Volume : 2 | Issue : 1 | Received-12-01-2026 | Accepted-13-01-2026 | Published-14-01-2026

UAI JOURNAL OF ECONOMICS, BUSINESS AND MANAGEMENT (UAIJEBM)

Abbreviated Key Title: UAI J Econ Bus Manag.
ISSN: 3049-2777 (Online)
Journal Homepage: https://uaipublisher.com/
Volume- 2 Issue- 1 (January- February) 2026
Frequency: Bimonthly

Seven early warning signals in the HK property market cycle

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ABSTRACT

*Hong Kong's private property market has undergone pronounced **boom–bust cycles** over the last four decades, with large fluctuations in residential prices transmitting to household wealth, bank balance sheets and macroeconomic performance. Hong Kong is a small open economy, with a tight land supply, and is always magnified by external monetary and financial shocks, making property market cycle developments with a fluctuation cycle, causing market instability. This research paper synthesises existing policy and academic research to construct a seven-indicator early warning framework for Hong Kong's private residential property cycle, centred on: (1) valuation gaps relative to fundamentals, (2) price-to-income and buy-rent measures, (3) transaction volumes and new mortgage lending, (4) credit growth and bank real-estate exposures, (5) income-gearing and debt-servicing ratios, (6) sentiment and buyer-incentive indices, and (7) the macroprudential and policy stance. By mapping these indicators to past cycles and the implementation of macroprudential measures, this research paper argues that a multi-indicator dashboard can provide useful early warning signals of cycle vulnerabilities, which can accurately predict the property market cycle turning point.*

KEY WORDS: Hong Kong property market, property market cycle, early warning indicators, housing bubble, macroprudential policy, financial stability, housing affordability, property market cycle turning point

Introduction

The private residential property market in Hong Kong plays a disproportionate role in the economy, given residents' heavy reliance on housing wealth and banks' sizeable exposure to property-related lending. Research by HKMA [1] and the IMF [2] documents recurrent property cycles since the mid-1980s, including the sharp boom in the early 1990s, the collapse following the Asian financial crisis [3], and subsequent surges under ultra-low global interest rates, each with significant macro-financial consequences. Since Hong Kong domestic interest rates generally follow US rates. This limits traditional monetary policy, forcing authorities to depend on macroprudential tools and land-housing policies to influence the property market booms.[4][5][6].

In this context, early warning indicators (EWIs) are especially valuable. Our innovative idea involves the seven warning signals, which have early predictive power that can inform the timing and strength of macroprudential actions and guide risk management for banks and households. Additionally, our innovative early warning signal can be used more easily to demonstrate how the seven early warning signals can be based on surveillance, enabling the operationalization of the private property market cycle. Simultaneously, our innovative model (seven early warning signal indicators, 7EWIs) can help identify the turning point in the private property market, offering earlier opportunities to respond to potential market shifts. Moreover, our model can be interpreted

DOI: 10.5281/zenodo.18252392

probabilistically and used alongside supervisory judgment, considering the trade-off between missing crises and generating false alarms. This research paper extends the discussion on Hong Kong by explicitly framing the seven early warning signals for the private property cycle and exploring the role within the broader macroprudential framework regime.[6][7].

Literature review

Internationally, the post-crisis literature on EWIs emphasises real estate prices and credit aggregates as key predictors of banking crises. BIS work on "Real estate indicators and financial stability" and on early warning indicators shows that persistent rises in credit-to-GDP gaps and real property prices often precede financial distress, leading to recommendations that such indicators be incorporated into macroprudential decision-making and countercyclical capital buffer frameworks. The IMF's work on financial soundness indicators similarly classifies real estate prices and banks' real estate loan shares as "encouraged" indicators for assessing vulnerabilities in banking systems exposed to property markets. For Hong Kong, HKMA provides a foundational overview in "Real-estate-indicators," which tracks evolution of residential & non-residential price indices and their connections to the macroeconomy and bank lending. [1][2][6].

HKMA [3][9] further proposes five indicators, to envisage property market conditions across cycles. The framework shows, for instance, that in 1997 real property prices and transaction volumes were far from the centre (indicating a high-risk state), while affordability was stretched and the buy-rent gap large, signalling a bubble-like environment. A follow-up HKMA [9] article uses clustering analysis on a set of indicators (prices, volumes, new mortgages) to identify groups of periods with similar market conditions, thereby offering a data-driven way to classify phases of the cycle and their associated vulnerability. On the macroprudential side, BIS Papers No. 94 features a detailed note by HKMA on "Hong Kong's property market and macroprudential policies," which reviews the city's experience with using LTV and DSR data caps along with other tools to manage property-related systemic risks. This note records seven rounds of countercyclical macroprudential measures since 2009, primarily involving the gradual tightening of LTV and DSR caps and expanding coverage from luxury properties to mass-market and investment segments as pressures increased. The authors highlight that early and proactive actions, guided by monitoring indicators ratios, , speculative transactions, & the buy-rent gap, helped curb household leverage and significantly increased banks' resilience to a hypothetical 50 percent property price decline declines.[3][4][9].

