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“Real Costs in the Real World”

Quarterly Market Commentary: Q1 2024

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Market Commentary

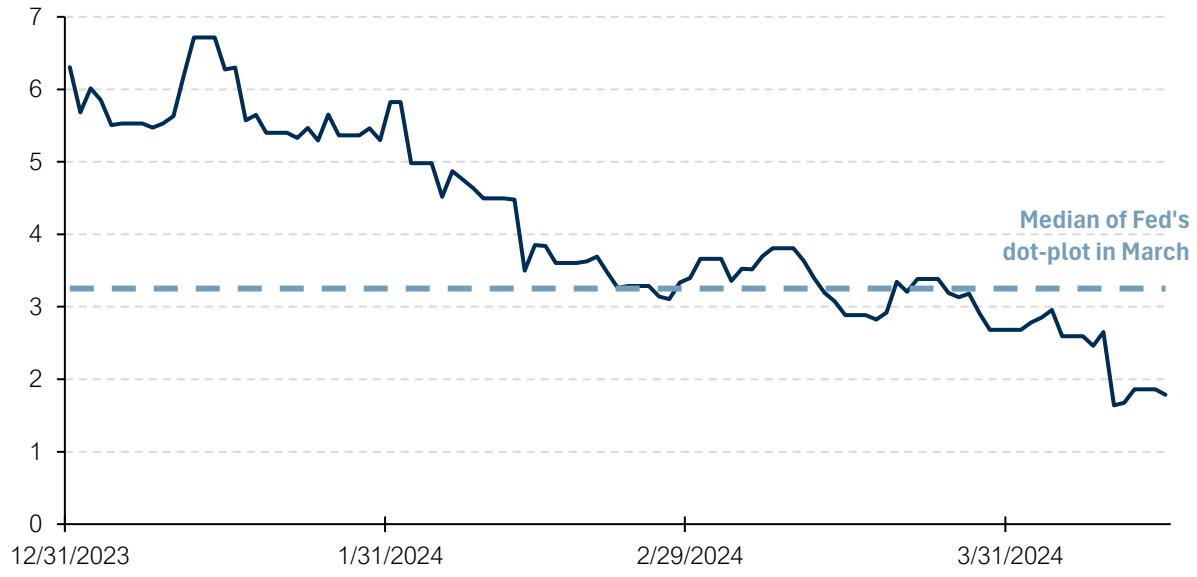
The first quarter of 2024 saw a continuation of late-2023 conditions in the U.S. equity markets. The S&P 500 rose 10.6% (near 45% on an annualized basis), and Growth outpaced Value for the fifth straight quarter and the 23rd of the past 29.[1] This environment persisted despite a precipitous drop in the number of Federal Funds rate-cut expectations being priced into this calendar year as demonstrated in the chart below.

Excess liquidity and economic strength continued to rule the day and drove momentum stocks to their best quarterly returns since the heady "YOLO" days of the 2020 pandemic.[2] You would need to go back to Q4 1999 to find a better quarter for momentum returns.[3]

It appears that the rapid consensus-building that regularly occurs on social media platforms has permeated the stock market. This FOMO phenomenon is quite real, and when you are participating in one of the most crowded trades in history, togetherness can create complacency or a false sense of security.

Forward-Curve Implied Number of Rate Cuts

Estimates number of Fed Funds Rate Cuts by Dec 2024
Daily Data from 12/31/2023 through 4/15/2024



Sources: Bloomberg

1 Sources: Bloomberg. Number of calendar quarters where Russell 1000 Growth outperformed Russell 1000 Value.

2 Sources: Morgan Stanley U.S. Momentum Long Portfolio (MSQQUMOL Index) vis Bloomberg.

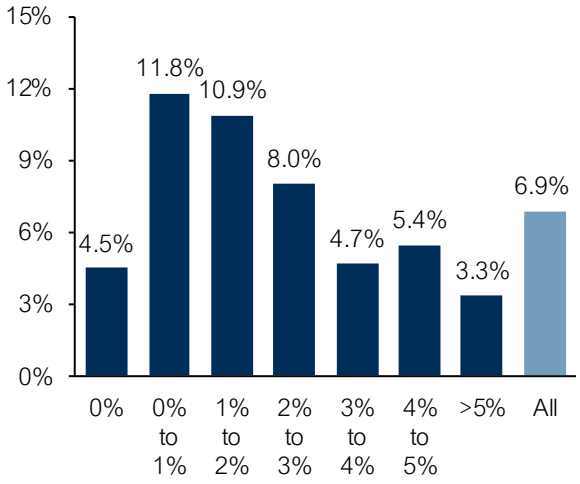
3 Sources: Morgan Stanley U.S. Momentum Long Portfolio (MSQQUMOL Index) vis Bloomberg. Excluding "YOLO days of 2020 pandemic" which is calendar Q1 and Q2 2020.

