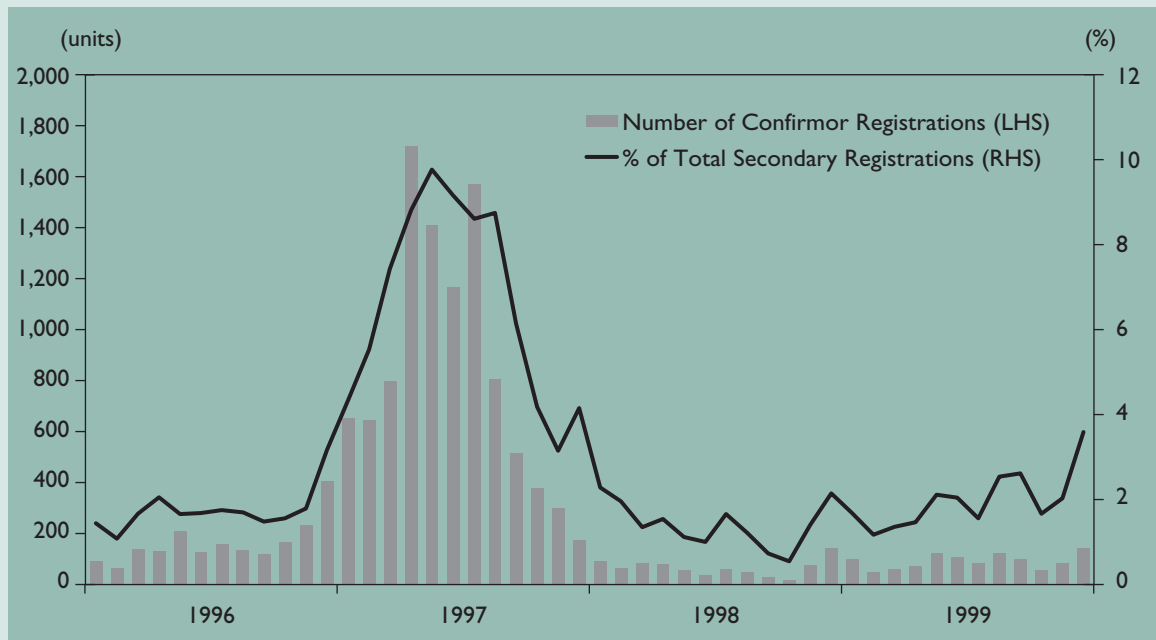


3 If an uncompleted flat is re-sold to sub-purchasers before the legal completion of the original sale, all sub-vendors will sign in the capacity as “confirmors” in the Assignment. The legal interests in the flat will pass from the developer directly to the sub-purchaser at the end of the chain. Confirmors are therefore buyers with a view to obtain short-term gains before completion of the sale of the property.

4 For a recent survey of the literature, see Campbell (2000).

5 Sarno and Taylor (1999) used this approach to test for bubbles in stock prices in East Asian economies in the period before the financial crisis. Herrera and Perry (2001) applied the same method to asset prices in Latin America. A similar approach was used by Meese and Wallace (1992) in testing the present value relation for housing prices in the U.S.

Chart 8
Number of Confirmor Transactions



based on the implication of the efficient market hypothesis that prices are capitalised rents (i.e. expected discounted sum of future rents). Thus, a bubble is said to exist if the gap between the observed price and its present value is explosive (nonstationary). One way of testing for bubbles is to verify or reject the existence of a stable (non-explosive) relationship among property prices, rents and homeowner cost of capital.

