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Do Tightening Cycles Amplify the Negative Effect of VIX Shocks on U.S. Bank Stock Returns?

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Abstract. This study examines whether monetary tightening amplifies the negative effect of VIX shocks on U.S. bank stock returns. Using daily public data from January 2010 to March 2026, the analysis constructs a panel of returns for four exchange-traded funds: KBE, KRE, XLF and SPY. Large increases in the CBOE Volatility Index are treated as episodes of market fear and risk repricing. A tightening regime is defined as a trading day on which the effective federal funds rate has increased by at least 25 basis points over the previous 90 trading days. The baseline factor-adjusted regressions show that the interaction between VIX shocks and tightening regimes is significantly negative. In the preferred KBE specification, a VIX shock during a tightening regime is associated with an additional daily excess return of approximately -0.278 percentage points. Heterogeneity tests indicate that this effect is concentrated in bank ETFs, especially the regional-bank ETF KRE, and is not significant for the broader financial-sector ETF XLF or the market ETF SPY. Event-window evidence shows lower five-day cumulative excess returns for KBE and KRE after VIX shocks in tightening regimes. The findings provide conditional asset-pricing evidence on bank equity risk under monetary tightening.

Keywords: VIX shocks, Monetary tightening, Bank ETFs, Balance-sheet risk, Event study

1. Introduction

Bank equity returns are shaped by both the macroeconomic interest-rate environment and market risk appetite. During periods of rising interest rates, banks may benefit from higher loan yields. They may also face higher deposit costs, valuation losses on securities portfolios, funding pressure and liquidity risk. The effect of monetary tightening on bank stocks is therefore not mechanically positive or negative. At the same time, rapid increases in the CBOE Volatility Index (VIX) are commonly interpreted as signals of market fear, risk aversion and repricing of expected volatility. When a VIX shock occurs during a tightening cycle, investors may assess bank balance-sheet fragility more severely. This may produce an additional negative reaction in bank equity returns.

The central research question is whether tightening cycles amplify the negative effect of VIX shocks on U.S. bank stock returns. This question matters for understanding how financial institutions are priced during monetary tightening. If VIX shocks carry different implications across interest-rate regimes, bank equity risk cannot be explained by volatility or interest-rate conditions alone. It should instead be interpreted as a conditional pricing outcome generated by their

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interaction. For investors, the same market-fear signal may contain stronger information about bank equity risk during tightening cycles. For researchers, the setting provides an empirical framework linking monetary policy regimes, financial-intermediary fragility and high-frequency market shocks.

1.1. Literature review

One strand of research studies the effect of monetary policy on asset prices. Bernanke and Kuttner show that equity markets respond strongly to changes in Federal Reserve policy. They also show that this response reflects not only changes in expected cash flows, but also changes in expected excess returns and risk premia [1]. Gurkaynak et al. further show that asset prices respond to policy-rate actions, policy statements and market revisions of the expected future policy path [2]. This evidence indicates that the interest-rate environment is not merely a macroeconomic background variable. It may change how investors price the same risk shock.

A second strand studies the interest-rate sensitivity of bank stocks and bank balance sheets. English et al. examine interest-rate risk and bank equity valuations, emphasizing that bank equity values are jointly affected by the level of interest rates, the term structure and duration mismatch on balance sheets [3]. Recent studies of U.S. banking stress also suggest that monetary tightening may amplify bank fragility through unrealized losses on securities portfolios, uninsured deposit shares and deposit-run risk [4, 5]. These studies imply that banks differ from ordinary non-financial firms because interest-rate changes affect both assets and liabilities. The present study therefore does not ask whether tightening itself is always bad for bank stocks. It asks whether bank stocks face additional negative pricing when market volatility suddenly rises during a tightening cycle.

A third strand treats the VIX and uncertainty as important signals of financial-market repricing. Whaley describes the VIX as an investor fear gauge, indicating that it reflects expectations about future volatility and market stress [6]. Ludvigson et al. examine uncertainty and business cycles, Ahir et al. construct the World Uncertainty Index, and Bekaert et al. analyse links among uncertainty, risk appetite, monetary policy and asset prices [7-10]. This study does not interpret the VIX as a fully exogenous structural shock, because the VIX can respond to contemporaneous equity-price declines and news. In daily financial-market analysis, however, large VIX increases still provide a useful window for observing market fear, risk aversion and changes in expected volatility.

A fourth strand concerns factor adjustment and event-study methods. Fama and French show that stock and industry portfolio returns are affected by common risk factors, including market, size and value factors [11]. Kothari and Warner stress that event studies require clear event windows, a normal-return benchmark and a coherent approach to statistical inference [12]. Because bank ETFs may have high market beta and may be exposed to value and size factors, failure to control for common risks could make the interaction between VIX shocks and tightening regimes a restatement of broad market exposure.

The prior research has examined asset prices and financial-institution returns through monetary policy, bank interest-rate sensitivity, uncertainty shocks and event-study design. The literature shows that the rate environment affects bank balance sheets and profitability expectations, whereas VIX increases often reflect market fear and risk repricing. Fewer studies combine the two perspectives to examine whether bank stocks respond differently to volatility shocks across interest-rate regimes. The following analysis addresses this gap by focusing on the effect of VIX shocks on bank equity returns during tightening cycles and on the industry specificity of that effect.

