

Article

SVB Shock and Risk Repricing Among Selected Major Chinese Financial Institutions: Parameter Stability, Event Evidence, and Spillover Reconfiguration

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Abstract

This study investigates whether the March 2023 failure of Silicon Valley Bank (SVB) coincided with changes in market-risk exposure, abnormal returns, and return connectedness among five major Chinese financial institutions. Using daily data from January 2022 to December 2023, we apply CAPM and market-model regressions, structural-break tests, event-study methods, and generalized forecast-error variance decompositions. The revised design distinguishes 10 March from the first subsequent Chinese trading day, 13 March, and adds symmetric event windows, placebo tests, an alternative risk-free rate, return-series audits, significance tests, and VAR diagnostics. Full-sample Chow tests identify breaks for ICBC and CITIC Securities, but only ICBC remains significant within the ± 60 -day window, and none are significant within ± 30 days. Only ICBC records a significant positive CAR over $[-3, +3]$. Overall connectedness falls from 55.53% to 47.98%, while CITIC Securities becomes the largest post-event net transmitter. The evidence therefore indicates selective repricing and reconfigured linkages rather than a system-wide effect, and does not support unique causal attribution to SVB.

Keywords: Silicon Valley Bank; selected Chinese financial institutions; structural break; event study; generalized connectedness; robustness



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1. Introduction

The failure of Silicon Valley Bank in March 2023 renewed a central question in financial economics: when does a localized banking shock become a market-wide repricing event, and when is it instead absorbed through selective adjustments in expectations, risk premia, and cross-asset linkages? SVB's collapse was not a conventional credit-loss episode. It emerged from the interaction of duration risk, unrealized securities losses, concentrated uninsured deposits, and the speed with which digital withdrawals can convert balance-sheet fragility into a run. The mechanism was rooted in classic maturity-transformation fragility (Diamond & Dybvig, 1983), but it also reflected modern amplification through market valuation, liquidity management, and information-sensitive funding (Allen & Gale, 2000; Brunnermeier, 2009; Adrian & Shin, 2010). Recent analyses of the 2023 banking turmoil emphasize precisely this interaction between monetary tightening, mark-to-market

losses, and depositor run incentives (Board of Governors of the Federal Reserve System, 2023; Jiang et al., 2024; Metrick, 2024).

For non-U.S. markets, however, the relevant empirical question is not whether SVB's institutional failure mechanism was replicated domestically. China's large financial institutions operate under different ownership structures, deposit bases, regulatory regimes, and market expectations. The sharper question is whether a salient foreign banking failure coincided with measurable changes in the pricing of selected Chinese financial equities and in the structure of return spillovers among them. This distinction matters because international financial stress can travel through risk appetite, valuation channels, funding expectations, portfolio rebalancing, and information spillovers even when direct balance-sheet exposure is limited. It also matters because the Credit Suisse crisis, China's post-pandemic reopening, and domestic policy news unfolded during the same period. Any credible empirical design must therefore separate evidence of event-associated repricing from stronger claims of clean causal attribution.

This paper studies daily returns from 4 January 2022 to 29 December 2023 for five large and visible Chinese financial institutions: China Merchants Bank, Industrial Bank, ICBC, CITIC Securities, and East Money. The sample deliberately spans three commercial banks, one securities firm, and one internet-finance platform, but it is not intended to represent the full Chinese financial system. The descriptive evidence already points to substantial heterogeneity. Table 1 shows that return volatility differs sharply across institutions, with ICBC displaying the lowest standard deviation and East Money the highest. All return series exhibit heavy tails, reinforcing the need for inference procedures that do not rely on a benign normal-return environment. Figure 1 further shows that the sampled institutions followed distinct price paths around the March 2023 event date rather than moving as a single homogeneous sector portfolio.

Table 1. Descriptive statistics of daily returns.

Asset	Class	Mean	Std. Dev.	Minimum	Maximum	Skewness	Pearson Kurtosis
China Merchants Bank	Joint-stock bank	−0.0008	0.0158	−0.0748	0.0724	0.316	6.544
Industrial Bank	Joint-stock bank	0.0000	0.0111	−0.0506	0.0660	0.474	8.510
ICBC	Large state-owned bank	0.0002	0.0054	−0.0281	0.0371	0.446	10.726
CITIC Securities	Securities firm	−0.0002	0.0148	−0.0490	0.0872	0.638	6.672
East Money	Internet finance platform	−0.0009	0.0244	−0.1330	0.1414	0.500	9.178
CSI 300	Market portfolio	−0.0007	0.0109	−0.0494	0.0432	0.039	5.088

Note: Kurtosis is Pearson kurtosis, for which the Gaussian benchmark equals 3. The earlier table inadvertently reported excess kurtosis. The corrected CSI 300 value is 5.088, not 2.088.

The empirical analysis asks four questions. First, did the market-risk exposure or intercept of any sampled institution change around the first Chinese trading day after the SVB regulatory takeover? Second, are apparent parameter breaks robust to symmetric event windows, alternative break dates, temporal placebo tests, and an alternative risk-free proxy? Third, were short-window abnormal returns statistically distinguishable from ordinary return variation? Fourth, did directional return connectedness among the sampled institutions change after the event? These questions are intentionally narrower than a system-wide resilience claim. They are designed to evaluate whether the SVB episode was associated with selective repricing and reconfigured financial linkages among a small set of prominent Chinese financial firms.

The paper combines three empirical approaches. The first is a parameter-stability design based on CAPM and market-model regressions, fixed-date Chow tests, symmetric-window tests, temporal placebos, and data-guided break diagnostics (Chow, 1960; An-

draws, 1993; Bai & Perron, 2003). The second is an event-study framework that estimates abnormal returns around 13 March 2023, the first Chinese trading day after the U.S. regulatory action, and reports cumulative abnormal returns with statistical inference (MacKinlay, 1997). The third is a generalized connectedness analysis based on forecast-error variance decompositions, which identifies directional transmitter and receiver roles without imposing Cholesky ordering (Diebold & Yilmaz, 2012). This combination allows the paper to distinguish three related but conceptually different outcomes: changes in market beta, abnormal returns over short windows, and changes in network transmission.

