The Rise of the Robots

Future-proof your portfolio

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The best investment solutions address the biggest problems.

The development and increasingly widespread use of robotics and artificial intelligence (AI) is a vast, society-shifting trend, capable of addressing climate change, productivity and food shortages; and of job creation and destruction on a massive scale. It’s undoubtedly the next economic revolution – and it’s nearer than you might think.

Our ETF tracks the Rise of the Robots Index, a strategy we believe better captures the benefits of this revolution than other like-for-like products which combine robotics and AI investing in Europe. The benefits of AI are stretching beyond familiar places like manufacturing and technology, and our unique product was specifically designed with this in mind.

François Millet
Head of ETF and Index Product Development
Setting a megatrend

Now, more than ever, investors need to be alert to its influence, its power to disrupt and its potential for long-term returns.

And, with mainstream AI revenue growth still in its relative infancy, the question is how best to harness this megatrend.

AI is a first mover advantage market where pioneers will gain most of the profits, and followers will share the leftovers. However, pinning it down to a single company or group of companies isn’t easy. AI pioneers may also have many other strands to their business, while areas such as robotics may be overly-concentrated in certain countries.

Achieving targeted exposure to AI and robotics – both the companies involved in its creation and those benefiting from it – while maintaining sufficient diversification is difficult but, in our view, more rewarding, than singular exposures to either area.

Keeping you on the right side of change

For illustrative purposes only. This is not a recommendation.
Think big, think different

To date, the large global technology companies have had the deepest resources to invest in the development of AI and are among its most successful proponents.

For example, Amazon has invested significantly in a bid to make its warehouses as efficient as possible. It has created robots equipped with 3D vision able to recognise, choose and manipulate boxes of different sizes and in different locations on the shelves. Big Tech companies have also been first-movers in using AI in the cloud. The tech titans have also been increasingly active in buying smaller technology start-ups. A lot of innovation is happening at the smaller, nimbler end of the market and those companies are commanding an increasingly high price because none of the titans can afford to become obsolete. We wanted to create an investment option that would capture this entrepreneurial energy and this growth as well the main AI movers to date.

Did you know?

*$15.7tn* Potential contribution to the global economy by 2030 from AI

*16%* Average global estimated labour cost savings from robot adoption by 2025

*$20-30bn* Amount spent on AI by tech giants in 2016, including R&D and AI acquisitions

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1 Source: PWC, “Sizing the prize – What’s the real value of AI for your business and how can you capitalise?”, 2017
For all that, there’s plenty of growth outside of the traditional areas of IT and industrials if you’re prepared to seek it out. As the products already on the market have shown, it is possible to become too concentrated in certain sectors or geographic regions when investing in AI.

Most technology companies are based in the US or Asia, while the majority of robotics companies are based in Japan. North America is ahead, with 60% of all companies working on AI. However, including those companies that are benefiting from AI as well as those innovating in AI gives a broader sector and geographic spread of investments.

Source: SG Cross Asset Research/Thematic. For illustrative purposes only. This is not a recommendation.

The Lyxor Rise of the Robots Index provides targeted exposure to those companies where AI is a key part of their development strategy and will drive revenue and profitability into the future across a range of sectors and geographic regions.
During the design process, our expert index builders in the SG Thematic Research team were confronted with three main constraints:

► How to define a consistent universe which truly captured the development and spread of AI, without ignoring the benefits hardware and robotics can bring
► How to ensure the index would select stocks from as complete a universe as possible
► How to ensure it could systematically select companies from within that universe in order to really capture the investment benefits of the AI megatrend

In doing so, they came to the conclusion that a new, bespoke industry classification was required. Older definitions were already in danger of becoming obsolete and wouldn’t, as we’ve alluded to above, allow us to fully exploit the investment opportunity.

So they started with 1,400 companies across the three main sectors benefiting from AI – healthcare, information technology and industrials. Our big data analysis scanned for the most relevant companies within those sectors, narrowing down the universe to around 190 stocks. So far, so conventional.

**How we define the starting universe**

<table>
<thead>
<tr>
<th>Information Technology</th>
<th>3 main sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare</td>
<td>~1,400 companies identified</td>
</tr>
<tr>
<td>Industrials</td>
<td>Aerospace &amp; Defence, Electrical Equipment, Industrial Conglomerates, Machinery</td>
</tr>
</tbody>
</table>

例外从其他部门添加

- Amazon, Schlumberger, J.P. Morgan...