Specifically, the test is based on the following equation for the log rent-price ratio.⁶

$$rent_t - p_t = \frac{k}{1-\rho} + E_t \left[\sum_{j=0}^{\infty} \rho^j (-\Delta rent_{t+1+j} - i_{t+1+j}) \right] \quad (1)$$

where $rent$ and p are logarithms of rents and property price respectively, and i is the homeowner cost of capital. If property prices and rents are

nonstationary processes, then in the absence of bubbles the standard present value model implies cointegration between the property price and rent series (assuming stationary homeowner cost). Thus, one way to test for bubbles is to examine whether the log rent-price ratio is stationary. However, the wedge between price and rent could also be due to a stochastic cost of capital series which is nonstationary. Specifically, equation (1) can be re-arranged to obtain

$$rent_t - p_t - \frac{1}{1-\rho} i_t = \frac{k}{1-\rho} + E_t \left[\sum_{j=0}^{\infty} \rho^j (-\Delta rent_{t+1+j} + \frac{1}{1-\rho} i_{t+1+j}) \right] \quad (2)$$

A further test is therefore to verify or reject a cointegration between the log rent-price ratio and the homeowner cost of capital. This can be done

6 To derive equation (1), consider the ex post return on homeownership as

$$\gamma_{t+1} = \log(P_{t+1} + RENT_{t+1}) - \log(P_t)$$

where P and $RENT$ are price and rents in levels. Taking a Taylor series approximation of this expression gives

$$\gamma_{t+1} \approx k + \rho p_{t+1} + (1 - \rho) rent_{t+1} - p_t$$

where lower case letters denote logarithms, $\rho = 1/[1 + \exp(rent - p)]$, $k = -\log(\rho) - (1 - \rho) \log(\frac{1}{\rho} - 1)$ and $rent - p$ is the average log rent-price ratio. Solving the above equation forward, imposing the transversality condition, and taking expectations conditional on information at time t yields

$$p_t = \frac{k}{1-\rho} + E_t \left[\sum_{j=0}^{\infty} \rho^j [(1-\rho) rent_{t+1+j} - \gamma_{t+1+j}] \right]$$

In equilibrium, the rational representative agent requires that the expected return from homeownership (γ) equals the homeowner cost of capital (i). Substituting γ by i and re-arranging the above equation gives rise to equation (1). This derivation draws on Sarno and Taylor (1999).

by testing whether the residuals from the following regression are stationary.

$$rent_t - p_t = c + \alpha i_t + \varepsilon_t \quad (3)$$

Conceptually, the homeowner (user) cost of capital consists of mortgage costs net of income tax, property tax, depreciation, maintenance and repair expenditures. Data on the latter items are not available, however. Thus, only mortgage interest rate was used as a proxy for the user cost. This assumption is probably not unreasonable on two counts. First, depreciation and maintenance costs are likely to be a stable fraction of the property value. Secondly, given the low and flat tax regime in Hong Kong, the income and property taxes are also expected to affect mainly the constant term in equation (3).

The unit root test results are summarised in Table I. The estimates indicate that the log rent-price ratio is not mean-reverting. Furthermore, a linear combination of this series and the mortgage interest rate is not stationary. This is also confirmed by a formal test for cointegration using Johansen (1991, 1995) method. These results thus suggest a bubble component in property prices. To examine the extent and persistence of the

bubble, we derive a present-value series from equation (3), and compare it with the property price index (Chart 9).⁷ It indicates that property prices were persistently above their equilibrium values in most of the 1990s, with the largest overvaluation recorded in the second quarter of 1997 at about 50%. The gap subsequently declined, as the actual price dropped by a much larger extent than the present-value price. As of the first quarter of 2002, the negative gap indicates an undervaluation of about 18%.⁸

In sum, these estimates reject the housing price present value relation: property prices were higher than the discounted future rental payments for much of the 1990s. While the gap in part reflects factors including transactions costs and measurement errors, the rising and extremely large deviations in the few years prior to the Asian financial crisis support the view that there was probably a property bubble due to speculative activities.

IV. A Model of Fundamentals and Bubbles

This section employs an alternative method that relates property prices to macroeconomic conditions and other demand and supply-side factors. This is useful because the bubble detected in the previous

Table I
Augmented Dickey-Fuller Unit Root Test Results
(1981:1 - 2002:1)

	Level	Change
Nominal property price (log)	-0.68	-3.70*
Nominal rent (log)	-0.42	-3.00*
Rent-price ratio (log)	-1.17	-4.27*
Mortgage interest rate (%)	-1.64	-3.91*
Residuals from equations (3)	-1.24	-5.35*