This phenomenon is being reinforced by passive flows, which simply compound prior market cap creation, as investors move in unison without any real conviction regarding why.

To date, this behavior has largely been enjoyed in a consequence-free investing environment. However, it has created a binary situation where one market segment is pricing in higher interest rates, and another is not.

One segment lives in a liquidity-induced augmented reality, while the other lives with the reality of higher real rates and their impact on valuation, capital allocation and competing "risk-free" returns. We can see this quite clearly when we look at the de-coupling of the correlation between the 10-Year Treasury yield and the earnings yield for both Value and Growth stocks, or simply examining where performance has been concentrated while rate cut expectations have been eliminated. It would seem the market sees the most issue in defensive higher yielding sectors, the very part of the equity market with the lowest duration, and in theory the lowest exposure to higher discount rates.

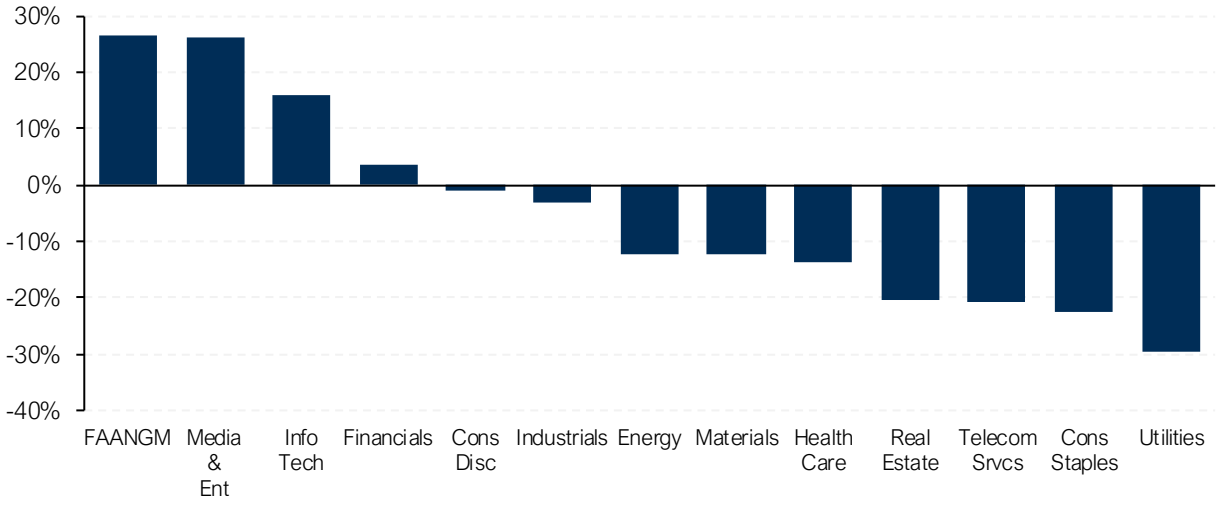
YTD Median Return of Russell 1000 Constituents by Starting Dividend Yield



Sources: Bloomberg, Callodine Capital Research Team
Methodology: Median Total Returns from 12/31/2023 through 3/31/2024 by implied dividend yield on 12/31/2023. Constituents in Russell 1000 as of 12/31/2023

12 Month Large Cap Sector Relative Performance

Select S&P 500 Sector and Industry Group, and FAANGM Performance Relative to the S&P 500
12/31/2023 through 12/31/2024



Sources: Bloomberg
Methodology: FAANGM is the cap weighted returns of META, AAPL, AMZN, NVDA, GOOGL, and MSFT. Industry Groups Media & Entertainment and Telecom. Services make up the Communication Services Sector

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An amazing aspect of this A.I.-driven rally has been the star performer of the show, NVIDIA Corporation (NVDA), and the truly impressive explosion in its earnings that has justifiably driven the stock higher.

