

## collective insight

By Bradley Preston



DECISION-MAKING

# Age of automation

Recent advances in machine learning and the emergence of 'big data' present challenges and opportunities for fund managers and their clients.

The widespread adoption of smartphones; falling costs of data storage and computing; as well as centrally hosted applications that are able to record user interaction has led to businesses generating, storing and processing significantly more data than historically possible. For example, Facebook disclosed in 2013 that over 4.75bn items, status updates, wall posts, photos, videos, and comments, were shared on its platform each day.

These new large data sets have led to significant opportunities to gain analytical insight and to train new machine-learning models to do anything from recognise you in a photo to recommend new shows to you on Netflix – raising the question of how this data could be used by investment managers and traders to find predictive "edge" in financial markets.

In 2016, AlphaGo, a machine-learning application developed by Google's DeepMind, beat Lee Sedol, the world champion at the board game Go. **If DeepMind can teach a computer to play a complex board game such as Go better than any human, could it not learn to pick stocks better than your average analyst?**

### Information arms race

The history of investment management has always been an arms race for information, analytical ability and technology. Early in his career, Warren Buffett used to visit Moody's offices to copy historical financial data by hand from their library. Alan Dresher, an analyst at pioneering hedge fund A.W. Jones, would go to the Securities and Exchange Commission (SEC) offices the day a company's financial results were released to receive them in person, while the rest of the market waited for copies to be posted to them. Twenty years later, when the first Bloomberg terminal was released, this information became effortlessly available electronically, eradicating this potential source of edge for the likes of Buffett and Dresher.

As markets and technology have evolved market players have had to adapt, as their previous source of edge is eroded or

democratised through technology.

More recently, multifactor models and smart beta products have automated the process of earning various risk premia\*, offering a cheaper alternative to fund managers who may have been doing little more than buying cheap stocks based on measures such as price-to-earnings ratios or price to book. In fact, in a recent paper, the team at quantitative manager AQR Capital claims to be able to systematically replicate the investment styles of a range of managers from Warren Buffett to Bill Lynch and George Soros by employing a multifactor-based approach.

### New tools

A multitude of data providers are offering new data sources to analysts and fund managers based on non-traditional sources of data. For example, a number of companies offer analysis of satellite images to gain insight into anything from the number of vehicles parked outside retail stores to the size of oil stockpiles, offering real-time estimates of economic and earnings releases that are only released with a time lag.

With the growth of e-commerce, millions of product prices are available in real time on websites. The Billion Prices Project at MIT collects prices from hundreds of online retailers around the world to conduct economic research in real time.

Another area of progress is in processing text. Quantitative analysis and computer models have often been limited to dealing purely with numbers in the past, but the ability of computers to interpret text is progressing quickly. Ranging from emails to annual reports and research reports, the financial services industry creates large volumes of text, more and more of which is being analysed by computers.

### What are the implications?

Investment managers and their clients need to understand their sources of competitive edge and how emerging technology will impact these. Fund managers either need to embrace these technologies and data sources or focus on conducting detailed, differentiated analysis



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that can't be automated by machines.

Fundamental managers who are capturing simple risk premia will continue to be challenged by algorithmic and smart beta products which can replicate these simplistic strategies cheaper, faster and more objectively.

Similarly managers who rely on exploiting informational advantages over short time horizons may be at risk as more and more data and computing power is brought to bear on co-incident predictions of economic releases or earnings announcements. ■

**Bradley Preston** is Chief Investment Officer: Listed Investments at Mergence Investment Managers.

\*A **risk premium** is the minimum amount of money by which the expected return on a risky asset must exceed the known return on a risk-free asset in order to induce an individual to hold the risky asset rather than the risk-free asset.