Funds powered by AI

The Edge Malaysia (30 December 2019)

By Tan Zhai Yun

Funds driven by artificial intelligence (AI) arrived on our shores in 2015, when BIMB Investment Management Bhd launched its multi-currency shariah and environmental, social and governance compliant (ESG) global equity fund in partnership with UK-based quant firm Arabesque Asset Management Holding Ltd. Then, in 2017, Kenanga Investors Bhd launched a multi-asset wholesale fund that fed into the TCM Global Index Fund managed by US-based quant fund Taaffeite Capital Management. The fund trades index futures and currencies.

Both funds use AI to power their entire investment process. The introduction of such funds in Malaysia is significant and it comes at a time when AI is being widely explored and implemented by asset management firm s globally. This is due to the ability of AI to rapidly analyse patterns, make decisions and predict events based on historical data, according to Kenanga Investors executive director and CEO Ismitz Matthew De Alwis. "The term AI-driven investing' is used to broadly describe a set of techniques that use computers to systematically make predictions based on market behaviour, to profit from those predictions and learn from the success and failures.

In the coming years, more organisations will deploy AI into their infrastructure to gain insights, be more efficient and produce previously untapped profit streams," says De Alwis. The use of AI in investing is a natural progression from quantitative investing, which became popular in the 1980s when investors started relying on data to identify and profit from patterns in the markets. The quantitative investing approach was pioneered by mathematician Kim Simons, founder of the famous US quant fund Renaissance Technologies.

Over the years, many quant hedge funds have gained prominence, including Citadel and Man AHL. As the technology matured, these investors began adopting AI to improve their processes. "As computing power increased, so did the sophistication of AI techniques, particularly in the field of information theory. AI methods such as information theory and related statistical techniques are used to comprehend large financial data sets," says De Alwis.

For example, in data networks, it is important to deal with errors in data transmission. "So, if 2% of the picture transmitted to your television is lost during transmission, how can it use the 98& of the picture that has been received to predict the 2% that is missing? If you extrapolate information theory to financial markets, you can use 20 years of historical data to make predictions about data. This is just an example of how important advances in statistical techniques and greater computing power can be for financial markets," he says.

AI provides an edge to investors who are now able to make decisions based on huge amounts of data. This also benefits ESG investors who need to analyse non-financial information. "We need more information on the non-financial aspects of companies because we now know how important ESG factors are to their financial performance over time. With technology, those factors can be quantified and integrated with our financial data," says BIMB Investment Management CEO Najmuddin Mohd Lutfi. BIMB Investment Management currently has four funds with Arabesque in Malaysia.

HOW DO THEY WORK?

The BIMB-Arabesque funds undertake three steps in their investment process, all of which are done by the system without human interference. The first step in building the investable universe is done through Arabesque's S-Ray tool. Using machine learning and big data, it screens stocks using more than 200 ESG metrics and news signals from more than 30,000 sources globally.

The system also does a shariah screening of the stocks before performing financial analysis using a rules-based approach. At the final stage, the AI conducts risk management by deciding on the asset allocation to cash and equities based on market conditions.

"The system looks at over 1,600 factors for every stock. It also looks at current market trends to determine if it is a good stock to invest in at the moment. When the market is down, the fund automatically allocates more cash. For example, when the trade tensions flared up late last year to early this year, we held about 50% in cash. Because of this systematic approach, investors can benefit from the system that helps them navigate the volatility in the market. There are no emotions involved," says Najmuddin.

The unbiased approach also helped the fund avoid the Facebook scandal last year, when more than US$119billion in market value was wiped out. It was revealed that political consultancy Cambridge Analytica had violated the privacy of users by harvesting raw data from Facebook.

"Before Mark Zuckerberg was called to testify before the US Senate, there was already news about Cambridge Analytica and its links to Facebook. S-Ray was able to collect this data and it resulted in a low

governance score for Facebook, which was automatically removed from the portfolio. However, Facebook's share price continued to rise and only crashed in March. The system helped us to avoid exposure to Facebook before the stock price plunged," says Najmuddin.

Kenanga Investors' fund is powered by Taaffeite's TCM Liquid Alpha programme, which scans global markets and gathers price data, from equity, fixed income, commodity and currency markets on a tick basis. By analysing the relationships between data sets, the system identifies arbitrage opportunities.

"For example, it may see the S&P 500 and FTSE 100 as having some kind of relationship over a long period of time. But it will not just be these two instruments. It will be a very long formula with 200 variables to predict what the S&P 500 will do in the next 24 hours," Taaffeite co-founder and CEO Howard Siow told *Personal Wealth* in a previous interview.

But the function is so sophisticated that only AI can determine what the actual formula is. So, that is what it does. It looks at all your previous price actions, develops the actual formula and makes a forecast around the S&P 500."

According to Siow, the strategy works well when there is mispricing in the market. One of the fund's best trades was during the Brexit referendum in 2016, when it shorted the FTSE, pound sterling and euro stocks going into the vote.

HOW HAVE AI-DRIVEN FUNDS PERFORMED?

There have been many discussions on whether AI-driven funds can outperform their normal counterparts. Theoretically, since AI can process large amounts of data in a shorter time frame, it enables fund managers to respond faster to changing market conditions and, therefore, perform better. But it may be too early to draw this conclusion because many of these strategies are relatively new.

According to financial data and information provider, Preqin, AI-driven hedge funds outperformed conventional ones by three percentage points, based on their three-year cumulative returns as at June. While the outperformance is small, the AI-driven hedge funds experienced less volatility than their peers.