**Human touch**

年度质量控制由 Daniel Fermon, Head of SG Thematic Research, and by renowned futurist and AI specialist, Martin Ford

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1 As at December 2017.
Evolution and revolution

Some products on the market stop there but the SG team believed big data and machine-learning only get you so far, so they added a further 20 or more exceptional companies in the field from other industries, such as financial services or retail.

And, because the best technologies require both man and machine, they then consulted renowned futurist and author Martin Ford on the list the data process had delivered. After all, even the most sophisticated data mining algorithms can be deceived. Martin’s role was advisory – he helped determine which were the most relevant companies in the selection, highlighted any exceptions and provided suggestions for additional entries. The result of this work was a starting universe of 210 companies.

Industry expertise ensures this ETF won’t get left behind

A human touch ensures...    ... a dynamic and evolving portfolio

This gives us a list but makes no judgement on the strength or performance of these individual companies. For that, we still need systematic rules. It is a larger investment universe than some like-for-like products which focus only on companies involved in the development of AI and Robotics, rather than those that benefit from them.

The classification will be reviewed annually by the SG Thematic Research team and by Martin, ensuring that it stays fully relevant and picks up the latest trends. We believe this reduces the risk of obsolescence as technologies change and yesterday’s start ups become tomorrow’s titans. Every year there will be new potential entrants so a quality control process is vital. The human touch should help the index identify the right stories, rather than every story.

1 Martin Ford is a futurist focusing on the impact of artificial intelligence and robotics on society and the economy. He is author of the book “Rise of the Robots: Technology and the Threat of a Jobless Future”, and acts as a consultant to Société Générale, the index designer.

2 As at December 2017.
Building an index

In narrowing down this universe to an investable index, we sought to find those companies benefiting most from AI, where AI is or is becoming a main business driver.

To do this, we systematically score each stock based on:

1. R&D expenditure on net sales
2. Return on invested capital
3. 3-year sales growth

In so doing, we give plenty of weight to start-ups, rather than simply focusing on big tech. In fact, SMEs represent over 50% of the Index (so you hold more SMEs than you would in like-for-like indices because we have at least half as many constituents again), with the smallest market capitalisation at $500m.1 We also include those companies that may have missed the first wave but are making acquisitions to leverage the potential of AI and Robotics for their core business or to catch up with peers.

Across the board, we want to invest in companies that have demonstrated the ability to deliver real results and to identify companies with growing businesses. The result is a portfolio of 150 robust businesses capable, in our eyes, of giving investors exposure to the full impact of AI on business and consumers.

How the index works

The team behind the index

The SG Thematic Research Team led by Daniel Fermon has extensive experience in creating investable equity indices on themes ranging from ageing population (World Silver Economy Index) to companies with leading positions in their respective businesses (World Champions Index). In designing the Rise of the Robots Index, the team developed a proprietary systematic algorithm that tracks developing trends in AI.

1As at December 2017.
Do diversify, don’t dilute

The index is more diversified than other like-for-like blended indices both in terms of number of components (150 vs. c90-100) and its industry/sector exposures. It won’t hold more stocks as it risks diluting its ability to capture the theme. And, by definition, it is more diverse than products focusing solely on either AI or Robotics.

While most of it is concentrated on Information Technology, Industrials and Health Care, it also includes a number of other sectors. For example, TechnicFMC (Energy), BlackRock (Financials) and Netflix (Consumer Discretionary) are all in the index, plus more unusual names such as US broadcasting company Sirius XM. We have also added online retail giants like Amazon and Alibaba so we can capture AI’s impact on consumers.

More stock diversification

<table>
<thead>
<tr>
<th></th>
<th>Rise of the Robots Index</th>
<th>iSTOXX FactSet Automation &amp; Robotics Index</th>
<th>ROBO Global Robotics and Automation UCITS Index</th>
</tr>
</thead>
<tbody>
<tr>
<td># stocks</td>
<td>150</td>
<td>102</td>
<td>87</td>
</tr>
<tr>
<td>% large caps</td>
<td>48.25%</td>
<td>26.79%</td>
<td>24.95%</td>
</tr>
<tr>
<td>% mid caps</td>
<td>26.83%</td>
<td>42.62%</td>
<td>29.52%</td>
</tr>
<tr>
<td>% small caps</td>
<td>24.93%</td>
<td>30.09%</td>
<td>45.11%</td>
</tr>
</tbody>
</table>

Of the 225 stocks found across the three indices, 64 are unique to the Rise of the Robots Index

More sectors captured

Source for all data: Lyxor International Asset Management. Data as at 20/06/2018. The two peer indices chosen are based on similar robotics and automation ETFs available in Europe.
More of a good thing¹

In our view, a well-balanced exposure to robotics and AI can help future-proof your portfolio because the application of AI offers greater return potential than traditional robotics alone. Our index is weighted more towards AI leaders (notably in the US and China) and less towards robotics manufacturers (Japan and South Korea) than other like-for-like products, but we don’t ignore the benefits of an exposure to robotics. After all, it is still a key growth engine.

