SALT INSIGHT

July 2023

Bevan Graham
Salt Economist

The economics and investor implications of Artificial Intelligence

Innovation is key to unlocking higher economic growth, improved productivity, and higher living standards. At the same time, innovation often also comes with concerns about jobs and security of incomes.

The latest technological innovation evolution is occurring in Artificial Intelligence (AI). ChatGPT is ushering in a new era of generative AI, building on the narrower but still impressive AI technologies such as Machine Learning and Natural Language Processing.

What has been more impressive is the speed of adoption of the new technology. In 2006, it took Twitter nearly two years to reach one million users; in 2010 it took Instagram two-and-a-half months; for ChatGPT, it took five days.

The new technology is bringing with it a completely new set of risks and concerns around job displacement, but also fresh opportunities for new specialised jobs, and the potential to enhance productivity by automating tasks, and optimising processes.

But while AI may help unlock productivity gains, there are also challenges related to implementation, investment, and ethical considerations which must be addressed for AI to fully deliver its productivity benefits.

By carefully managing the transition and supporting workers in acquiring new skills, societies can harness the potential of AI while minimising the negative impacts on labour markets.

Technological advancement is not new

Since time immemorial, technological advancements have had a significant and positive impact on economic growth and living standards. Technological progress drives productivity improvements by enabling more efficient production processes, increased output, and cost reductions.

This, in turn, stimulates economic growth by expanding industries, creating new job opportunities, and fostering innovation. As living standards rise, individuals benefit from increased access to goods and services, improved healthcare, enhanced communication and transportation, and higher overall quality of life.

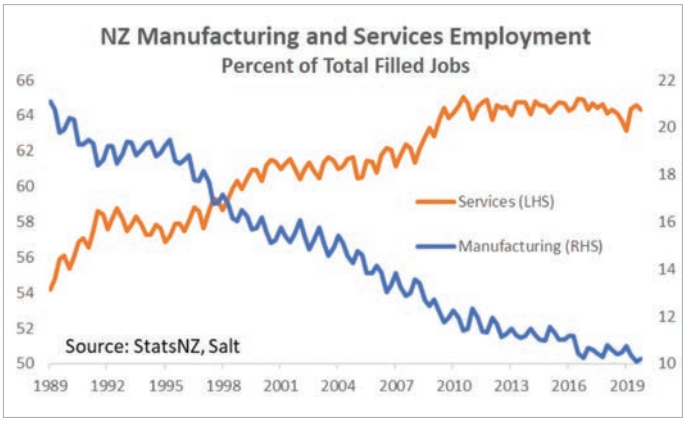
Technological advancements have played a pivotal role in shaping economies and societies. My favourite economist, Joseph Schumpeter, coined the phrase "creative destruction", which refers to the continuous process of innovation that disrupts existing systems, industries and jobs. It involves the replacement of outdated ideas, technologies, and businesses with new and more efficient ones. While it can cause short-term

upheaval, it drives progress, fosters economic growth, and fuels societal transformation, ultimately shaping a better future.

Labour markets have adapted

Despite fears of job losses, labour markets have continually adapted to improved technology throughout history. As new technologies emerge, they often lead to the displacement of certain jobs, but they also create new opportunities.

The introduction of machinery during the Industrial Revolution, for example, transformed traditional artisanal work into factory-based production. Over the last 30-plus years in New Zealand, there has been significant change in the makeup of our workforce as the proportion of people working in manufacturing has halved, while the proportion working in the service sector has grown.



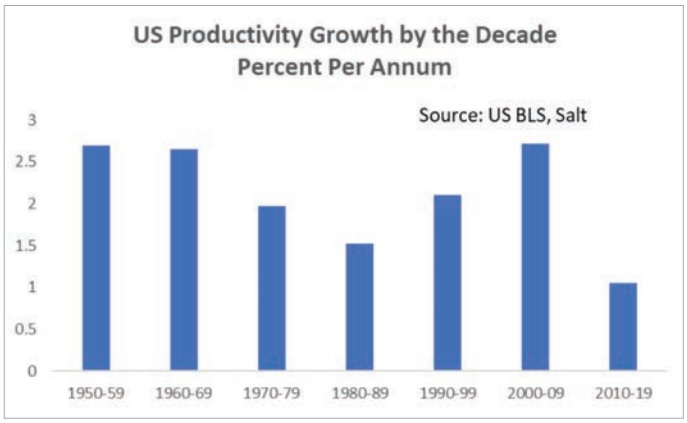
Similarly, the rise of digital technologies has resulted in the creation of entirely new job roles, such as software developers and data analysts.