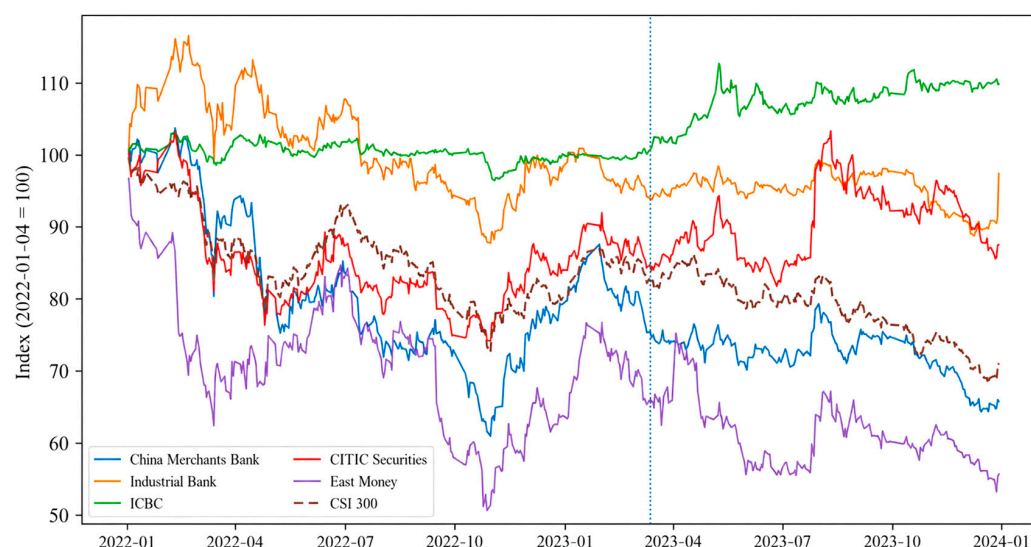


Figure 1. Normalized prices of the five institutions and the CSI 300. Note: The vertical line marks 13 March 2023.

The results qualify any broad contagion interpretation. Full-sample Chow tests reject parameter stability for ICBC and CITIC Securities, but Table 2 shows that this evidence weakens substantially in symmetric windows centered on 13 March 2023. No institution rejects stability within the ± 30 -trading-day window, and only ICBC remains significant within the ± 60 -trading-day window. The temporal placebo and unknown-break diagnostics further weaken a unique SVB attribution, especially for CITIC Securities. The event-study results are similarly selective. Table 3 shows that ICBC records a positive and statistically significant cumulative abnormal return over the $[-3, +3]$ window, while most institution-window estimates are statistically indistinguishable from zero. The connectedness evidence also rejects a simple system-wide amplification narrative. Table 4 reports that total connectedness declines from 55.53% before the event to 47.98% afterward, even as directional roles change and CITIC Securities becomes the largest post-event net transmitter. Figure 2 summarizes this decline in aggregate connectedness, while the directional network figures show a reorganization of linkages rather than a uniform strengthening of spillovers.

Table 2. Chow tests centered on 13 March 2023.

Institution	β Pre	β Post	Full F	Full p	± 30 F	± 30 p	± 60 F	± 60 p
China Merchants Bank	1.031	0.907	0.647	0.5242	0.781	0.4628	0.224	0.7999
Industrial Bank	0.553	0.461	0.559	0.5722	1.370	0.2626	1.237	0.2940
ICBC	0.063	0.232	5.922	0.0029	1.217	0.3037	4.161	0.0180
CITIC Securities	0.952	1.209	4.055	0.0179	0.221	0.8024	0.418	0.6594
East Money	1.626	1.740	0.354	0.7021	0.363	0.6971	0.054	0.9479

Table 3. Event-study CARs with statistical inference.

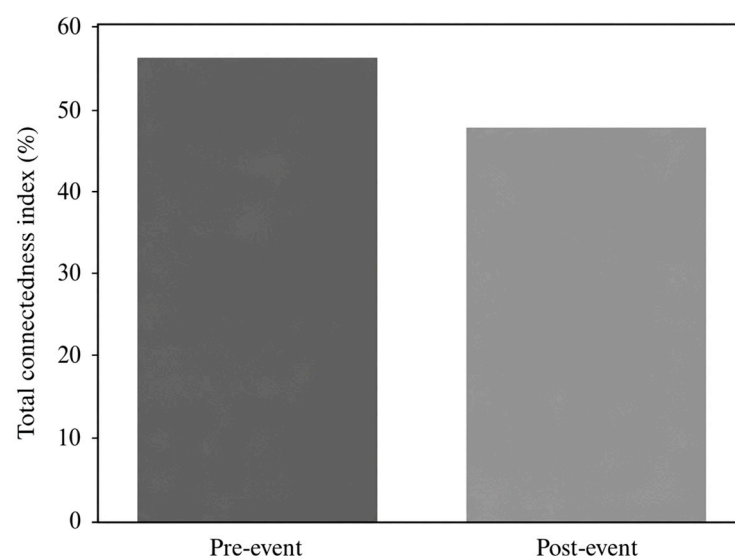
Institution	CAR [−1, +1]	t	p	CAR [−3, +3]	t	p	CAR [−5, +5]	t	p
China Merchants Bank	−1.69%	−0.73	0.467	−2.14%	−0.59	0.555	−5.34%	−1.15	0.251
Industrial Bank	−0.90%	−0.59	0.556	0.40%	0.17	0.865	0.09%	0.03	0.977
ICBC	0.45%	0.73	0.468	1.96% *	2.02	0.046	2.36% †	1.90	0.061
CITIC Securities	−1.18%	−0.82	0.414	−0.45%	−0.20	0.840	−0.95%	−0.33	0.741
East Money	1.45%	0.53	0.595	3.31%	0.78	0.437	2.22%	0.41	0.683

Note: * denotes $p < 0.05$. ICBC CAR [−3, +3] is significant at 5%; † denotes $p < 0.10$, ICBC CAR [−5, +5] is marginal at 10%. All other institution-window CARs are statistically insignificant.

Table 4. Directional generalized spillovers (%).

Institution	FROM Pre	TO Pre	NET Pre	FROM Post	TO Post	NET Post
China Merchants Bank	62.35	70.99	8.63	54.23	63.21	8.98
Industrial Bank	59.71	65.20	5.49	44.72	38.11	−6.62
ICBC	41.28	29.38	−11.90	36.62	26.46	−10.16
CITIC Securities	60.16	66.91	6.75	56.74	69.92	13.18
East Money	54.12	45.14	−8.98	47.56	42.18	−5.38

Note: NET = TO − FROM. Positive values indicate net transmitters; negative values indicate net receivers.

**Figure 2.** Total generalized connectedness before and after 13 March 2023.

The contribution of the paper is therefore empirical and interpretive. First, it provides a disciplined event-based assessment of whether a major U.S. banking failure coincided with repricing among selected Chinese financial institutions. Second, it demonstrates how conclusions change once the event date is aligned with the Chinese trading calendar and once fixed-break tests are supplemented by symmetric windows, placebo dates, and unknown-break diagnostics. Third, it integrates abnormal-return inference with directional spillover analysis, thereby showing that short-window return reactions and network transmission roles need not move in the same direction. Finally, it offers a more cautious framework for studying international banking stress in markets where direct exposure may be limited but market-based repricing can still occur.

