

ARTIFICIAL INTELLIGENCE AND FINANCE

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The rise of artificial intelligence (AI) will change the nature of financial services. Policymakers are starting to pay attention and think of ways to adapt policy.¹ Integrating AI into the financial services sector will raise numerous challenges, requiring thoughtful assessment and flexibility as the technology evolves.

AI IN FINANCE

One model for thinking about the newest wave of AI is that of a prediction machine:² AI uses data to make predictions. For example, an algorithm takes medical data to predict the likelihood that a patient will have a heart attack.

AI has seen tremendous advances in recent years that have helped lower the cost and increased the accuracy of predictions. These advances have made AI more practical for business purposes in a range of industries including financial services. For instance, AI can be used for detecting credit card fraud, underwriting risk, and marketing products. These applications, if done responsibly, can improve living standards and help underserved communities better access financial services.

However, AI should not be overhyped.

For example, AI is still reliant on data, so data flaws and limitations can hamper its effectiveness. AI does not substitute for human judgement in many matters either. For instance, a financial regulator still must decide what trade-offs to accept, such as whether to focus more on reducing risk or promoting innovation.

CHALLENGES

There are challenges to adapting AI in finance that need to be managed. These

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challenges are often immune to simple policy solutions and sometimes require accepting difficult tradeoffs, such as striking the right balance between privacy and accuracy. Several of these challenges include:

- **Algorithmic bias:** A common misconception is that AI will be free from bias (unless the bias is deliberately hardcoded), which suggests AI could help end discrimination against protected groups. Unfortunately, this is not necessarily correct. AI can suffer from biases based on the data fed into it and design flaws that introduce (conscious or subconscious) biases of its creators. For instance, a bank that unwittingly feeds biased historical data on credit decisions to an AI will have a biased algorithm.
- **Privacy:** AI needs data to make predictions, but this raises questions about what data should be collected. More data can help improve an algorithm's predictions, but it can also intrude on people's privacy. For instance, more detailed information about an individual's purchasing habits could help improve fraud detection, but that person might not want certain information

collected about their payments for medications.

- **Consumer protection:** AI raises new consumer protection concerns. For instance, an AI that is not properly designed may in effect predict that a person is prone to being duped, and target them with deceptive ads for costly and ineffective products. On the flipside, regulators might use AI to detect abuse and deception to help better tailor their regulatory efforts.
- **Overreliance:** Legendary investor Warren Buffett has said, "Beware of geeks bearing formulas."³ Many of the most spectacular blowups in finance have resulted from overreliance and misunderstanding the limits to mathematical modeling.⁴ The use of AI (which relies on mathematical modeling) is no different. AI is only as good as the data fed into it, so bad data or an unexpected event, which the AI does not have any data for, could cause its predictions to be grossly inaccurate. Not being aware of these limitations could lead to unexpected problems without proper safeguards.

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- **Gaming risk:** AI can be gamed. If people know their past behavior is being used to make predictions about how they will behave in the future, they may change their behavior. For instance, a study analyzed the database from an e-commerce site and found that the people who have their name in their email address were less likely to default.⁵ This might suggest an email address is a good gauge of a person's credit risk. However, if people knew this was a criteria that they were going to be evaluated on, they could adapt and selectively change their email address when applying for a loan, reducing the predictive power of using an email address in making credit decisions.
- **Encouraging Responsible Innovation:** Further innovations in AI can help improve financial services, so encouraging innovation that is responsible is important. Regulatory sandboxes are programs that allow innovators to test their products with less regulatory scrutiny until they are better understood. Critics are concerned they put consumers in harm's way.⁶ The design for these sandboxes and other regulatory measures can help guide the direction AI innovation takes.

FINAL THOUGHTS

The financial system is facing major changes in the way it does business. AI is giving it faster and cheaper tools to make predictions that can transform the nature of financial services. These changes can help promote stable and inclusive growth, but they can also breed instability and inequity if not managed well. Policymakers

should take note and work towards a vision for AI in the financial sector that serves all.

ENDNOTES:

¹House Financial Services Committee, Press Release: Waters Announces Committee Task Forces on Financial Technology and Artificial Intelligence, May 9, 2019, <https://financialservices.house.gov/news/documentsingle.aspx?DocumentID=403738>.

²Agrawal, Ajay, Joshua Gans, and Avi Goldfarb. *Prediction Machines: The Simple Economics of Artificial Intelligence*. Boston, MA: Harvard Business Review Press, 2018.

³David Segal, *In Letter, Warren Buffet Concedes a Tough Year*, New York Times, February 28, 2009, <https://www.nytimes.com/2009/03/01/business/01buffett.html>.

⁴Diana B. Henriques and Joseph Kahn, *Back from the Brink; Lessons of a Long Hot Summer*, New York Times, December 6, 1998, <http://www.nytimes.com/1998/12/06/business/back-from-the-brink-lessons-of-a-long-hot-summer.html>.

⁵Tobias Berg, et al., *On the Rise of FinTechs—Credit Scoring Using Digital Footprints*, FDIC Working Paper Series, September 2018, <https://www.fdic.gov/bank/analytical/cfr/2018/wp2018/cfr-wp2018-04.pdf>.

⁶Linda Jun, *CFPB's 'Disclosure Sandbox' Puts Consumers at Risk*, American Banker Bank-Think, November 19, 2018, <https://www.americanbanker.com/opinion/cfpbs-disclosure-sandbox-puts-consumers-at-risk>.