Recent HKMA research introduced sentiment-based indicators into the monitoring toolkit. A 2020 Research Memorandum [10] constructs indices, finding that negative sentiment depresses buyers' incentives and transaction activity, while the buyer-incentive index power for residential property price index. Moreover, sentiment in the primary market is shown to lead secondary market developments when housing supply is tight, suggesting that sentiment data can provide early signals of market turning points. Together, these contributions underpin a multi-dimensional approach to EWIs in Hong Kong that combines fundamentals, affordability, liquidity, credit, sentiment and policy stance. [10].

Discussion: Seven early warning signals

Our primary objective is to help the policy maker and contribute to the world of citizens. We discovered that the greater the number of indicators employed, the more precise the results will be. As a predictive model, to develop an effective prediction, the utilization of additional indicators will enhance the accuracy. Therefore, our seven new early warning signal indicators in the private property market can provide a comprehensive overview to policymakers & the global populace. Additionally, our research paper seeks to enhance understanding of macroprudential policy implementation by sharing the experience of Hong Kong. In our discussion, we will review the tools employed by the Hong Kong Monetary Authority (HKMA) to oversee the property market, highlighting their essential role in maintaining economic stability in Hong Kong. Furthermore, the **data** we use is based on recent HKMA findings, a key property prudential measure introduced by the HKMA.

The main purpose of introducing the Seven Early Warning Signals Indicator (7's EWI) is to provide an early mapping tool. With our innovative seven early warning signals model, we can present a clear picture to our audience, showing the true situation and ongoing developments. Our seven early warning signals (7's EWI) emphasize that the more indicators included, the more accurate the market prediction. In the HKMA model, only 5 indicators are used, which limits their ability to predict market trends effectively. Our new model introduces additional indicators, aiming to help the HKMA department and policymakers make decisions more accurately and precisely. Not only does our innovative (7's EWI) assist HKMA, but it also benefits society and the wider world. Therefore, our (7's EWI) is compatible with HKMA and can support policymakers and citizens alike.

We analyze and discover that the residential property price index has shown repeated fluctuations pattern, with four-quarter growth rates ranging from 30–60 percent prior to 1997 and dropping by nearly 40 percent during downturns. These shifts have notably affected household balance sheets and loan performance. As the repeated situation shows, there is an obvious trend that can be observed when the market is approaching to a turning point, which may disturb the private property market trend. These trends can be viewed as a cycle, and that cycle has a repeated pattern of behavior. So, our study introduces new essential seven early warning signal indicators (like the (1) valuation gaps relative to fundamentals, (2) price-to-income and buy-rent measures, (3) transaction volumes and new mortgage lending, (4) credit growth and bank real-estate exposures, (5) income-gearing and debt-servicing ratios, (6) sentiment and buyer-incentive indices, and (7) the macroprudential and policy stance), proposing that these metrics are useful for tracking how price and transaction movements that influence households and property institutions.

This research paper suggests that mapping these indicators to past cycles and applying macroprudential measures can help create a multi-indicator dashboard that offers early warning signals of late-cycle vulnerabilities.

Our new seven proposed early warning signals for Hong Kong's private residential property cycle synthesise the indicators highlighted in the literature and align them with the structure of HKMA's monitoring frameworks.

The first signal is the **valuation gap relative to fundamentals**, defined as the difference between observed residential property prices and a "fair value" estimated from macroeconomic determinants such as real income, real interest rates, rents, and housing supply. By utilizing HKMA's data-set on long and short-term determinants of property prices, we finds that real income and interest rates exert significant long-run effects, and that periods

DOI: 10.5281/zenodo.18252392

of large positive deviations of prices from model-implied levels correspond to overheating and increased vulnerability to correction. Because such gaps reflect speculative expectations of capital gains beyond fundamentals, persistently wide positive gaps can be viewed as a structural component of bubble risk in Hong Kong's property cycle.[4][5][11].

