# The Wealth Effect of Stock Market Crashes on Consumption

Evidence from Indonesia's Retail Sector (2019–2025)

February 2026

# Key takeaways

The wealth effect channel of stock market crashes is lagged, threshold-dependent, sentiment-driven, and asymmetric:

- Panic impact: A stock market crash leads to a 5.5-5.9% reduction in Retail Sales growth with a 2-month delay.
- Threshold-dependent: Only extreme shocks ($Shock < -1.5\sigma$) affect consumption; normal volatility is insignificant, indicating a non-linear "panic trigger" mechanism rather than gradual sensitivity.
- Sentiment-driven: Market panic matters more than income growth in the short run.
- Asymmetric: Crashes trigger significantly negative responses of consumption, while booms show no statistical impact.
- Speed of adjustment: 37.4% of the deviation from long-run equilibrium is corrected each month; clears half of shocks in 1.48 months.
- Consumption smoothing: Retail consumption is more sensitive to wealth shocks and seasonality than to immediate income fluctuations.

# Introduction

# Motivation: The MSCI Suspension Effect

- **The Event:** Recent structural shocks, such as the MSCI index rebalancing, triggered an 8% drop in the Indonesian stock market.
- **The Magnitude:** Estimates suggest a loss of nearly **US$80 billion** in market capitalization.[1]
- **The Concern:** Does this financial evaporation transmit to the real economy, specifically affecting household consumption via the *Wealth Effect*?

[1] https://www.idnfinancials.com/news/60876/msci-effect-caused-the-indonesian-stock-market-to-lose-us80-bn

# Research Objective

**Main Research Question**
To what extent does a stock market panic impact retail sales in Indonesia, and what are the dynamic patterns of this transmission?

- Identify the **Speed of Adjustment** back to equilibrium.
- Analyze **Asymmetric responses**: Are crashes more impactful than booms?
- Measure the **Lag length** (time-to-impact).

# Methodology

# The Four-Step Framework

**Step 1: GARCH(1,1) Shock Extraction** Extracting standardized residuals from daily IHSG returns to isolate "Panic" shocks.

**Step 2: Cointegration Testing** Using Johansen's Trace test to establish a long-run link between Retail Sales Index (RSI) as a proxy for consumption, Income, and Stock Shocks.

**Step 3: Error Correction Model** Estimating short-run dynamics with seasonal controls and panic dummies.

**Step 4: VECM & IRF** Generating Impulse Response Functions to simulate an 8% crash event.

# Step 1: GARCH(1,1) Shock Extraction

To isolate "unanticipated" panic from daily noise, we model stock returns volatility:

- **Mean Equation:** $r_t = \mu + \epsilon_t$
- **Variance Equation:** $\sigma_t^2 = \omega + \alpha\epsilon_{t-1}^2 + \beta\sigma_{t-1}^2$

**Implementation:**

- Extracted *standardized residuals*: $z_t = \epsilon_t/\sigma_t$.
- Aggregated daily shocks into **Monthly Cumulative Shocks** to match the frequency of retail data.
- This ensures the "Stock Shock" variable represents pure sentiment shifts.

# Step 2: Cointegration & Long-Run Equilibrium

We test for a stable long-term relationship using the Johansen Trace Test.

**Long-Run Equation (Levels)**

$$\ln(RSI_t) = \beta_0 + \beta_1 \ln(Inc_t) + \beta_2 Shock_t + \beta_3 IR_t + \beta_4 CPI_t + \epsilon_t$$

- Retail sales index (RSI) as a proxy for consumption; Income constructed from the Personal Income Taxes (PIT) revenues
- **ECT Extraction:** The residuals from this regression ($\hat{\epsilon}_t$) become the **Error Correction Term**.
- This term represents the "equilibrium gap" that the economy tries to close each month.

# Step 3: Error Correction Model (ECM)

Short-run dynamics are modeled with seasonal adjustments and a **Panic Dummy** ($Shock < -1.5\sigma$):

**The ECM Equation**

$$\Delta RSI_t = \phi ECT_{t-1} + \gamma \Delta Inc_t + \delta Panic_{t-2} + \theta IR_t + \sum_{m=1}^{11} \lambda_m S_m + \mu_t$$

- **Panic Dummy (Lag 2):** Captures the 60-day delayed psychological response to market crashes.
- **Seasonal Dummies ($S_m$):** Controls for predictable monthly spikes (e.g., Eid/Holiday seasons).
- **HAC Robustness:** Newey-West standard errors are used to correct for ARCH effects found in residuals.