The findings point to a central conclusion: the SVB episode was associated with selective repricing and a reconfiguration of linkages among the sampled institutions, not with a demonstrable system-wide shock to China's financial sector. This conclusion is deliberately narrower than a broad contagion claim. It is also more informative. In an environment where global banking stress, domestic macroeconomic news, and market-specific expectations overlap, the absence of uniform contagion does not imply irrelevance.

Rather, it indicates that foreign banking shocks may be incorporated through institution-specific balance-sheet perceptions, investor clientele, and changing transmission roles. The policy implication is correspondingly modest but important: monitoring external financial stress requires not only aggregate indicators of connectedness, but also directional diagnostics that can detect shifting transmitter and receiver positions among different types of financial institutions.

The remainder of the paper proceeds as follows. Section 2 discusses the institutional background and develops the hypotheses. Section 3 positions the study within the literature on bank fragility, contagion, event studies, and systemic risk measurement. Section 4 describes the data, return audit, structural-break design, event-study procedure, and connectedness methodology. Section 5 presents the empirical results. Section 6 discusses the implications for financial institutions and regulators. Section 7 concludes with limitations and directions for future research.

2. Institutional Background and Hypotheses

SVB's vulnerability combined long-duration securities, a concentrated technology-sector depositor base, a high share of uninsured deposits, and weak interest-rate-risk management. Rising yields reduced the market value of securities classified as available-for-sale (AFS) and held-to-maturity (HTM). AFS valuation changes generally flow through other comprehensive income (OCI), whereas HTM securities are carried at amortized cost subject to applicable impairment rules. The economic loss nevertheless becomes relevant when liquidity pressure forces asset sales or undermines confidence. These terms are used consistently throughout the revised manuscript.

China's large banks have different funding structures, regulatory settings, and ownership characteristics from SVB. External banking stress can nevertheless affect listed Chinese financial firms through global risk appetite, valuation changes, funding expectations, and portfolio reallocation. The Credit Suisse crisis intensified during the same mid-March 2023 period, while China's reopening and domestic policy news also affected prices. Consequently, the event design identifies event-associated repricing rather than an uncontaminated causal treatment.

H1. *At least one sampled institution exhibits a change in market-model parameters around 13 March 2023, but the change need not be common across institutions.*

H2. *Short-window abnormal returns are heterogeneous and may be statistically weak once estimation uncertainty is incorporated.*

H3. *Aggregate connectedness need not increase, but directional transmitter and receiver roles may change.*

H4. *Any claim of SVB-specific attribution should weaken when the result is not robust to symmetric windows, alternative break dates, or temporal placebos.*

3. Literature Review and Positioning

The theoretical basis for bank-run fragility originates in Diamond and Dybvig (1983), while Allen and Gale (2000), Brunnermeier (2009), and Adrian and Shin (2010) explain how liquidity, leverage, and network structure amplify shocks. More recent work links monetary tightening, mark-to-market losses, and uninsured deposits to the 2023 U.S. banking stress (Jiang et al., 2024; Metrick, 2024).

International SVB studies report heterogeneous and often short-lived spillovers. Naveed et al. (2024), Ali et al. (2024), and Aharon and Ali (2024) show that global equity re-

sponses and connectedness changed around the failure, with effects varying by market and horizon. This literature motivates a short-window design and cautions against interpreting a long post-event sample as a clean treatment period.

China-focused systemic-risk research is substantially broader than the earlier review acknowledged. Wen et al. (2020) use an asymmetric CoVaR framework for Chinese financial institutions; Wang et al. (2023) apply transfer entropy and social-network analysis to listed Chinese banks; and recent TVP-VAR work ranks directional interconnectedness among Chinese financial institutions. These studies typically employ larger panels and richer tail-risk measures than the present five-firm event study. The current paper therefore contributes a focused event-based diagnostic rather than a comprehensive systemic-risk measurement exercise.

CAPM remains a parsimonious time-series benchmark for beta stability, but it is not a complete asset-pricing model for Chinese equities. Size, value, profitability, and China-specific factors can matter (Fama & French, 1993; Liu et al., 2019). The revised paper therefore does not interpret alpha as a definitive pricing anomaly. It reports a raw-return market-model robustness check and explicitly treats a China multifactor extension as an important limitation because a validated daily factor file matching the full 2022–2023 sample was not contained in the submitted data package.

4. Data and Methods

4.1. Sample, Scope, and Data Sources

The sample contains 478 Chinese trading days from 4 January 2022 to 29 December 2023. The market proxy is the CSI 300. The five securities are China Merchants Bank (600,036), Industrial Bank (601,166), ICBC (601,398), CITIC Securities (600,030), and East Money (300,059). Selection was purposive: the firms are liquid, visible, and span banking, securities, and internet finance. They are not a statistically representative cross-section of China's financial sector.

Table 1 reports the descriptive statistics of daily returns for the five selected securities and the CSI 300 market portfolio. The results show clear heterogeneity across the sample. ICBC has the lowest return volatility, consistent with the defensive characteristics of a large state-owned bank, whereas East Money has the highest standard deviation, reflecting the greater elasticity of internet-finance and brokerage-related equities. All series display Pearson kurtosis above 3, indicating heavy-tailed return distributions.

Prices and percentage returns in the submitted workbook were downloaded through the BaoStock API using the BaoStock Python package, version 0.8.9, under Python 3.10.12. BaoStock is therefore cited as the primary data source rather than the personal GitHub repository. The WPD repository is mentioned only in the reproducibility note as the code wrapper used in the original data-collection workflow. The original risk-free series converts the People's Bank of China one-year benchmark deposit rate to a daily rate. For robustness, the revision also uses the official U.S. Department of the Treasury daily 13-week Treasury-bill coupon-equivalent yield, converted by 252 trading days and forward-filled to Chinese trading dates. This alternative rate is used only as an internationally conventional, market-determined benchmark; it is not interpreted as a domestic Chinese funding-rate proxy.

Data-source URLs and access descriptions are provided in Appendix A. No proprietary Wind, CSMAR, or Bloomberg observations were available in the submitted files, so the revision does not claim cross-provider verification. Instead, it audits the CSI 300 return series against close-to-close returns and reports the numerical discrepancy.

4.2. Return Audit and Variable Definitions

Vendor percentage returns are defined as the reported daily percentage change divided by 100. As an audit, CSI 300 close-to-close simple returns were recomputed as $(P_t/P_{t-1}) - 1$.

The correlation between the vendor and close-derived return series is 0.996348, the mean absolute difference is 0.000068, and the maximum absolute difference is 0.0206. Pearson kurtosis is 5.088 for the vendor return and 5.206 for the close-derived return. These results confirm that the CSI 300 return distribution is heavy-tailed and that the earlier apparent platykurtosis reflected a labeling error rather than evidence of price smoothing.