1.2. Research design and contribution

The study uses four exchange-traded funds (ETFs) to construct a daily sample: SPDR S&P Bank ETF (KBE), State Street SPDR S&P Regional Banking ETF (KRE), State Street Financial Select Sector SPDR ETF (XLF) and SPDR S&P 500 ETF (SPY). This design separates bank-specific responses from broader financial-sector or market-wide responses. The baseline model uses daily ETF excess returns as the dependent variable. The key explanatory variables are a VIX shock indicator, a tightening-regime indicator and their interaction. The model also controls for Fama-French factors, a recession indicator, the contemporaneous VIX change and the 90-day change in the effective federal funds rate.

By incorporating the monetary policy regime into the relation between VIX shocks and bank equity returns, the study shows that the same market-fear signal may carry different asset-pricing implications across rate environments. The findings are also relevant for investors and regulators when assessing bank equity risk.

2. Data, variables and identifying variation

The analysis uses daily public data from January 2010 to March 2026. Asset-return data include four ETFs: KBE, KRE, XLF and SPY. KBE is the baseline bank ETF, KRE represents regional banks, XLF represents the financial sector as a whole, and SPY represents the broad U.S. equity market. This sample design serves the identification logic. If tightening cycles amplify the negative effect of VIX shocks on bank stocks, the effect should appear more clearly in KBE and KRE than in XLF or SPY.

Adjusted ETF prices are obtained from Yahoo Finance, and daily returns are calculated from adjusted closing prices. VIX data are taken from the CBOE VIX series in Federal Reserve Economic Data (FRED). The index measures expected 30-day volatility based on S&P 500 index option prices, following the official Cboe methodology [13]. The effective federal funds rate is obtained from the FRED Effective Federal Funds Rate (DFF) series. The recession indicator is obtained from the FRED U.S. Recession Indicators (USREC) series. Fama-French three factors are obtained from the Kenneth French Data Library. All data are merged by trading day to form a daily ETF-date panel. Because the tightening variable requires the 90-trading-day change in the policy rate, early observations are naturally lost. The baseline regression sample starts in April 2010.

The dependent variable is the daily ETF excess return, defined as the ETF daily return minus the risk-free rate. The main explanatory variables are VIX shocks, tightening regimes and their interaction. A VIX shock is defined as a trading day on which the daily VIX change lies in the upper tail of the sample distribution. A tightening regime is defined as a trading day on which the effective federal funds rate has increased by at least 25 basis points over the previous 90 trading days. The interaction term is the product of the VIX shock and tightening-regime indicators, and it is the key explanatory variable. Table 1 reports descriptive statistics for the variables used in the baseline model.

Table 1. Summary statistics for model variables

Variable	N	Mean	S.D.	Median	Min.	Max.
KBE excess return	4,024	0.024	1.761	0.046	-15.932	12.675
KBE raw return	4,024	0.029	1.761	0.055	-15.922	12.675

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Table 1. (continued)

VIX level	4,024	18.417	6.887	16.630	9.140	82.690
Daily VIX change	4,024	-0.002	1.880	-0.100	-18.710	24.860
90-day DFF change	4,024	0.054	0.385	0.000	-1.560	2.000
Market excess return	4,024	0.051	1.122	0.070	-12.010	9.650
SMB factor	4,024	-0.004	0.622	-0.010	-3.530	5.450
HML factor	4,024	-0.004	0.780	-0.030	-5.030	6.730
Risk-free return	4,024	0.006	0.008	0.000	0.000	0.020

Note: Return and factor variables are daily percentage points; VIX and 90-day DFF changes are in original units. The sample is the KBE baseline sample after dropping observations without the 90-day rate-change variable.

Table 2 reports the key identifying variation. Because the main estimate comes from the interaction between VIX shocks and tightening regimes, the analysis requires observations in four cells: days with neither a VIX shock nor a tightening regime, days with only a VIX shock, days with only a tightening regime, and days on which a VIX shock occurs during a tightening regime. The key identifying cell is the set of VIX shock days during tightening regimes.

Table 2. Identifying variation: VIX shocks and tightening regimes

State	Trading days	Share (%)	Mean KBE excess return	S.D.
No VIX shock, no tightening	2,819	70.055	0.361	1.523
VIX shock only	477	11.854	-1.796	2.024
Tightening only	621	15.432	0.239	1.436
VIX shock during tightening	107	2.659	-1.996	1.789

Note: This table reports the four cells that identify the interaction term. Mean and standard deviation are daily KBE excess returns in percentage points.

Figure 1 shows the time distribution of VIX levels and VIX shock days over the sample period. VIX shocks are not distributed uniformly across the sample. They are concentrated in periods of high market stress, including episodes of global financial-market turbulence, the COVID-19 shock and the 2023 banking-stress episode. Shock days also display clear time clustering. Subsequent regressions therefore use Newey-West heteroskedasticity- and autocorrelation-consistent standard errors.

