



*the* **CAPITAL LIST**

## ***Capital InFocus***

**NVIDIA: Expensive but Worth It**

*By Don Yocham, CFA*

# NVIDIA *InFocus*

NVIDIA Corporation, launched in 1993, focused on gaming.

In 1999, it revolutionized the industry with its GeForce 256 graphics processing unit, the world's first GPU.

The GPU offloaded complex graphics computations from the CPU, significantly enhancing gaming performance.

Gaming remained the central focus, but in 2006, NVIDIA recognized the potential of its GPU technology in other areas.

This awareness led to the development of CUDA (Compute Unified Device Architecture), a parallel computing platform and programming model that retooled their GPUs for general-purpose computing tasks. CUDA opened up new markets for NVIDIA in scientific research, artificial intelligence (AI), and data centers.

This ability to repurpose their chips, plus a process that brings chips from the “design stage” to “on the market” **twice to four times as fast as the competition** sets NVIDIA apart.

The rise of crypto-mining, AI, and machine learning in the 2010s was a game-changer for NVIDIA. The company's GPUs were well-suited for the parallel processing required for AI computations, making them the hardware of choice for researchers and companies developing AI applications.

NVIDIA capitalized on this trend by investing heavily in AI research and development, acquiring key companies, and forming strategic partnerships. Its GPUs became integral to AI frameworks such as TensorFlow and PyTorch, further cementing its dominance in this sector.

Finally, there's the ecosystem that has emerged around NVIDIA's dominance.

The company's software stack optimizes the performance of its hardware, and developers find it easy to adopt NVIDIA's technology and ensure seamless integration with various applications and platforms.

NVIDIA built its dominant position over three decades.

**And once ChatGPT got unleashed on the world, NVIDIA was positioned to capitalize.**

# King of the Hill

Over the last 18 months, the semiconductor industry has been turned on its head.

The catalyst was OpenAI's release of ChatGPT. But were it not for NVIDIA's ability to capitalize on that catalyst, the incumbent leaders would not have ceded so much ground in terms of market share to NVIDIA.

March of 2023 marked the *AI Inflection*

That was the first full quarter for companies to report following ChatGPT's release. And that's when Nvidia's rise to the top began – and so did its stock price.

Its stock price rose 346% through June and made NVIDIA Corp the largest company by market capitalization, overtaking **Microsoft (NASDAQ: MSFT)** and **Apple Inc. (NASDAQ: AAPL)** as the most valuable company in the world.

It has since pulled back dramatically. The big question for investors is whether the stock is worth the \$100 per share stock price.

In this *Capital InFocus* report, I'll walk through financial metrics to highlight what you're paying for and why. Though the stock is still expensive at these levels, it's worth the price



Source: ThinkOrSwim





## The Semiconductor Competitive Landscape

There are 829 publicly traded semiconductor stocks with a combined annual revenue of \$4.1 trillion.

NVIDIA topped them all last quarter, reporting \$79.8 billion in revenue edging out the next largest company, Taiwan Semiconductor with \$72.4 billion.

This analysis focuses on the top 4 companies:

- **NVIDIA Corp. (NYSE: NVDA)**
- **Taiwan Semiconductor (NYSE: TSM)**
- **Broadcom Inc. (NASDAQ: QCOM)**
- **Intel Corp (NASDAQ: INTC)**

Let's begin...

# Nvidia's Rise to Dominance

The charts on the right show the market share among the top 12 semiconductor companies by revenue. Three years ago, Intel led the group with a 30% market share while NVIDIA ranked 5<sup>th</sup>, behind Micron.

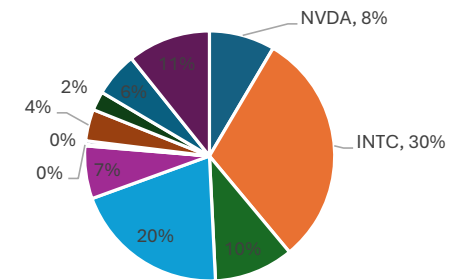
It now dominates the sector with a 24% share.

