Comparative Analysis of U.S. and China's Monetary Policy Effects on the Stability of the Hong Kong Financial Market

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Abstract. This study investigates the integrated effects of U.S. and Chinese equity markets, monetary policies, and exchange rate dynamics on Hong Kong's financial stability using a tripartite VAR model (2015–2025) and Granger causality test. Findings indicate U.S. equity volatility and USD-CNY fluctuations strongly Granger-cause Hang Seng Index instability, while China's equity market and monetary policy display secondary yet notable causal effects. U.S. monetary policy generates spillover effects via equity and currency channels, indirectly pressuring China's yields and amplifying systemic risks. Under the tone of globalization, Hong Kong's dual vulnerability—as a dollar liquidity conduit and mainland financial gateway—necessitates macroprudential buffers against cross-border volatility and enhanced integration with the mainland market to balance U.S.-China monetary divergence.

Keywords: financial market; Hong Kong; monetary policy; U.S.; China

1 Introduction

With deepening globalization, the global economy has become increasingly interconnected. Cross-border capital and regional stock markets have become more sensitive to various external influences, especially the policies of major economies. The spillover effects of monetary policy on financial markets have become an increasingly important topic in the study of regional economies.

In the post-epidemic era, there has been a significant shift in global monetary policy, mainly reflected in a shift from easing to tightening in developed economies, while some emerging economies have adopted easing policies in response to their domestic economic situation. Observing the two major economies at present, the U.S. Federal Reserve has been adjusting its monetary policy in accordance with the economic cycle, inflationary pressures, political games and the global situation, with a high degree of uncertainty. The People's Bank of China, on the other hand, has shifted the tone of its monetary policy to "moderately loose" in 2025, seeking to find a balance between economic growth and financial stability to support the economic rebound. The Federal Reserve's caution and other economies' accommodation will create a scissor effect which,

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combined with geopolitical risks, competitive pressures and debt burden, may exacerbate the volatility of Hong Kong's financial markets.

As an open and highly sensitive market, Hong Kong provides a unique perspective on how US and Chinese monetary policies affect the regional financial system. Hong Kong is closely linked to the economy of mainland China and is heavily influenced by changes in the monetary policy of the People's Bank of China. At the same time, Hong Kong is playing an important role in the geo-economic and financial system in connecting China with the world. Hong Kong's linked exchange rate system, which ties the Hong Kong dollar to the U.S. dollar, makes its monetary policy and economic conditions highly dependent on policy adjustments by the U.S. Federal Reserve. Hong Kong's free-flowing capital attributes and its offshore hub role also make it an "amplifier" for the Federal Reserve's policy. This dual dependence makes Hong Kong's financial market vulnerable to changes in monetary policy in both China and the US, making the study significant.

Given Hong Kong's dual vulnerability to both U.S. dollar liquidity cycles and mainland China's monetary interventions, this paper seeks to quantify the asymmetric transmission mechanisms through which Federal Reserve and PBOC policy shifts propagate into Hong Kong's financial system. By constructing a tripartite vector autoregression (VAR) model spanning 2015-2025, we employ Granger causality tests to systematically examine the directional relationships between monetary policy variables, equity market performance and exchange rate dynamics. The findings will provide empirical evidence to assess Hong Kong's unique role as both a dollar liquidity conduit and an offshore clearing center for RMB, offering policymakers actionable insights for calibrating macroprudential buffers against cross-border monetary shocks.

2 Literature Review

The global financial system is increasingly shaped by spillovers from major economies, with U.S. and Chinese monetary policies exerting distinct yet interconnected pressures on open markets. While the U.S. Federal Reserve's actions historically dominate cross-border capital flows (Zhang et al., 2023)[1]. China's growing integration into global finance—despite lingering capital controls—adds complexity to spillover dynamics (Mohammadi & Tan, 2015)[2]. Hong Kong, uniquely positioned as a hybrid hub, faces dual vulnerabilities: its dollar peg forces monetary alignment with the U.S., while deep economic ties to mainland China expose it to PBOC policy shifts. Empirical work shows U.S. rate hikes disproportionately strain Hong Kong's interest-sensitive sectors (e.g., property markets), whereas China's monetary interventions more directly impact real economic indicators like GDP growth (Chen & Tsang, 2020)[3]. This duality creates a transmission paradox—Hong Kong amplifies U.S. liquidity shocks through its currency board system but relies on mainland financial integration to buffer domestic instability.

