

Market Musings 10/26

For Professional Investors only

AI is changing the world

That doesn't mean everyone will make money

AI adoption is already occurring at a speed rarely seen in economic history. For equity investors, the question is no longer whether AI will transform the economy. The question is who will ultimately capture the economic value and make attractive returns. The spoiler alert is this: while the AI revolution is real, the economics are considerably less straightforward than current market enthusiasm and valuations suggest.

History's pattern when innovation outruns economics

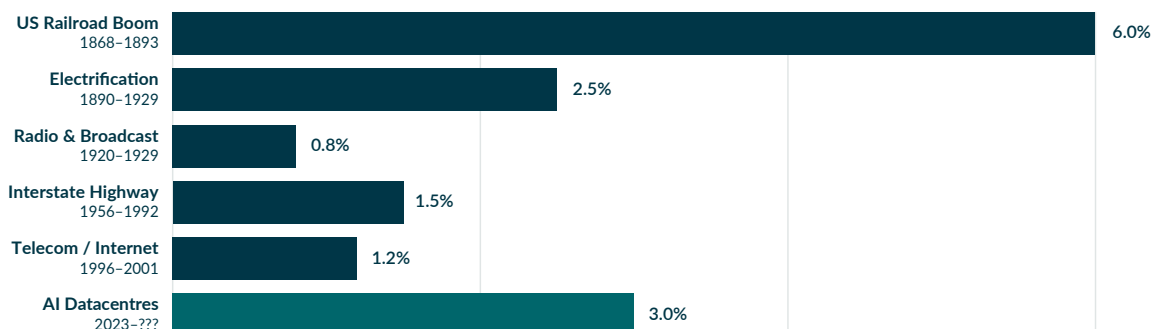
Railways, electrification, the internet: all transformed economies. Yet each suffered through periods of overcapacity, falling prices and disappointing returns. In fact, most major infrastructure buildouts have been followed by a bust.¹

History shows that technology adoption and shareholder returns are not the same thing: many early investors in transformative infrastructure earned far less than expected. The lesson here is that breakthrough technologies and attractive shareholder returns do not always arrive at the same time, nor necessarily in the same industry.

AI may follow a similar pattern. As we will show, it is turning parts of the technology sector into a far more capital-intensive business than investors have become accustomed to. It is even on track to become one of the largest investment programmes in modern history, as illustrated in chart 1 below.² What does this mean for investors?

Chart 1: The AI infrastructure buildout in perspective

Peak investment as % of GDP



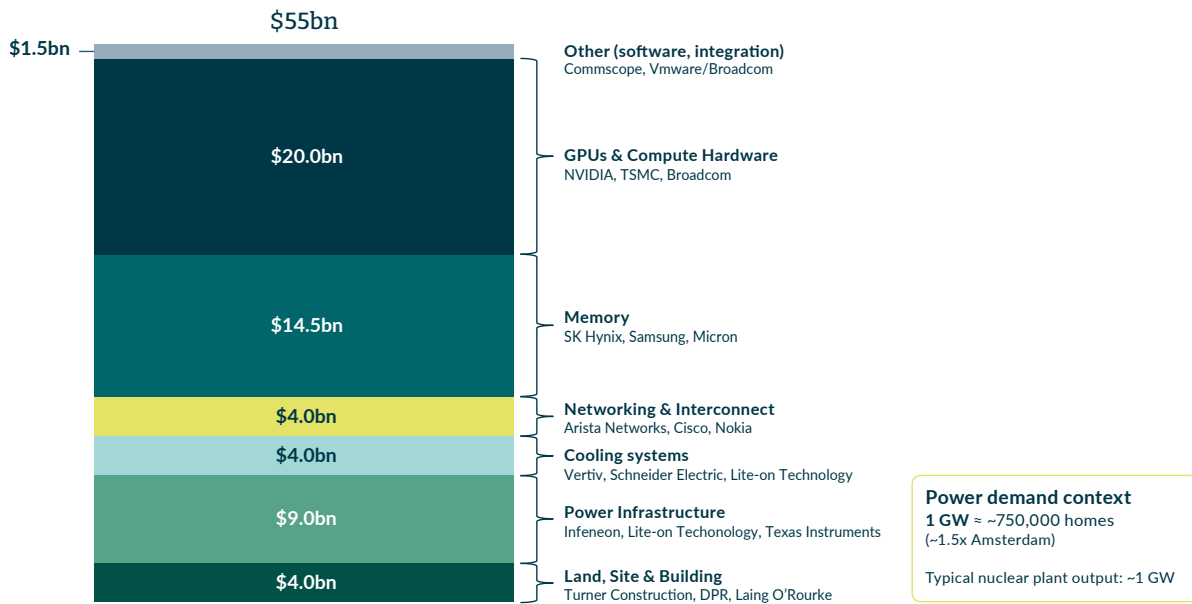
¹Carlota Perez, Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages

