How Credible Is Hong Kong's Currency Peg? Insights from Financial Market Prices

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Summary:

This article presents a structural asset-pricing model that quantifies financial market perceptions of the credibility of Hong Kong's Linked Exchange Rate System (LERS). Using data from the foreign exchange market, the authors estimate the probability that the Hong Kong dollar (HKD) remains pegged to the US dollar (USD) and the value the HKD would take if the peg were to break. The analysis reveals multiple episodes when market confidence in the peg declined, with particularly sharp stress in late 2022 and mid-2025. In these periods, capital flows, interest rate differentials, and liquidity shocks drove market expectations of peg instability. The model identifies option prices as key forward-looking indicators of regime risk. This framework provides a real-time, market-based tool for monitoring currency peg credibility. The findings also offer policy-relevant insights into how global monetary shifts and local liquidity conditions shape perceptions of exchange rate stability.

Key Findings:

1. Our asset-pricing model for the Hong Kong dollar exchange rate estimates that financial markets participants assign fluctuating—but sometimes substantial—probabilities to the peg breaking, especially during periods of monetary divergence or capital flow volatility.

2. Credibility is driven by factors including interest rate differentials, interbank liquidity, and China's currency renminbi movements. Financial derivative data such as option-implied volatility are strongly associated with market perceptions of peg sustainability.

3. Compared to standard benchmarks, our model offers a more accurate, real-time gauge of peg risk and can serve as an early warning tool for policymakers in Hong Kong and beyond.

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JEL Classification: C83, D22, D70, F14

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1 Introduction

Hong Kong's currency board arrangement, known as the Linked Exchange Rate System (LERS), has been a cornerstone of monetary stability since 1983. By fixing the Hong Kong dollar (HKD) to the US dollar (USD), the Hong Kong Monetary Authority (HKMA) has anchored inflation expectations, facilitated trade, and supported Hong Kong's role as a global financial center. The peg has historically provided a transparent and rules-based framework for monetary policy, shielding Hong Kong from currency crises that have disrupted other emerging markets.

Yet despite its longstanding success, the peg has periodically come under pressure, particularly during times of global monetary divergence, capital market stress, or regional geopolitical shifts. These pressures raise critical questions for policymakers and market participants alike: Is the peg still credible? Do markets believe the HKMA can maintain the peg under extreme conditions? And how can we quantify such beliefs?

In recent years, macroeconomic developments have reignited these questions. The Federal Reserve's postpandemic monetary tightening has driven up US interest rates relative to those in Hong Kong, widening the interest rate differential and incentivizing carry trade[1] and capital outflows from Hong Kong. At the same time, geopolitical tensions between the United States and China, along with Hong Kong's increasing integration with mainland financial institutions, have raised concerns about long-term monetary alignment and autonomy.

This article presents findings from our recent research (Jermann, Wei and Yue, 2025), which develops a structural asset-pricing model to assess the credibility of the HKD-USD peg. Using information from HKD foreign exchange markets including option prices, our model extracts the probability that financial markets assign to the continuation of the peg, as well as the exchange rate to which the HKD would converge if the peg were abandoned. The results provide a forward-looking, market-based view of peg credibility and insights into the pressures facing the system.

2 Overview of Hong Kong's Linked Exchange Rate System

The HKD-USD peg was introduced in 1983 amid a crisis of confidence in the local currency. To restore stability, the Hong Kong government adopted a currency board system, which commits the HKMA to fully back the monetary base with US dollar reserves. The framework guarantees convertibility between HKD and USD at a fixed rate of 7.8 HKD per USD, ensuring that the supply of local currency is constrained by available reserves.

Under the LERS, the HKMA maintains a narrow trading band known as the *Convertibility Undertaking* (CU). Since 2005, this band has been set between 7.75 and 7.85 HKD per USD. The HKMA stands ready to buy US dollars at 7.75 and sell them at 7.85. This commitment effectively

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[1] A carry trade is an investment strategy that involves borrowing funds in a currency or asset with a low interest rate and using those funds to purchase a different currency or asset that offers a higher interest rate or yield. The primary goal is to profit from the difference in interest rates, or "carry."

creates a buffer zone: when the HKD appreciates toward 7.75, the HKMA sells HKD to dampen upward pressure; when it depreciates toward 7.85, it buys HKD to defend the peg.