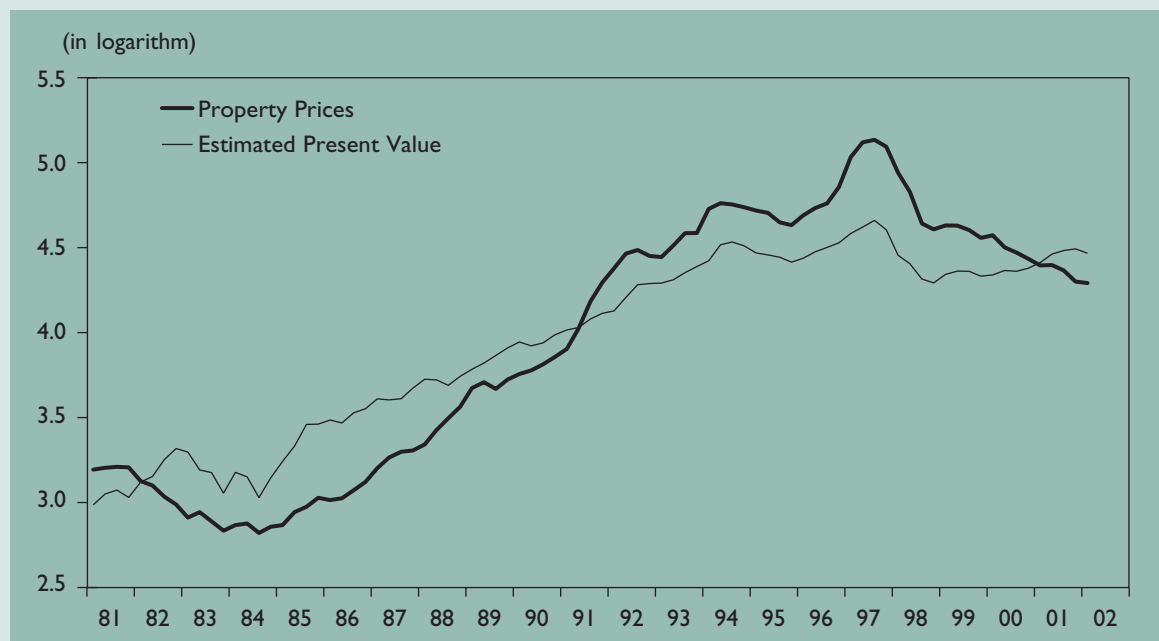
Note: In line with the usual practice in macroeconomic time series studies, a time trend is included for series that have clear up or downward trend in case the variable is stationary around a linear trend. Similarly, an intercept is included unless it is clear that the variable has a zero mean. Lag orders (not reported) were chosen by eliminating all lags up to the first significant lag, starting with a maximum lag order of 6.

* Denotes significance at the 5% level.

7 The present-value series is derived from the fitted values of equation (3), adjusted for the rent series.

8 It should be noted that the gap between the observed and estimated present-value price could also reflect high transaction costs in the property market as well as a mis-specification of the fundamentals, particularly in relation to the measurement of the user cost of capital. Nevertheless, these factors are unlikely to account for a large part of the deviations that are large and persistent.

Chart 9
Property Prices and Estimated Present Value



section may reflect a mis-specification of the fundamentals. By including other potential fundamental variables (in addition to rent and the mortgage rate), we can examine whether a bubble element could still be detected. This approach also provides information on the relative importance of macroeconomic variables and other specific demand and supply factors in driving property price movements. Testing for co-integration using the Johansen method failed to find a long-run stable relationship between real property prices, and the fundamental demand and supply variables. The empirical analysis thus follows an IMF study by modeling property prices as determined by some fundamental factors and a bubble builder and burster term.⁹ The model was originally developed by Abraham and Hendershott (1996) in their study of metropolitan housing markets in the US.