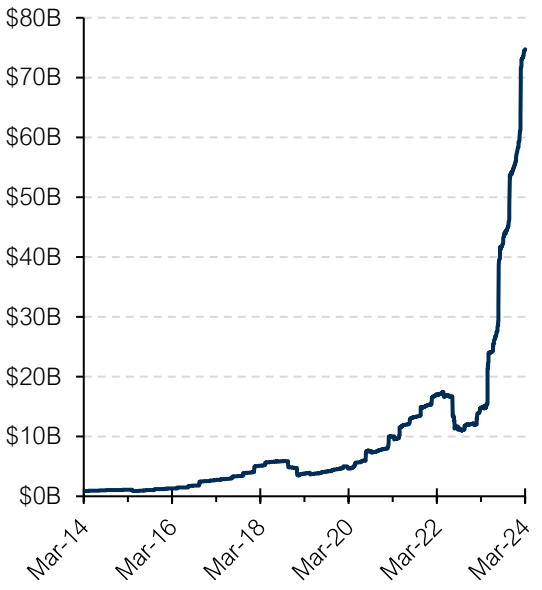
CEO Jensen Huang recently announced that NVIDIA's next-gen A.I. chip, Blackwell, will cost between $30,000 and $40,000 each.[4] Considering that its DGX GB200 NVL72[5] server contains 72 GPUs and that you can connect eight of these servers into a single DGX Superpod, you end up with a state-of-the-art A.I. learning machine valued between $25 and $30 million.[6]

Amazon's cloud-computing division, Amazon Web Services (AWS), is planning to build a 278-rack supercomputer using these products, suggesting a price tag close to $1 billion just for the server racks.[7] This figure ignores plenty of other costs, namely the power and cooling requirements (more on these costs later). Numbers like these might make CIOs and CFOs start sweating, but if you want to replace and multiply the entire brainpower of human civilization, it's not going to come cheap.

This onslaught of capital spending has already started, of course, and is quite evident in the capital expenditures ("CAPEX") of your favorite "capital-light" software company. Witness the CAPEX trends at Microsoft, the largest company in the world and known universally as a software company. It currently spends $35 billion a year (and growing) on CAPEX.[8] That's a lot, even for a behemoth like Microsoft.

NVDA Fwd EBITDA Estimates Last 10 Years

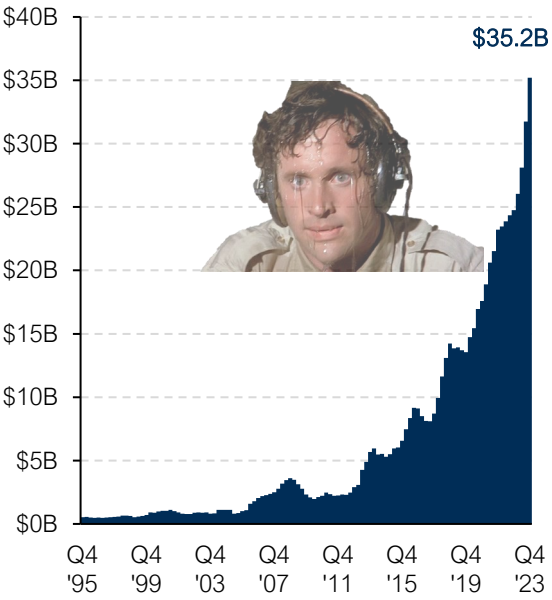
NVDA Blended 12 Month Forward EBITDA Estimate
March 31, 2014 through March 31, 2024 Daily



Sources: Bloomberg

Microsoft Trailing 12 Month CAPEX

Trailing 4 Quarter Sum of CAPEX for MSFT
Q4 1995 through Q4 2023



Sources: Bloomberg

4 Source: The Indian Express. (2024, March 24). Nvidia's Blackwell AI chip to cost between $30,000 to $40,000. The Indian Express.

5 Source: Mann, T. (2024, March 21). A closer look at Nvidia's 120kw DGX GB200 NVL72 Rack system. The Register

6 Source: Kennedy, P. (2024, March 19). This is the Nvidia DGX GB200 NVL72. Serve The Home.

7 Source: Morgan, T. P. (2024, April 1). AWS and Nvidia reboot "Ceiba" supercomputer for Blackwell GPUs. The Next Platform.