This setup delivers automatic stabilizers. Capital inflows push the exchange rate toward the strong side, prompting liquidity injections that reduce local interest rates and disincentivize further inflows. Conversely, capital outflows lead to rising local rates, discouraging further depreciation pressure.

Over time, the peg has weathered several significant challenges. During the Asian Financial Crisis (1997–98), speculative attacks targeted both the currency and local equity markets. The HKMA responded by defending the peg with aggressive interventions, including direct purchases of domestic equities and hikes in short-term interest rates. The peg held, but the episode revealed the risks of defending both the exchange rate and financial stability simultaneously. Later the SARS epidemic (2003) led to a sharp economic slowdown and concerns about capital flight. Despite these challenges, the currency board framework continued to function smoothly, with limited pressure on the peg. During the Global Financial Crisis (2008–09), as global liquidity dried up, safe-haven flows into the USD created depreciation pressure on the HKD. The HKMA intervened to support the currency, but relatively modest outflows meant that the system remained stable. In 2018–20, amid mass demonstrations in Hong Kong and rising geopolitical friction between the United States and China, markets grew concerned about Hong Kong's autonomy and the future of its financial system. The peg came under renewed scrutiny, with some advocating for a shift toward RMB alignment. Nonetheless, the HKD remained within the CU and the HKMA reiterated its commitment to the LERS.

Between mid 2022 and early 2023, the HKD faced sustained depreciation pressure as US interest rates surged while Hong Kong Interbank Offered Rates (HIBOR) remained low. This widening differential encouraged carry trades and capital outflows, pushing the HKD toward the weak-side limit of 7.85. The HKMA intervened repeatedly, leading to a sharp contraction in the aggregate balance—from over HK$300 billion in early 2022 to under HK$100 billion by April 2023. This decline in interbank liquidity reflected the intensity of intervention and raised market concerns about the peg's durability.

In 2025, Hong Kong faced exceptional two-sided pressure on its currency band, as the HKD first strengthened to the strong-side limit of 7.75 in May–June on the back of large capital inflows from foreign IPO investors and record northbound equity purchases, prompting the HKMA to sell HKD and expand the aggregate balance, driving local rates near zero and encouraging carry trades. (The aggregate balance reflects the level of excess reserves in the interbank market and responds directly to HKMA interventions.) These trades quickly reversed the flows, and by late June the HKD had weakened to the 7.85 weak-side limit, leading the HKMA to sell USD and buy HKD in six interventions between June 26 and July 16 totaling more than US$11.1 billion. The episode underscored how rapidly sentiment can shift, with option-based measures such as risk reversals and butterflies signaling elevated uncertainty over regime stability.

Figure 1 illustrates the evolution of the spot HKD/USD exchange rate alongside the

aggregate balance of the banking system—a key liquidity measure under the LERS. When the HKD strengthens and the HKMA sells local currency to buy USD, the aggregate balance expands, injecting liquidity. Conversely, when the HKD weakens and the HKMA buys local currency to defend the peg, the aggregate balance contracts. Notably, sharp declines in the aggregate balance—such as those observed in 2019 and again in late 2022 and June to July 2025—coincide with episodes of market stress and increased depreciation pressure, highlighting the link among intervention activity, domestic liquidity, and perceived peg credibility.

These episodes highlight both the resilience of the peg and the conditional nature of its credibility. Although the currency board structure provides robust tools for defense, it also imposes constraints on monetary autonomy. Credibility must be continuously earned and reinforced through policy transparency, strong reserves, and consistent signaling. Our research offers a method to assess how markets perceive that credibility in real time.