Labour markets have shown resilience by evolving and adjusting to these technological changes, with workers adapting their skills and acquiring new ones to remain relevant in an increasingly digital world. Furthermore, technology has often enhanced productivity, leading to overall economic growth and the creation of more diverse employment opportunities.

We need improved productivity now more than ever

The rise of AI and its associated risks and opportunities intersects with many of our Structural Themes. For example, ageing populations plus increasingly entrenched low productivity growth have us worrying about the capacity of many economies to maintain current living standards as the proportion of their populations in work decline, while the proportion wanting to enjoy a long and healthy retirement grows.

In the United States, apart from a brief period in the 1990's leading up to the Global Financial Crisis, productivity has been in a trend decline.



Higher productivity is essential if we want to maintain, let alone improve living standards and the quality of social services.

AI has the potential to revolutionise the way businesses operate. AI-powered systems can process vast amounts of data quickly, extract insights, and make intelligent decisions. This enables organisations to streamline their operations, optimise processes, and make more informed strategic choices. AI algorithms can analyse customer behaviour patterns to improve marketing campaigns, or they can automate inventory management to minimise waste and optimise supply chains. By leveraging AI, companies can enhance efficiency, reduce costs, and ultimately improve productivity.

We expect AI will have a profound impact on productivity in the years ahead. As AI technologies continue to advance, they are reshaping industries, job roles, and the overall economy. That's a good thing as we face into the demographic challenges ahead.

AI and the labour market

As we note above, labour markets have been highly adaptive to technological change over time. However, we think AI will be different in the sense that it is expected to evolve quickly, and it will have wide reach, even into low skilled service roles.

AI systems have the capability to automate tasks that were previously performed by humans, leading to a reduction in the demand for certain types of jobs. Repetitive and routine tasks, such as data entry and assembly line work can now be efficiently handled by AI-powered machines. As a result, workers who were primarily engaged in these tasks may find themselves at risk of unemployment or needing to reskill for different roles.

One of the arguments explaining recent poor productivity is that it is harder to achieve productivity gains in the

service sector as opposed to manufacturing processes. But AI also has the capacity to revolutionise some service sector roles such as customer service. It's not uncommon these days to check into a hotel in cities like Tokyo, including having a door key issued, while not speaking to a single human.

However, it is important to note that while AI may eliminate certain jobs, it also creates new opportunities. AI systems require skilled professionals to develop, deploy, and maintain them. This has led to the emergence of new job roles, such as AI engineers, data scientists, and machine learning specialists.

The demand for these positions has increased significantly as organisations seek to leverage AI technologies for competitive advantage. Therefore, the overall impact on employment heavily depends on the ability of workers to adapt and acquire the necessary skills for the changing job market.

Policies required to minimise the negative labour market consequences of AI

As the greater use of AI may lead to job losses in certain sectors, implementing policies to offset these losses becomes crucial.

One key policy is to invest in education and retraining programs to equip workers with the skills needed for new job opportunities created by AI. Governments can collaborate with educational institutions and businesses to provide targeted training programs and promote lifelong learning.

Additionally, policies supporting entrepreneurship and innovation can encourage the creation of new businesses and job opportunities. Social safety nets and income support programs can also be implemented to provide temporary assistance to individuals affected by job displacement, ensuring a smoother transition in the labour market.

Broader AI challenges

There are other challenges to implementing AI:

- substantial investment will be required in infrastructure, data collection, and talent acquisition,
- companies must overcome technical and organisational hurdles to integrate AI effectively into their operations, and
- concerns about privacy, security, and ethical considerations surrounding AI usage need to be addressed.

These issues need to be addressed to ensure responsible and beneficial AI deployment, which can impact the overall productivity gains that AI promises.

Implications for Investors

Our recent Structural Themes paper argued that we are heading into a period of likely lower economic growth, higher inflation, and higher interest rates. We also expect shorter economic cycles than we have become used to in the post Global Financial Crisis period.

But while the future likely holds a more challenging environment for equities and bonds alike, it is an environment ripe for active investors. More volatility means more cycles, providing greater opportunity to add value through more frequent sector and factor rotation.