Crisis response mechanisms highlight Hong Kong's adaptive role as a policy arbitrator, selectively transmitting or absorbing shocks while leveraging macroprudential buffers against cross-border volatility (IMF, 2024)[4]. Recent studies suggest this dual

behavior enables Hong Kong to act as a policy arbitrator, selectively transmitting or absorbing shocks (Chen et al., 2025)[5]. However, prevailing frameworks oversimplify Hong Kong's role—either as a passive Fed policy follower or a China-dependent periphery—neglecting its agency in reconciling conflicting U.S.-China pressures. Static models also fail to capture how events like the U.S.-China trade war rewire spillover pathways.

Following the literature review, this study applies a tripartite vector autoregression (VAR) model spanning 2015–2025 to systematically examine the asymmetric transmission mechanisms of U.S. and Chinese monetary policies on Hong Kong's financial stability.

3 Methodology and Data

3.1 Methodology

This study employs a six-variable Vector Autoregression (VAR) model to analyze the asymmetric transmission mechanisms of U.S. and Chinese monetary policies on the stability of Hong Kong's financial market.

The VAR(p) model is specified as:

$$R_t = \varphi_0 + \varphi_1 R_{t-1} + \cdots + \varphi_p R_{t-p} + \varepsilon_t \quad (1)$$

where R_t represents a vector of six variables. $\varphi_1, \ldots, \varphi_p$ are coefficients quantifying the persistence of past values. Intercept φ_0 is a constant term reflecting the baseline level of R_t. ε_t is an error term assumed to be a white noise process with zero meaning, constant variance, and no serial correlation.

Then Granger causality tests are conducted to identify directional relationships among variables. For instance, if lagged values of the S&P 500 significantly improve the prediction of HSI returns (via F-tests with p-values < 0.05), U.S. equity movements are deemed to be Granger-cause Hong Kong's market fluctuations. The strength of causality is quantified by F-statistics, where higher values indicate stronger predictive power.

Finally, a directed weighted network is constructed to visualize spillover pathways. The nodes represent the six endogenous variables listed below, the direction and weights depend on the Granger tests. A directed edge $A \rightarrow B$ exists if variable A Granger-causes variable B and the edge weight is the normalized F-statistic, with larger weights denoting stronger causal relationships. The complex network provides a systematic approach to quantifying policy spillovers and their systemic implications for financial stability.

3.2 Data

This study utilizes six key variables sourced from Investing.com to capture the interplay of U.S. and Chinese monetary policies on Hong Kong's financial stability. This study

employs the Hang Seng Index (HSI) to represent Hong Kong's financial market dynamics while incorporating the Shanghai Composite Index (SSEC) and S&P 500 Index (SPX) to capture cross-border risk transmission between Chinese and U.S. equity markets. To reflect monetary policy dynamics, the U.S. 10-Year Treasury Yield (USD_YIELD) and China 10-Year Treasury Yield (CNY_YIELD) are utilized as proxies for long-term interest rate trends and monetary policy changes in their respective economies. The USD-CNY exchange rate is included to quantify currency fluctuation impacts on cross-border capital flows and policy coordination. All data spans from January 5, 2015, to December 31, 2024, enabling a systematic analysis of interdependencies among equity markets, interest rate regimes, and exchange rate mechanisms across these interconnected financial systems.

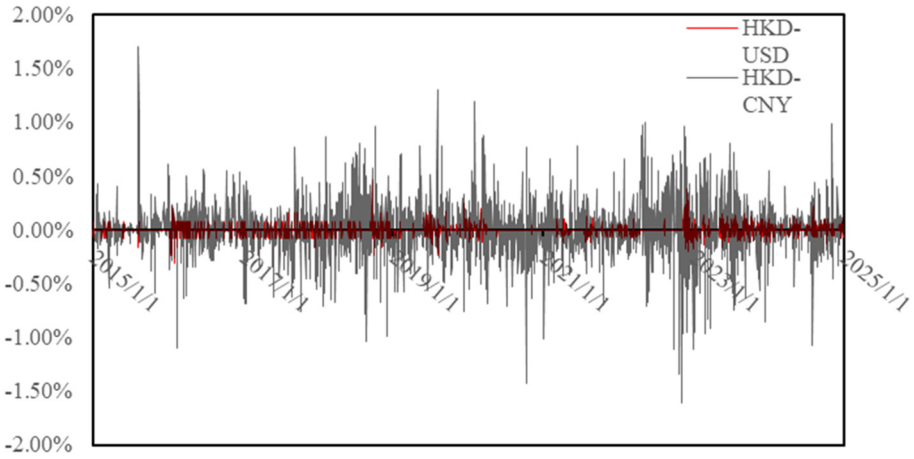

Fig. 1. Percentage Exchange Rate: High Correlation Between HKD and USD Exchange Rates (2015-2025)