Figure 1: USD-HKD Exchange Rate and Aggregate Liquidity

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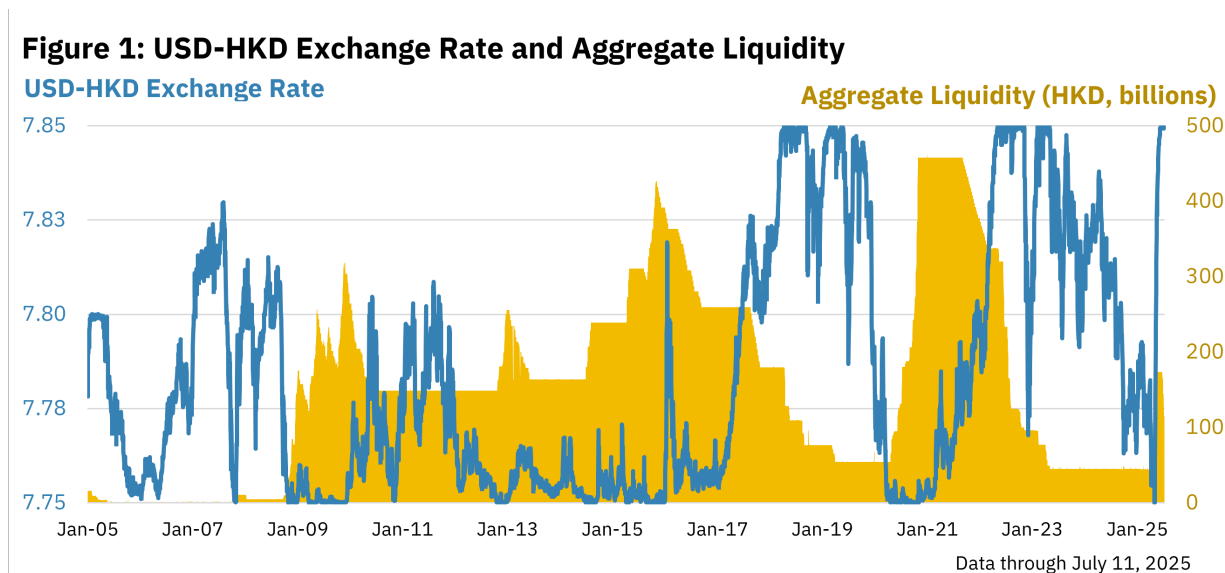
Note: This figure plots the USD-HKD exchange rate (solid line, left axis) and aggregate banking liquidity in Hong Kong in billion HKD (shaded area, right axis) between January 2005 and July 2025. Data source: Bloomberg and Hong Kong Monetary Authority

Figure 2 shows the evolution of the interest rate differential between the United States and Hong Kong, a key driver of capital flows and exchange rate pressure under LERS. The chart plots the spread between three-month USD London interbank offered rate (LIBOR) (imputed using Secured Overnight Financing Rate SOFR) and Hong Kong Interbank Offered Rates (HIBOR), highlighting episodes when US rates rose significantly above Hong Kong's. These gaps incentivize carry trades, where investors borrow in low-rate HKD to invest in higher-yielding USD assets, leading to capital outflows and pressure on the HKD to depreciate. This dynamic was particularly evident during the Fed's tightening cycles in 2018 and 2022, as well as in mid-2025, when the rate gap widened sharply again. Our model finds that such rate differentials are

strongly associated with declining peg credibility, as reflected in both declining aggregate balances and rising option-implied volatility.

Figure 2: Interest Rates in the US and Hong Kong

Figure 2: Interest Rates in the US and Hong King | three-month interbank interest rate

Data through July 11, 2025

Note: This figure plots 3-month interbank interest rates in the US (solid blue line) and in Hong Kong (dotted red line) between January 2005 and July 2025. Data source: Bloomberg

3   Model and Results

The central idea behind our model is that the peg may not be perceived as fully permanent. Markets may believe that under certain stress scenarios, the HKD could be allowed (or forced) to float. These expectations manifest in the pricing of options—particularly those far from the current spot rate.

Our structural model assumes two regimes: a *peg regime*, where the HKD remains within the 7.75–7.85 band; a *float regime,* where the HKD converges to a fundamental value , determined by macroeconomic factors like interest rate differentials. We derive the equilibrium exchange rate in closed form when we cast the model in continuous time. Based on our estimation results, we find that the exquilibrium exchange rate has the S shape for *V* in the middle range. Importantly, our model produces U-shaped distributions—something standard Black-Scholes models cannot replicate. The empirical distribution of the USD-HKD exchange rate is U-shaped in the data. The U-shaped distribution is at odds with the bell-shaped distribution under standard Black-Scholes models. In sharp contrast, our model implies a distribution that closely resembles the empirical one in the data. The main force behind the exchange rate dynamics in our model is that the expectation of possible interventions affects exchange rate behavior even when the exchange rate lies inside the bounds.