Table 5 defines the variables used in the CAPM, event-study, and spillover analyses. Institution-level returns, market returns, excess returns, the post-SVB indicator, abnormal returns, cumulative abnormal returns, and generalized forecast-error variance decomposition shares are defined consistently across the empirical specifications.

Table 5. Variable definitions.

Variable	Definition
r_{it}	Daily return of institution i , reported percentage change divided by 100.
r_{mt}	Daily CSI 300 return.
r_{ft}	Daily risk-free proxy: PBOC deposit-rate conversion in the baseline; 13-week U.S. Treasury bill in robustness.
x_{it}	Institution excess return, $r_{it} - r_{ft}$.
x_{mt}	Market excess return, $r_{mt} - r_{ft}$.
$Post_t$	Indicator equal to one from 13 March 2023.
AR_{it}	Actual return minus the fitted market-model return.
$CAR_{i[a,b]}$	Sum of abnormal returns over event days a through b .
$\theta_{ij(H)}$	H -step generalized FEVD share of institution i attributable to shocks from institution j .

4.3. Structural-Break and Robustness Design

The baseline excess-return regression is

$$x_{it} = \alpha_i + \beta_i x_{mt} + \varepsilon_{it}.$$

The interaction specification is

$$x_{it} = \alpha_i + \beta_i x_{mt} + \gamma_i Post_t + \delta_i (Post_t \times x_{mt}) + \varepsilon_{it},$$

where δ_i measures the post-event change in beta. Heteroskedasticity-consistent standard errors are used for the interaction model.

Two dates are distinguished. On 10 March, the U.S. regulatory takeover occurred, but the information arrived after the Chinese market had closed. The 13 March is therefore the economically relevant Chinese trading breakpoint. Results are reported for both dates. To reduce contamination from later macroeconomic developments, Chow tests are repeated in symmetric $[-30, +30]$ and $[-60, +60]$ trading-day samples centered on 13 March.

Temporal robustness is assessed in two ways. First, a fixed pseudo-breakpoint of 16 September 2022 is used. Second, the Chow statistic is computed at all admissible neutral dates with at least 60 observations on each side, excluding ± 30 observations around the SVB date; the empirical percentile of the event statistic is reported. A local unknown-break search over ± 30 trading days around 13 March and a globally trimmed maximum-F search provide data-guided break-date diagnostics. Because searching over dates changes the null distribution, these maxima are interpreted descriptively rather than as ordinary single-date p -values.

4.4. Event Study

The estimation window is $[-130, -21]$ relative to 13 March 2023. The market model is estimated separately for each institution. CAR inference includes the residual variance and parameter-estimation uncertainty: $\text{Var}(\text{CAR}) = s^2 [L + L^2/T + (\Sigma(r_{mt} - \bar{r}_m))^2/S_{xx}]$. Institution-level t statistics and two-sided p values are reported for $[-1, +1]$, $[-3, +3]$, and $[-5, +5]$. A small-sample cross-sectional standardized-CAR statistic is reported only as supplementary evidence because $N = 5$.

$$\text{Var}(\text{CAR}_i(T_1 + 1, T_2)) = \sigma_{\epsilon_i}^2 \left[L_2 + \frac{L_2^2}{L_1} + \frac{(\sum_{\tau=T_1+1}^{T_2} (R_{m\tau} - \hat{\mu}_m))^2}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \hat{\mu}_m)^2} \right]$$

4.5. VAR and Generalized Connectedness

Return stationarity is checked with augmented Dickey–Fuller tests. Lag orders from one to five are compared by AIC, BIC, and HQIC. A common VAR(1) is retained for pre/post comparability because BIC and HQIC select one lag in both subsamples, while post-event AIC alone modestly favors two lags. Companion-matrix eigenvalues are reported to verify stability. Generalized FEVD is used to avoid Cholesky-ordering dependence. Directional FROM, TO, and NET measures follow Diebold and Yilmaz (2012); an edge $j \rightarrow i$ means that shocks to j explain part of i 's forecast-error variance.

5. Results

5.1. Full-Sample Beta Estimates

Table 6 reports the full-sample CAPM estimates for the five selected Chinese financial institutions. All market beta coefficients are positive and statistically significant, indicating that each sampled equity is exposed to CSI 300 market movements. East Money has the highest beta, at 1.6539, suggesting the strongest market sensitivity among the sampled institutions, while ICBC has the lowest beta, at 0.1040, consistent with the defensive return profile of a large state-owned bank. China Merchants Bank and CITIC Securities both have betas close to one, implying market-level systematic risk exposure. The R^2 values also vary substantially across institutions, from 0.0439 for ICBC to 0.5599 for CITIC Securities, showing heterogeneous explanatory power of the market factor. These estimates describe the risk characteristics of the selected equities only and should not be interpreted as reproducing the full risk distribution of China's financial sector.

Table 6. Full-sample CAPM estimates.

Institution	α	$t(\alpha)$	β	$t(\beta)$	R^2
China Merchants Bank	−0.000097	−0.186	1.0009	20.858	0.4775
Industrial Bank	0.000325	0.743	0.5303	13.202	0.2680
ICBC	0.000225	0.929	0.1040	4.677	0.0439
CITIC Securities	0.000494	1.099	1.0143	24.606	0.5599
East Money	0.000197	0.260	1.6539	23.813	0.5437

5.2. Breakpoint Sensitivity and Symmetric Windows

Table 6 reports the Chow tests centered on 13 March 2023, the first Chinese trading day after the SVB regulatory takeover and weekend information accumulation. The full-sample results reproduce the earlier finding that parameter stability is rejected at the 5% level for ICBC and CITIC Securities. However, the symmetric-window tests materially qualify this conclusion. No institution rejects stability within the ± 30 -trading-day window, while only ICBC remains significant within the ± 60 -trading-day window ($F = 4.161$, $p = 0.0180$). This suggests that the immediate pricing effect was limited and selective. In particular, CITIC

Securities' full-sample instability appears to depend on the longer post-event horizon and may therefore reflect subsequent market developments rather than a direct short-horizon SVB transmission effect.

Table 7 further examines whether the results are sensitive to the fixed breakpoint date. Moving the breakpoint from 10 March to 13 March produces little change in the full-sample Chow statistics because the two dates are adjacent trading observations in the Chinese market. ICBC and CITIC Securities remain significant under both specifications, whereas China Merchants Bank, Industrial Bank, and East Money remain statistically stable. The baseline specification nevertheless retains 13 March 2023 because it corresponds to the first A-share trading session after Chinese investors had absorbed the U.S. regulatory action and related weekend information.

Table 7. Sensitivity to the fixed breakpoint date.

