Artificial Intelligence in investment and wealth management

By Dr Lawrence Tse and Dr Quintin Rayer | Sep 20, 2018

Fund managers, wealth managers and hedge funds are already incorporating artificial intelligence (AI) and machine learning into their investment processes. These include fully-automated wealth management services ('robo-advisors'), to automated trading systems[1]. With wealth management in a state of flux with pressure on margins, the rise in passive investing and moves from commissions to level fees; many managers are investing heavily in technology to reduce costs while complying with ever-increasing regulation[2]. Advisers would be wise to keep abreast of developments to anticipate how they may be affected.

Fund management will change

Artificial intelligence provides the following benefits for investment managers[3]:

1. **Data Analysis.** AI can detect new information amongst market noise helping investment managers rapidly to respond when signals are spotted.
2. **Forecasting.** Investment managers can manage portfolio risk by using models to recognise patterns and predict future market movements and portfolio responses.
3. **Risk Management.** AI can spot and react to the first signs of market volatility, with the potential to reduce losses and enhance performance, improving the evaluation of assets at risk and hedging strategies.

Investment firms are spending vast amounts of money seeking alternative data sources to help them forecast companies' financial performances and helping generate higher investment returns[4], [5]. Funds with these technologies may have an advantage over conventional managers.

The analysis of individual stocks can be enhanced by digesting massive amounts of data, adding insights into investment selections. These include satellite data on retail car parking, social media, the impact of weather on shopping patterns, footfall, payment card and transaction data, local pricing and customer sentiment [6]. These can be supported by textual analysis of readily available documents, including press releases, conference call transcripts, websites and regulatory filings, processing volumes of material at rates far higher than achievable by human analysts [2], [5].

Performance implications

There is some evidence that AI funds have outpaced the returns of their traditional counterparts. The Eurekahedge AI Hedge Fund Index has outperformed conventional hedge funds and traditional quant funds in both absolute and risk-adjusted terms over the two- and five-year periods to 2017[7]. Five-year annualised returns for the AI Hedge Fund Index were 11.8%, 8.4 percentage points above the traditional quants fund index and 4.2-5.9 percentage points above conventional hedge fund indices.

Challenges

However, there are development challenges for AI in wealth management [5],[8].

» Lack of understanding. There is a shortage of professionals with the proper expertise to communicate with AI developers. Programmers may not understand financial data while financial professionals do not appreciate the strengths and weaknesses of the technology.This makes Individuals with the skills and knowledge to bridge this divide, a valuable resource.

» Hardware development can manage a considerable growth in digital data volumes. Before machines can analyse it, much data needs to be structured. AI firms spend significant resources on collecting and preparing data instead of improving technology.

» Models built using historical information often fail to deliver anticipated returns when past trends change. AI's need to be able to adapt in real time.

» AIs cannot foresee one-off events such as natural disasters, or political upheavals which most humans fail to predict.

AI is free of human behavioural biases and so can react differently[9]. However, AI can be prone to 'false positives' as correlation does not equal causation. AI often uses developments of established statistical techniques. It can struggle to tell which data is useful from that which is not; and may be prone to 'overfitting' or data-mining: appearing to find patterns even when unsupported by the underlying data.

Advanced techniques try to overcome these difficulties, including supervised learning, in which an AI works to 'understand' data with a human 'teacher' guiding it. Understanding can be enhanced by including economic drivers behind data and experience[5]. Unsupervised learning, in which the AI is left to identify structures alone, potentially permits it to find novel solutions. Another approach is 'deep learning' where simple overviews are analysed first, with successive layers of detail added later; an approach which is believed to share similarities with how neurons work[5].

Many AI systems have become 'black boxes' that give investment recommendations with no clear basis or strategy. This makes it harder for investors to put their trust in a program that cannot communicate with humans on how it 'thinks'. Machine learning algorithms cannot entirely replace human intuition, or understand complex, long-term investment trends[5]. Moreover, if everyone in the industry uses the same or similar AI techniques, they could eventually offset each other's competitive advantage[10].

The message for advisers

Wealth management is vulnerable to disruption by AI, but advisors should embrace the trend. Eventually, it will provide valuable tools that will help human asset managers and advisers make better-informed decisions[9]. Currently, the finance sector is increasingly adopting AI, backed by the desire of Millennials to manage their finances online[1]. The ability to extract value from big data will be a crucial differentiator for asset management companies. Wealth managers and advisers that make decisions augmented with insights from AI analytics are likely to have a significant competitive advantage, while skilled analysts who can bridge the gap between finance and AI will be in demand as the sector evolves.

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