The starting point of the model is to express growth in the fundamental or fair real property price (Δp^*) as a linear function of a set of demand

and supply variables such as change in the unemployment rate (Δu), real interest rate (r), and growth in the real rental index (Δrent_t), in the potential demand – i.e. the number of households adjusted for public housing stock – (Δh), and in the private housing stock (Δs):¹⁰

$$\Delta p^*_t = \alpha_0 + \alpha_1 \Delta u_t + \alpha_2 r_t + \alpha_3 \Delta \text{rent}_t + \alpha_4 \Delta h_t + \alpha_5 \Delta s_t + \dots + \text{lagged variables} \quad (4)$$

The actual growth in property prices is this fundamental value plus an error term:

$$\Delta p_t = \Delta p^*_t + \theta_t \quad (5)$$

The error term is specified as:

$$\theta_t = \lambda_0 + \lambda_1 \Delta p_{t-1} + \lambda_2 (p_{t-1} - p^*_{t-1}) + \phi_t \quad (6)$$

where p^*_{t-1} and p_{t-1} are the fundamental and actual real prices, respectively, in the previous period, and ϕ_t is a random error. For $\lambda_1 > 0$, Δp_{t-1} acts to

9 The IMF working paper by Kalra, Mihaljek and Duenwald (2000) presents an empirical model of the Hong Kong property price that includes a speculative element. It also provides references to similar studies of other economies' experiences.

10 Lower-case letters denote logarithms of the respective variables, except the unemployment rate and interest rate.

perpetuate growth, generating a price bubble. For $\lambda_2 < 0$, $(p_{t-1} - p^*_{t-1})$ captures the tendency of the bubble to eventually burst when the actual price level exceeds the fundamental level.¹¹ Substituting equations (4) and (6) into (5) gives the following:

$$\Delta p_t = (\alpha_0 + \lambda_0) + \alpha_1 \Delta u_t + \alpha_2 r_t + \alpha_3 \Delta \text{rent}_t + \alpha_4 \Delta h_t + \alpha_5 \Delta s_t + \dots + \lambda_1 \Delta p_{t-1} + \lambda_2 (p_{t-1} - p^*_{t-1}) + \phi_t \quad (7)$$

The econometric difficulty in estimating equation (7) is that p^* itself depends on the estimates from the equation. Following the other studies mentioned earlier, the problem is solved by first estimating equation (7) without the λ_2 term. Based on the preliminary estimates, Δp^* is computed, and cumulated over time to obtain a first-pass time series on p^* . We then add $(p_{t-1} - p^*_{t-1})$ to equation (7) for re-estimation. The process is repeated until the coefficient estimates stabilise, implying that $(p_{t-1} - p^*_{t-1})$, p_{t-1} , and the determinants of Δp^* are uncorrelated and that Δp^* and p^* estimates are consistent.

Quarterly data for the period 1981-2002 were used in the estimation. The CPI excluding the rental component is used for deflating nominal variables. Thus, the real property price is a measure of property prices relative to prices of other goods and (non-housing) services.¹² The real mortgage rate is measured as the difference between the nominal rate and log-change in the CPI during the quarter. Seasonal adjustments were made to the variables with stable seasonal patterns such as employment and the number of households. Unit root tests suggest that all log differences, real interest rate, and changes in the unemployment rate are stationary.

In estimating equation (7), changes in real property prices were regressed against its own lags and a set of potential demand and supply variables and their lags. Using a general-to-specific approach, a parsimonious equation was derived. Based on the estimates, Δp^* was cumulated to obtain a preliminary estimate of p^* by assuming that real property prices were in equilibrium in the early 1990s. The latter assumption follows the IMF study and is based on the considerations that output was estimated at potential in the early 1990s and that real property prices were stable for a sustained period around that time. This is also in line with the test results in the previous section indicating that the observed price was close to its present value in that period. The calculated p^* was used to estimate the full version of equation (7), and the estimates were used to obtain a new estimate of p^* . The process continued until the estimated coefficients stabilised and Δp^* and p^* were consistent.

The final estimates of equation (7) are presented in Table 2. A number of observations are highlighted.

