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FINANCIAL MARKET SNAPSHOT

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The Transformative Power of Artificial Intelligence

In this edition of the Market Snapshot, we take a look into the world of Artificial Intelligence (AI). Just as the internet revolutionized the way we live and work in the 1990's, AI is being looked at in a similar light and we are just in the early stages of this transformative innovation.

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The Case for Artificial Intelligence

Between 1898 and 1901, Charles Holland Duell served as the Commissioner of the United States Patent Office. Over time, Duell became famous for allegedly declaring, "Everything that can be invented has been invented." Although there's no solid evidence that he said those exact words, the quote is often used to highlight the danger of underestimating the potential for innovation and the continuous progress of technology.

In the 1990s, the internet revolutionized the US economy, altering the way people communicate, collaborate, and conduct business. Since then, digital communication tools have significantly contributed to societal advancement and productivity by enabling seamless connectivity, facilitating access to information and resources, and fostering global innovation and collaboration. Its impact has been profound, shaping the way people live, work, and interact in the 21st century.

Today, with the advent of artificial intelligence (AI), we stand on the brink of another transformative shift that will permanently alter how consumers interact, generate, and consume information. In this edition of the *Market Snapshot*, we explore artificial intelligence, its potential evolution over the next five to seven years, and its anticipated economic impact.

What is artificial intelligence (AI)?

AI refers to a machine's ability to perform cognitive functions associated with human minds, such as perceiving, reasoning, learning, interacting with an environment, problem-solving, and even exercising creativity. You may have already interacted with AI through voice assistants like Siri and Alexa, or customer service chatbots that assist with website navigation.

AI encompasses various techniques and approaches, including machine learning, deep learning, natural language processing, computer vision, and robotics. These techniques enable AI systems to analyze vast data sets, extract meaningful insights, and adapt to new situations without explicit programming.

The most exciting area is generative AI which focuses on making new content, data, or outputs that mimic human creations. Unlike traditional AI systems that recognize patterns or make decisions based on existing data, generative AI models autonomously create novel content. As AI continues to evolve, it holds the potential to revolutionize how we work, communicate, and interact with the world.

How do graphics processors – like those made by Nvidia – enable AI?

Nvidia graphics processing units (GPUs) play a crucial role in driving the advancement of artificial intelligence (AI) because of their remarkable capability to swiftly handle complex computations.

In AI, a vast number of calculations are essential for processing data and recognizing patterns. Nvidia's processors excel in making these complex calculations quickly and efficiently, enabling specialized functionalities crucial for training and accelerating AI workloads.

You might think of it like having a really powerful engine in a car. Just like a powerful engine helps a car go really fast, Nvidia processors empower AI systems to swiftly process data and absorb knowledge. They effectively function as the muscle that amplifies the cognitive abilities of AI, driving progress and innovation in the field.

Is AI expected to replace human workers?

In the early 1980s, some predicted the demise of accountants with the advent of electronic spreadsheets. However, electronic spreadsheets didn't eliminate accountants; rather, they evolved their roles, focusing more on analysis, interpretation of financial data, and strategic planning.

A recent study by MIT economist David Autor found that 60% of today's workers are employed in occupations that didn't exist in 1940, implying that more than 85% of employment growth over the last 80 years is explained by the technology-driven creation of new positions.

While AI may automate some tasks, it is more likely to augment human capabilities than replace them entirely. AI could automate mundane tasks, freeing up humans for higher-level analysis and decision-making. Although AI might eliminate certain job roles, it will likely create demand for new skills and occupations, as history has shown with past technological advancements.

Are workers using AI in their workflows today?

According to a recent survey by the Workforce Lab from Slack (a Salesforce company), workplace adoption of AI tools has accelerated, with a significant number of desk workers reporting improved productivity through their use. Around 80% of respondents say that AI technology is already enhancing their productivity, with tasks like writing assistance, workflow automation, and content summarization being the most valued. Many workers are enthusiastic about AI's potential to enhance their on-the-job effectiveness.

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What are some of the longer-term potential use cases for generative AI?

Generative AI has the potential to disrupt traditional business models in various ways:

• AI-powered chatbots and virtual assistants could provide round-the-clock customer support and assistance.

• Generative AI can create high-quality content, including text, images, and videos, at scale and with minimal human intervention.

• AI algorithms can analyze user data to generate personalized recommendations and experiences.

• AI can assist in product design, optimization, and prototyping by generating and evaluating numerous design iterations.

• AI may accelerate drug discovery, potentially leading to significant advancements in combatting chronic diseases.