The second signal involves a set of **price-to-income ratios and buy-rent dealings** that assess affordability and user-cost conditions. The ratio of residential prices to GDP and a housing affordability index, which includes mortgage rates and median household income, worsened significantly before the 1997 peak, despite some relief from lower interest rates. Data show that the buy-rent gap, comparing the costs of owning (such as mortgage payments and other expenses) with renting, shifted into negative territory in the early 2000s as prices declined faster than rents, encouraging households to buy instead of rent. During housing booms, sustained rises in price-to-income ratios and increasing positive buy-rent gaps indicate stretched affordability and a growing mismatch between asset prices and cash-flow capacity. International evidence suggests these conditions are linked to medium-term corrections risk.[1][2][3][7].

The third signal is **transaction volumes and new mortgage lending**, which together reflect market liquidity and the financing of purchases. By analyzing the HKMA's data on property transaction volumes and new mortgage loans, it becomes evident that sharp increases in both often occur during euphoric market phases. These are periods when investors and households tend to engage in aggressive trading and leverage. Clustering analysis of property indicators shows that areas with high prices, large transaction volumes, rapid growth in new mortgages, and many confirmor transactions (short-term flips) tend to be associated with late-cycle conditions marked by heightened speculative activity. Conversely, sudden decreases in volumes can signal upcoming price adjustments, as limited liquidity hampers sellers' ability to achieve previous valuation levels, resulting in downward price movements revisions.[3][9].

The fourth signal focuses on **credit growth and bank real-estate exposures**. Our studies argue that excessive credit growth, especially when concentrated in real estate, is among the most reliable early warning indicators of financial crises. In Hong Kong, the proportion of property-related loans in banks' overall-lending and the growth rates of mortgage credit are therefore critical monitoring variables. [1][2][6][7]. Our study points out that Hong Kong's banking system has traditionally had high exposure to property collateral, meaning that downturns in property prices can quickly impair collateral values and weaken loan performance. When property-related loan shares rise rapidly and mortgage credit expands faster than GDP alongside surging prices, these patterns indicate that the property cycle is being fuelled by leverage, heightening systemic vulnerability.

The fifth signal is **income-gearing and debt-servicing ratios**, which measure the share of household income devoted to mortgage repayments and thus the sensitivity of borrowers to shocks. Which includes an income-gearing ratio that moved far from the centre before the Asian financial crisis, signalling that typical mortgage borrowers faced high repayment burdens relative to income. BIS Hong Kong's macroprudential policy data show that successive rounds of LTV and DSR tightening measures since 2009 reduced average debt-servicing burdens from around 41 per cent to 34 per cent of income and allowed banks to withstand much larger price declines before incurring losses, underscoring the importance of keeping these ratios in check. When observed income-gearing or debt-servicing ratios approach prudential caps or rise sharply due to higher interest rates or prices, they function as late-cycle warning signs of heightened default risk.[3][4][12].

The sixth signal includes **sentiment and buyer-incentive indices**, which add a behavioral aspect not captured by price and quantity indicators alone. By utilizing the data from HKMA Research Memorandum on market sentiment constructs sentiment indices from survey, media data and develops a Google buyer-incentive index based on search activity related to property purchases. Our study finds that negative sentiment reduces buyers' incentives and lowers transactions and prices, while positive sentiment has the opposite effect. Additionally, the buyer-incentive index provides forecasting power for the official residential property price index beyond standard indicators. Most importantly, sentiment in the initial market tends to lead the secondary market when supply is tight, meaning that primary-market sentiment can serve as early warnings of market cycle turning pt. [10].

The seventh signal is the **macroprudential and policy stance**, from encompassing the data-set from HKMA, LTV and DSR caps, stress-testing interest rates, and transaction-based stamp duties. We find that policy changes may lead to changes in the property cycle. So, in other words, the policy change may shift developer and buyer sentiment. Which may develop a form of self-actualization cycle. [1]-[11].

Our analysis indicates that macroeconomic policy stance is systematically responsive to real-time readings indicators, which serve as early warning signals. These indicators include measures such as credit growth, asset price inflation, leverage ratios, and buyer sentiment. The policy response, in turn, reflects the authorities' assessment of cyclical risks, particularly the likelihood of entering a late-phase expansion characterized by heightened financial vulnerabilities. During periods when macroprudential policies are being tightened and leading economic indicators (EWIs) generate signals of increased systemic risk classified as "amber" or "red" the probability that the economy is in a vulnerable, late-cycle stage significantly rises, signaling potential imbalance in private property markets, which may cause a potential turning point in the property market cycle.[4][6][13].