Institution	10 Mar F	10 Mar <i>p</i>	13 Mar F	13 Mar <i>p</i>
China Merchants Bank	0.650	0.5227	0.647	0.5242
Industrial Bank	0.501	0.6060	0.559	0.5722
ICBC	6.131	0.0024	5.922	0.0029
CITIC Securities	4.027	0.0184	4.055	0.0179
East Money	0.324	0.7237	0.354	0.7021

5.3. Placebo and Unknown-Break Diagnostics

Table 8 reports the temporal placebo distribution and data-guided break-date diagnostics. The results provide a more cautious interpretation of the fixed-breakpoint Chow tests. ICBC's event statistic lies at the 92.9th percentile of the neutral-date distribution, with an empirical *p*-value of 0.074, indicating suggestive but not decisive event specificity. By contrast, CITIC Securities' event statistic is only at the 74.7th percentile, with an empirical *p*-value of 0.255. Moreover, the local maximum-F dates for ICBC and CITIC Securities occur on 4 April and 3 April 2023, respectively, rather than on 13 March. These findings weaken any claim that the SVB episode uniquely caused the full-sample parameter breaks. They therefore support the revised interpretation that the SVB collapse was associated with selective repricing and possible structural adjustment, rather than providing definitive evidence of a uniquely SVB-driven causal break.

Table 8. Temporal placebo distribution and data-guided break dates.

Institution	Event F	Placebo Percentile	Empirical <i>p</i>	Local Max-F Date	Local Max F	Global Max-F Date
China Merchants Bank	0.647	64.3%	0.359	10 March 2023	0.650	7 September 2023
Industrial Bank	0.559	79.5%	0.208	7 March 2023	0.611	5 May 2022
ICBC	5.922	92.9%	0.074	4 April 2023	7.100	4 April 2023
CITIC Securities	4.055	74.7%	0.255	3 April 2023	4.782	14 November 2022
East Money	0.354	9.8%	0.903	23 March 2023	0.781	4 November 2022

5.4. Alternative Risk-Free Proxy and Market-Model Robustness

Table 9 reports the robustness checks using alternative risk-free-rate and market-model specifications. The baseline deposit-rate results are almost unchanged when the official 13-week U.S. Treasury-bill yield is used as an alternative risk-free proxy. ICBC and CITIC Securities continue to reject parameter stability at the 5% level, whereas China Merchants Bank, Industrial Bank, and East Money remain statistically stable. The raw-return market-model specification produces the same substantive conclusion. This numerical stability is expected because daily risk-free rates are small relative to daily equity-return volatility. Therefore, the robustness exercise does not turn the single-factor CAPM into a complete

multifactor asset-pricing model; rather, it shows that the reported break diagnostics are not driven mechanically by the near-constant deposit-rate proxy.

Table 9. Risk-free-rate and market-model robustness.

Institution	Deposit-Rate F	<i>p</i>	13-Week T-Bill F	<i>p</i>	Raw Market-Model F	<i>p</i>
China Merchants Bank	0.647	0.5242	0.646	0.5245	0.647	0.5242
Industrial Bank	0.559	0.5722	0.538	0.5841	0.559	0.5722
ICBC	5.922	0.0029	5.753	0.0034	5.922	0.0029
CITIC Securities	4.055	0.0179	4.061	0.0178	4.055	0.0179
East Money	0.354	0.7021	0.376	0.6869	0.354	0.7021

5.5. Event Study Results

Table 6 reports the cumulative abnormal returns (CARs) around 13 March 2023 with statistical inference, while Figure 3 plots the corresponding CAR dynamics over the event window. The results show a heterogeneous sign pattern across the five selected institutions. China Merchants Bank records the most negative point estimate over the $[-5, +5]$ window, with a CAR of -5.34% , but this effect is not statistically significant. By contrast, ICBC records a positive CAR of 1.96% over $[-3, +3]$, which is statistically significant at the 5% level, and a positive CAR of 2.36% over $[-5, +5]$, which is marginally significant at the 10% level. The CARs for Industrial Bank, CITIC Securities, East Money, and the remaining windows are not statistically distinguishable from zero.

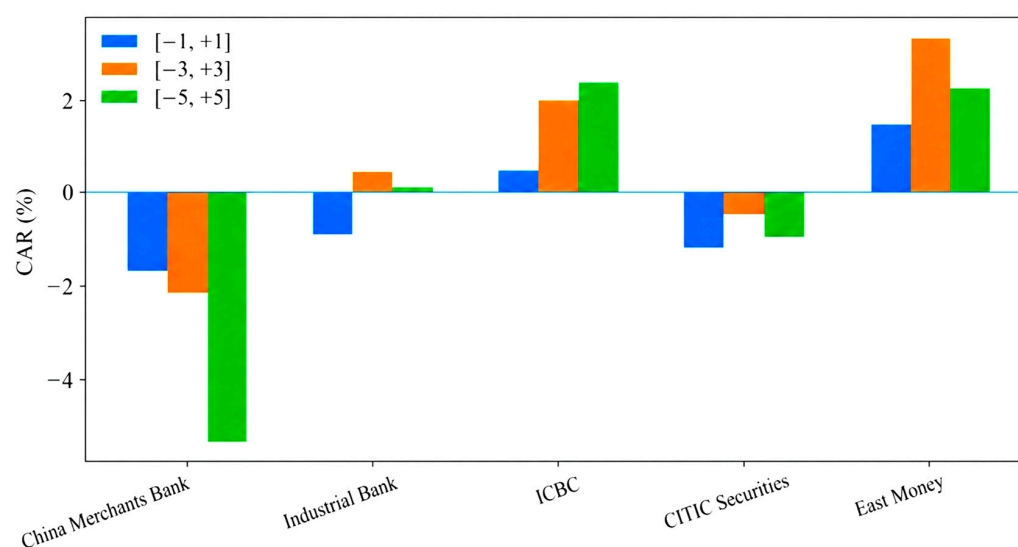


Figure 3. Cumulative abnormal returns around 13 March 2023.

Figure 3 visually confirms that abnormal-return responses were not uniform across the sampled institutions. Some institutions experienced short-window pressure, whereas ICBC displayed a positive cumulative abnormal-return pattern. However, the revised statistical inference materially qualifies the interpretation of the event-study results. The cross-sectional standardized-CAR tests are insignificant across all three event windows, which is unsurprising given the small sample of only five institutions. Moreover, the event window overlaps with the unfolding Credit Suisse crisis and China's domestic reopening-related news. Therefore, even the significant ICBC result should be interpreted cautiously as event-associated evidence rather than as proof of an abnormal return effect attributable exclusively to the SVB collapse.