As illustrated in Figure 1, the red line (HKD/USD exchange rate) exhibits negligible volatility under Hong Kong's currency board system, which rigidly pegs the HKD to the USD. This stability renders HKD/USD dynamics statistically insignificant for analyzing cross-border monetary spillovers. Consequently, this study focuses exclusively on USD/CNY fluctuations, which reflect meaningful policy-driven volatility and capital flow dynamics between China and global markets.

Based on the descriptive statistics (Table 1), for the sample-wide mean values, the Hong Kong stock market exhibits a negative average return (-0.00015), while both the U.S. and Chinese equity markets show positive returns, with the SPX (0.00045) outperforming the Shanghai Composite Index (9.93E-05). In terms of monetary policy proxies, the 10-year Chinese treasury yield (CNY_YIELD) displays an overall downward trend (mean=-0.00035), contrasting with the rising trajectory of the U.S. 10-year yield (mean=0.000513). Regarding volatility, the Hong Kong stock market demonstrates the highest standard deviation (0.0135), followed by the Chinese equity market (0.0130), both significantly exceeding the lower volatility of the U.S. market (0.0112).

These patterns underscore Hong Kong's heightened sensitivity to financial shocks relative to its counterparts, as well as divergent monetary policy trajectories between China and the U.S. during the study period.

Table 1. Descriptive Statistics Summary

	HSI	SPX	SSEC	CNY_YIELD	USD_YIELD	USD_CNY
Mean	-0.00015	0.00045	9.93E-05	-0.00035	0.000513	6.99E-05
Median	0.0002	0.0007	0.0004	-0.0003	0.0000	0.0001
Maximum	0.0908	0.0938	0.0806	0.0434	0.4437	0.0183
Minimum	-0.0941	-0.1198	-0.0849	-0.0623	-0.2767	-0.0161
Std. Dev.	0.0135	0.0112	0.0130	0.0073	0.0316	0.0026
Observations	2296	2296	2296	2296	2296	2296

Table 2. Correlation Coefficient Matrix

	HSI	SPX	SSEC	USD_CNY	USD_YIELD	CNY_YIELD
HSI	1	0.197	0.542	-0.265	0.104	0.133
SPX	0.197	1	0.155	-0.146	0.349	0.053
SSEC	0.542	0.155	1	-0.18	0.068	0.115
USD_CNY	-0.265	-0.146	-0.18	1	0.015	-0.088
USD_YIELD	0.104	0.349	0.068	0.015	1	0.112
CNY_YIELD	0.133	0.053	0.115	-0.088	0.112	1

As shown in Table 2, the correlation matrix reveals distinct patterns in cross-market linkages. The Hong Kong stock market (HSI) exhibits a strong positive correlation with mainland China's equity market (SSEC) and the correlation coefficient is 0.542, compared to a weaker positive correlation with the U.S. equity market (0.197), indicating tighter integration with mainland financial dynamics during the sample period. Furthermore, the 10-year treasury yields of China and the U.S. display a weak positive relationship, with a correlation coefficient of 0.112, suggesting limited synchronization between the two economies' monetary policy trends. Monetary policy proxies for both China and the US are positively correlated with the Hang Seng Index, with correlation coefficients of 0.133 and 0.104 respectively, though China's yield exerts a marginally stronger influence than its U.S. counterpart. Notably, the USD-CNY exchange rate demonstrates a significant negative correlation with the HSI (-0.265), implying that RMB depreciation exerts downward pressure on Hong Kong's equity market, likely through capital outflow risks or diminished investor confidence in cross-border stability. These findings underscore Hong Kong's dual role as a bridge between U.S. dollar liquidity and China-driven financial flows, with mainland linkages dominating equity market co-movements.

4 Empirical Analysis

The empirical investigation begins by confirming the stationarity of all six variables through Augmented Dickey-Fuller (ADF) tests, ensuring the validity of subsequent time-series analyses. The optimal lag order for the Vector Autoregression (VAR) model is determined as 1 based on Schwarz information criterion (SC) and Hannan-Quinn Information criterion (HQ). Utilizing the specified VAR framework, Granger causality tests are conducted to identify directional relationships among monetary policy variables, equity markets, and exchange rate dynamics. The results of the test, presented in Table 3, reveal the asymmetric transmission mechanisms of U.S. and Chinese monetary policies on Hong Kong's financial stability, providing empirical grounding for the study's core hypotheses.