- All the coefficients are of correct signs and significant, and the diagnostic tests suggest that the residuals are well behaved.¹³ The model performs reasonably well in explaining property price changes, close to half of the variation in the quarter-on-quarter growth in real property prices (Chart 10).
- The real interest rate accounted for about 7% of the total variation of real property prices in the sample period, and changes in the unemployment rate explained 6%, and those

11 It should be noted that this framework is also a joint test of the existence of a bubble and model specification. Results that are thought to be bubbles could equally well be produced by a mis-specification of fundamentals. Nevertheless, to the extent that strong priors exist about the fundamental variables and the excess movement in the actual property price (such as the run-up in 1996-97 before the collapse), this is a useful device for understanding observed market behaviour.

12 The rental component of the CCPI lags market rents because of typical 1 to 2-year rental contracts. Thus, in terms of measuring economic effects of general price changes (rather than solely from consumers' cost of living perspective), the CCPI may be a distorted indicator in the period of significant changes in market rents.

13 Recursive estimates of the equation suggest stable parameters throughout the 1990s including the period following the Asian financial crisis. The latter period included significant policy changes in relation to the Government land supply and public housing program. Details are available upon request.

in the rental index about 5%. Thus, while the low real interest rates in the earlier part of the 1990s and the subsequent rise contributed to the swings in property prices, its overall effect was not disproportionately high, when compared with that of the general macroeconomic conditions as captured by changes in unemployment.

- Changes in the potential demand for private housing and private housing supply explained about 6% and 8% of the variation respectively. This confirms the notion from the stylised facts that demographic changes and public housing program have influenced the demand for private residential properties. Also, changes in the supply of private units seemed to have a lagged effect on property price.

- While the IMF study used only general macroeconomic variables such as GDP growth, real interest rate and real effective exchange rate, our estimates suggest that a combination of macroeconomic and monetary conditions, and demographic developments, and government housing policies have contributed to changes in property prices.

The estimates suggest that property price movements were likely subject to speculative activities. The estimated bubble builder (0.32) and burster (0.06) are close to the estimates by the IMF study and within the ranges reported in Abraham and Hendershott for US cities. A fair or fundamental value of the real property price and the deviation of the actual price from that fair value are shown in Chart 11. The former grew

Table 2
A Speculative Bubble Model of the Real Property Prices
(1981:3 - 2002:1)

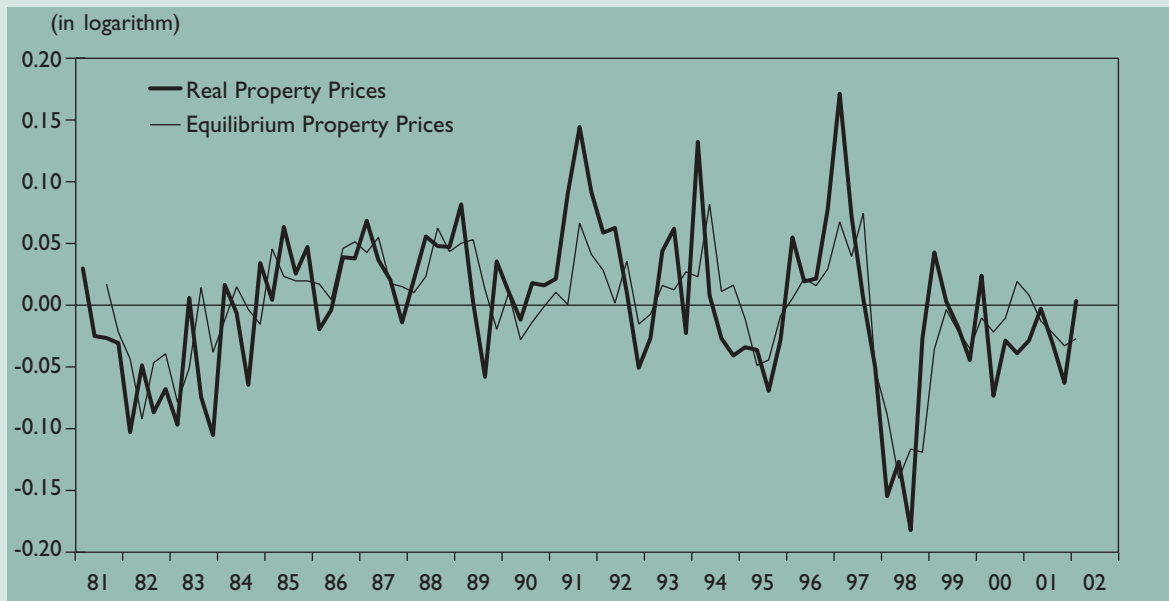
Variable	Coefficient	Std.Error	t-value	t-prob	Part.R ²
Constant	0.047	0.017	2.750	0.007	0.092
$0.5\Delta\text{rent}_t + 0.5\Delta\text{rent}_{t-1}$	0.573	0.281	2.040	0.045	0.053
$0.5r_t + 0.5r_{t-1}$	-0.384	0.158	-2.420	0.018	0.073
Δu_t	-0.028	0.013	-2.180	0.032	0.060
Δh_{t-2}	1.172	0.534	2.190	0.031	0.060
Δs_{t-2}	-3.241	1.306	-2.480	0.015	0.076
λ_1	0.324	0.133	2.440	0.017	0.074
λ_2	-0.060	0.031	-1.960	0.054	0.049
R ² = 0.48; DW = 1.98					
Diagnostic tests for the residuals:			Instability tests:		
AR 1-5 test :	F(5,70) = 0.78 [0.57]	variance		0.172	
ARCH 1-4 test :	F(4,67) = 1.95 [0.11]	joint		1.375	
Normality test :	$\chi^2(2) = 2.07 [0.36]$	Constant		0.197	
hetero test :	F(14,60) = 1.78 [0.06]	Δu_t		0.174	
hetero-X test :	F(35,39) = 1.10 [0.38]	$0.5r_t + 0.5r_{t-1}$		0.185	
RESET test :	F(1,74) = 0.01 [0.91]	$0.5\Delta\text{rent}_t + 0.5\Delta\text{rent}_{t-1}$		0.066	
		Δh_{t-2}		0.183	
		Δs_{t-2}		0.272	
		λ_1		0.046	
		λ_2		0.081	