8 Source: MSFT Company Filings via Bloomberg.

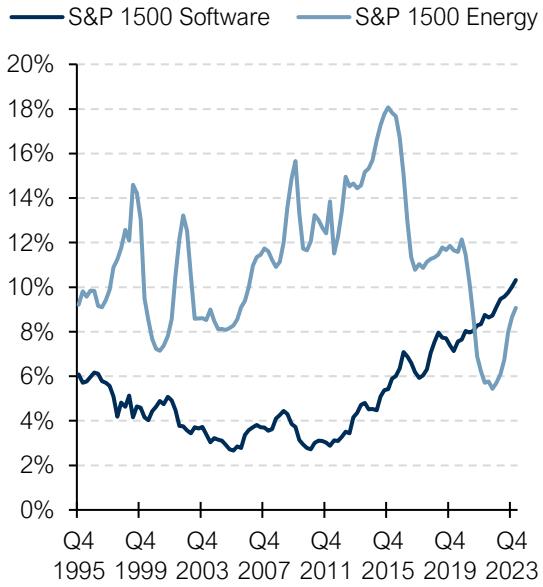
To frame it another way, it's 60% more than notorious capital spender Exxon Mobil spent during the past 12 months.[9] And while we are highlighting Microsoft (a great and fantastically profitable business), this capital intensity is true across the industry writ large. In fact, as shown in the exhibit to the right, the S&P software industry group is now more capital intensive than the energy sector.

It's clear to us that Microsoft's (MFST) capital footprint and sales per dollar of fixed investment is starting to look a lot more like Exxon's (XOM) than the care-free and capital-light Microsoft of old. Writing software to drive revenue and profit growth is a very high return-on-invested-capital way to make your money, if successful, and as a result is a very high-multiple endeavor. Driving growth by brute force capital investment, however, is a far different business model and a far lower multiple business in our mind—and one that tends to take its toll on free cash margins, which is precisely what's happening at Microsoft.

When asset turnover decelerates, you need ever more investment in the business to sustain growth. Microsoft is no longer generating revenue solely off of its intellectual property. It is now generating revenue from capital investment, which looks to us a lot like an "old economy" business model priced like a "new economy" darling. The future will tell us which is right, but we believe the valuation risks are to the downside, not upside.

Software vs Energy CAPEX to Sales

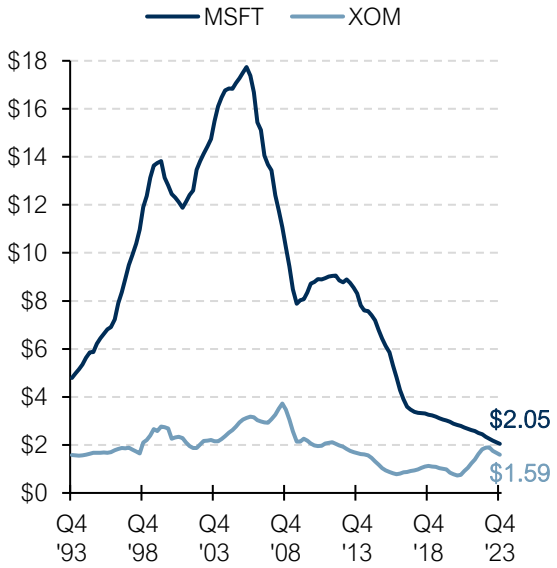
Trailing 12 Month CAPEX to Sales
Q4 1995 through Q4 2023



Sources: Bloomberg, Callodine Capital Research Team

MSFT vs XOM Capital Intensity

Sales per $ of Net Fixed Assets
Q4 1993 through Q4 2023



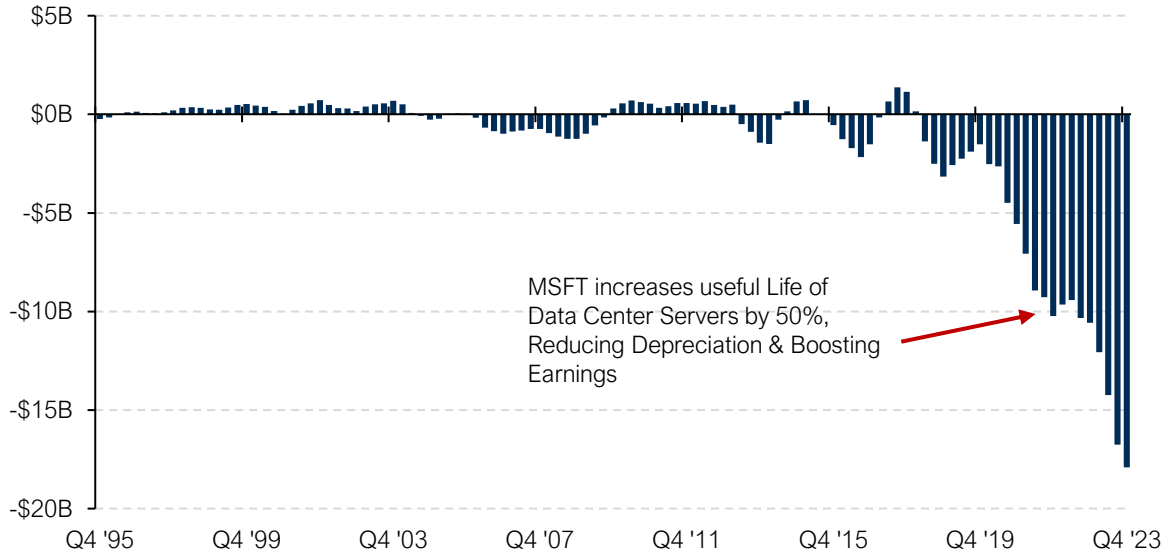
Sources: Bloomberg, Callodine Capital Research Team
Methodology: Trailing 12 Month Sales / Average of Trailing 5 Quarter Net Property, Plant, & Equipment