5.6. Rolling β

Figure 4 presents the 60-trading-day rolling CAPM betas for the five selected financial institutions, with the vertical line marking 13 March 2023. The rolling estimates illustrate substantial time variation in market-risk exposure, but they should be interpreted as descriptive evidence rather than as formal structural-break tests. ICBC's beta rises after the event date and remains elevated during part of the second quarter of 2023, broadly consistent with the significant full-sample and ± 60 -day Chow-test results. CITIC Securities also exhibits considerable variation in its rolling beta, although the change is less tightly centered on 13 March. This pattern is consistent with its insignificant short-window tests and weaker temporal-placebo evidence. Overall, Figure 4 supports the interpretation that changes in market exposure were heterogeneous and institution-specific, while providing limited evidence that all observed beta movements were uniquely attributable to the SVB episode.

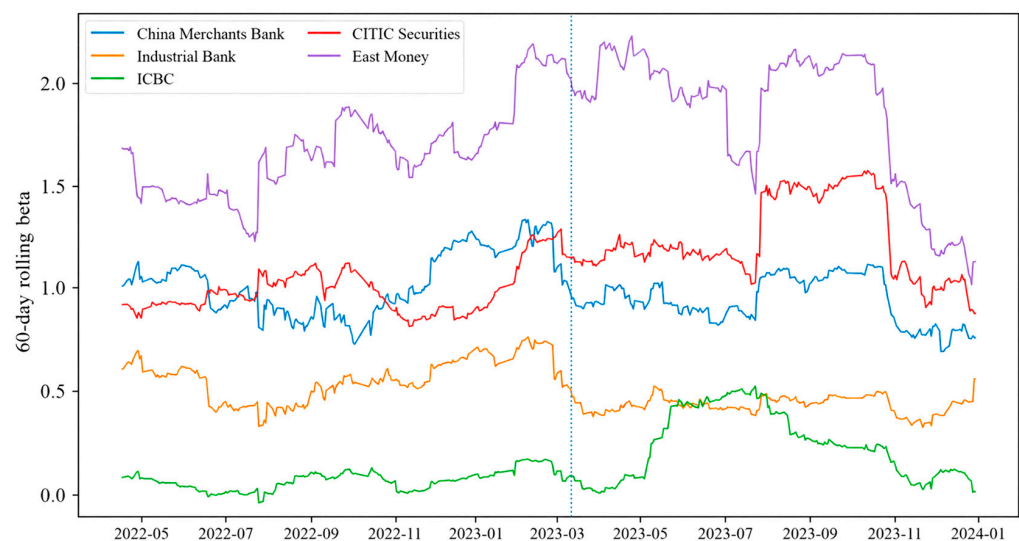


Figure 4. Sixty-trading-day rolling CAPM β . Note: The vertical line marks 13 March 2023.

5.7. VAR Diagnostics and Directional Spillovers

Table 10 reports the VAR lag-order selection and stability diagnostics used for the generalized spillover analysis. In the pre-event subsample, AIC, BIC, and HQIC all select one lag. In the post-event subsample, AIC alone selects two lags, while BIC and HQIC select one lag. To maintain comparability across subsamples, the analysis uses a common VAR(1), consistent with the BIC criterion in both periods. The maximum companion eigenvalues are 0.268 before the event and 0.207 afterward, confirming that the VAR systems satisfy the stability condition. In addition, all ADF tests reject a unit root at conventional levels, supporting the validity of the forecast-error variance decomposition.

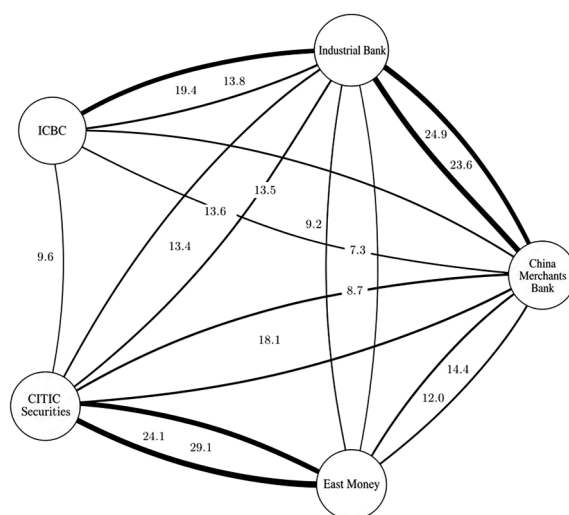
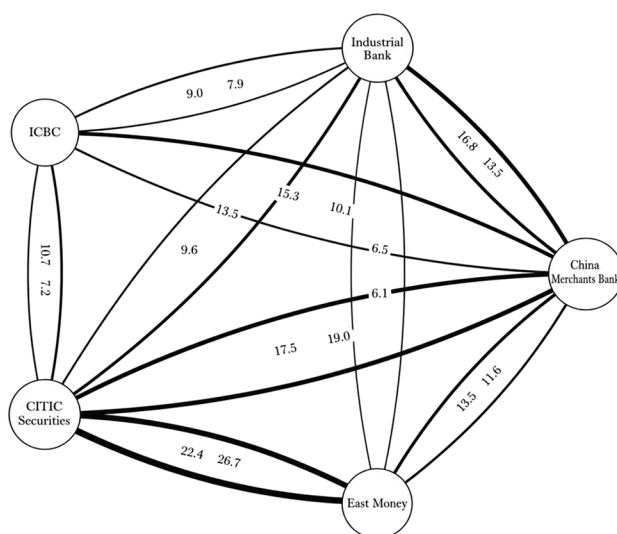
Table 4 presents the directional generalized spillover results. Total connectedness declines from 55.53% before the event to 47.98% afterward, as also shown in Figure 2. This indicates that aggregate linkage among the five sampled institutions did not increase after the SVB episode. However, the directional decomposition reveals meaningful structural reconfiguration. CITIC Securities becomes the largest post-event net transmitter, with a NET value of 13.18%, while Industrial Bank changes from a net transmitter before the event to a net receiver afterward. ICBC remains a net receiver in both subsamples, suggesting that shocks from other institutions explain a larger share of its forecast-error variance than shocks it transmits to the sampled network.

Table 10. VAR lag selection and stability diagnostics.

Sample	AIC Lag	BIC Lag	HQIC Lag	Used Lag	Max Companion Eigenvalue	Stable	TCI (%)
Pre	1	1	1	1	0.268	Yes	55.53
Post	2	1	1	1	0.207	Yes	47.98

Note: All ADF tests reject a unit root at conventional levels. A common VAR(1) is used because BIC and HQIC select lag 1 in both subsamples, and the stability condition is satisfied. Although AIC selects lag 2 in the post-event subsample, the common VAR(1) specification is retained for pre/post comparability.