Sources: HKMA Research Department staff estimates.

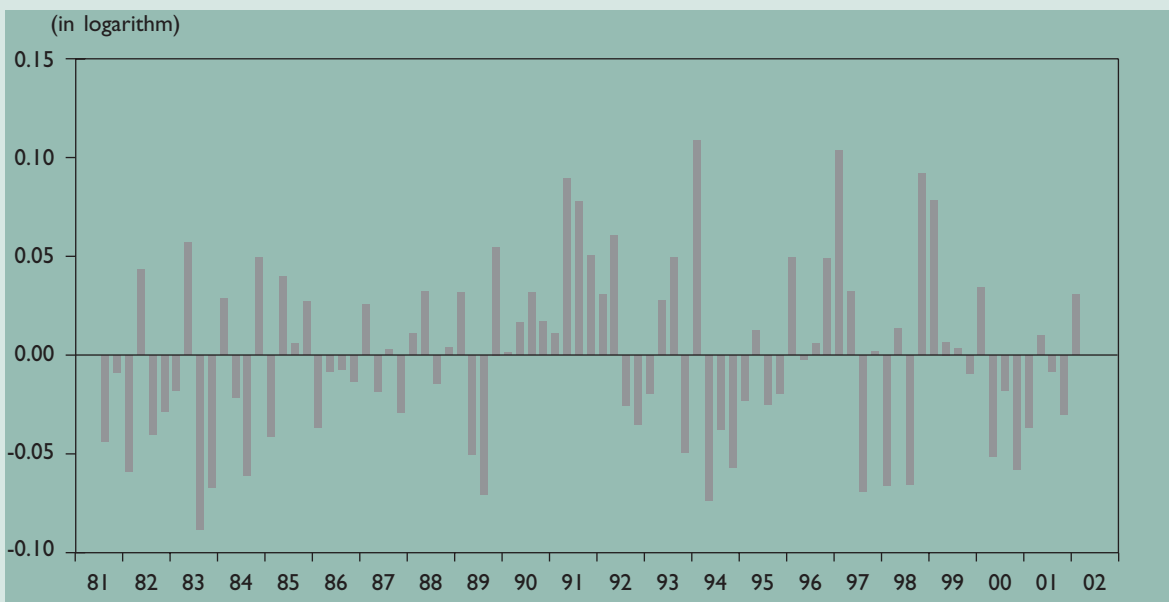
strongly in the earlier part of the 1990s, reflecting a combination of factors including booming economic activity, low real interest rate, strong increase in the number of households, and

moderate growth in public housing supply. The fair value slid in the wake of the Asian financial crisis, as economic activity contracted, real interest rate rose, and growth in the number of households slowed.