Geographical breakdown

![Geographical breakdown chart]

Does it work?²

![4Yr Performance chart]

![Performance since index inception (27/11/2017) chart]

We believe the Rise of the Robots Index provides targeted but diversified access to this exciting megatrend, allowing you to capture the influence of robotics and AI on companies across the globe.

¹Source: Lyxor International Asset Management. Data as at 20/06/2018. The two peer indices chosen are based on similar robotics and automation ETFs available in Europe.
²Source: Lyxor International Asset Management; Bloomberg. Data as at 30/07/2018. 4-year time period chosen based on oldest available Bloomberg data for Rise of the Robots index. Past performance is not a reliable indicator of future results.
Future-proof your portfolio

Capture the megatrend with our Robotics and AI ETF

Embracing the AI and robotics revolution could help future-proof your portfolio. Our ETF gives you exposure to 150 companies harnessing the power of robotics and AI, whether for themselves or their customers.

Five things to know

- **Balanced**
  - The blend of robotics and AI helps future-proof your portfolio

- **Diversified**
  - We look beyond Industrials & IT to better capture change

- **Innovative**
  - Industry expertise ensures our ETF won’t get left behind

- **Future-proof**
  - Align your portfolio with the technological megatrend

- **Low cost**
  - Capture the Robotics and AI theme for just 0.40%¹

<table>
<thead>
<tr>
<th>UCITS ETF</th>
<th>Bloomberg tickers</th>
<th>Trading currencies</th>
<th>Replication type</th>
<th>TER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lyxor Robotics &amp; AI</td>
<td>ROAI</td>
<td>EUR, USD</td>
<td>Synthetic</td>
<td>0.40%¹</td>
</tr>
</tbody>
</table>

A note on investing in megatrends

- **Megatrends take time to shape the world; your investment horizon should be long term**

- **At 150 stocks, the Rise of the Robots Index is more narrow than a traditional cap weighted global index**

- **As a result of this increased concentration, volatility may be higher**

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¹Source: Lyxor International Asset Management, as at 18/09/2018. TER correct as at 18/09/2018.
Knowing your risk

It is important for potential investors to evaluate the risks described below and in the fund prospectus on our website www.lyxoretf.com

Capital at risk
ETFs are tracking instruments: Their risk profile is similar to a direct investment in the Underlying index. Investors' capital is fully at risk and investors may not get back the amount originally invested.

Replication risk
The fund objectives might not be reached due to unexpected events on the underlying markets which will impact the index calculation and the efficient fund replication.

Counterparty risk
With synthetic ETFs, investors are exposed to risks resulting from the use of an OTC swap with Société Générale. In-line with UCITS guidelines, the exposure to Société Générale cannot exceed 10% of the total fund assets. Physically replicated ETFs may have counterparty risk if they use a securities lending programme.

Underlying risk
The Underlying index of a Lyxor ETF may be complex and volatile. For example, when investing in commodities, the Underlying index is calculated with reference to commodity futures contracts exposing the investor to a liquidity risk linked to costs such as cost of carry and transportation. ETFs exposed to Emerging Markets carry a greater risk of potential loss than investment in Developed Markets as they are exposed to a wide range of unpredictable Emerging Market risks.

Currency risk
ETFs may be exposed to currency risk if the ETF is denominated in a currency different to that of the Underlying index they are tracking. This means that exchange rate fluctuations could have a negative or positive effect on returns.

Liquidity risk
Liquidity is provided by registered market-makers on the respective stock exchange where the ETF is listed, including Société Générale. On exchange, liquidity may be limited as a result of a suspension in the underlying market represented by the Underlying index tracked by the ETF, a failure in the systems of one of the relevant stock exchanges, or other market-maker systems; or an abnormal trading situation or event.

Conflicts of interest:
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