

THE AGE OF ARTIFICIAL INTELLIGENCE

NOVEMBER 2024

KEY INSIGHTS

1. AI is Now More Accurate than Humans in Certain Cognitive Tasks
2. Over the Next Few Years, AI Will Surpass Humans in Ever More Areas
3. AI is Set to Boost Productivity and Growth, Though the Timing is Still Uncertain
4. Labour Market Disruptions Will Be Uneven by Sector
5. Rolling Out AI Will Require Vast Amounts of Capital Investment
6. AI's Investment Cycle Will Happen in Phases, Led by Infrastructure
7. Long-Term Investors Such As IMCO Can Futureproof Portfolios via Core AI Infrastructure
8. Key Sectors To Consider: Semiconductors, Data Centers, Cloud Service Providers, and Network Infrastructure
9. Healthcare & Software Look Poised for Disruption at the Industry Level
10. AI Poses Ethical, Operational, Regulatory, and Security Risks

IMCO has undertaken extensive research into the complex opportunities and risks that the artificial intelligence (AI) revolution brings. This high-level summary is adapted from the full, in-depth analysis IMCO produced for its clients, and outlines IMCO's efforts to navigate AI technology, its potential macroeconomic and societal impacts, and an approach to positioning portfolios for this generationally disruptive technology.

AI has evolved from early algorithms to complex systems like deep learning neural networks and is now integrated into our everyday lives. **Generative AI (Gen AI), a subset of AI that generates data and creative content, is pushing the boundaries of AI's capabilities in natural language generation, computer vision, and other fields.**

Recent advancements have seen AI surpass human performance in certain cognitive tasks, indicating a significant shift in AI's potential to influence society and the economy. **More is on the way.** We are just in the beginning stages of how AI applications will impact all our daily lives.

Despite its significant computational advances over the past decade, the boost to productivity has not yet been reflected in the macroeconomic data. Our view is that **a labour-market disruption from AI is coming and may already be taking place.** AI-driven automation will be uneven across industries but particularly pronounced in those reliant on repetitive language-dependant tasks such as software coding and clerical legal work.

AI has triggered a significant capital investment boom.

AI's computational power requirements are growing exponentially, necessitating a sizable investment push in core infrastructure and hardware to support its advanced capabilities. Estimates suggest that global AI investment could reach US\$200 billion by 2025, with the US accounting for roughly half.

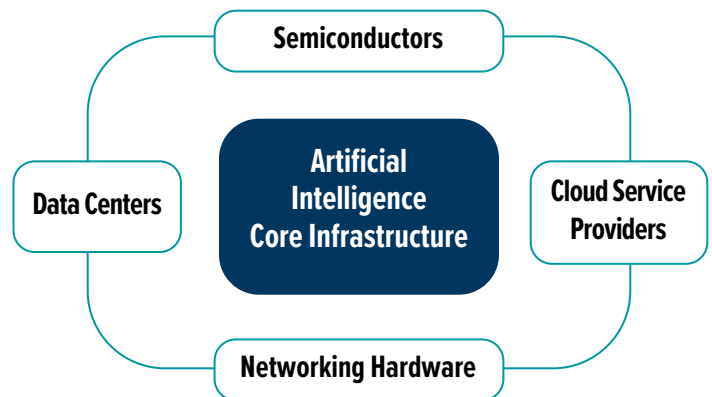
The needed investments for the AI rollout will come in stages.

These investments can be broken down into four major components: model developers, infrastructure providers, software providers, and end-users.

IMCO has taken steps to "futureproof" portfolios in the face of a rapidly evolving – and highly uncertain – AI-influenced world. At a high level, this can include diversifying across the core infrastructure AI supply chain, rather than focusing on a specific component or segment (**Exhibit i**). Investing in the complex supply chain of the global semiconductor industry, the data centers that train, infer, store and distribute large language models, the necessary upgrade in networking hardware, and the cloud service ecosystem, are key segments to focus on.

Hardware investment will be frontloaded, while software investment is set to rise steadily over time as end-user adoption increases. As the technology matures, new markets such as 'training AIs' — through machine learning or neural network algorithms and using massive datasets — are set to become enormous.