Figures 5 and 6 visualize the directed generalized FEVD networks before and after the event. Arrows point from shock transmitters to variance receivers, and edges below 5% are omitted to highlight economically meaningful linkages. The comparison of the two figures confirms that the SVB episode was not followed by a uniform strengthening of all network ties. Instead, the network became more selectively organized, with risk-transmission roles shifting across institutions. Because the network contains only five nodes, these findings should be interpreted as evidence on the selected institutions rather than as a complete representation of China's financial system.

**Figure 5.** Directed pre-event generalized FEVD network. Note: Arrows point from shock transmitter to variance receiver; edges below 5% are omitted.**Figure 6.** Directed post-event generalized FEVD network. Note: Arrows point from shock transmitter to variance receiver; edges below 5% are omitted.

5.8. Composite-Portfolio Robustness and Sample Limitation

Table 11 reports an equal-weight composite-portfolio robustness check for the bank portfolio, the non-bank portfolio, and the full five-institution portfolio. None of the three composite portfolios rejects parameter stability in either the full-sample Chow test or the symmetric ± 60 -trading-day window. The equal-weight bank portfolio has a nearly unchanged beta, declining slightly from 0.549 before the event to 0.533 afterward. The non-bank portfolio beta increases from 1.289 to 1.474, but the change is not statistically significant. The five-institution portfolio also remains stable, with a beta change from 0.845 to 0.910 and an insignificant full-sample p -value of 0.433.

Table 11. Equal-weight composite-portfolio robustness.

Portfolio	B Pre	β Post	Full F	Full p	± 60 F	± 60 p
Equal-weight bank portfolio	0.549	0.533	0.182	0.833	0.636	0.531
Equal-weight non-bank portfolio	1.289	1.474	1.656	0.192	0.034	0.967
Equal-weight five-institution portfolio	0.845	0.910	0.839	0.433	0.316	0.730

These results reinforce the revised interpretation that the detected instability is institution-specific rather than a common break across the sampled financial-sector portfolio. In particular, the earlier ICBC and CITIC Securities findings should be understood as selective repricing at the individual-institution level, not as evidence of a broad sampled-sector shift. However, this robustness check does not eliminate the representativeness limitation. A larger panel including more banks, securities firms, insurers, and fintech-related firms remains necessary before drawing system-level conclusions about China's financial sector.

6. Discussion and Policy Implications

The evidence is best summarized as selective repricing under substantial attribution uncertainty. ICBC shows the most robust beta change and the only statistically significant event-window CAR. CITIC Securities' full-sample break and post-event net-transmitter role are economically interesting, but its breakpoint result is not robust to symmetric short windows or temporal placebos. The paper therefore no longer labels ICBC and CITIC Securities as definitive structural breakpoints caused by SVB.

Table 12 summarizes the main institutional lessons from the SVB episode for Chinese commercial banks and regulators. For Chinese commercial banks, the SVB mechanism highlights the need to jointly manage interest-rate risk in the banking book, liquidity risk, depositor concentration, and crisis communication. AFS and HTM classifications change the accounting recognition of unrealized losses, but they do not remove the underlying economic exposure. OCI should therefore be monitored alongside market-value losses relative to capital, while contingency funding plans should account for the speed of digital withdrawals.

For regulators, Table 12 also shows that aggregate connectedness alone is insufficient. Directional measures can reveal shifts in transmitter and receiver roles even when total connectedness falls. Nevertheless, the small network in this paper is illustrative. A regulatory application should include a much larger panel covering interbank exposures, wealth-management products, funds, insurers, and market-based funding variables.

The results also caution against using one event date as a definitive causal breakpoint. Where nearby international events and domestic policy news overlap, short symmetric windows, placebo dates, and endogenous break searches should be routine. A credible conclusion may be that attribution is ambiguous; such a conclusion is more informative than a strong causal narrative unsupported by robustness tests.

Table 12. Institutional lessons from the SVB episode.

Risk Dimension	SVB Mechanism	Implication for Chinese Commercial Banks and Regulators
Interest-rate risk	Long-duration securities funded by runnable short-term deposits	High-frequency IRRBB stress tests; duration-gap limits; joint AFS/HTM market-value monitoring; OCI and capital sensitivity analysis.
Liquidity and concentration	Large uninsured, sector-concentrated deposits	Top-depositor and sector concentration thresholds; contingent liquidity capacity; reverse stress tests for rapid digital withdrawals.
Information and communication	Capital-raising announcement accelerated confidence loss	Pre-agreed crisis disclosure and communication protocols coordinated with supervisors.
Cross-market transmission	Bank stress repriced securities and other financial assets	Directional connectedness dashboards and joint bank–broker–fund stress tests.
Resolution	Uncertainty about losses and access to liquidity intensified runs	Operational resolution playbooks, deposit–insurance communication, bridge-bank and merger options.

7. Conclusions

This paper examines whether the March 2023 failure of Silicon Valley Bank coincided with changes in market-risk exposure, abnormal returns, and return connectedness among five selected Chinese financial institutions. The analysis treats the SVB episode as a salient external banking shock, but not as a clean experimental treatment. This distinction is central. SVB’s failure arose from the interaction of duration mismatch, unrealized securities losses, concentrated uninsured funding, and rapidly shifting depositor confidence, mechanisms closely related to the classic theory of bank runs and to modern accounts of liquidity amplification and mark-to-market fragility (Diamond & Dybvig, 1983; Brunnermeier, 2009; Jiang et al., 2024; Metrick, 2024). Whether such a shock is transmitted to Chinese financial equities is therefore an empirical question about market repricing and spillover structure, not a presumption of direct institutional replication.

The evidence supports a deliberately narrow conclusion. The SVB episode was associated with selective repricing and a reconfiguration of linkages among the sampled institutions, but it does not provide evidence of a broad shock to China’s financial system. Full-sample Chow tests identify parameter instability for ICBC and CITIC Securities, yet Table 7 shows that this result weakens sharply once the analysis is confined to symmetric event windows around 13 March 2023. No institution rejects parameter stability in the ± 30 -trading-day window, and only ICBC remains significant in the ± 60 -trading-day window. Table 9 further shows that the event-date statistics are not uniquely dominant relative to placebo and data-guided break dates, especially for CITIC Securities. These findings are consistent with the broader warning in contagion research that measured co-movement and parameter instability should not be interpreted mechanically as crisis transmission without careful attention to timing, background interdependence, and competing shocks (Forbes & Rigobon, 2002).