Table 3. Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
HSI does not Granger Cause CNY_YIELD	2295	0.6947	0.4047
CNY_YIELD does not Granger Cause HSI		3.8752	0.0491
SPX does not Granger Cause CNY_YIELD	2295	2.1069	0.1468
CNY_YIELD does not Granger Cause SPX		6.5046	0.0108
SSEC does not Granger Cause CNY_YIELD	2295	1.7325	0.1882
CNY_YIELD does not Granger Cause SSEC		2.8501	0.0915
USD_CNY does not Granger Cause CNY_YIELD	2295	0.0058	0.9392
CNY_YIELD does not Granger Cause USD_CNY		0.2658	0.6062
USD_YIELD does not Granger Cause CNY_YIELD	2295	19.2290	0.0000
CNY_YIELD does not Granger Cause USD_YIELD		0.0226	0.8805
SPX does not Granger Cause HSI	2295	155.6463	0.0000
HSI does not Granger Cause SPX		0.6471	0.4212
SSEC does not Granger Cause HSI	2295	11.3173	0.0008
HSI does not Granger Cause SSEC		7.1867	0.0074
USD_CNY does not Granger Cause HSI	2295	36.6099	0.0000
HSI does not Granger Cause USD_CNY		0.7140	0.3982
USD_YIELD does not Granger Cause HSI	2295	0.4860	0.4858
HSI does not Granger Cause USD_YIELD		2.7603	0.0968
SSEC does not Granger Cause SPX	2295	0.2008	0.6541
SPX does not Granger Cause SSEC		49.0438	0.0000
USD_CNY does not Granger Cause SPX	2295	0.2520	0.6157
SPX does not Granger Cause USD_CNY		6.0176	0.0142
USD_YIELD does not Granger Cause SPX	2295	30.2354	0.0000
SPX does not Granger Cause USD_YIELD		82.1754	0.0000

USD_CNY does not Granger Cause SSEC	2295	7.4182	0.0065
SSEC does not Granger Cause USD_CNY		1.7586	0.1849
USD_YIELD does not Granger Cause SSEC	2295	0.7260	0.3943
SSEC does not Granger Cause USD_YIELD		5.1410	0.0235
USD_YIELD does not Granger Cause USD_CNY	2295	16.5801	0.0000
USD_CNY does not Granger Cause USD_YIELD		1.5933	0.2070

Based on the results of the Granger causality test above, the following complex network diagram is produced:

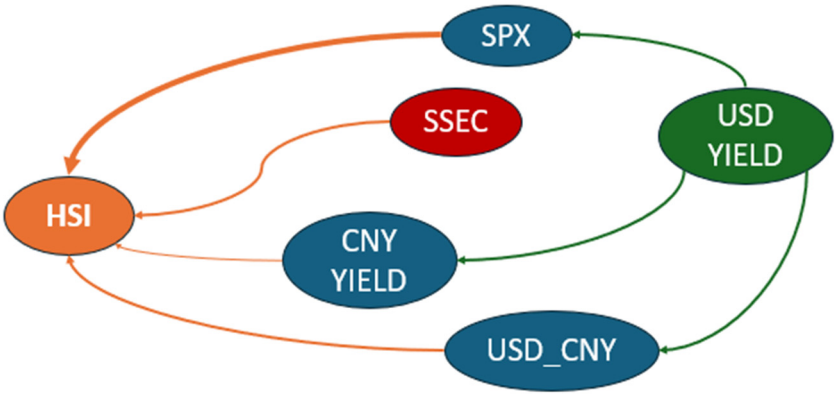

Fig. 2. Complex Network Diagram

As shown in Figure 2, the Granger causality tests indicate the asymmetric spillover effects of U.S. and Chinese monetary policy shifts on Hong Kong's financial stability, reaffirming its dual vulnerability as a dollar liquidity conduit and a gateway to mainland financial integration. Direct transmission mechanisms to the Hang Seng Index are predominantly driven by U.S. financial dynamics. The S&P 500 exerts a strong Granger-causal influence on HSI fluctuations ($F = 155.65$, $p < 0.01$), underscoring the amplified spillover of U.S. equity market volatility through Hong Kong's currency board system and free capital flows. Similarly, USD-CNY exchange rate movements directly Granger-cause HSI declines ($F = 36.61$, $p < 0.01$), reflecting heightened sensitivity to RMB depreciation risks and cross-border capital flight. While China's equity market (SSEC) also Granger-causes the HSI ($F = 11.32$, $p < 0.01$), its impact remains secondary to U.S. dominance, mirroring Hong Kong's hybrid role in reconciling global and regional financial linkages. China's monetary policy exhibits a weaker but statistically significant causal relationship with the HSI ($F = 3.88$, $p < 0.05$), suggesting incremental spillovers from interventions of People's Bank of China (PBOC).

