RESEARCH NOTE: THE TRANSMISSION MECHANISM — HOW RISING INTEREST RATES FLOW THROUGH THE TECHNOLOGY SECTOR

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SYNTHETIC DOCUMENT — FOR DEMONSTRATION PURPOSES

OVERVIEW

This note maps the causal chain from Federal Reserve rate decisions to observable outcomes in the technology sector — including equity valuations, hiring practices, venture capital activity, and enterprise software spending. Understanding this transmission mechanism is critical for forecasting technology company performance during periods of monetary tightening.

PART 1: THE RATE-TO-VALUATION LINK

1.1 Discount Rate Mechanics

Technology companies, particularly high-growth names with earnings weighted toward future years, are acutely sensitive to changes in the risk-free rate. This is not a behavioral phenomenon — it is arithmetic.

The intrinsic value of any asset is the present value of its future cash flows. The discount rate applied to those cash flows incorporates the risk-free rate (typically the 10-year US Treasury yield) plus an equity risk premium. When the Federal Reserve raises the federal funds rate, short-term rates rise immediately. The 10-year Treasury yield typically rises as well, though the relationship is imperfect.

A simplified illustration: a company with 80% of its discounted cash flow value residing beyond year 5 — common for high-growth software companies — will see its intrinsic value decline by approximately 12–18% for every 100 basis point increase in the discount rate, holding cash flows constant.

Between March 2022 and July 2023, the Federal Reserve raised the federal funds rate by 525 basis points — from 0.25% to 5.50%. The Nasdaq Composite, heavily weighted toward technology, declined 33% from its November 2021 peak to its October 2022 trough before recovering.

1.2 Multiple Compression in Practice

The forward P/E ratio for the technology sector averaged approximately 28x in January 2022, prior to the rate hiking cycle. By October 2022, that multiple had compressed to approximately 18x — a compression of 10 turns, representing a 36% reduction in the price the market was willing to pay for each dollar of expected earnings.

This multiple compression occurred even as earnings estimates for many technology companies remained relatively stable, indicating that the valuation decline was primarily rate-driven rather than fundamental.

PART 2: FROM VALUATIONS TO HIRING — THE TALENT MARKET LINK

2.1 How Equity Valuations Drive Headcount Decisions

Technology company compensation structures are unusually dependent on equity — restricted stock units (RSUs) and stock options often represent 40–60% of total compensation for engineers and product managers at major technology companies. This creates a direct link between stock price and the effective cost of labor.

During the 2020–2021 bull market, rising stock prices effectively subsidized hiring. Companies could offer large RSU grants that appeared affordable relative to market capitalization while the stock price inflated. When valuations collapsed in 2022, the same RSU grants required issuing significantly more shares to deliver the same dollar value to employees — diluting existing shareholders and increasing the perceived cost of labor.

2.2 The 2022–2023 Layoff Wave

The technology sector shed approximately 260,000 jobs in 2022 and a further 260,000 in the first half of 2023, according to aggregated data from Layoffs.fyi. Major events include:

- Amazon: ~27,000 layoffs across two rounds (November 2022 and March 2023)
- Google/Alphabet: ~12,000 layoffs (January 2023), representing approximately 6% of global workforce
- Microsoft: ~10,000 layoffs (January 2023), representing approximately 5% of global workforce
- Meta: ~21,000 layoffs across two rounds (November 2022 and March 2023)
- Salesforce: ~8,000 layoffs (January 2023)
- Amazon Web Services: specific headcount reductions in device and music streaming divisions

The proximate cause cited by most companies was "over-hiring during the pandemic" and "macroeconomic uncertainty." The structural cause, however, was the collapse in equity valuations that made the true cost of the prior hiring binge visible.

2.3 The Lag Effect

Note that the layoff cycle lagged the equity market peak by approximately 12–14 months. This lag reflects the time required for boards and management teams to acknowledge the permanence of valuation declines, work through contractual notice periods, and implement restructuring programs. Future monetary tightening cycles should expect similar lags between equity market deterioration and labor market adjustment in the technology sector.

PART 3: FROM HIRING TO ENTERPRISE SPENDING — THE CUSTOMER LINK

3.1 Tech Companies as Customers of Each Other

A significant and often underappreciated dynamic: technology companies are among the largest customers of enterprise software. When Microsoft, Google, and Amazon lay off tens of thousands of employees, they simultaneously reduce their own internal consumption of software licenses, cloud compute, and productivity tools.

Salesforce reported in its Q1 FY2024 earnings call that several large technology customers had downsized their seat counts during contract renewals — a direct consequence of tech-sector layoffs. This created a feedback loop: rate hikes reduced tech valuations → tech companies cut headcount → reduced headcount decreased enterprise software consumption → enterprise software companies (themselves technology companies) faced revenue pressure.

3.2 Venture Capital Contraction and Startup Spending

Rising interest rates also compressed venture capital activity. The alternative cost of capital for venture funds increased, making early-stage investments less attractive on a risk-adjusted basis. US venture capital investment declined from a peak of $344 billion in 2021 to $170 billion in 2022 and approximately $140 billion in 2023.

Startups, deprived of venture funding, dramatically reduced their consumption of cloud infrastructure, SaaS tools, and developer services. AWS, Azure, and Google Cloud all reported slower growth from SMB and startup customers in 2023, even as enterprise demand remained robust.

PART 4: THE FULL TRANSMISSION CHAIN

The complete causal chain from Federal Reserve policy to technology sector outcomes:

Fed raises rates
   → Risk-free rate increases
   → Discount rates for future cash flows rise
   → Present value of long-duration assets (high-growth tech stocks) falls
   → Equity market valuations compress
   → RSU-based compensation becomes more expensive (dilutive)
   → Companies perceive labor costs as elevated relative to productivity
   → Headcount reduction programs initiated
   → Reduced headcount decreases internal software consumption
   → Enterprise software vendors face seat-count attrition
   → VC funding contracts as alternative returns improve
   → Startup cloud consumption declines
   → Cloud hyperscaler SMB revenue growth slows
   → Earnings growth estimates revised downward
   → Further multiple compression (compounding the initial effect)

This feedback loop partially explains why technology sector drawdowns during rate hiking cycles tend to overshoot the direct valuation impact of rate changes alone.

PART 5: IMPLICATIONS FOR 2024

The Federal Reserve signaled in December 2023 that it expects to cut rates three times in 2024. If this guidance proves accurate, the transmission mechanism described above will operate in reverse:

- Lower rates → multiple expansion for growth stocks
- Higher valuations → RSU compensation more affordable
- Improved hiring appetite → increased internal software consumption
- VC activity recovery → startup cloud spending recovery
- Cloud hyperscaler SMB growth reacceleration

The speed of this recovery will depend on the pace of rate cuts, the durability of the AI-driven capital expenditure cycle, and whether enterprise software vendors can offset seat-count attrition with higher per-seat pricing from AI features.

END OF NOTE