9 Source: XOM and MSFT company filings via Bloomberg.

Readers may think this doesn't matter, because Microsoft has been growing so quickly and making so much money that it can drive CAPEX numbers like this without concern or a clear monetization mechanism on the other side. One might ask, hasn't the earnings growth at Microsoft justified this expenditure? Well, a funny thing about an explosion of CAPEX is that it doesn't hit your P&L immediately, due to being smoothed by the depreciable life of the purchased asset. In the case of Microsoft (as well as Google, Meta, Amazon and others), the company is building a significant backlog of depreciation that will run through the future P&L.

MSFT Trailing 12M Depreciation - CAPEX

Trailing 12 Month Depreciation & Amortization - Trailing 12 Month CAPEX
Q4 1995 through Q4 2023 Quarterly



Sources: Bloomberg, Callodine Capital Research Team

The other curious thing that CFOs often do to obscure a spending explosion like this is to change assumptions, which Microsoft, Google and others have decided is warranted, now that they have entered the realm of the market's most capital-intensive businesses. That subtle change from depreciating server/networking equipment over two years to depreciating it over four years has conveniently kept tens of billions of expenses off Microsoft's P&L during the past three years.[10] By our math, without this change, earnings per share would be $8.19 instead of $11.08 over the past twelve months, suggesting the five-year growth rate has been closer to 14% than the reported 21%.[11] We hear very little about this potential trend, possibly because no one wants to highlight when the "new economy" starts to look a lot like the "old economy".

10 Source: Company Filings.

11 Source: Callodine Capital Research Team estimates.

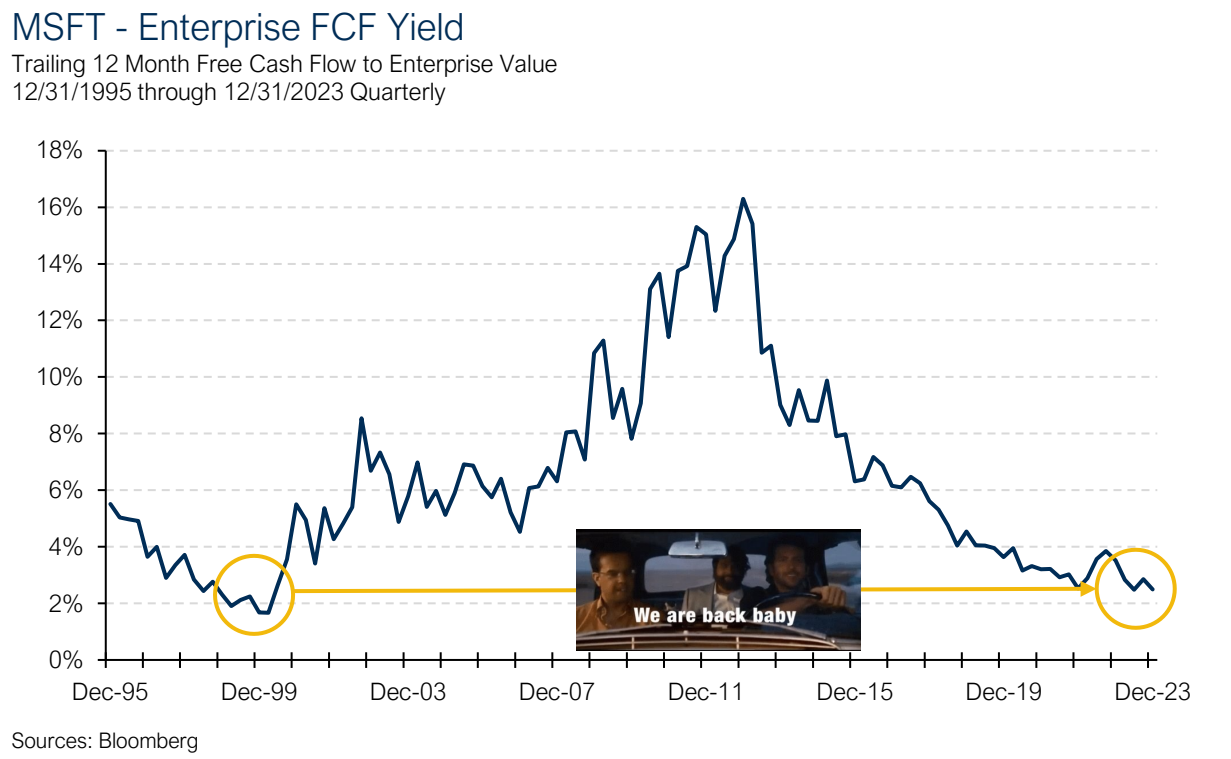
Benchmark Capital co-founder Andy Rachleff popularized the mental model of finding your "product market fit" within venture investing, where he called out two key phases of this process:

