Potential Impacts of Artificial Intelligence on the Financial Services Industry

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Artificial intelligence (AI) is likely to grow in both acceptance and use in the years ahead, and this is likely to have significant implications for the society in which we live. To gain a better understanding about AI and its future, we conducted the following Q&A session with Floyd Simpson III, CFA, CAIA, CFP and Emiline Jacobs. Floyd and Emiline are members of our OCIO business and work with clients across the country to develop and implement multi-asset class strategies for their portfolios.

What are some of the ways that AI might impact the financial services industry?

Simpson: Financial services companies are likely to benefit as AI gains greater acceptance. This is largely because these organizations, by their nature, have a plethora of data at their disposal that can be analyzed to find new patterns or relationships. More specifically, the trove of data maintained by financial organizations often includes both public market data and proprietary data collected by firms, such as user spending habits, regional economic trends, and credit usage. And this data can be mined to find statistically significant aspects that simply weren't identifiable in the past given prior analytical tools.

As an example, a financial organization that uses AI can analyze certain data points that are captured from individual credit and debit card transactions in conjunction with account balances and fluctuations of those balances over periods of time. This can provide a highly accurate picture of the financial health of individual consumers. And, given that firms now have greater access to income data and data captured from credit agencies, their ability to both serve their clients and sell bespoke products will improve.

Many asset management firms have already embedded some (elementary) forms of AI into their respective businesses. For example, machine learning is being increasingly utilized to recognize patterns and predict possible outcomes, while large language models have helped advisors and analysts be more productive by creating summaries of meetings or calls based on transcripts.

When considering the use of AI in the financial services sector, we can look to a growing number of white papers that have focused on the benefits that machine learning offers. However, one paper, "Machine Learning for Active Portfolio Management," deserves a closer look. The paper, which was published in The Journal of Financial Data Science, points out that machine learning has the ability to capture nonlinear patterns and focus on predictions by fitting multiple models with the same data and combining the predictions with the goal of achieving better performance.

Some firms have also begun to use AI to help select stocks for client portfolios. Based on our research, to date, AI-powered funds have struggled to outperform peers or their respective benchmarks. As evidence, well-known funds, including the Watson powered ETF AIEQ, and Wisdom Tree's value biased ETF AIVL haven't had consistent success and, one might argue, have struggled against their respective benchmarks and peers.

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That said, when researching this topic, we discovered a white paper published by Social Science Research Network in 2021 called "Do AI-Powered Mutual Funds Perform Better?" that highlighted that AI funds have struggled against the benchmark but were able to outperform their peers. However, when we researched a sample set of their data, we found that some of the funds mentioned have not consistently traded or had stale information, which leads us to believe that their work was primarily time period dependent. In time, there is a high likelihood that the number of firms that use AI for stock picking will increase as the capability of the technology continues to improve. However, the potential impact on performance is currently unknown.

Moreover, the increased usage of AI is likely to, in some fashion, disintermediate personnel and reduce costs that theoretically could be passed along to investors.

What are some considerations with regard to structural trends and the evolvement of AI?

Jacobs: New product releases, including ChatGPT, (Google) Bard and DALL-E, have piqued both consumer and investor interest and have caused the investment community to become more attuned to the technology's potential impact on future earnings and portfolios.

Similar to the technology craze in the early 2000s', small companies are driving innovation. However, this time around some of these innovations are being subsidized by large companies, which is helping to accelerate the trend through greater support and funding. In addition, some larger firms are investing in smaller entities and embedding their products in their systems in an effort to create a new client base and/or segment.

As just one example, in February 2023, Alphabet took a nearly $400 million stake in Anthropic (a startup and potential ChatGPT rival), while also becoming a "preferred cloud provider." In addition, in September, Amazon committed $1.25 billion to Anthropic (with the option to invest up to $4 billion). This commitment allows Amazon to become Anthropic's "primary cloud provider."

Finally, to gain a better understanding of how fast AI is actually improving over time, in 1996, chess champion Garry Kasparov played IBM's supercomputer "Deep Blue" in a series of six chess matches. Kasparov won the series 4-2. In 1997, there was a rematch and Deep Blue won 3.5-2.5. More recently, Stockfish (an AI chess engine) played against 12 grandmasters as a team and won. In short, humans now face a seemingly insurmountable task when pitted against this ever-improving technology.

