VOLATILITY REGIME SHIFTS AND STRESS TRANSMISSION IN EUROPEAN CAPITAL MARKETS: A DYNAMIC CONNECTEDNESS APPROACH

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Abstract

This paper investigates whether volatility regime shifts in European equity markets are associated with changes in cross-market stress transmission. Using daily returns for seven major European equity indices (1998-2026), plus two extension panels adding Sweden, Denmark and Poland, we estimate EGARCH (1,1)-Student-t volatility models, classify markets into low-, medium- and high-volatility regimes via a hidden Markov model, and measure dynamic connectedness with a rolling-window VAR-based variance-decomposition approach. High-volatility regimes cluster strongly across markets (the same-day coincidence rate of regime-entry dates is 24-33% across panels, against a 1% placebo benchmark), and total connectedness rises significantly before, during and for several weeks after system-wide regime shifts, even after controlling for connectedness persistence. Net-transmission concentration increases during high-volatility periods even as gross transmission becomes more diffuse; France, Germany and the Netherlands are persistent net transmitters of stress, while Switzerland, the United Kingdom and Spain are persistent net receivers. A European Market Stress Transmission Index (EMSTI), combining regime probability, connectedness, and network concentration, peaks at well-documented stress episodes: the 2015 Greek/China selloff and the 2022 Russia-Ukraine energy shock. The findings hold up in nine of ten robustness checks. The one substantive qualification: once global risk factors (VIX, US equity returns, EUR/USD and US interest rates) are controlled for, part of the apparent pre- and post-shift rise in connectedness reflects global risk sentiment rather than a purely European phenomenon; only the contemporaneous shift-window effect is unambiguously European. The results support regime-sensitive connectedness indicators as a complement to, not a replacement for, existing financial-stability monitoring tools.

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Keywords
volatility regimes; dynamic connectedness; stress transmission; EGARCH; hidden Markov model; European equity markets; financial stability.

JEL Classification
C32, C58, G01, G15