Using the model, we estimate the probability that the peg continues over a given horizon

p and the fundamental exchange rate V. We fit the model using maximum likelihood techniques and calibrate it with daily data, capturing both short-run shifts and long-term patterns. The daily data are from January 2007 through July 2025. This sample spans multiple episodes of financial stress, monetary policy shifts, and capital flow cycles, providing a rich environment to evaluate the dynamics of market expectations. Our primary data sources include spot HKD/USD exchange rates, three-month HIBOR and USD LIBOR/SOFR interest rates, and implied volatilities from the USD/HKD options market. The model is estimated using maximum likelihood techniques, fitting observed option prices to theoretical values derived from our structural framework. The resulting estimates allow us to construct time-varying series of peg survival probabilities and fundamental exchange rate values.

Figure 3 displays the estimated three-month peg survival probability p derived from our structural model, capturing how market confidence in the HKD-USD peg evolves over time. The figure highlights several distinct periods when p declined sharply, indicating increased perceived risk of a peg break. Notably, the probability dipped below 60 percent in late 2022, amid aggressive US rate hikes and shrinking interbank liquidity in Hong Kong. A similar decline is observed in mid-2025, when the HKD swung from strong-side to weak-side pressure within weeks, triggering multiple HKMA interventions. These episodes coincide with volatile macro-financial conditions and are corroborated by shifts in option-implied volatility. The figure demonstrates the usefulness of our model in identifying periods of stress and quantifying shifts in market sentiment toward the peg regime in real time.

In addition, empirical regressions study the main determinants of peg credibility identified in our model. In particular, we find that the interest rate differential between the United States and Hong Kong is a key driver: higher US rates relative to HIBOR are significantly associated with lower peg survival probabilities, reflecting increased incentives for capital outflows through carry trades. In contrast, higher HIBOR levels—when holding US rates constant—tend to support peg credibility, likely because tighter local conditions dissuade speculative selling of the HKD. Furthermore, when the aggregate balance drops, peg credibility declines sharply, a finding consistent with market concerns about the adequacy of liquidity buffers available to the HKMA to defend the peg.