- The "value hypothesis": You test your concept, figure out what you are going to sell, determine for whom it is relevant, and then decide how you price it.
- The "growth hypothesis": After you have proven the value hypothesis, you can invest in acquiring customers.

His view was that shifting prematurely from the value hypothesis to the growth hypothesis means almost certain death (as does not having the right team/talent for the second stage). The opposite is to create products looking for problems to solve, after you've made your large investment, into A.I. and prior to fully understanding the "value hypothesis," which strikes us as a high-risk proposition. Maybe that's a reasonable bet for companies as cash rich as Microsoft, Google and Amazon to make.

But when the market ignores the costs of these investments and prices in the near certainty of success resulting from them, it's a recipe for the compounding of risk and loss of a lot of capital in the process.

Microsoft's enterprise value has nearly tripled since the end of 2019, adding nearly $2 trillion in market capitalization, while free cash flow (FCF) is up just over 50% in four years.[12] When a high FCF business transitions to a capital-intensive business, there is inherent danger in placing high certainty on the future returns of that investment and bidding up the stock accordingly.



Sources: Bloomberg

12 Source: Bloomberg, Callodine Capital Research Team.

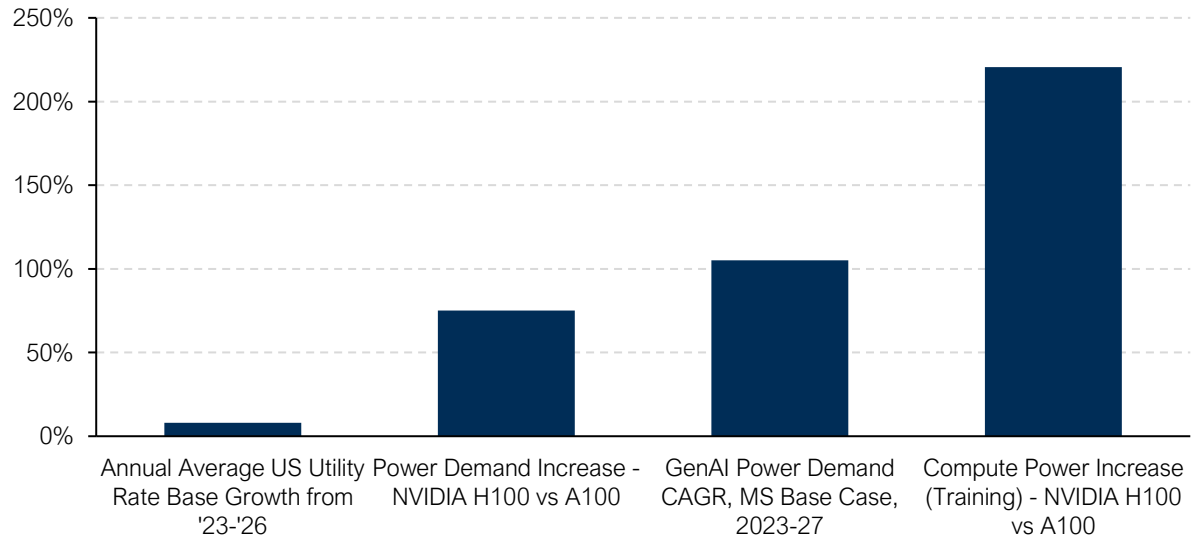
Power Play