Digital transformation adds to that theme of shorter cycles. While Schumpeter obviously didn't foresee today's technological advancements, his concept of "creative destruction" is even more relevant today as that advancement picks up pace at the industry and firm level. Even today's market heavyweights such as Meta, Alibaba and Amazon won't be immune from the occasional bit of creative disruption.

In a recent note, Morgan Stanley Investment Management (MSIM), the manager of the Salt Sustainable Global Shares Fund (SSGSF), has outlined the investment opportunities and threats associated with AI. Opportunities generally centre on:

1. Process improvement and cost reduction: AI presents clear opportunities for cost reduction as existing processes get automated, particularly rules-based functions. Broadly, the generative AI revolution should help content creation in customer operations, sales and marketing, and software development by sharply reducing the quantity of human inputs. This is not to say these functions will necessarily become obsolete: the nuance and depth that comes with human input will likely still be needed in some capacity. In its current form, generative AI may be great at finding and summarising information embedded in websites – but should probably not yet be trusted with any complex legal agreements.
2. Value creation: As well as reducing costs, AI enables companies to improve the quality of their services and product offering. Companies with large proprietary datasets across an array of industries may be able to use AI to run more effective and efficient data analysis to protect their competitive advantage. In the Health Care industry, AI presents the possibility of improved capabilities in patient diagnostics and the optimisation/ automation of a number of parameters in the drug

discovery process. Meanwhile, for consumer brands, AI can enhance the customer experience through virtual offerings and personalised advertising. A recent example is the gain to Microsoft (a holding in SSGSF) and its customers from the revenue generating option to include ChatGPT technologies via Microsoft Office 365, in a module called "Copilot".

In addition to where the opportunities lie, MSIM are also focused on how change might adversely affect the companies already in the portfolio. It's important to worry about potential downsides even more than getting excited by the potential upsides.

1. **Customer automation risk:** As mentioned above, AI should be able to help corporates cut costs by automating a range of rules-based and back-office tasks. This is a potential downside if a company's model depends on supplying services that get automated, for instance operating call centres, or on supporting personnel that may be automation targets, such as offering a data product to junior lawyers.

2. **Disruption risk:** AI will likely disrupt existing business models. AI's ability to accelerate the writing of code may provide extra competition for software providers, for instance. This threat requires constant vigilance as the technology evolves, and MSIM are closely watching their holdings' proprietary data sources in case AI generates viable alternatives.

3. **Legal and regulatory risks:** It is still early days for generative AI adoption, and as such regulatory and legal frameworks are very underdeveloped. The issue of patent and copyright is a central one, as models are being trained on intellectual property without any compensation to the owners. In general, regulation may choke off innovation and the ability to create value, particularly if global companies are only able to progress at the speed of regulation in the slowest geography.

4. **Disappointment risk:** Aside from AI hurting companies' future earnings, there is potential risk to valuations if the current excitement dissipates or if productivity gains are not reflected in net earnings growth. That could sometimes occur, given risk factors such as inadequate data systems security or the legacy of over-priced corporate acquisitions which some companies chasing "AI-smarts" may engage in.

Conclusions

At the macro level, AI provides one the greatest opportunity for the boost to productivity the (developed) world needs right now. AI needs to be embraced if we aspire to maintaining or improving living standards as we face into significant challenges in the form of ageing population and moribund productivity growth. It will help us achieve the high wage economy we often talk about aspiring to.

That's not to diminish the potential pain of transition for firms, industries, and economies in general. There is a clear public policy role in regulation, education and investing in the new skills that will be required in the workforce.

AI also provides significant opportunity for active investors, but also the need to stay attuned to the risks. Ultimately, it's still early days for generative AI, and its full impact remains unclear. Which industries and companies will thrive and whose business models will be made redundant? As active investors, that question we have always dealt with and will continue to ask ourselves. The only change that's occurred through time has been the pace of the change.

Perhaps the only question left to answer is what AI means for funds management? We are not yet prepared to accept the future as AI-powered algorithms and trading systems given the frequent episodes of algorithmic-driven trading glitches and potential market manipulation. Here too there is a role for regulators as they face the challenge of keeping pace with this rapidly evolving technology to ensure fair and transparent markets.

For us, at least for now, active funds management will remain an activity steeped in research, debate, risk management, and ultimately, human judgement. As MSIM said in their note, and with which we concur (which is one of the reasons we appointed them!) - we have no intention of replacing human intelligence with bots when managing portfolios or servicing clients any time soon – the outcomes and our clients are too important for that.