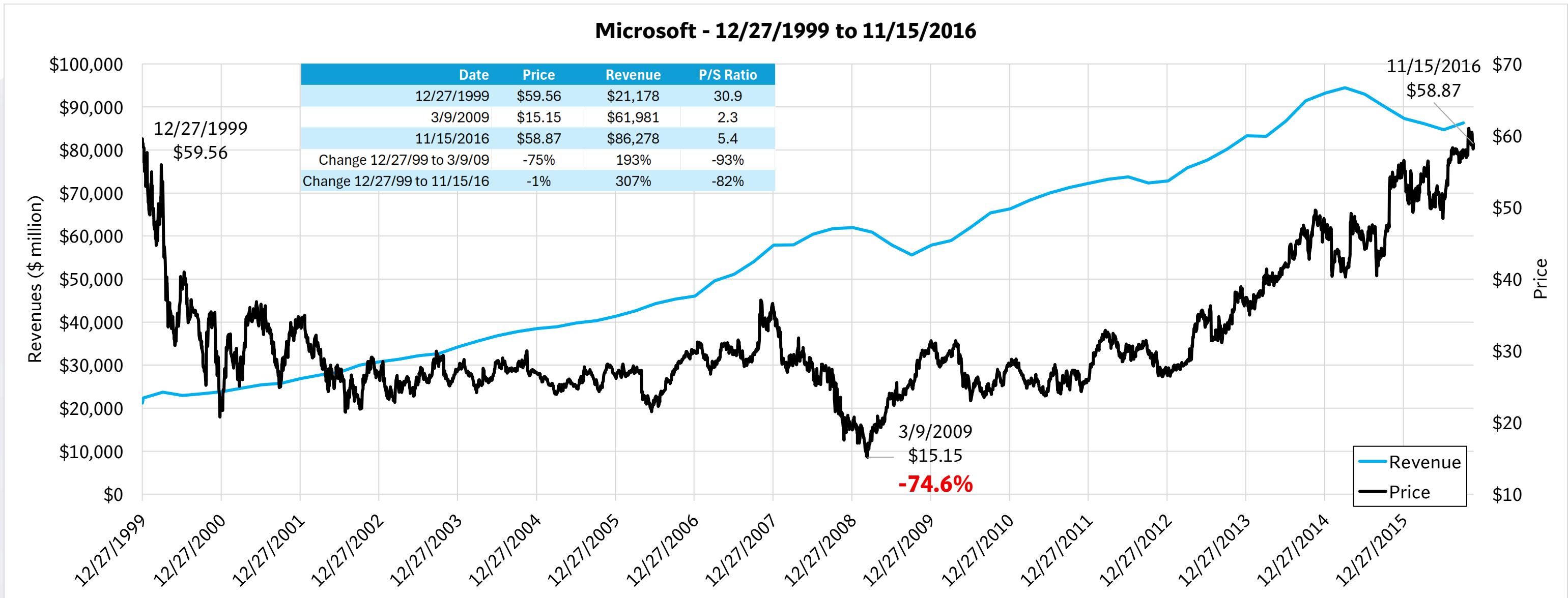


Microsoft Report: Data Science Reveals the Mathematics of Loss

Stock performance follows mathematics, not opinion. The Microsoft example underscores how data science empowers fiduciaries to protect capital through disciplined valuation calculations.



On December 27, 1999, Microsoft's stock closed at \$59.56, giving it a market capitalization that far exceeded any reasonable estimate of its Net Present Value (NPV). Over the next 17 years—through November 15, 2016—the company's revenues more than quadrupled, yet shareholders earned nothing. At the 2009 market low, shareholders lost 75%. This outcome was not a reflection of poor management or weak business performance, but of an extreme mismatch between market price and underlying value. In the long run, stock returns are governed by the difference between a company's market cap and its NPV—the present value of all its future profits.

Between 1999 and 2016, Microsoft's revenue grew from \$21 billion to \$86 billion, but its Price-to-Sales (P/S) ratio collapsed from 30.9 to 5.4. That contraction was not random; it was the predictable result of **P/S compression**—a measurable statistical pattern observed by data scientists and valuation analysts. As companies expand and mature, their growth rates slow and the market systematically adjusts the premium investors are willing to pay for each dollar of sales. The 1999 valuation was so detached from long-term norms that no level of growth could have justified it, and it took more than a decade of rising sales for the market's pricing mechanism to rebalance.

This same relationship between market capitalization and NPV is what Equity Risk Sciences' **Profit Map™** quantifies. By measuring how far a company's current market price diverges from its statistically probable NPV range, ERS helps fiduciaries and investors identify when a stock's risk of loss is greatest—before the correction occurs. Microsoft's 17-year flat return was not bad luck; it was the inevitable arithmetic of overvaluation. With ERS's technology, investors can now measure that risk precisely, rather than discover it painfully after the fact.