Indirect U.S. policy spillovers operate through interconnected transmission pathways. Federal Reserve tightening, proxied by U.S. 10-year yield hikes, first Granger-causes volatility in the S&P 500 and USD-CNY appreciation, which subsequently propagate shocks to the HSI. Additionally, USD_YIELD increases exert upward pressure

on China's long-term yields ($F = 19.23$, $p < 0.01$), indirectly constraining PBOC policy flexibility and amplifying financial instability in Hong Kong. These cascading effects highlight the systemic risks posed by U.S. dollar liquidity cycles, even as mainland economic integration partially buffers domestic markets.

In conclusion, Hong Kong's financial stability remains disproportionately exposed to U.S. monetary policy shocks, while mainland China's influence, though secondary, underscores its evolving role in regional risk transmission. Policymakers must prioritize macroprudential buffers to mitigate cross-border volatility, particularly from Fed-driven equity and currency shocks, while leveraging deeper integration with mainland markets to enhance systemic resilience.

5 Conclusion

This study underscores the asymmetric spillover effects of U.S. and Chinese monetary policies on Hong Kong's financial stability, shaped by its dual role as a dollar liquidity conduit and a bridge to mainland markets. Empirical results reveal that U.S. monetary policy shocks dominate Hong Kong's equity dynamics, with the S&P 500 exhibiting a robust causal influence on the Hang Seng Index, reflecting amplified volatility transmission through Hong Kong's currency board system and free capital flows. Concurrently, RMB depreciation risks directly pressure the HSI, highlighting vulnerabilities to cross-border capital flight and investor sentiment shifts. While mainland China's equity market and monetary policy demonstrate weaker causal links, their secondary impacts emphasize Hong Kong's hybrid role in mediating global and regional financial interdependencies.

Indirect transmission pathways further compound systemic risks. Federal Reserve tightening propagates shocks through U.S. equity volatility and USD-CNY appreciation, cascading into HSI instability. Additionally, U.S. yield increases exert upward pressure on China's long-term rates, indirectly constraining PBOC policy flexibility and exacerbating Hong Kong's financial fragility.

To safeguard stability, policymakers must prioritize macroprudential buffers—such as countercyclical capital requirements—to mitigate Fed-driven equity and currency shocks. Simultaneously, deepening integration with mainland markets through cross-border financial infrastructure and RMB clearing reforms can enhance systemic resilience. Reducing over-reliance on the dollar peg by exploring targeted exchange rate flexibility, alongside advancing RMB internationalization, offers a pragmatic path to balance dual dependencies. Enhanced transparency in monitoring cross-border capital flows and improving risk disclosures will further bolster investor confidence.

In conclusion, Hong Kong's financial future hinges on strategically navigating its dual vulnerabilities. Proactive policy coordination and adaptive integration with mainland markets are imperative to withstand the evolving spillover landscape shaped by U.S.-China monetary divergence.

References

1. Zhang, H., Lau, C. K., & Wu, E. (2023). Monetary policy spillovers in emerging hubs. Journal of Financial Stability, 67, 101189.
2. Mohammadi, H., & Tan, Y. (2015). Return and volatility spillovers across equity markets in mainland China, Hong Kong and the United States. Econometrics, 3(2), 215-232.
3. Chen, H., & Tsang, A. (2020). Impact of US Monetary Policy Rate Shock and Other External Shocks on the Hong Kong Economy: A Factor-Augmented Vector Autoregression Approach. Emerging Markets Economics: Firm Behavior & Microeconomic Issues eJournal. https://doi.org/10.1111/1468-0106.12262.
4. International Monetary Fund. (2024). Macroprudential buffers for cross-border volatility. IMF Working Paper No. WP/24/78.
5. Chen, Y. L., Yang, J. J., & Chang, Y. T. (2025). Stock market volatility spillovers from US to China: The pivotal role of Hong Kong. Pacific-Basin Finance Journal, 90, 102670.

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