• AI can optimize supply chain operations by predicting demand, identifying inefficiencies, and automating decision-making processes.

Overall, generative AI has the potential to automate tasks, personalize experiences, and drive innovation across various business functions.

US Labor Productivity Trends and the Impact of AI on Economic Growth:

Since World War II, US labor productivity growth has been a cornerstone of US economic power and prosperity, adding on average 2.2% annually to economic growth and contributing to a 1.7% annual gains in real income, according to McKinsey & Company.

However, since 2005, US labor productivity growth has stagnated at 1.4%, coinciding with a slowdown in real wages and declining workforce participation. McKinsey researchers estimate that restoring US productivity growth to its long-term trend of 2.2% annually could generate approximately $10 trillion in cumulative GDP over the next decade. This could translate to a $15,000 cumulative income gain per household and potentially alleviate stagnating median incomes while encouraging labor participation.


Source: McKinsey & Company
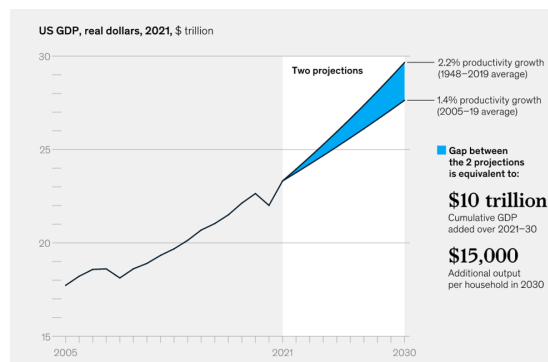
Advancements in generative AI may hold the potential to revolutionize the global economy, potentially adding nearly $7 trillion to global GDP and boosting productivity growth by 1.5 percentage points over a 10-year period, as indicated by Goldman Sachs.

Bank of America has already upgraded their forecast for S&P 500 earnings per share in 2024, which reflects a more optimistic outlook for the US economy, with GDP growth expectations revised upward from 1.4% to 2.7%. In raising their forecast, their analyst highlighted the pivotal role of artificial intelligence investments in this scenario, suggesting a "potential virtuous cycle forming from AI investments".

The surge in AI adoption is attributed to decreasing computing costs, advancements in computer hardware, and the proliferation of big data. Bloomberg Intelligence forecasts the generative AI market to reach $1.3 trillion by 2032, with companies like Meta, Nvidia, Microsoft, Alphabet, and Amazon positioned at the forefront of training large language models. Additionally, Bloomberg predicts that generative AI investments could comprise 10-12% of total technology expenditures by 2032, up from less than 1% today.
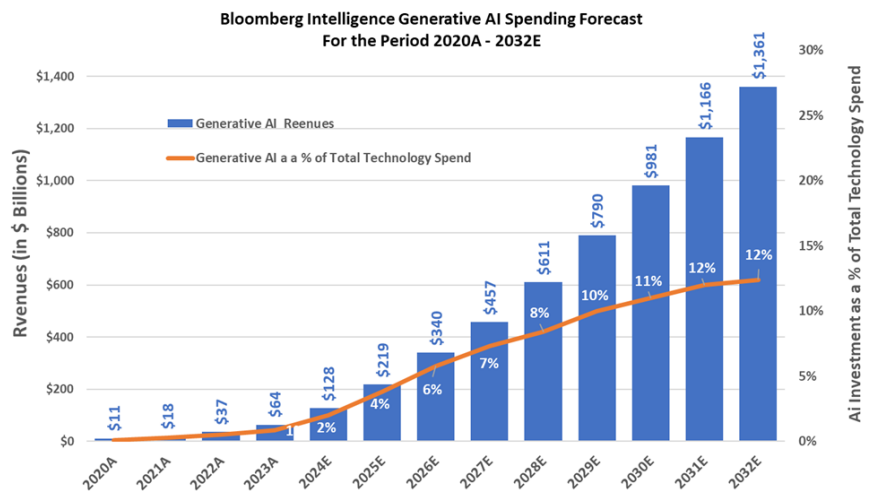
Source: Bloomberg Intelligence

One last thought on AI adoption:

The adoption of AI raises ethical and security concerns that require careful consideration and mitigation strategies. The opacity of complex AI algorithms can make it challenging to understand how decisions are made, leading to a lack of accountability and potential biases. Additionally, there are ethical dilemmas surrounding the use of AI in sensitive domains such as healthcare and criminal justice, where decisions can have profound impacts on individuals' lives. Transparency, accountability, fairness, and security are critical aspects to address to ensure that AI technologies are developed and deployed ethically and responsibly.

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