While servers and data centers are driving up CAPEX directly for technology companies, the second-order effects are also starting to appear within the market psyche, most notably in and around the power sector. If the "A.I. craze" has many similarities to the "dot-com bubble" of the early 2000s, the coming risk to the power sector has all the parallels of the disastrous overbuild of telecom/fiber capacity of the same era, which by some estimates resulted in $750 billion of capital losses.[13]

Morgan Stanley recently put out a report on this topic that identified a few key issues that are not fully understood. The report highlights "a significant mismatch between the hyper-rapid growth in GenAI power needs…and the slow growth in power grid infrastructure."[14] In the late 1990s, the stodgy incumbents of the telecom industry (Verizon and AT&T) were viewed as moving "too slow" to keep up with the intense bandwidth needs of the internet. Today, the same complaints can be heard about the incumbent U.S. utilities and their ability to sufficiently serve power-hungry data centers. The competitive local exchange carriers of our cautionary tale may turn out to be the independent power producers (IPPs), suddenly the hottest prospects in utility-land.

Comparison of Power Demand Growth Rates

Morgan Stanley Base Case Estimates for Power Demand Growth Rates



Source: Morgan Stanley

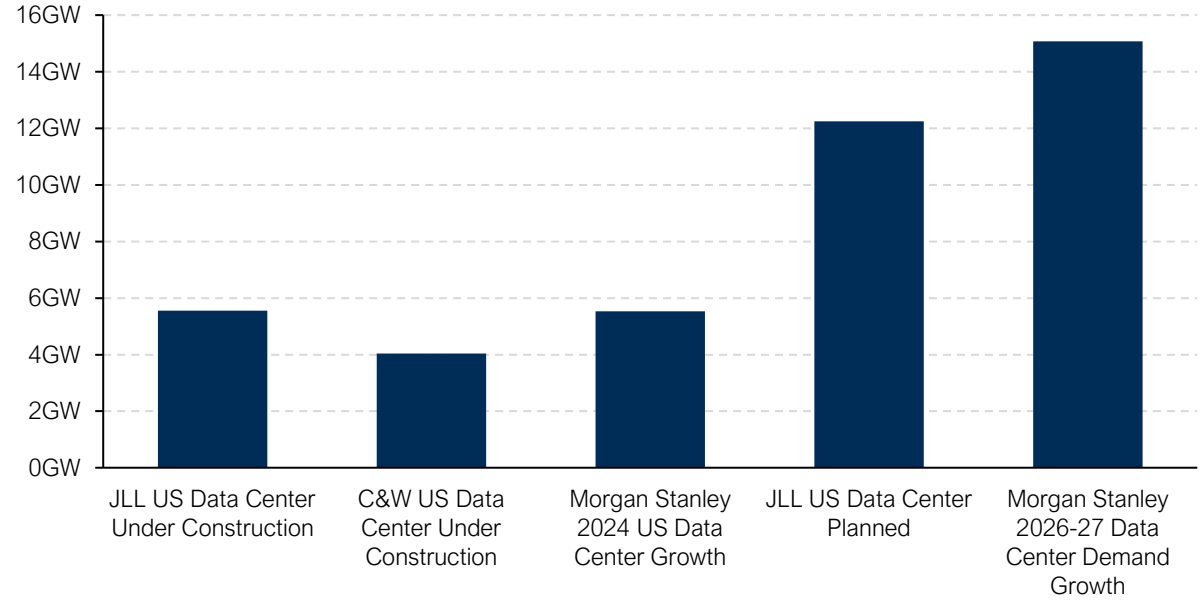
13 Source: "Broadbandits: Inside the $750 Billion Telecom Heist" by Ohm Malik, 1st edition (November 8, 2004).