EXHIBIT I. THE DIVERSIFIED CORE INFRASTRUCTURE AI SUPPLY CHAIN



By focusing on the broader core AI infrastructure, **investors could benefit without having to 'pick' early AI winners.** The difficulty of successfully picking early winners through generational technological disruption was seen in the early 1990s, when star performers in the internet's early days — such as Cisco, Dell and Sun Microsystems — failed to deliver on the growth and performance anticipated by markets at the time.

An important element in order to futureproof portfolios for the coming disruption could involve avoiding major investments in sectors and companies that may have sizable downside exposure to AI's secular disruption.

To gauge the many opportunities and risks of investing in the AI revolution, a detailed analysis of its supply chain is necessary.

- i. Cutting-edge semiconductors will play a pivotal role in developing generative AI. **As AI continues to evolve and push the boundaries of what is possible, the semiconductors it runs on must keep pace.** The supply chain of the high-tech semiconductor industry involves many layers, with each segment having its suppliers, drivers of demand, costs, margins, outlooks, competitive pressures, and so on. This complexity creates numerous opportunities in segments that will likely experience demand or supply pressures.
- ii. **The AI roll-out is expected to absorb anywhere from 30% to 100% more data center capacity globally (over a non-AI baseline level) by the end of this decade.** As use grows in the coming years, exponentially rising compute and data needs will boost the demand for the advanced designs and technologies of data centers, particularly to improve energy efficiency given the power-hungry nature of the technology. **IMCO's investment in Databank, one of the largest data centre operators in the United States, is in a great position to benefit from the structural rise of AI regardless of which of "the magnificent 7" (or yet-to-be-thought-of company) ultimately prevails.**
- iii. As data centers become less collections of computers but instead fleets run by large operating systems, **the network infrastructure also needs to evolve to handle higher data traffic and enable faster data transmission speeds.** The network infrastructure push to facilitate and optimize AI servers and AI data centers is still in its infancy and presents many great potential investment opportunities. Since IMCO's initial investment in euNetworks in 2018, a leading pan-European bandwidth provider, the company has significantly expanded its bandwidth network across Europe, enhancing the infrastructure needed to meet the growing demands of AI and high-speed data transmission.
- iv. **Cloud service providers (CSPs) are also a key component of a diversified supply chain framework.** CSPs deploy and manage data centers housing servers, storage, networking, and software applications, offering on-demand access to computing power without requiring users to invest in and maintain physical hardware. As they impact the entire supply chain, the spillover effects from hyperscaler CSPs (and all other smaller CSPs) create investment opportunities that go beyond investing in the mega-cap hyperscalers (e.g., Alphabet, Meta, Microsoft) themselves. CoreWeave, a specialized CSP for GPU-accelerated workloads at enterprise scale, provides an example. **Recognizing its potential, IMCO invested in CoreWeave in December 2023.**

Predicting how AI will disrupt industries and sectors is a formidable task. The far-ranging nature of Gen AI, which spans content creation to problem-solving, makes it challenging to pinpoint how it will unlock value at the industry level. The technology's ability to autonomously improve itself and generate novel and creative solutions for businesses introduces an unprecedented dimension of unpredictability.

AI is set to improve quickly, and many business and end-user applications have yet to be discovered let alone implemented. Though outside the scope of this report, **software and healthcare are surveyed as two industries/sectors that seem destined to experience an incredible transformation because of AI.**

The rapid development of AI necessitates adaptive regulatory frameworks to mitigate risks and ensure responsible deployment. In addition, the many known and unknown risks highlight the need to be cautious. Within asset management, portfolio optimization and risk management stand out as the areas most likely to benefit from AI. However, the many legal, regulatory, and ethical considerations associated with the technology will slow its deployment (outside of back-office process optimization use cases).

Though generative AI holds promise for positive societal transformation, its unchecked development and deployment may pose significant risks to the global economy and financial markets. Proactive measures, ethical considerations, and robust regulatory frameworks are essential to harness the benefits of AI while minimizing its potential adverse impacts in the years to come.

AI's mark on our daily lives will be felt ever more strongly in coming years as the necessary infrastructure for its rollout is deployed and applications built on top of the technology flourish throughout the global economy. Although its history will be written in the future and there are some sobering risks associated with its deployment, generative AI and all other versions of the technology, hold immense potential to unlock breakthroughs once thought to lie only in the realm of science fiction.

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