What are some of the potential near-term impacts of AI?

Simpson: In the near term, companies that will directly benefit from the emergence of AI are likely to have some sort of competitive advantage within one of the primary AI inputs: data, algorithms and/or computing power.

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With regard to data, over the past several years, it has become a very valuable currency. Companies including Alphabet, Microsoft, and Meta have capitalized on their access to an abundance of data and have created large language models as a result. This has arguably helped to propel their respective share prices. That said, there are other parties that have and will continue to benefit as well. For example, AI is having a marked impact on the Energy sector as internal data are being used and synthesized to improve production and supply chains.

When considering the algorithm input, the competition is more scarce. In fact, algorithm creation has arguably become more ubiquitous, and companies, including OpenAI and GitHub, are now focused on building algorithms to suit any company and thus creating AI tools to help worker efficiency across a wide swath of sectors. AI large language models can even improve efficiency when creating new algorithms. Studies by GitHub show that developer productivity can increase as much as 56% improvement with the support of AI, further commoditizing this input.

For AI to continue to advance, the algorithms supporting it will need an abundance of data and computing power. According to estimates by Stanford's Human-Centered Artificial Intelligence, GPT-2, which was released in 2019 and considered the first large language model, had 1.5 billion parameters and cost an estimated $50,000 to train. Only three years later, in 2022, PaLM launched with 540 billion parameters and cost an estimated $8 million to train!

While the cost of computing has gone down, and PC magazine estimates that since 1982 storage has increased 40,000 times and costs a mere one-hundredth of the price, the need (for overall computing power) continues to increase. Further, the magnitude of computing power needed by AI equates to a strong demand for producers. This market is dominated by large, well-capitalized companies as the chips require highly specialized and expensive factories to produce. Competition is therefore relatively limited, however, future improvements will likely occur at a diminishing rate as companies work to improve increasingly small and complex processing chips.

What are some of the potential longer-term impacts and considerations?

Jacobs: While we expect to see changes across a variety of industries in the near term, some of the more profound changes and sector-specific advances are likely to occur much further down the road. This is partially due to technological capabilities/limitations. We would suggest that for AI to become more widely embraced by countries, companies, and individuals, that concerns over ethics, trust, human impact and regulation must be satisfactorily addressed.

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Per the AI, Algorithmic, and Automation Incidents and Controversies repository, the number of adverse issues reported in 2021 (such as "deepfakes") was 26 times greater than in 2012! And, although some regulation efforts have begun, such as the October 30, 2023 executive order from President Biden, which requires AI developers to share safety tests with the U.S. government and sets standards for the testing, additional standards are needed to ensure safe and responsible use of the technology.

Based on various studies, the adoption/implementation will take longer than the early hype may suggest. Looking at past adoption and transition periods for other disruptive technologies, we see that while early adopters may bring the technology to the forefront within the first few years, 25% market penetration may take more than 10 years and full acceptance may be nearer to 30 years (as seen with the growth of cellphone use). How the adoption of AI will advance and what its impacts will be will vary greatly based on who will use it and how.

The human impact of the "AI revolution" should be seen through the lens of previous technological shifts. Take for example, the automation of the telephone switchboard. Those who were existing phone switchboard operators were forced to seek new employment as opportunities were phased out (e.g., creative disruption) and saw somewhat lower levels of employment. However, overall unemployment did not increase as "future cohorts" (those that would have gone into the field) were largely able to find jobs elsewhere in the economy. For reference, we are already seeing this with AI, as the demand for code writers has decreased, while the demand for prompt writers has increased. Going forward, we would argue that analytic and technical roles will be the most impacted, while jobs that require more interpersonal work will be more resistant to replacement.

Finally, it's important to note that AI may be used in the future to resolve some of the demographic headwinds that our nation faces that may negatively impact gross domestic product (GDP) growth. Headwinds that include an aging population, decreased labor force participation, a lower birth rate and productivity concerns.

For additional information or questions about this topic, please reach out to your PFMAM relationship manager.

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