Figure 2 shows the effective federal funds rate and the tightening regime defined in this study. The tightening variable is not a single-day event. It captures a persistent monetary policy environment. The sample contains several periods of rising rates, especially the post-2015 Federal Reserve normalization period and the rapid tightening cycle after 2022. The variable captures the rate environment faced by the market, rather than a single Federal Open Market Committee decision. The analysis therefore asks whether VIX shocks have different return implications across interest-rate regimes.

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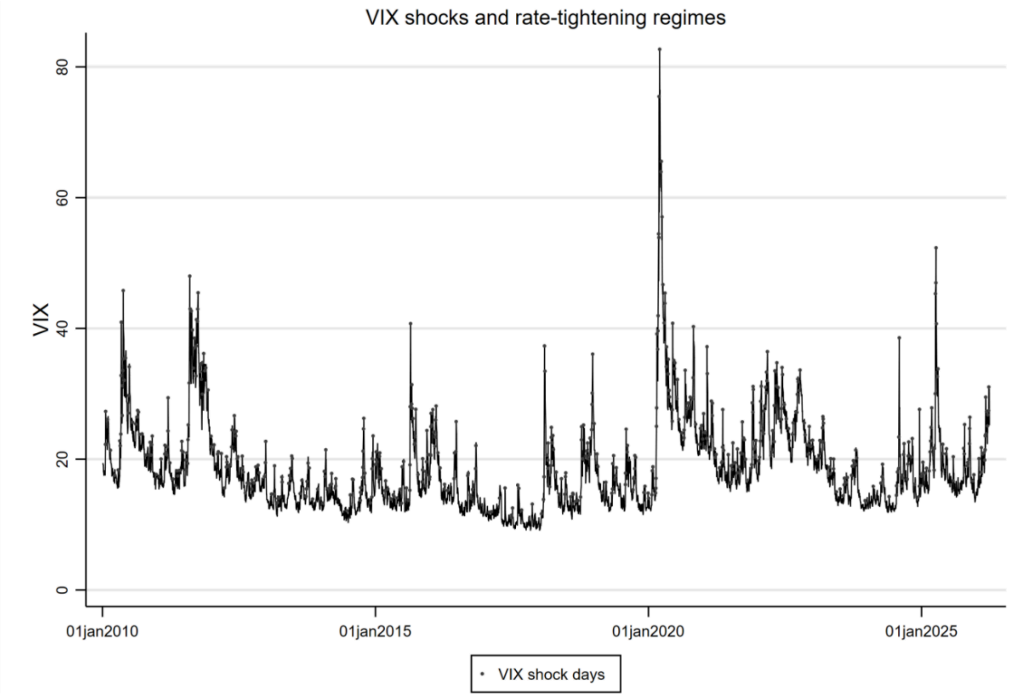

Figure 1. VIX shocks over the sample period (photo credit: original)

Note: Figure 1 plots VIX dynamics and highlights the VIX shock days used in the empirical analysis.

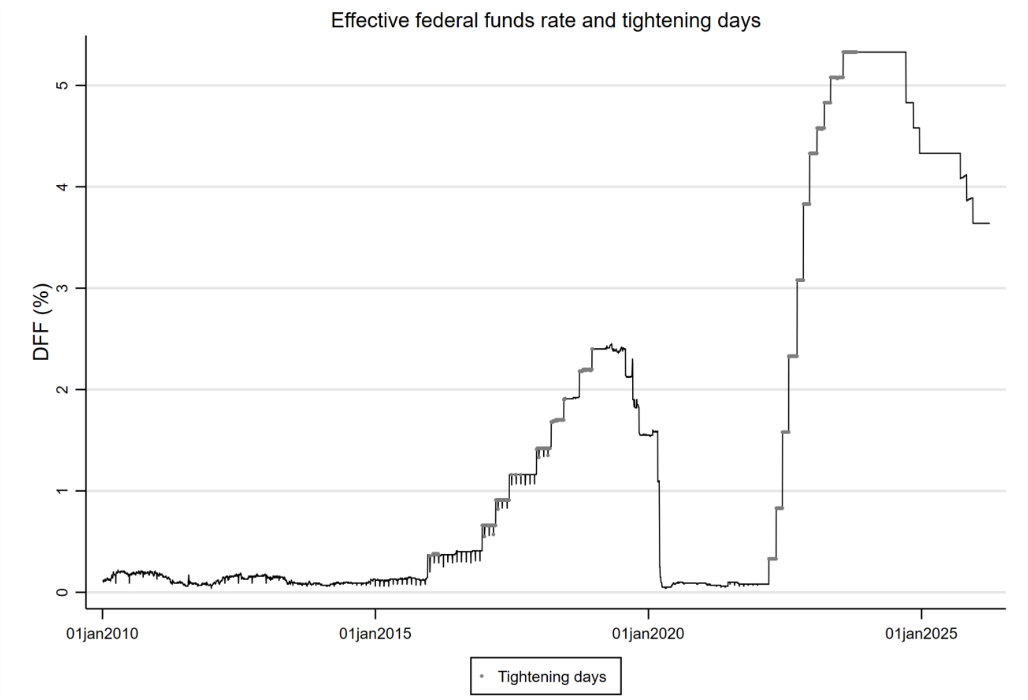

Figure 2. Effective federal funds rate and tightening regime (photo credit: original)

Note: The tightening regime is defined by a positive 90-trading-day change in the effective federal funds rate of at least 25 basis points.