Nvidia began its rise with the release of ChatGPT - the AI Inflection - with Intel losing the most ground.

The chart below shows the sales growth of the top four companies in the sector - NVIDIA, Intel, Broadcom, and Taiwan Semiconductor.

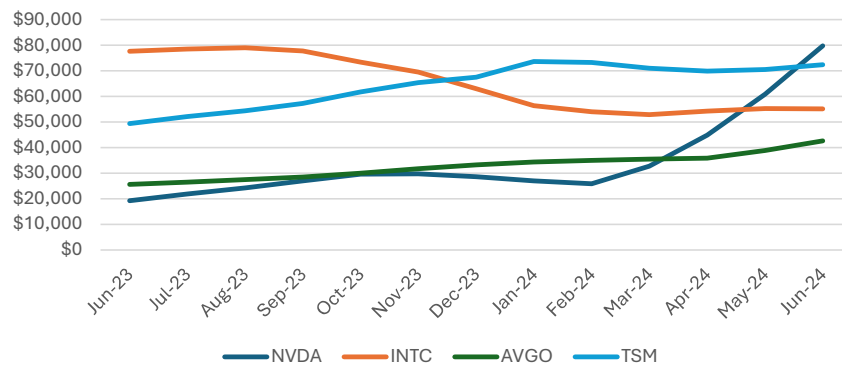
Since that inflection, NVIDIA sales have surged over 200%.

Market Share (3 yrs ago)

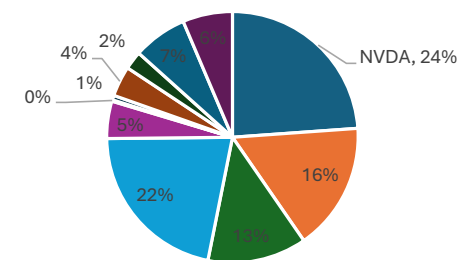


■ NVDA ■ INTC ■ AVGO ■ TSM ■ TXN ■ OLED ■ MPWR ■ NXPI ■ ON ■ AMD ■ MU

Sales



Market Share (Current)



■ NVDA ■ INTC ■ AVGO ■ TSM ■ TXN ■ OLED ■ MPWR ■ NXPI ■ ON ■ AMD ■ MU

Source: ISS Investor Express, The Capital List

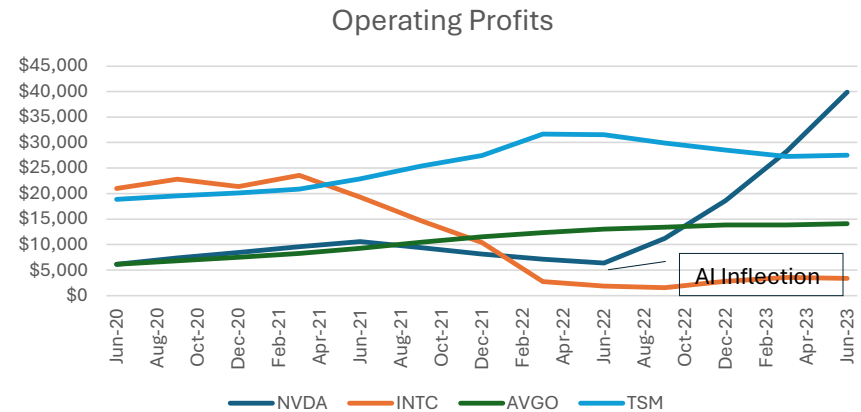
# Higher Profits, Less Investment

Operating profits for Nvidia soared post-inflection by 524% (from \$6.4bn to just shy of \$40bn) – as measured by net operating profits after tax, or NOPAT.