Turning to the external dimension, we also find the effect of China's renminbi (onshore exchange rate and offshore exchange rate) depreciation on peg expectations. Both onshore and offshore RMB weakness are associated with reduced peg credibility and a decline in the estimated fundamental value of the HKD under a floating regime, underscoring the perceived linkage between China's currency policy and the future of Hong Kong's monetary regime. As China's financial influence in Hong Kong continues to grow, market participants may increasingly view RMB depreciation as a signal of broader regional monetary realignment, reinforcing uncertainty about the long-term stability of the USD peg.
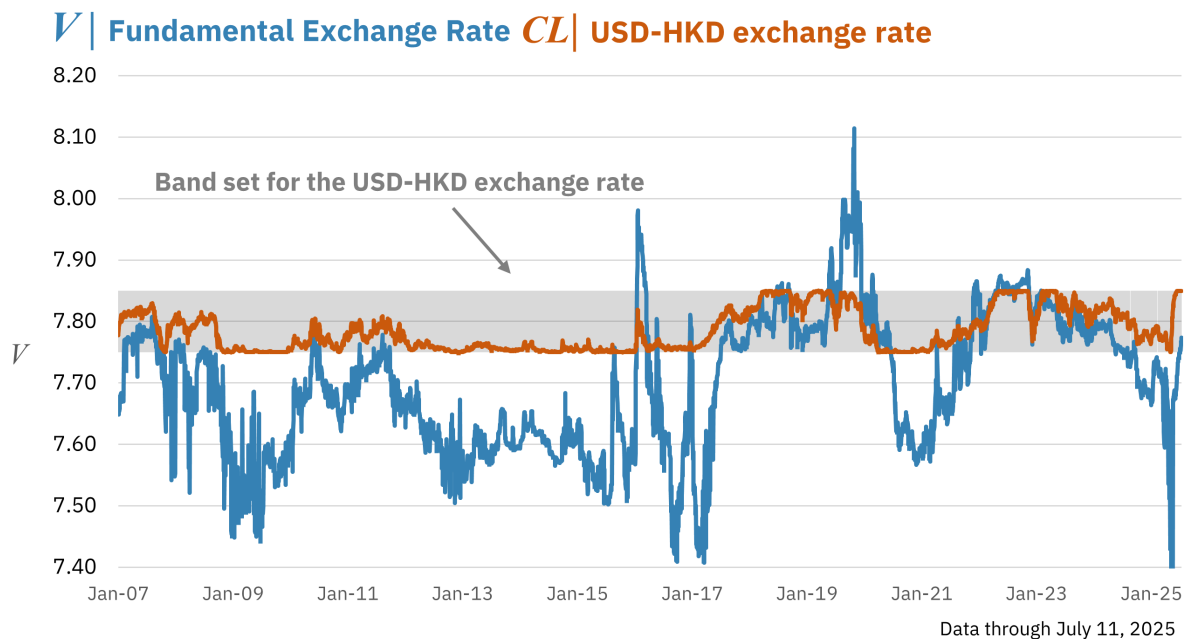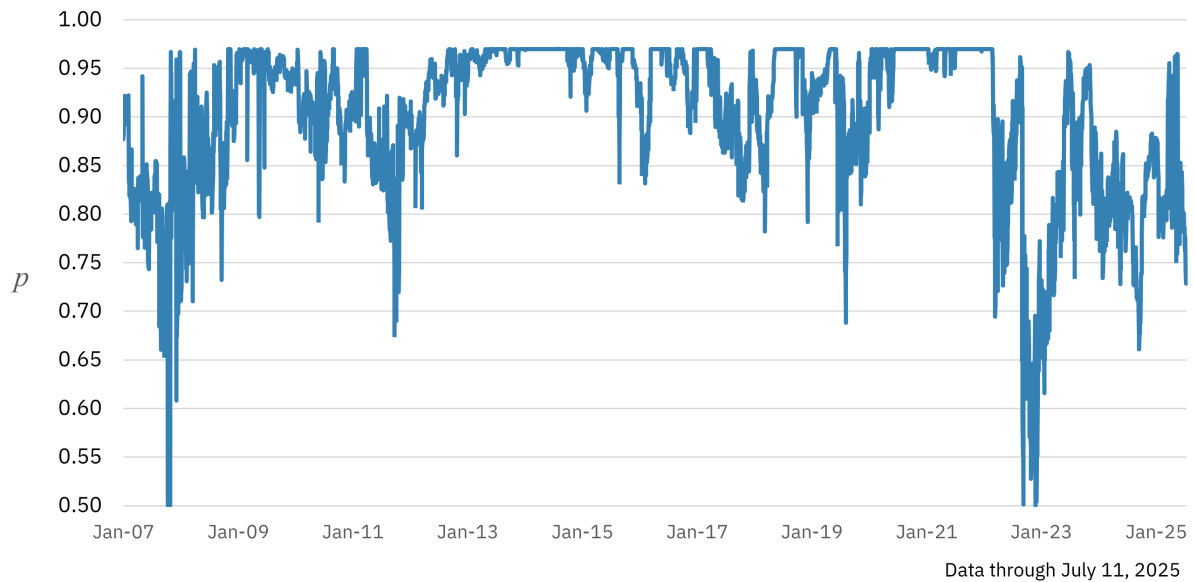
4   Conclusion

Hong Kong's currency peg has proven resilient, but it is not immune to global shocks. By estimating market-implied probabilities using options data, we quantify peg credibility and

Figure 3: Estimation Results

HKD Peg Survival Probability | 3-month probability p that th eHKD peg remains credible in 90 days

Data through July 11, 2025

V | **Fundamental Exchange Rate** CL | **USD-HKD exchange rate**

Band set for the USD-HKD exchange rate

Data through July 11, 2025

Note: Blue line in Panel (a) plots the 3-month probability p that the HKD peg remains credible in 90 days. The red line is the spot USD-HKD exchange rate. The shaded area is the band set for the USD-HKD exchange rate. Panel (b) plots the estimated fundamental exchange rate value V.

identify periods of vulnerability. Our findings suggest that credibility is shaped by interest rates, capital flows, liquidity, and broader regional dynamics. As financial conditions evolve, real-time market-based models like ours offer valuable tools for policy monitoring and stress detection.

Understanding how financial markets perceive currency regime risk is vital for central banks operating under fixed or managed exchange rates. Our model offers a framework that is both tractable and adaptable, providing a blueprint for risk monitoring in similar contexts. Continued research into market-based credibility metrics will help bridge the gap between policy design and financial market expectations.

References

Jermann, Urban J., Bin Wei, and Vivian Z. Yue. 2025. "How Credible Is Hong Kong's Currency Peg?" *Working Paper*.