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3. Model specification

The baseline specification is a daily factor-adjusted return regression. For the excess return of ETF i on trading day t, the estimated model is given in equation (1).

$$R^e_{i,t} = \alpha + \beta_1 Shock_t + \beta_2 Tightening_t + \beta_3 (Shock_t \times Tightening_t) + \gamma_1 MKT_t \quad (1)$$

$$+\gamma_2 SMB_t + \gamma_3 HML_t + \delta_1 USREC_t + \delta_2 \Delta VIX_t + \delta_3 \Delta DFF90_t + \varepsilon_{i,t}$$

Where $Shock_t$ indicates a VIX shock day, Tightening_t indicates a tightening-regime trading day, and their product is the interaction term. The coefficient of primary interest is β_3. If β_3 is negative, ETF excess returns decline by more when a VIX shock occurs during a tightening cycle. In other words, the negative pricing effect of VIX shocks is stronger under tightening conditions.

The baseline regression is first estimated for KBE because KBE is the main proxy for U.S. bank stocks. The same model is then estimated for KRE, XLF and SPY to assess whether the results are bank-specific. Due to daily financial returns may exhibit heteroskedasticity and short-run autocorrelation, standard errors are adjusted using the Newey-West HAC method [14]. Financial panel studies also need to consider correlation in residuals across time and cross-sectional units, so the interpretation of the results is informed by Petersen's discussion of standard errors in finance panels [15]. The preferred baseline uses five trading-day lags, with alternative lag choices examined in robustness checks.

In addition to regression analysis, the study conducts an event-window analysis. For each VIX shock day, cumulative excess returns are calculated over 0-, 1-, 3-, 5- and 10-trading-day windows after the shock. Mean cumulative excess returns are compared between tightening and non-tightening regimes. The event-window results do not replace the factor-adjusted regressions, but they provide intuitive evidence on the return path after shock days.

4. Empirical results

4.1. Baseline regression results

Table 3 reports stepwise baseline regression results for KBE. Column (1) includes only the VIX shock indicator, the tightening-regime indicator and their interaction. Column (2) adds the Fama-French three factors. Column (3) adds macroeconomic, VIX and interest-rate controls. Column (4) is the preferred full-control specification. Column (5) further adds year fixed effects. This sequence shows whether the core interaction term depends on a particular group of controls.

In the preferred column (4), the coefficient on the interaction between VIX shocks and tightening regimes is -0.278. The Newey-West standard error is 0.138, and the p-value is 0.0438. The coefficient implies that when a VIX shock occurs during a tightening cycle, KBE daily excess returns fall by an additional 0.278 percentage points. The standalone VIX shock and tightening terms are not significant in the full-control model. The result therefore does not simply indicate that VIX shocks are always significantly negative for KBE or that tightening periods are always significantly negative for KBE. It points instead to an additional negative reaction when the two conditions occur together.

DOI: 10.54254/2754-1169/2026.36018

Table 3. Baseline regressions: KBE daily excess returns

Variable	(1)	(2)	(3)	(4)	(5)
VIX shock	-2.157***	-0.003	-0.450***	-0.041	-0.031
	(0.120)	(0.041)	(0.113)	(0.046)	(0.047)
Tightening	-0.122**	0.034	-0.076	0.024	0.034
	(0.060)	(0.031)	(0.079)	(0.035)	(0.045)
VIX shock × tightening	-0.078	-0.291**	-0.255	-0.278**	-0.281**
	(0.255)	(0.139)	(0.240)	(0.138)	(0.139)
Fama-French factors	No	Yes	No	Yes	Yes
Macro/VIX/rate controls	No	No	Yes	Yes	Yes
Year fixed effects	No	No	No	No	Yes
Observations	4,024	4,024	4,024	4,024	4,024

Note: Coefficients are percentage points. Newey-West HAC standard errors with five trading-day lags are in parentheses. The preferred specification is column (4); column (5) checks year fixed effects. *** p<0.01, ** p<0.05, * p<0.10.

4.2. Heterogeneity across bank and comparison ETFs

Table 4 estimates the same full-control model for KBE, KRE, XLF and SPY. This table directly addresses whether the finding is specific to bank ETFs.

Table 4. Heterogeneity across bank, financial and market ETFs

Variable	KBE	KRE	XLF	SPY
VIX shock	-0.041	0.014	-0.002	-0.012
	(0.046)	(0.052)	(0.030)	(0.008)
Tightening	0.024	0.021	-0.020	-0.002
	(0.035)	(0.040)	(0.023)	(0.004)
VIX shock × tightening	-0.278**	-0.348**	-0.065	-0.005
	(0.138)	(0.167)	(0.068)	(0.010)
Full controls	Yes	Yes	Yes	Yes
Observations	4,024	4,024	4,024	4,024

Note: Coefficients are percentage points. All columns use the full-control model. Newey-West HAC standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.10.