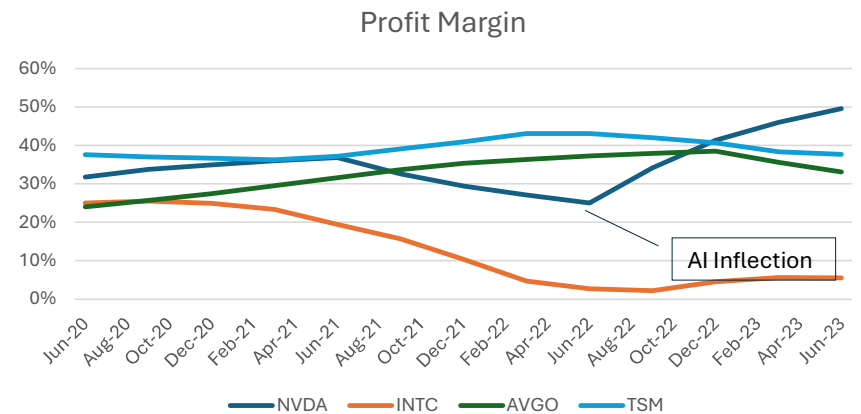
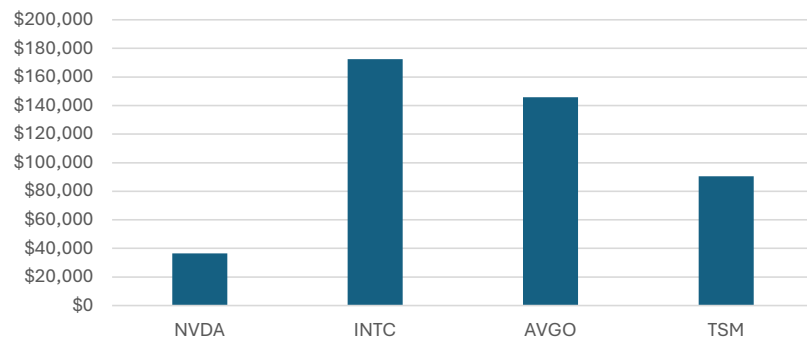
Its competitors have basically flatlined.

NVIDIA's profit margins also expanded dramatically. The company focuses on process and design while outsourcing the cost of manufacturing. This pushes costs (and capital expenditures) onto their manufacturers for what is otherwise a commodity business.

You can see the difference in the respective capital bases below. NVIDIA is a low-capital-intensity business. And that low capital base combined with high profitability drives value-added profitability for shareholders.



**Capital**  
(Most Recent Quarter)



Source: ISS Investor Express, The Capital List

# Value-Added Momentum

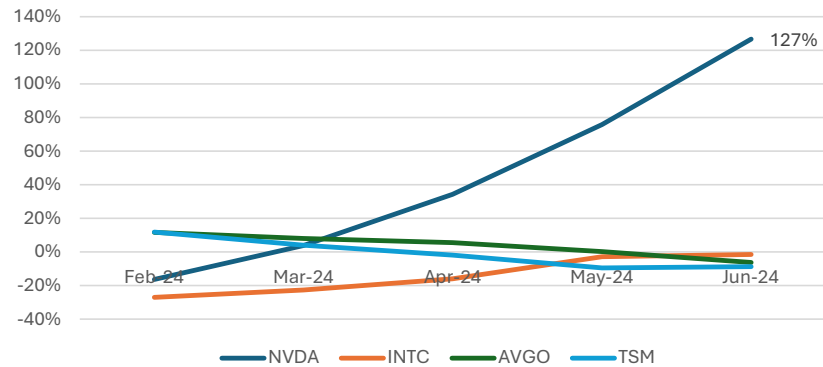
To add value and get a rising stock price over time, profits must exceed the cost of maintaining a company's capital base. Capital costs apply to all companies, depending mostly on debt service costs and the riskiness of the company's stock.

NVIDIA's low capital base and rapidly expanding profit margins have allowed it to add more value each quarter consistently.