# Step 4: VECM & Impulse Response (IRF)

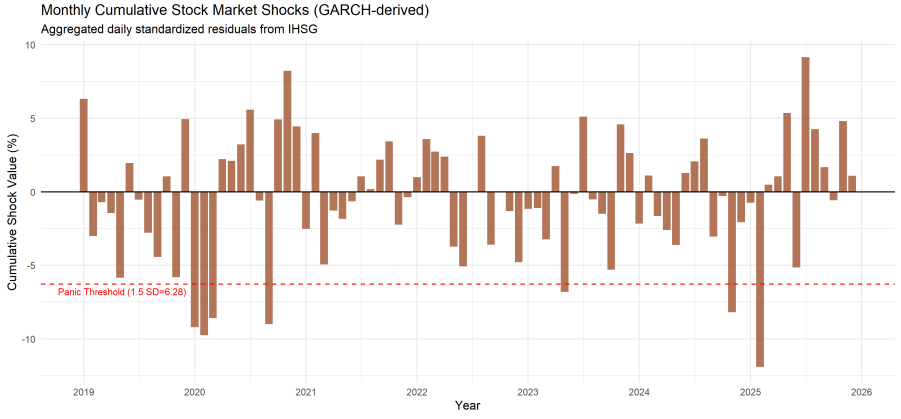
To simulate the impact of the MSCI suspension (8% crash), we move to a VECM framework:

- **VECM Construction:** Integrates all variables into a system of equations.
- **IRF Scaling:** Standard IRFs show a $+1$ S.D. shock. We **invert** the results and scale them by Factor $= -0.08/\sigma_{\text{shock}}$.

**The Result**
Simulates exactly how a **-8% drop** in IHSG propagates through RSI and Income over a 12-month horizon.

# Results & Analysis

# The Stock Shocks




- Shocks are derived from a **GARCH(1,1)** model on daily returns.
- Values below the dashed line represent **"Panic"** events ($> 1.5\sigma$).

# Long Run Equilibrium Results

| Variable | Estimate | Std. Error | t-value | Pr($>|t|$) |
|---|---|---|---|---|
| (Intercept) | 5.112 | 0.653 | 7.828 | *** |
| **Income (log)** | 0.127 | 0.027 | 4.657 | *** |
| Stock Shock | -0.002 | 0.002 | -1.313 | 0.193 |
| Interest Rate | 0.036 | 0.007 | 5.182 | *** |
| CPI (SA) | -0.163 | 0.146 | -1.118 | 0.267 |

Signif. codes: 0 '***' 0.001 '**' 0.01; Adj. $R^2$: 0.434

**Table 1:** Long-Run Cointegration Equation (Dependent: $\ln(RSI)$)

**Economic Interpretation:**

- **Income Elasticity:** A 1% increase in income leads to a 0.127% increase in retail sales, confirming income as a fundamental long-run driver.
- **Cointegration:** Significant coefficients for Income and IR suggest a stable, long-term co-movement with consumption.

# ECM: Do Only Big Crashes Matter?

**Testing the Threshold Hypothesis**
We test whether consumption reacts linearly to all shocks or specifically to "Panic" events (shocks $> 1.5\sigma$).

| Variable | Estimate | Std. Error | $t$-value | $Pr(>\|t\|)$ |
|---|---|---|---|---|
| (Intercept) | 0.002 | 0.025 | 0.097 | 0.923 |
| ECT ($t-1$) | -0.466 | 0.095 | -4.920 | *** |
| $\Delta$ Income (log) | 0.087 | 0.018 | 4.901 | *** |
| Interest Rate (IR) | 0.000 | 0.005 | 0.050 | 0.961 |
| Panic Dummy ($t$) | -0.006 | 0.019 | -0.338 | 0.737 |
| Panic Dummy ($t-1$) | 0.010 | 0.019 | 0.509 | 0.612 |
| **Panic Dummy ($t-2$)** | **-0.055** | **0.019** | **-2.903** | **0.005**** |

- **Income Elasticity:** A 1% increase in income growth leads to a **0.087%** increase in retail sales growth.
- **Panic Impact:** A stock market crash leads to a **5.5% reduction** in Retail Sales growth with a 2-month lag, confirming the specific transmission speed in Indonesia.

# Short-run Dynamics: ECM Model with Panic Dummy Variable & Seasonality

| Variable | Estimate | Std. Error | t-value | Pr($>\|t\|$) |
|---|---|---|---|---|
| **ECT ($t-1$)** | **-0.374** | 0.094 | -3.993 | *** |
| $\Delta$ Income (log) | 0.037 | 0.023 | 1.573 | 0.121 |
| **Panic Dummy ($t-2$)** | **-0.059** | 0.017 | -3.575 | *** |
| Interest Rate | -0.001 | 0.004 | -0.184 | 0.855 |
| **Significant Seasonality** | Mar***, Apr***, May**, Dec*** | | | |

Adj. $R^2$: 0.513; **Durbin-Watson: 2.25** (No Autocorrelation)

- **Speed of Adjustment:** The ECT coefficient (-0.374) is negative and highly significant, indicating that 37.4% of the deviation from long-run equilibrium is corrected each month.
- **The Lagged Panic Effect:** A stock market crash significantly reduces retail sales growth with a **two-month lag**. An 8% crash leads to a roughly 5.9% contraction in RSI growth.
- **Consumption Smoothing:** The insignificance of $\Delta$ Income suggests that Indonesian retail consumption is more sensitive to *wealth shocks* and *seasonality* than to immediate income fluctuations.