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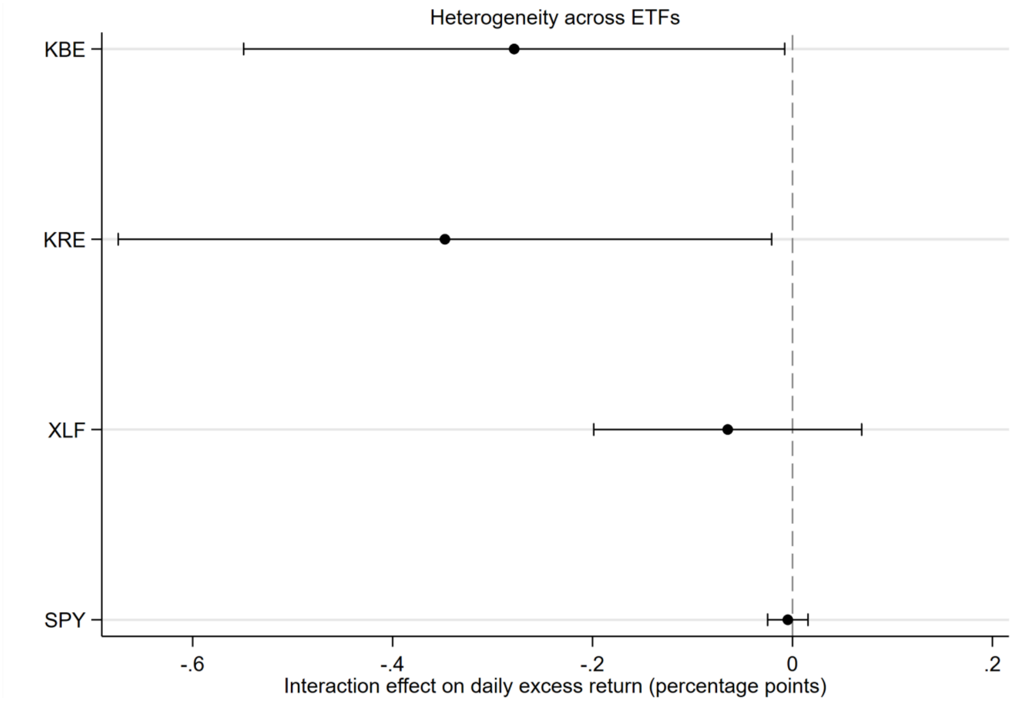

Figure 3. Heterogeneity of the interaction coefficient across ETFs (photo credit: original)

Note: Figure 3 reports the estimated interaction coefficient and confidence interval from the full-control model for each ETF.

Figure 3 presents the heterogeneity results from Table 4 in a forest-plot format. The estimated interaction coefficients for KBE and KRE lie to the left of zero, and their confidence intervals are closer to the negative-significance region. By contrast, the estimates for XLF and SPY are close to zero. This pattern reinforces the central identification argument. The amplification effect of tightening cycles on VIX shocks is concentrated in bank-related ETFs, especially regional-bank ETFs, rather than in the market or the financial sector as a whole.

The results show that the interaction term is -0.278 for KBE and -0.348 for KRE, both significant at the 5% level. By contrast, the interaction term is -0.065 for XLF and -0.005 for SPY, and neither estimate is significant. This pattern indicates that the amplification effect appears mainly in bank ETFs, especially regional-bank ETFs, rather than appearing equally in the financial sector or the broad market.

The KRE result is particularly notable. KRE represents regional banks, and its interaction coefficient is larger in absolute value than the KBE coefficient. This is consistent with the possibility that regional banks are more exposed to deposit stability, funding pressure and local credit risk. The ETF-level data cannot directly prove a specific balance-sheet channel. Even so, the relative results for KRE and KBE support a bank-specific interpretation.

4.3. Continuous interaction evidence

Table 5 uses continuous variables to check the interpretation. Because ETF-level data cannot directly observe deposit outflows, unrealized securities losses or duration mismatch, this table is best interpreted as continuous-interaction evidence rather than direct evidence on a specific bank balance-sheet channel.

The interaction between the continuous VIX change and the 90-day change in the effective federal funds rate is -0.052. This suggests that the negative effect of VIX changes on KBE excess

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returns is stronger when interest rates have risen more over the preceding period. The interaction between the continuous VIX change and the tightening-regime indicator is -0.060. Its sign remains negative, although the statistical significance is weaker. In the pooled KBE and KRE sample, the interaction is -0.063, indicating that the negative amplification relation between volatility changes and tightening regimes is clearer within the bank ETF sample.

Table 5. Continuous interaction evidence

Interaction	Coefficient	S.E.	p-value	Sample	Obs.
$\Delta VIX \times \Delta DFF90$	-0.052***	(0.015)	0.001	KBE	4,024
$\Delta VIX \times$ tightening	-0.060*	(0.033)	0.064	KBE	4,024
$\Delta VIX \times$ tightening	-0.063**	(0.027)	0.021	KBE and KRE	8,048

Note: Coefficients are percentage points. The table is suggestive continuous-interaction evidence rather than direct proof of a specific bank balance-sheet channel.