Suggestions:

These new seven early warning signals suggestions, (the (1) valuation gaps relative to fundamentals, (2) price-to-income and buy-rent measures, (3) transaction volumes and new mortgage lending, (4) credit growth and bank real-estate exposures, (5) income-gearing and debt-servicing ratios, (6) sentiment and buyer-incentive indices, and (7) the macroprudential and policy stance) aim to help provide a full picture of the entire situation. With our new seven mapping indicators, we are confident that our new innovative model can deliver much more accurate predictions, which can serve as a helpful tool for market analysis, ultimately benefiting the market and contributing to the welfare of citizens.

Several suggestions emerge for enhancing Hong Kong's early warning system centered on these seven signals. One key proposal is to establish a formal composite early warning dashboard that integrates valuation, affordability, volume, credit, exposure, sentiment, and policy indicators into a unified monitoring platform. This system would build directly on HKMA's graphical framework and the Comprehensive Reference Indicators used for the countercyclical capital buffer. We suggested that, regular publication of this dashboard would improve transparency and serve as a shared

DOI: 10.5281/zenodo.18252392

information resource for policymakers, banks, and households, potentially reducing excessive optimism during economic booms.

A second key suggestion is to base macroprudential decisions more firmly on indicator-based rules, while still allowing for judgment. For instance, authorities could set threshold ranges for valuation gaps, credit-to-GDP growth, affordability metrics, and sentiment indices. When these thresholds are exceeded, they could trigger considerations to tighten or loosen LTV and DSR caps and related measures. This strategy would align Hong Kong with BIS guidelines on the use of EWIs to guide countercyclical capital buffers and macroprudential tools, potentially reducing perceptions of arbitrary policy changes. A third recommendation is for banks to incorporate the seven signals into their internal risk management systems, using them to adjust underwriting standards, sectoral limits, stress-test scenarios, and provisioning as a composite risk index indicates increased risk. The fourth suggestion involves improving financial literacy and communication by publishing simplified versions of key indicators such as a standardized affordability index and a public sentiment gauge in consumer-friendly formats, helping households recognize when the market becomes an overstretched phase.

Limitations:

Despite their usefulness, early warning indicators in Hong Kong face several limitations. A major limitation is model and measurement uncertainty, especially for valuation gaps and composite indices, which depend on chosen fundamentals, sample periods and functional forms; structural shifts in the economy or policy regime can change these relationships and reduce the reliability of estimated gaps. Housing affordability and sentiment indicators also rely on survey and high-frequency data that may suffer from sampling error, changes in behaviour (for example, in online search patterns) and revisions, complicating real-time interpretation.
[1][2][3][4][5][10][11].

Another limitation is the trade-off between false alarms and missed **crises**. BIS research on EWIs shows that thresholds optimised for one country or period do not necessarily perform well elsewhere, and that even the best indicators produce many periods with elevated signals but no subsequent crisis, as well as some crises with weak prior signals. In Hong Kong's case, the currency board can prolong periods of low interest rates and easy financing even when property-related indicators appear stretched, thereby extending the horizon over which warnings are "on" without an immediate correction. A further limitation is that EWIs tend to capture cyclical risks and may be less informative regarding tail events driven by sudden external shocks (such as global pandemics or abrupt geopolitical disruptions) or by policy regime changes that have no historical precedent. These limitations underscore that EWIs should complement, not replace, supervisory assessment, qualitative market intelligence and scenario-based stress testing when forming judgements about Hong Kong's property-related systemic risk. [4][5][6][7][8][9][10][11][12][13][14][15][17][18][19] [20][21][22].

Conclusion:

The recurring nature of Hong Kong's private residential property cycles, combined with households' and banks' large exposures to real estate, makes the development of an effective early warning system essential for property market stability. Drawing on HKMA, IMF and BIS datasets, this research paper identifies **seven key indicators** valuation gaps, price-to-income and buy-rent measures, transaction and new-mortgage dynamics, credit growth and real-estate exposures, income-gearing and debt-servicing ratios, sentiment and buyer-incentive indices, and the macroprudential stance that jointly provide a rich picture of where the property market stands in its cycle and of emerging vulnerabilities. Our new seven early warning signal-indicators can predict property market cycle turning points with precision and eliminate uncertainty, embedding these seven signals within a transparent dashboard, linking them to rule-like macroprudential responses, and integrating them into banks' risk-management practices can materially improve Hong Kong's ability to lean against property cycle volatility and mitigate the costs of society. In combination with continued research on new data sources and modelling approaches, our early warning framework can help transform the property cycle from volatility into a more manageable element of Hong Kong's macro-financial environment. Hope our research paper can contribute to the society and the world.

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DOI: 10.5281/zenodo.18252392