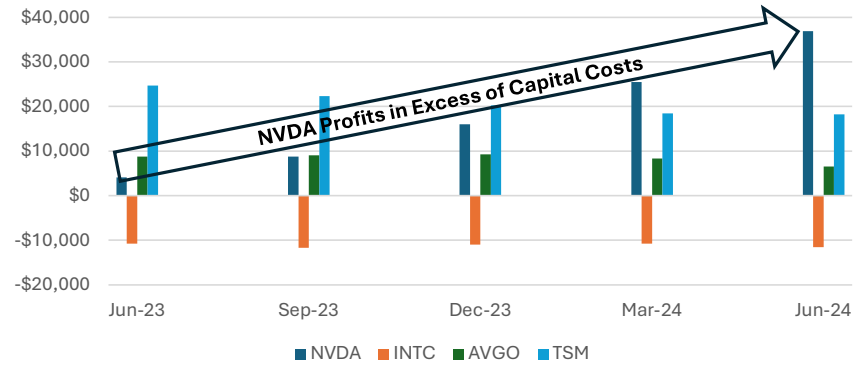
As a percent of sales, its value-added profit has shot up from 16% to 46% while the others have languished or declined. INTC has been consistently negative over the last five quarters.

And the momentum behind that profit growth – at 127% - continues to accelerate.

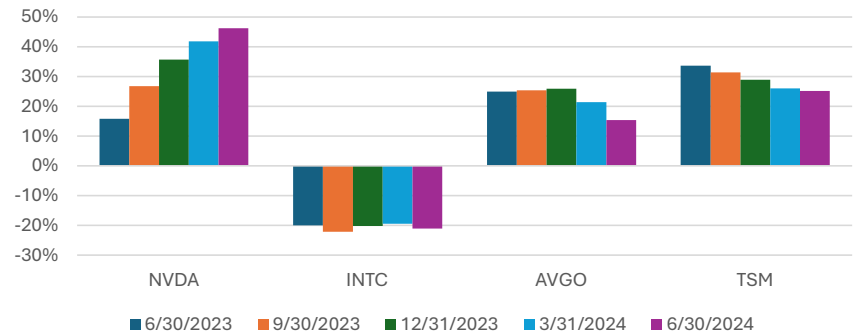
Momentum - Value Add Profits



Value Add Profits



Value Add Profits (as a % of sales)



Source: ISS Investor Express, The Capital List

It's also important to gauge the quality of a company's value-added cashflows.

Cash flows are low quality when they are volatile, depend on leverage, or don't cover the capital needed to generate them.

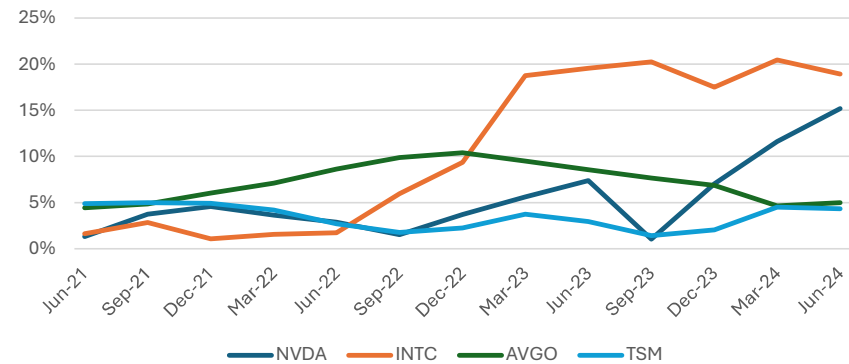
In terms of volatility, NVIDIA's value-added cash flows rank second among the top 4 semiconductor players. However, that volatility is driven by large profitability gains. In other words, it is driven by the upside. Broadcom and Taiwan Semiconductor have lower volatility because of stagnant growth. Intel has low downside volatility.

