

RESEARCH INSIGHT

Can Market Data Tell a Tech Firm Where It Stands in the Cycle?

A firm's own stock data reveal its business-cycle phase almost perfectly within a cycle, but the signal fails at the next cycle's turning points, exactly when managers need it most.

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Firms are investing record sums in AI and IT, yet the payoff arrives with long lags because complementary intangibles such as new processes and skills take years to build. Whether an investment pays off therefore depends on where the firm stands in the business cycle, but official recession dating covers only the whole economy and arrives months late. This study asks whether a single firm's phase (Expansion, Peak, Contraction, or Trough) can be detected from its own market data, and whether that phase matters for its performance.

The authors assembled 30 years (1996–2026) of daily data for 74 S&P 500 technology and communication-services firms: stock prices, 44 technical indicators computed from them, and 56 news and social-media sentiment indices. Five machine-learning classifiers were trained on earlier business cycles and tested on a later one, and the phases were then linked to each firm's profitability, growth, and market value.

Four insights stand out.

1. Detectable within a cycle, unreliable across cycles. A Random Forest identifies a firm's phase almost perfectly within the cycles it learned from (macro-F1 of 0.975), but scores only 0.379 on the next cycle. It still labels about 81 percent of days correctly, because most days are expansion days, yet it recognizes only 1 to 3 percent of peak, contraction, and trough days.

2. Prices beat sentiment. Technical indicators from a firm's own stock price carry nearly all the signal. Adding news and social-media sentiment improves out-of-sample detection by less than 0.01, and IT-specific topics such as innovation, partnerships, and mergers do worse than generic emotions such as fear and optimism.

3. The phase matters for performance. Compared with expansion years, contraction years bring sales growth that is 36 percentage points lower, operating return on assets 2.2 points lower, and a Tobin's Q 1.6 lower. Valuations begin falling at the peak, before output does.

4. R&D is not a shock absorber. Contrary to the expectation that R&D-intensive firms adapt better, their downturn penalty is larger and they recover no faster after troughs. Heavy R&D appears to signal fixed commitments and growth exposure rather than resilience.

Why it matters. For managers timing capital spending, hiring, and acquisitions, a firm's own price data offer a near-real-time read on its cyclical position, but the read is weakest at turning points and must be recalibrated every cycle rather than trusted as a one-time model. Aggregated across firms, such signals could also give policymakers an early complement to official recession dating.

References

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