14 Source: Morgan Stanley Research Report, "Powering GenAI: Answering Your Questions." April 4, 2024.

In addition to the lack of power availability, we don't believe that investors are adequately focusing on the limits of the technology. Many data centers are operating with a legacy set of equipment that does not accommodate the new technology and will take longer to replace and/or be updated and come online. Data warehouses consumed 17 gigawatts of electricity in 2022, or about 4 percent of total U.S. consumption. This figure is projected to double to 35 gigawatts by 2030.[15]

US Data Center Growth vs Data Center Power Demand Growth

Morgan Stanley Base Case Estimates for Data Center and Data Center Power Demand Growth Rates



Source: Morgan Stanley

When the digital world meets the real world, there is likely to be significant blocking and tackling required by ancillary businesses and sectors to perform and support this new technology and its associated applications. If A.I. is as big of a deal as Nvidia's multiple would imply, here is what we know so far:

1. There will be an intense need to build electrical generation and transmission capacity to fuel the demand for A.I. computing power.
2. The demand for steady, cheap baseload generation capacity is completely at odds with the current plans for new power generation, both in terms of quantity (largely insufficient) and type (mostly wind and solar).
3. Hyperscale players like Microsoft, Google and Amazon can easily pay more for power than current baseload consumers, especially households.

15 Source: Bangalore, S., Bhan, A., Miglio, A. D., Sachdeva, P., Sarma, V., Sharma, R., & Srivathsan, B. (2023, January 17). Investing in the Rising Data Center Economy. McKinsey & Company.

We think these conditions will set up a significant race to secure power, with the following screenshot from early March a case in point:

As such, we believe retail power consumers may get squeezed mightily, as well as create all kinds of policy issues for regulators that have largely spent the last decade restricting the ability to build new fossil fuel–based power sources. We expect regulators to continue to strangle the nuclear industry with excessive regulation while subsidizing wind and solar power, which do not provide baseload capacity. Get your popcorn out for this one, as "move fast and break things" Silicon Valley meets the Federal Energy Regulatory Commission.

Why Do Value Investors Care?

We live in interesting times. The aforementioned advancements in technology and the potential applications of A.I. will likely have both innumerable (and, by definition, immeasurable) implications for world economies and our society as a whole. This may come as a shocking admission to some of our readers, but we do not discount the importance of A.I. However, we do note that this is not the first time that a revolutionary technology has been introduced to the world, and, in almost every instance, both the ultimate beneficiaries and victims seemed to be immediately obvious and yet were almost always proven to be wrong.

Whether we draw a parallel to the advent of the internet, electricity, the steam engine, mechanical clocks or paper currency, there has always been a "new, new thing." The number of businesses that were ultimately able to capitalize on each of these paradigm-shifting inventions are impossible to count and, in many instances, were seemingly so far removed from the base technology that no one would have thought to identify them as a direct "winner" at the outset. On the flip side, individuals and businesses that appeared to be in prime position to reap the rewards of these technologies either fumbled the opportunity or were sideswiped by unforeseen consequences.

Sure, the railroads made Cornelius Vanderbilt and Jay Gould legends of American commerce, but the owners of the railroads didn't all come out on top. In fact, the Panic of 1893 was the result of railroad overbuilding (the issue is ALWAYS supply) and shaky railroad financing, which set off a series of bank failures. One-quarter of U.S. railroads had failed by mid-1894, representing more than 40,000 miles of track.[16] On the other hand, few people probably identified Sears Roebuck as one of the greatest beneficiaries of the U.S. railroad system. Nevertheless, railroads made their mail-order catalog easy to deliver, and its business flourished, effectively making it the Amazon of the railroad era.

Fast-forwarding to the internet era, nearly every brick-and-mortar retailer was expected to become obsolete. However, it turned out that companies with complex inventory systems, like Home Depot, were able to simplify their business models and extract tremendous value through cost and working capital management. E-commerce was how people initially interacted with the internet in the 1990s, but it wasn't the only application of the internet.

We believe people are right to be excited about today's advancements, but we also believe that A.I. is unlikely to benefit semiconductor manufacturers and technology companies exclusively. Beneficiaries of A.I. might be firms that have to employ a high number of mid-level employees whose skills can be replaced with technology to the benefit of profit margins. How many different iterations of a fast-food order can there be? And yet I doubt you'll see Chipotle in any "A.I." baskets.

The internet was a massive productivity tool. A.I. might be a similar phenomenon that crushes real wages and has myriad flow-through effects on operating margins and profitability across all industries and geographies. However, we would argue quite vehemently that the broader ramifications of A.I. are not being priced into the market. This narrow view creates disparity in multiples and the opportunity for alpha generation.

History doesn't repeat itself, but it does tend to rhyme, and we think there are a host of lessons that can be learned about the broadening of the market and the diversity of secular winners that have benefited from transformational shifts in technology.

16 Source: History of rail transportation in the United States - Wikipedia

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