You can also gauge quality by how much free cash flow exceeds the capital base. Again, NVIDIA dominates its competition, effectively covering 100% of its capital in the most recent quarter.

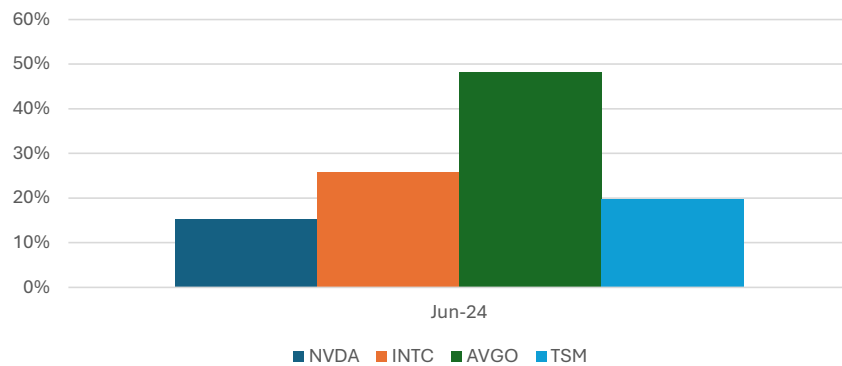
Finally, for a more traditional measure, NVIDIA has the lowest Debt-to-Capital Ratio, meaning it relies less on debt for funding its business.

# High Quality Profits

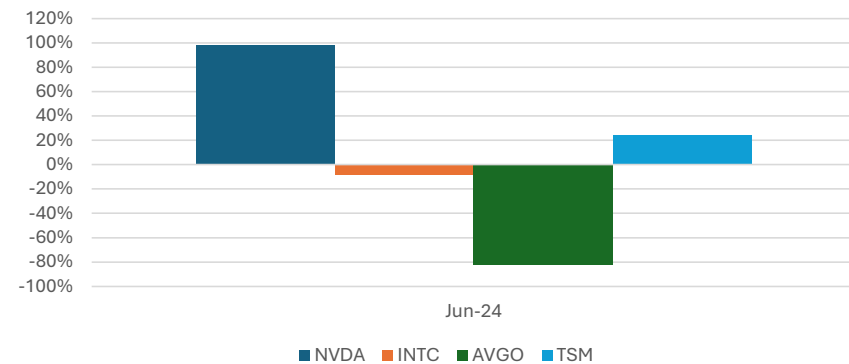
Value Add Volatility



Debt to Capital



Free Cash Flow Spread to Capital



Source: ISS Investor Express, The Capital List



The total market value of a company can be broken down into three components: 1) Capital, 2) Current Value-Added Profits, and 3) Value-Added Profit Growth.

Value-Added Profit Growth is the premium for future profits priced into the stock (in green). It's growth that already price into the stock.

A high proportion of NVIDIA's market value depends on future growth, but that doesn't necessarily make it expensive.

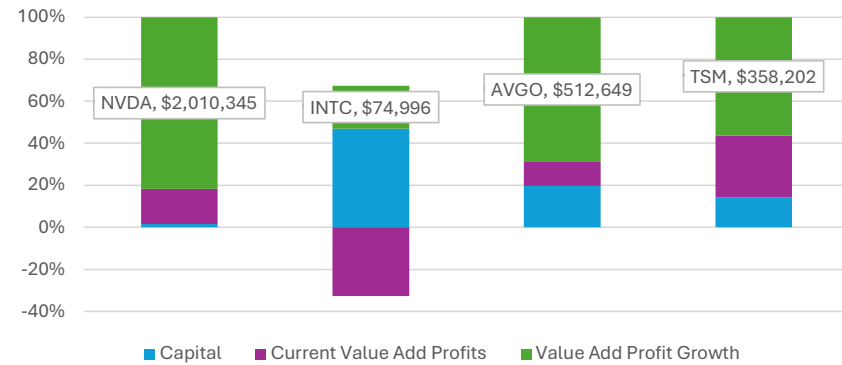
Those premiums can be translated into required profit growth. NVIDIA requires the highest growth rate to justify those premiums, at 82%. It is also the only company in the top four with positive profit momentum (see Value Add Profits page).