4.4. Event-window results

Table 6 reports cumulative excess returns across different windows after VIX shocks and compares tightening with non-tightening regimes. Event studies usually measure market reactions through abnormal returns or cumulative abnormal returns around event dates [12, 16]. Table 6 complements the regression evidence. The regressions control for common risk factors, whereas the event-window table displays the economic magnitude of the post-shock return path.

Table 6. Event-window cumulative excess returns around VIX shocks

ETF	Horizon	Non-tightening	Tightening	Difference	p-value	Events
KBE	0	-1.796	-1.996	-0.200	0.307	584
KRE	0	-1.786	-2.021	-0.235	0.282	584
KBE	1	-1.569	-2.259	-0.690**	0.016	584
KRE	1	-1.521	-2.262	-0.741**	0.018	584
KBE	3	-1.596	-2.326	-0.730*	0.080	583
KRE	3	-1.515	-2.352	-0.838*	0.059	583
KBE	5	-1.527	-2.586	-1.059**	0.031	582
KRE	5	-1.438	-2.654	-1.216**	0.019	582
KBE	10	-1.375	-2.245	-0.870	0.196	580
KRE	10	-1.227	-2.453	-1.226*	0.089	580

Note: Cumulative excess returns are percentage points. Difference equals tightening minus non-tightening. Horizon is measured in trading days after the VIX shock day. *** p<0.01, ** p<0.05, * p<0.10.

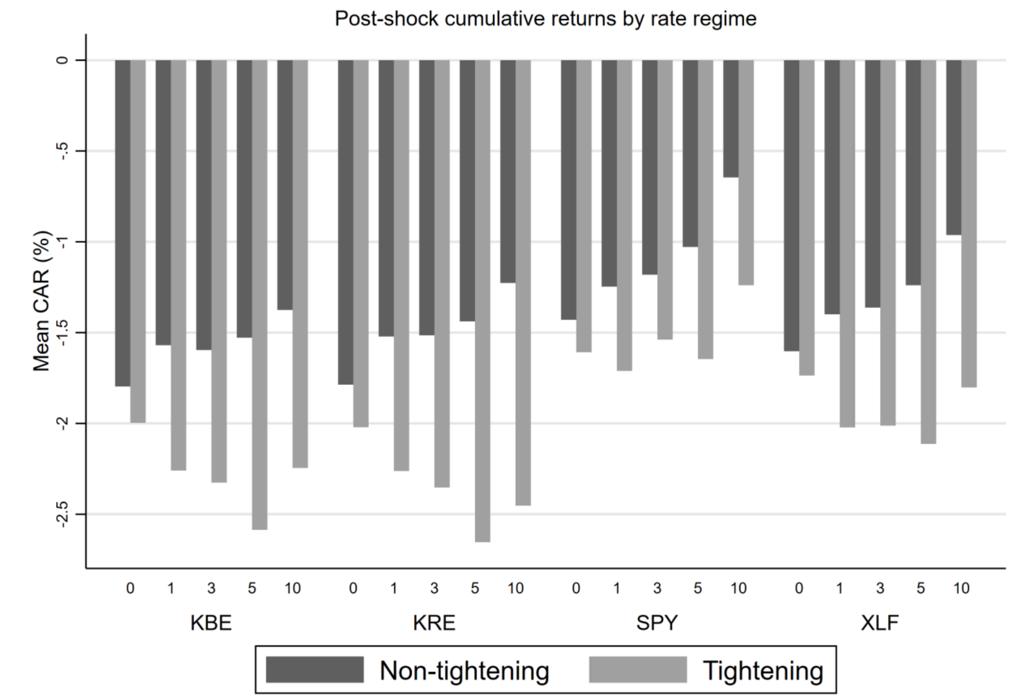

Figure 4. Event-window cumulative excess returns (Photo credit: Original)

Note: Figure 4 compares cumulative excess returns after VIX shocks between tightening and non-tightening regimes.

Figure 4 visualizes the event-window results from Table 6. In short windows after VIX shocks, cumulative excess returns for bank ETFs are generally lower during tightening regimes than during non-tightening regimes. The difference is especially visible over one- to five-day horizons. This figure helps show the economic magnitude behind the regression results. The finding is not confined to a same-day regression coefficient. It is also visible in the short-run cumulative return path after shock days. At the 10-day horizon, the difference becomes weaker, suggesting that the negative reaction is concentrated in the short-run repricing period after the shock.

Using the five-day window as an example, the average cumulative excess return for KBE after non-tightening VIX shocks is -1.527%. During tightening regimes, it is -2.586%, giving a difference of approximately -1.059 percentage points with a p-value of 0.0306. The corresponding difference for KRE is -1.216 percentage points with a p-value of 0.0190. The one-, three- and five-day differences for KBE are all negative. This indicates that the negative reaction after VIX shocks is concentrated in short event windows.