The event-study evidence reinforces this interpretation. Table 11 shows that ICBC records a positive and statistically significant cumulative abnormal return over the $[-3, +3]$ window, while most institution-window estimates are statistically indistinguishable from zero. Figure 3 confirms that abnormal-return paths were heterogeneous rather than sector-wide. This result is economically informative precisely because it is not uniform. It suggests that investors did not simply mark down all sampled Chinese financial firms in response to the U.S. banking shock. Instead, the market response appears to have differentiated across balance-sheet perceptions, ownership characteristics, investor clientele, and expected exposure to changes in financial conditions. The result should nevertheless be

read cautiously, because the event window overlaps with the Credit Suisse turmoil, China's reopening-related news, and other contemporaneous macro-financial signals. Following the logic of event-study inference, statistical significance in a short window is evidence of event-associated repricing, not proof of exclusive SVB causality (MacKinlay, 1997).

The connectedness results add a second dimension to the conclusion. Table 4 and Figure 2 show that total generalized connectedness declines from 55.53% before the event to 47.98% afterward. Thus, the SVB episode was not followed by a generalized strengthening of return spillovers within the five-institution network. At the same time, the directional decomposition reveals meaningful reallocation of transmitter and receiver roles. CITIC Securities becomes the largest post-event net transmitter, Industrial Bank moves from net transmitter to net receiver, and ICBC remains a net receiver. Figures 5 and 6 therefore describe not aggregate amplification but network reorganization. This distinction matters because systemic-risk monitoring can miss important changes when it focuses only on the level of total connectedness. Directional measures, in the sense of Diebold and Yilmaz (2012), are especially useful when aggregate spillovers fall but the identity of influential transmitters changes.

The robustness exercises also discipline the interpretation. Table 10 shows that the main fixed-break results are not driven by the baseline risk-free-rate proxy, since the alternative Treasury-bill specification and the raw market model produce the same substantive pattern. Table 11 further shows that equal-weight bank, non-bank, and five-institution composite portfolios do not reject parameter stability. The implication is that the strongest evidence in the paper is institution-specific rather than portfolio-wide. The findings therefore speak to selective repricing among a small purposive sample of visible Chinese financial institutions. They should not be generalized to the entire Chinese banking sector, the full Chinese financial system, or the effectiveness of China's regulatory architecture without a broader panel and richer exposure data.

The paper contributes by showing how the interpretation of an international banking shock changes once the empirical design is aligned with the trading calendar, robustness tests, and sample scope. Treating 13 March 2023 as the relevant Chinese trading date, supplementing fixed-break Chow tests with symmetric windows and temporal placebos, estimating abnormal returns with statistical inference, and decomposing directional spillovers together produce a more restrained but more credible conclusion. The evidence does not support a simple contagion narrative. It points instead to differentiated market learning, partial repricing, and shifting network roles among selected financial equities.

The policy implication is correspondingly modest but important. External banking shocks need not produce a visible increase in aggregate connectedness to matter. Supervisors and institutions should monitor interest-rate risk, liquidity concentration, unrealized securities losses, and crisis communication practices, as summarized in Table 12, but they should also track directional market-based indicators that identify changing transmitter and receiver positions across banks, securities firms, and platform-linked financial firms. Aggregate stability can coexist with localized repricing, and a decline in total connectedness can still mask an economically relevant shift in where shocks originate and where they are absorbed.

Several limitations define the agenda for future research. The sample contains only five listed institutions and cannot represent the cross-section of Chinese financial intermediaries. The single-factor CAPM and market-model framework is useful for transparent beta-stability tests, but it does not exhaust the asset-pricing structure of Chinese equities, where China-specific size, value, profitability, liquidity, and policy factors may matter (Fama & French, 1993; Liu et al., 2019). Future work should expand the institution set to include additional banks, securities firms, insurers, asset managers, wealth-management entities, and fintech-linked firms; incorporate China-specific factor models and market-based funding rates such as SHIBOR or DR007; and combine listed-equity data with balance-sheet,

deposit-concentration, interbank-exposure, and wealth-management-product information. Time-varying-parameter models, multiple-break designs, and larger connectedness networks would also help distinguish temporary event-window repricing from persistent changes in systemic transmission.

A further and especially important limitation concerns the contaminated event window. The March 2023 SVB episode did not occur in isolation: the Credit Suisse crisis intensified during the same period, China's post-pandemic reopening was still being repriced, and domestic policy news may also have affected Chinese financial equities. The present design addresses this problem through trading-calendar alignment, short symmetric windows, placebo dates, and data-guided break diagnostics, but these tests cannot fully isolate the SVB-specific component of the observed repricing. A future study would require more explicit identification of competing shocks. One feasible extension would be to construct separate event indicators for major Credit Suisse regulatory-intervention dates, such as the Swiss National Bank liquidity-support announcement and the UBS rescue announcement, and include these indicators alongside the SVB event indicator in a multi-event regression framework. Another extension would be a difference-in-differences design that exploits cross-sectional variation in direct exposure to global banking stress, for example by comparing institutions with different levels of foreign funding dependence, overseas asset exposure, interbank-market exposure, securities-business exposure, or investor-base sensitivity to global risk appetite. With a larger panel of financial institutions and richer exposure variables, such a design could compare high-exposure and low-exposure institutions before and after the SVB and Credit Suisse events, thereby separating general market stress from event-specific transmission more convincingly. In the absence of these exposure measures and separately identified competing-shock indicators, the results in this paper should be interpreted as evidence of event-associated repricing during a global banking-stress window rather than as clean causal evidence attributable uniquely to SVB.

The central lesson is that the absence of broad contagion is not the same as the absence of information. In this sample, the SVB episode did not generate a uniform adverse repricing of Chinese financial equities, nor did it increase aggregate connectedness. It did, however, coincide with measurable institution-level adjustment and a change in directional spillover roles. For empirical work on international banking stress, this is the more relevant finding: external shocks may be absorbed not through system-wide collapse or sector-wide repricing, but through selective changes in risk exposure, abnormal returns, and the architecture of market transmission.

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Conflicts of Interest: The authors declare no conflicts of interest.

Appendix A. Data Sources and Audit Trail

BaoStock API and documentation: <http://www.baostock.com> (accessed on 1 April 2026). Used for the submitted A-share and CSI 300 price/return sheets.

People's Bank of China: <http://www.pbc.gov.cn> (accessed on 2 April 2026). Source institution for the one-year benchmark deposit-rate series used in the baseline workbook.

U.S. Department of the Treasury, Daily Treasury Bill Rates archive, 2020–2023: <https://home.treasury.gov/resource-center/data-chart-center/interest-rates/daily-treasury-rate-archives/bill-rates-2020-2023.csv> (accessed on 4 April 2026). The 13-week coupon-equivalent yield was divided by 100 and 252 and forward-filled to Chinese trading dates.

WPD code repository: <https://github.com/yimu611/WPD> (accessed on 7 April 2026). Relegated to reproducibility documentation; not treated as the primary source of financial observations.

Return audit: vendor CSI 300 return versus $P_t/P_{(t-1)-1}$ from the submitted close series; correlation 0.99635 and both Pearson kurtoses above 5.

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