Chart 10
A "Speculative Bubbles" Model of Hong Kong Property Prices
A. Fitted Values



B. Residuals

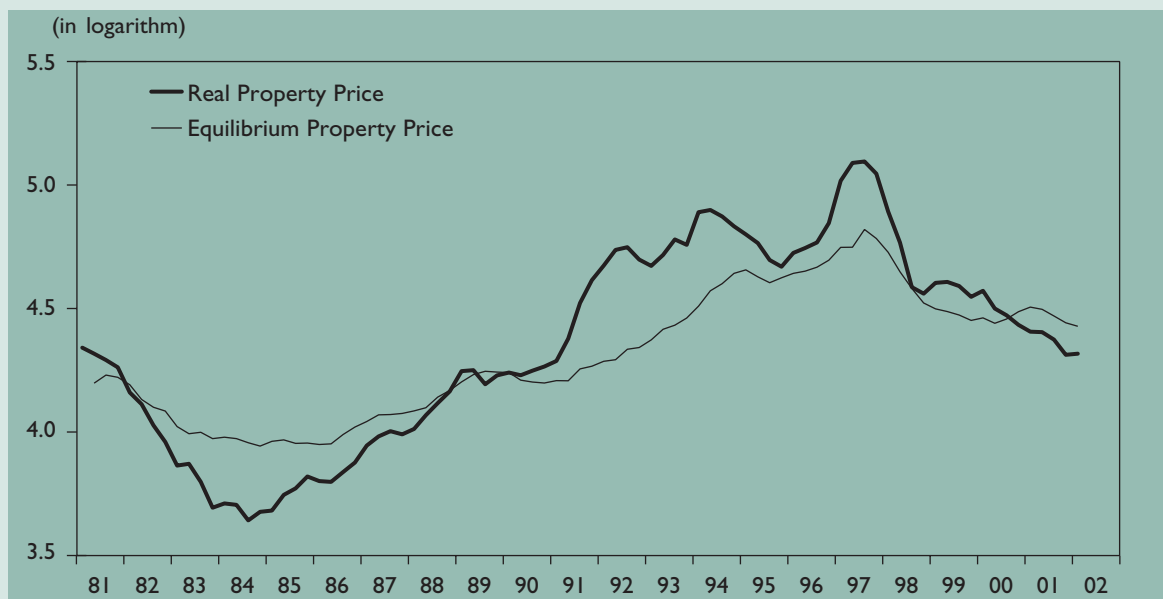


During the last upswing that peaked in mid-1997, real property prices were estimated to be about 34% above levels suggested by the fundamental variables (Table 3). The estimated bubble term was thus smaller than that from the