4.5. Robustness checks

Table 7 summarizes robustness checks required for the main text. The table reports results for alternative VIX thresholds, alternative tightening thresholds, alternative Newey-West lag choices, exclusion of crisis windows, alternative dependent variables and a five-day lead placebo test.

Table 7. Robustness summary for the KBE interaction coefficient

Specification	Coefficient	S.E.	p-value	Obs.
VIX shock threshold: 90th pct.	-0.327*	(0.186)	0.078	4,024

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Table 7. (continued)

VIX shock threshold: 95th pct.	-0.094	(0.203)	0.644	4,024
VIX shock threshold: 99th pct.	0.025	(0.386)	0.948	4,024
Tightening threshold: 50 bp	-0.581**	(0.284)	0.041	4,024
Newey-West lag 1	-0.278**	(0.120)	0.020	4,024
Newey-West lag 10	-0.278*	(0.148)	0.061	4,024
Exclude COVID crash window	-0.264*	(0.139)	0.057	3,972
Exclude SVB window	-0.163*	(0.099)	0.098	3,992
Winsorized excess return	-0.302***	(0.105)	0.004	4,024
Raw return dependent variable	-0.277**	(0.138)	0.045	4,024
Five-day lead placebo	-0.032	(0.088)	0.720	4,019

Note: Coefficients are percentage points. This table reports selected robustness checks for the interaction coefficient. The empty p85 row in the raw Stata output is not reported because the coefficient is omitted in that specification. *** p<0.01, ** p<0.05, * p<0.10.

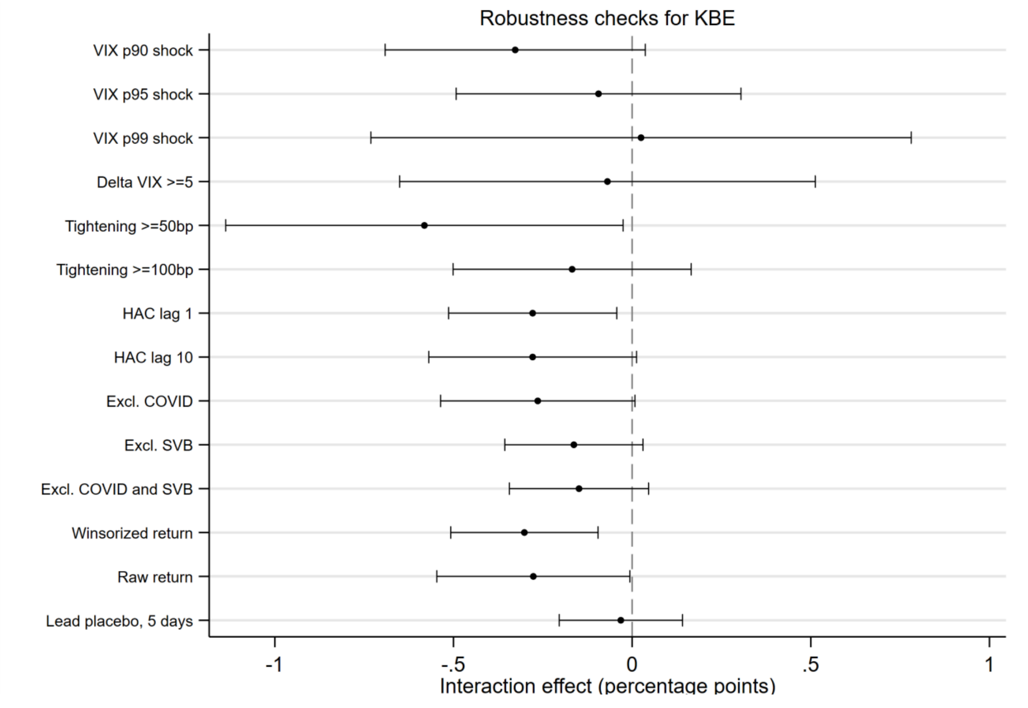

Figure 5. Robustness of the KBE interaction coefficient (Photo credit: Original)

Note: Figure 5 summarizes the interaction coefficient across alternative shock definitions, standard-error choices, crisis-window exclusions, outcome definitions and placebo specifications.

Figure 5 summarizes changes in the KBE interaction coefficient across robustness specifications. Overall, the point estimates in most specifications remain to the left of zero, suggesting some stability in the negative amplification effect. However, confidence intervals and statistical significance vary across specifications. In particular, when the VIX shock threshold is raised to the extreme upper tail, or when major crisis windows are excluded, the estimates become less precise.

The robustness evidence therefore suggests that the findings are best interpreted as directional evidence under the baseline and relatively broad shock definitions.

The robustness checks support a cautious conclusion. With the 90th-percentile VIX threshold, the interaction term remains negative and significant at the 10% level. With the 95th-percentile threshold, the sign remains negative but is not significant. With the 99th-percentile threshold, the direction is no longer stable. Changing the Newey-West lag length leaves the coefficient unchanged but changes significance through the standard error. After excluding the COVID-19 crash window or the Silicon Valley Bank window, the coefficient remains negative but becomes less significant. Results remain negative and significant when using winsorized excess returns and raw returns, whereas the five-day lead placebo test is not significant.