# Speed of Adjustment & Recovery Half-Life

**Theoretical Context**
The coefficient of the Error Correction Term (ECT) measures how quickly the system returns to its long-run equilibrium following a disturbance.

- **ECT Coefficient:** $-0.374$ ($p < 0.001$)
- **Interpretation:** Approximately **37.4%** of the disequilibrium in retail sales is corrected within a single month.

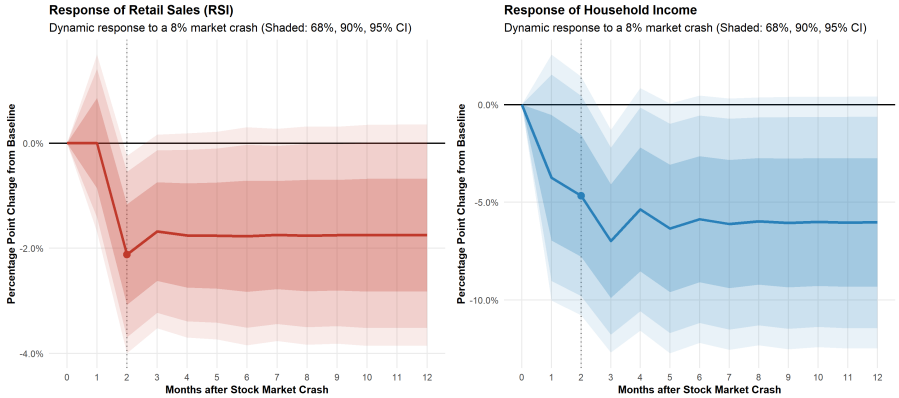
## Half-Life Calculation

To calculate the time required to dissipate 50% of a shock's impact:

$$\text{Half-life} = \frac{\ln(0.5)}{\ln(1 + \text{coeff})} = \frac{-0.693}{\ln(1 - 0.374)} \approx 1.48 \text{ months}$$

- **Conclusion:** The Indonesian retail sector clears half of any shock-induced imbalance in roughly **six weeks**. This suggests a high degree of "economic resilience" despite the significant short-term impact of market panics.

# IRFs of the VECM Model: Dynamic Responses to 8% Crash




- **Retail Sales (RSI):** Exhibits a persistent drop, peaking at Month 2.
- **Household Income:** Initially contracts but shows signs of mean-reversion by Month 12.
- **Finding:** Consumption is "scarred" by sentiment even after income stabilizes.

# Non-Linear Analysis: Consumers fear the loss of wealth more than they celebrate the increase of it

| Variable | Estimate | Std. Error | $t$-value | $Pr(>\|t\|)$ |
|---|---|---|---|---|
| (Intercept) | 0.019 | 0.028 | 0.679 | 0.499 |
| ECT $(t-1)$ | -0.441 | 0.096 | -4.612 | *** |
| $\Delta$ Income (log) | 0.091 | 0.018 | 5.108 | *** |
| Interest Rate (IR) | -0.000 | 0.005 | -0.052 | 0.959 |
| Negative Shock $(t)$ | -0.000 | 0.002 | -0.218 | 0.828 |
| **Negative Shock $(t-2)$** | **0.007** | **0.002** | **3.118** | **0.003**** |
| Positive Shock $(t)$ | -0.002 | 0.003 | -0.577 | 0.566 |
| Positive Shock $(t-2)$ | -0.003 | 0.003 | -1.222 | 0.226 |

- **Significant Loss Aversion:** Only negative shocks $(t-2)$ have a statistically significant impact on retail sales; The wealth effect in Indonesia is driven by precautionary motives.
- **Directionality:** The positive coefficient on the negative shock (0.007) indicates that as the shock becomes more negative (smaller), RSI decreases.
- **Finding:** Market "booms" do not significantly stimulate Indonesian retail spending, but market "crashes" significantly depress it.

# Conclusion

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- **60-Day Delay:** The Wealth Effect isn't instant; it takes 2 months for panic to curb retail spending; Policy responses to stock crashes have a 2-month window before consumption bottoms out.
- **Sentiment vs. Income:** Retail Sales are more sensitive to market "shocks" than actual income growth in the short run.
- **Wealth Effect Channel:** The wealth effect in Indonesia operates strongly through precautionary motives or Consumer Sentiment rather than just direct income loss.