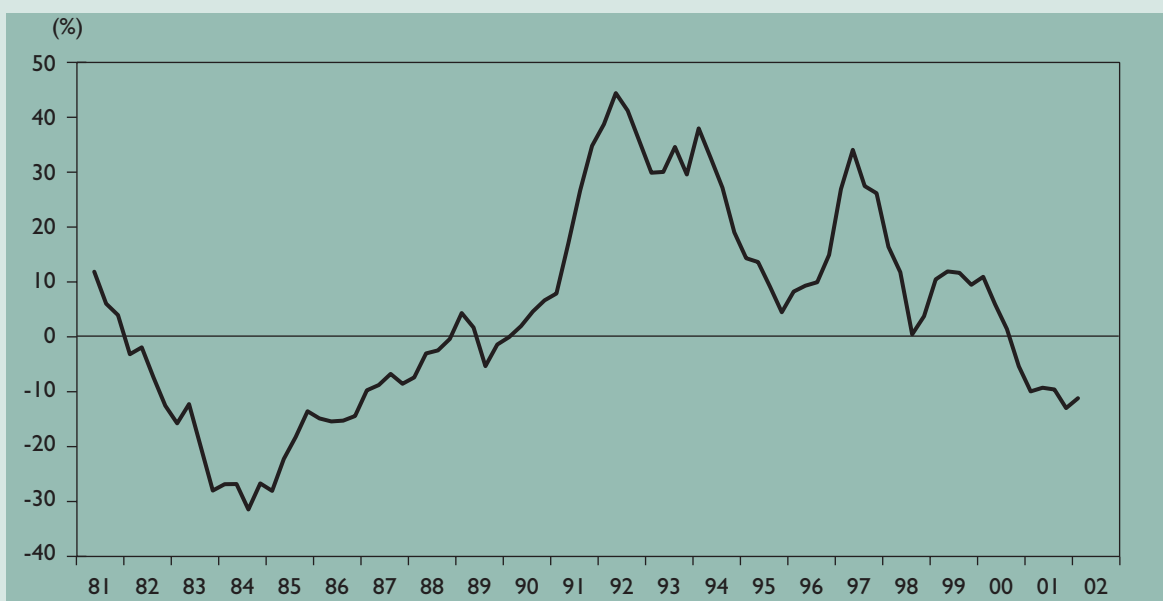
present-value approach, probably because more fundamental variables were accounted for in this framework.¹⁴ The exact magnitudes of these estimates should be treated with caution given the uncertainties about model specifications.

Chart II
Estimated Fundamental Value and Property Price Disequilibrium

A. Estimated Fundamental Value



B. Property Price Disequilibrium



¹⁴ Part of the difference may reflect that the present-value calculations use nominal rather than real property prices.

Table 3
Explanation of the Real Property Price Swings

	1990:1–1997:2	1997:3–2002:1
Cumulative change in logarithms		
Actual real property price	0.85	-0.77
Fundamental value	0.51	-0.32
Disequilibrium at end-period	0.34	-0.11

Sources: HKMA Research Department staff estimates.

Nevertheless, it is interesting to note that both approaches suggest a significant bubble component in property prices in the 1990s.


The estimates suggest that real property prices are at present moderately below their fair values, implying that prices have fallen to levels that are supported by fundamentals. However, caution is required in interpreting these estimates, particularly for assessing the near-term outlook of property prices. The observed prices could deviate from their fair values by a large magnitude in a downturn just as in an upturn. For example, in the downturn around the mid-1980s, the observed prices were estimated to be below trend by about 30%, although the sharp decline at that time was in part attributable to the political uncertainty prior to the Sino-British agreement on the transfer of sovereignty.

V. Concluding Remarks

This paper presents two different empirical models of property prices that combine fundamental variables with the concept of speculative bubbles. Both approaches indicate a significant bubble component in the observed property prices in the period before the Asian financial crisis. A combination of fundamental factors including macroeconomic and monetary conditions, demographic developments, and government housing policies have also influenced property prices. The estimated fair value increased strongly in the first part of the 1990s, before declining following the Asian financial crisis.

The loose monetary conditions in the earlier part of the 1990s—as reflected in the low and negative real interest rate—helped boost the

demand for properties. The subsequent increase in the real interest rate also contributed to the price decline. Nevertheless, our estimates suggest that changes in monetary conditions were probably not the single most important factor contributing to the property price swings. It might be argued that with a flexible exchange rate system, the monetary authority might have been able to take pre-emptive actions to prevent the build-up of the bubble by tightening monetary conditions. However, it is doubtful whether this would have been effective. Indeed, there were many episodes of excessive property price swings in other economies with flexible exchange rates.

The estimates indicate that the current levels of property prices are supported by improved fundamentals such as increased rental yield. Nevertheless, it should be noted that these estimates offer little guide in predicting property prices. For one thing, actual prices may undershoot equilibrium prices for a sustained period in a downturn. Secondly, the economic growth outlook remains uncertain, notwithstanding some improvements due to a rebound in exports. In particular, the unemployment rate is likely to remain high in the near term. 

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