Meanwhile, the local funds have underperformed their benchmarks. According to its fund fact sheet as at November, the BIMB-Arabesque i Global Dividend Fund 1 recorded a three-year cumulative return of 29.28% (MYR class) against the 37.33% of its benchmark. BIMB-Arabesque Asia Pacific Shariah-ESG Equity Fund recorded a one-year return of 2.34%, against its benchmark's 11.87%.

The underperformance compared with the benchmark is because the latter is not limited to the ESG and shariah universe, says Najmuddin. "I think there are a lot of expectations when it comes to AI. People think it can give you guaranteed returns and manage any market condition. But in investment management, AI helps us to be more efficient in our data processing and managing risk. Investing in equities is always risky. So, we use AI to mitigate risk and look for returns."

The BIMB-Arabesque funds are rather conservative and meant for long-term holding, he adds. "If the market drops by 25%, you only lose 10% (with this strategy). But the funny thing is people appreciate it if the market is down and we are not down that much. But when the market is up, they expect the fund to give even higher returns. They do not realise that they have already benefitted from the down market."

The Kenanga Global Multi Asset Fund saw a cumulative return of -23.08% (MYR class) over the one-year period, against the benchmark's 15%, according to its November fund fact sheet. In an email interview,

Siow says this is due to the underperformance of short-duration trades, which are typically held for a few hours to two days, compared with longer duration trades that are rebalanced weekly.

"In 2018/2019, there has been a level of randomness or 'noise' in the data that has made it extremely difficult to trade short-duration techniques. As a result, market liquidity and unexpected shocks to the markets have reached levels that had not been experienced for many decades. The short-duration strategies that have historically returned 30% to 40% per annum have performed below -30% for this period, nullifying the effect of several long-duration strategies that were up over 20% during this period," he adds.

Going forward, the fund will allocate more to long-duration strategies. This was a decision made by the investment management team in view that unexpected news flow, trade tensions and other events will continue to occur in the next two years. Statistical techniques such as AI typically do well in anticipating predictable events, says Siow. For instance, a strong breakout followed by an upward trending market is a favourite of many systems.

"However, unpredictable events occur if there is significant randomness or noise in the price pattern. The AI system finds it very difficult to discover predictable patterns because there is so much random noise. It is difficult to discern what noise is and what valuable information is. We do not expect this situation to subside as unexpected events are ongoing and market liquidity is still relatively low, which has continued to make price actions very random," he says.

WHAT DOES THE FUTURE HOLD?

In Malaysia, there are already brokers and other entities exploring the use of AI in trading, research and even financial education. However, it is still early days when it comes to the widespread adoption of this technology, with many questions surrounding how AI will affect financial markets when it is widely adopted. Already, there are concerns that AI-driven quant strategies can cause a flash crash or volatile market movements if every system chases the same signals.

"The money management industry is relatively small and quants often discuss techniques. So, it is possible that something could happen that creates signals for several strategies to catastrophically cascade sell or buy billions and trillions of dollars of assets at the same time. As a result of the flash crash (in 2010) and other similar events, we believe markets do have processes to try and stop these market routes however difficult it is to predict," says Siow. On the other hand, finding computer science graduates with strong math skills to develop AI-driven strategies is not an easy task. This creates a great obstacle to the large-scale adoption of these strategies, he adds.

"It takes perhaps 10 years to have expertise in the field of information theory and statistics that is refined to a level that companies would be willing to allocate US$10million of capital (to invest). However, with the explosion and proliferation of data, it would be fair to say the companies that are best at acquiring and extracting value from data are going to be leaders of the industry tomorrow."

While it may take some time before AI strategies become commonplace, it could be something more mature or long-term investors use to generate alpha, suggests De Alwis. "Traditional and AI-powered funds service different clientele and this trend will continue for the foreseeable future. However, in the long run, even the most conservative investor will warm up to the idea of a partiality autonomous technology working around the clock without fatigue that can provide unrealised returns to their portfolio," he says.

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Saving the planet, one green bond at a time

BY **PATHMA SUBRAMANIAM**

Green bonds have become the go-to asset class for investors looking to fortify their portfolios with sustainable finance options. Despite being structured like a traditional debt instrument, these bonds are fashioned so that investors are doubly assured — that their capital is protected and they are helping to make a difference.

> Public interest and awareness of these issues have never been higher and there has been a corresponding increase in public focus on green and sustainable finance.
> **> Kapasi**

Green bonds have surged as an investment category since the World Bank Group came up with the concept more than 10 years ago. New issues this year are expected to reach about US$250 billion globally — a more than 20% increase from a year ago.

The increase is due to the fact that the securities provide one of the most direct ways for investors to make a measurable, positive impact on the environment, says Mushtaq Kapasi, chief representative for Asia-Pacific at the International Capital Market Association. "Public interest and awareness of these issues have never been higher and there has been a corresponding increase in public focus on green and sustainable finance.

"On a more technical level, the launch of a number of green bond indices by different providers is a very helpful development in driving demand from institutional investors. Examples include the Bloomberg MSCI Barclays Green Bond Index, BAML Green Bond Index, S&P Green Bond Index and the Solactive Green Bond Index. In Asia-Pacific, there is the ChinaBond China Green Bond Index and the ChinaBond China Green Bond Select Index."

The demand for the debt instrument has become stronger following the adoption of the Paris Agreement to combat climate change and the Sustainable Development Goals in 2015.

Growing concern about climate change and social values are driving an unprecedented change in the way people invest their money, says Dr Firas Raad, the World Bank Group's representative to Malaysia and country manager.

"If we focus on investment plans that are compatible with a 2°C

> If we focus on investment plans that are compatible with a 2°C path, US$6.9 trillion of annual investments are required in energy, transport, buildings and water infrastructure alone.
> **> Firas**