5. Discussion

The results can be interpreted through bank balance-sheet mechanisms. During tightening cycles, loan yields may increase, but deposit costs, funding pressure and valuation losses on securities portfolios may also rise. When a VIX shock occurs, market risk aversion increases. Investors may pay greater attention to unrealized losses on bank securities holdings, deposit-run risk and latent credit risk. The same increase in the VIX may therefore be interpreted as a stronger bank-stress signal during a tightening cycle.

The stronger results for KBE and KRE than for XLF and SPY support a bank-specific interpretation. The more negative interaction coefficient for KRE suggests that regional banks may be more sensitive to the combination of interest-rate pressure and market fear. Nevertheless, the study uses ETF-level data and cannot directly identify bank-level securities duration, uninsured deposit shares or loan-portfolio risk. The mechanism should therefore be understood as an interpretation consistent with the empirical pattern, not as a directly measured causal channel.

6. Conclusion

This study examines whether tightening cycles amplify the negative effect of VIX shocks on U.S. bank stock returns. Using daily public data from January 2010 to March 2026, the analysis finds that the implication of VIX shocks for bank stocks depends on the interest-rate environment. When rates are already in a tightening regime, market fear may lead investors to price bank balance-sheet risks more severely. This generates an additional negative reaction in bank ETF returns.

The conclusion should be interpreted as conditional asset-pricing evidence rather than a strict causal estimate of monetary policy. VIX shock thresholds and crisis-window treatment affect statistical significance, especially under the 99th-percentile extreme threshold. The final interpretation therefore emphasizes direction, conditionality and suggestive evidence. Overall, market volatility shocks and interest-rate cycles should not be separated when bank equity risk is assessed. For investors, a VIX increase during a tightening cycle may contain stronger information about bank equity risk than a VIX increase in ordinary periods. For researchers, the study provides a reproducible ETF-level benchmark and points to future bank-level tests of balance-sheet mechanisms.

This study has limitations. ETF-level data cannot directly identify securities duration, uninsured deposit shares or loan-portfolio risks at individual banks. Daily public data also make it difficult to fully separate monetary policy shocks, macroeconomic news and contemporaneous market sentiment. Future work could use bank-level data to connect stock returns with unrealized securities losses, uninsured deposits, loan portfolios and capital ratios. It could also use high-frequency

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monetary policy surprise measures around Federal Open Market Committee announcements to move from conditional asset-pricing evidence toward a stricter causal identification design.

References

[1] Bernanke, B. S., & Kuttner, K. N. (2005). What explains the stock market's reaction to Federal Reserve policy? *The Journal of Finance, 60*(3), 1221–1257.

[2] Gurkaynak, R. S., Sack, B., & Swanson, E. T. (2005). Do actions speak louder than words? The response of asset prices to monetary policy actions and statements. *International Journal of Central Banking, 1*(1), 55–93.

[3] English, W. B., Van den Heuvel, S. J., & Zakrajsek, E. (2018). Interest rate risk and bank equity valuations. *Journal of Monetary Economics, 98*, 80–97.

[4] Jiang, E. X., Matvos, G., Piskorski, T., & Seru, A. (2024). Monetary tightening and U.S. bank fragility in 2023: Mark-to-market losses and uninsured depositor runs? *Journal of Financial Economics, 159*, 103899.

[5] Acharya, V. V., Richardson, M., Schoenholtz, K. L., & Tuckman, B. (2023). SVB and beyond: The banking stress of 2023. *CEPR Discussion Paper, 18316*.

[6] Whaley, R. E. (2000). The investor fear gauge. *Journal of Portfolio Management, 26*(3), 12–17.

[7] Ludvigson, S. C., Ma, S., & Ng, S. (2021). Uncertainty and business cycles: Exogenous impulse or endogenous response? *American Economic Journal: Macroeconomics, 13*(4), 369–410.

[8] Ahir, H., Bloom, N., & Furceri, D. (2022). The World Uncertainty Index. *NBER Working Paper, 29763*.

[9] Bekaert, G., Hoerova, M., & Xu, N. R. (2023). Risk, monetary policy and asset prices in a global world. *ECB Working Paper No. 2879*.

[10] Bekaert, G., Engstrom, E., & Xu, N. R. (2022). The time variation in risk appetite and uncertainty. *Management Science, 68*(6), 3975–4004.

[11] Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics, 116*(1), 1–22.

[12] Kothari, S. P., & Warner, J. B. (2007). Econometrics of event studies. In B. E. Eckbo (ed.), *Handbook of Corporate Finance: Empirical Corporate Finance, 1*, 3–36.

[13] Cboe Global Markets. (2019). White paper: Cboe volatility index. *Cboe Global Markets*. https://www.cboe.com/

[14] Newey, W. K., & West, K. D. (1987). A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica, 55*(3), 703-708.

[15] Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies, 22*(1), 435-480.

[16] MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of Economic Literature, 35*(1), 13-39.