²Apollo, Chief Economist, FactSet, Bloomberg (August 2026); Paul Kedrosky, June 2025; Paul Kedrovsky, July 2026. Pre-1990 GDP % figures are indicative estimates drawn from multiple sources and economic-history literature.

AI's huge capital requirements: the costs of scale and depreciation

AI may appear to be a software story, but the investment needed shows otherwise. Building AI requires infrastructure and computing equipment investments on a historic scale. The industry is moving towards data centres of around 1 GW scale, and our research suggests that construction costs of one such centre amount to roughly USD 55 billion of investment.³

Chart 2: The costs of building a 1GW datacentre



Source: Van Lanschot Kempen 2026, estimates based on industry reports (Uptime Institute, JLL, TD Cowen, JPM). Figures are indicative for a greenfield 1 GW campus, mid-2026.

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Importantly, close to two-thirds of the required investment is tied to semiconductors and computing equipment: computer hardware and processing units that have relatively short economic lives and depreciate relatively quickly. Unlike the buildings that house them, these assets can become obsolete within a couple of years. For investors, this means that before earning attractive returns, AI investments first must overcome a massive depreciation bill, followed by an equally substantial replacement bill.

These costs become even more striking when viewed at industry level. Although estimates are still uncertain, the industry is presently discussing creating around 100 gigawatts of AI data centre capacity by the end of the decade. With a 1 GW data centre costing approximately USD 55 billion (as the calculation above shows), the potential investments for 100 GW could amount to the hard-to-grasp figure of USD 5 to 6 trillion.

Does it add up?

How would this math work in financial practice? In other words, how much revenue would investments of this scale need to generate to be profitable for investors? A 1 GW data centre costing around USD 55 billion would need approximately USD 15 billion in annual revenue to cover its operating expenses and provide its owner with an 8% return, on our calculations. The largest expense however, about USD 7.4 billion of the total of USD 15 billion, is depreciation: current estimates are that much of the IT equipment would need to be replaced after only six years, with depreciation therefore accounting for almost half of the required revenue.

And that is even before considering the AI labs using the infrastructure to sell access to their models. Training models, employing researchers and earning a return on the lab's own investment is expensive and could raise the total annual revenue requirement for each 1 GW data centre to between USD 19 billion and USD 25 billion. When again applied to a potential 100 GW buildout, this means annual AI-related spending of around USD 1.9 trillion to USD 2.5 trillion. This, for instance, compares to the total market size of enterprise software of roughly USD1.4 trillion.

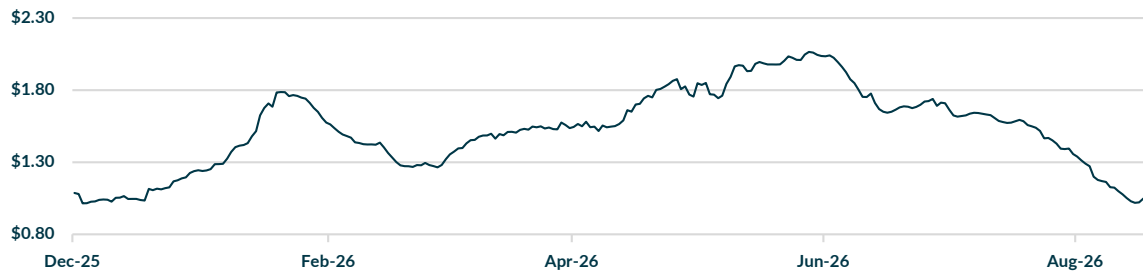
³Capex of USD 50- USD 60bn/GW is NVIDIA management guidance (FQ2 2026). Same range has been given by UBS (investor call).