It doesn't have to deliver 82% more profits tomorrow. Market Value Reliance on Growth looks out over a few years. It's not hard to imagine NVIDIA's value-added profit growing at 82% for the next few years.

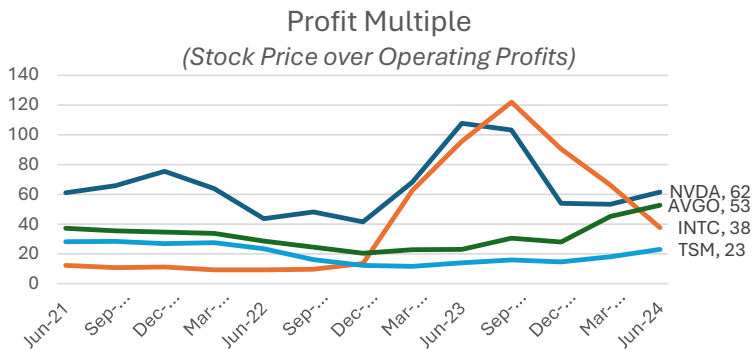
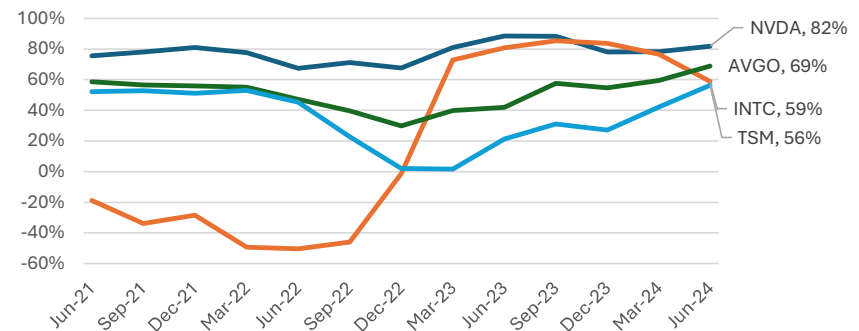
NVIDIA's stock also fetches the highest multiple of operating profits. But its current multiple of 62 is not extreme relative to its history.

# Paying for Growth

Market Value Components (Equity and Debt)



Market Value Reliance on Growth



Source: ISS Investor Express, The Capital List

# What To Do With NVIDIA

NVIDIA has found itself at the top of the semiconductor heap. It now dominates sales and its long history of rapid innovation -- it's 2 to 4 times as fast as the competition -- will help it maintain dominance for some time.

Investors currently buying NVIDIA at its current \$107 share price are paying for the company's spectacular profitability momentum.

But they aren't overpaying.

Given NVIDIA's market share dominance, operating efficiency, low capital requirements -- and being at the center of the AI revolution -- growing profits by 82% over the next few years seems reasonable.

And an operating profit multiple of 62 isn't a historically extreme multiple for this stock.

The stock could easily hit **\$140 per share** by the end of the year (a 40% rally from its current \$100 price). But given its strong profit momentum, I expect to revise that upside significantly with the release of next quarter's financials (scheduled for August 28, 2024).

And remember, with NVIDIA, you're buying the early stages of mass adoption of AI.

But there will be competition -- particularly from Broadcom.

Broadcom is the leading player in high-end AI ASIC chips.

ASIC stands for **application-specific integrated circuits**. Optimized for a single purpose, ASIC chips displaced GPUs in crypto-mining several years ago.

ASIC chips handle specific computations far more efficiently than multi-purpose chips.

I call them **Bare Metal Code**. You can expect an InFocus report from me on **Broadcom** shortly.

Think Free, Be Free

Don Yocham, CFA