Adoption is booming, but prices are falling

These calculations become even more challenging when set against the industry's pricing dynamics. AI adoption is progressing extraordinarily quickly, but the economics appear to be moving in the opposite direction. Model-training costs continue to rise, while competition, such as cheaper open-source models, and technological improvements are pushing down the price charged for AI usage.

Chart 3: The Price paid for AI is volatile

Silicon Data LLM Token price index (\$ per million tokens)



Source: Gartner (2026), UNESCO GEM Report (2022), company filings, Kempen estimates. Bars are not additive: infrastructure revenue is funded out of AI lab revenue, which is in turn funded out of one of these spending pools.

AI labs typically charge per million tokens, with a token representing a small unit of AI consumption, rather like the meter running during a taxi journey. Recent sharp falls in average token prices are good news for users and may accelerate adoption even more. For AI labs and the investors financing the infrastructure behind them, however, they create considerable uncertainty. If leading models become increasingly similar, competition may place further pressure on prices and margins.

None of this means the investment cannot work. AI may replace existing technology spending, improve productivity and create entirely new sources of revenue. But it highlights the central tension: demand is strong, while pricing power remains uncertain. Rapid adoption alone may therefore not be enough to deliver economic value.

Who benefits?

What does this mean for investors? Broadly speaking, the AI ecosystem can be divided into three areas:



The first consists of the 'picks and shovels' of the AI ecosystem: semiconductor manufacturers and suppliers of networking, power and manufacturing equipment needed for the infrastructure buildout. These businesses are currently benefiting from rapidly growing demand and earnings.



The second area comprises data-centre operators and AI labs. Here, the outlook appears less straightforward. AI labs are not yet publicly listed, while listed pure-play data-centre operators tend to be highly leveraged. As the calculations above illustrate, quite some uncertainty remains over the revenues they will ultimately generate and the returns they can earn on their substantial investments.



The third group consists of companies applying AI within their existing businesses. In theory, this could eventually include almost every industry. The clearest benefits so far, however, can be seen among banks and payment companies, which are using AI to improve productivity, strengthen fraud detection, streamline customer service and make their operations more efficient. Crucially, these companies can capture the benefits of AI without having to finance the underlying infrastructure themselves.

For now, this points towards the greatest opportunities being found among the suppliers enabling the AI buildout and established businesses capable of deploying the technology productively. By contrast, caution appears warranted regarding data-centre operators and AI labs, whose economics remain uncertain.

There may also be opportunities among companies that markets have already labelled as AI casualties. Disruption fears can quickly become exaggerated, while strong competitive positions, proprietary data, trusted brands and high switching costs do not simply disappear in an AI-enabled economy. Some businesses currently perceived as vulnerable may prove more resilient than expected or successfully incorporate AI into their own operations. As investor perceptions adjust, some of today's supposed losers could therefore become tomorrow's beneficiaries.

Follow the value

AI is transforming the economy, but both history and mathematics show that not all the companies financing the huge buildout necessary for the AI revolution will make profit. Massive investment requirements, short technology cycles and falling prices make the economics far from certain. Investors should therefore look beyond the pace of adoption and follow the value: towards the suppliers benefiting from demand today and the established businesses using AI to improve productivity and strengthen their operations. Ultimately, the winners may be defined less by who builds the technology than by who can turn it into sustainable earnings.

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In our earlier publication, [The Trillion-Dollar Machine](#), we explored AI as a credit story. Here, we ask a different question: not how the investment cycle affects balance sheets and funding needs, but who is most likely to profit from it.

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