



Thematic ETFs performance

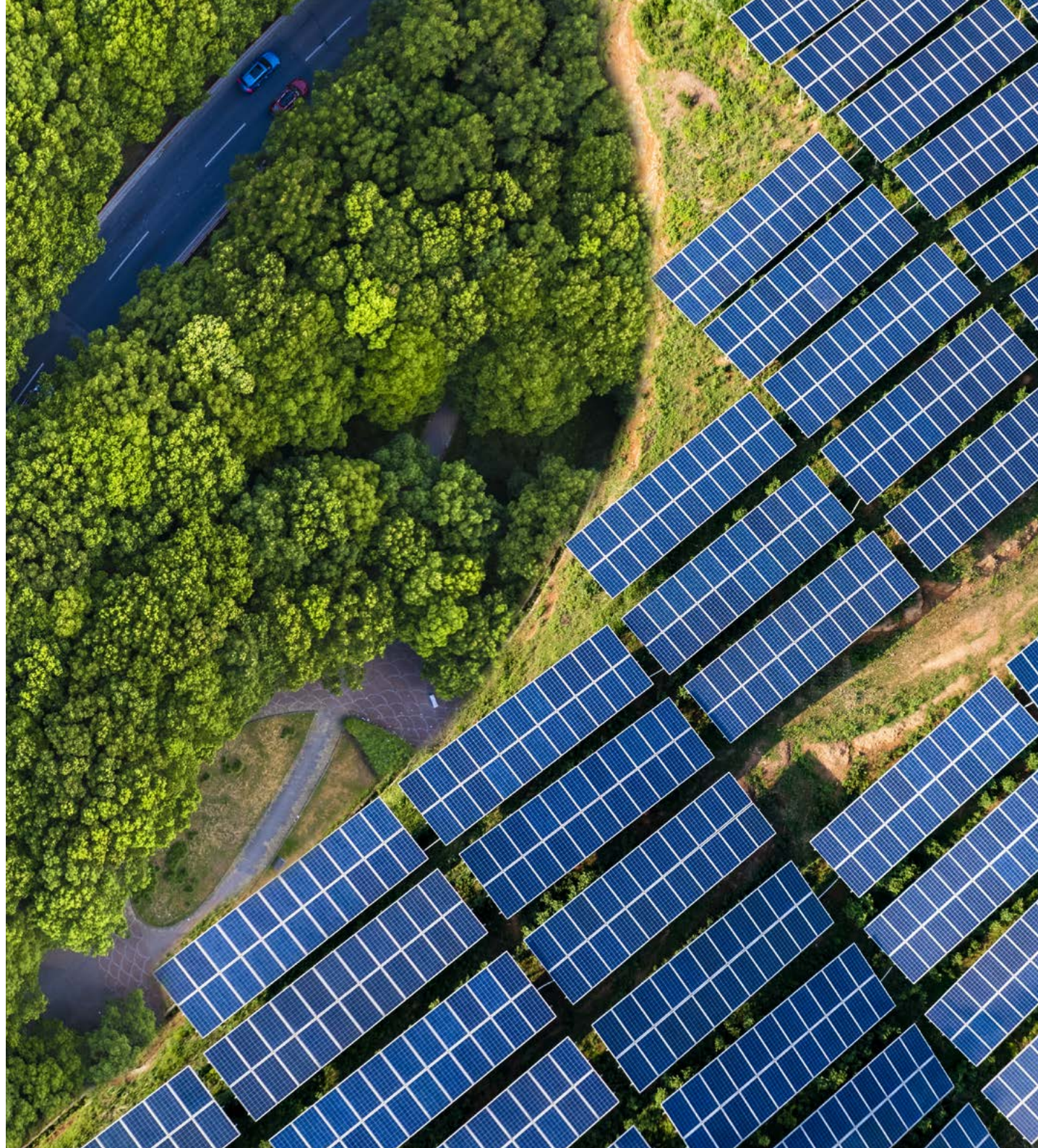
Q3 2023

Key risk

The value of an investment and any income taken from it is not guaranteed and can go down as well as up; You may not get back the amount you originally invested. Simulated and past performance is not a guide to the future.

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L&G Thematic ETFs



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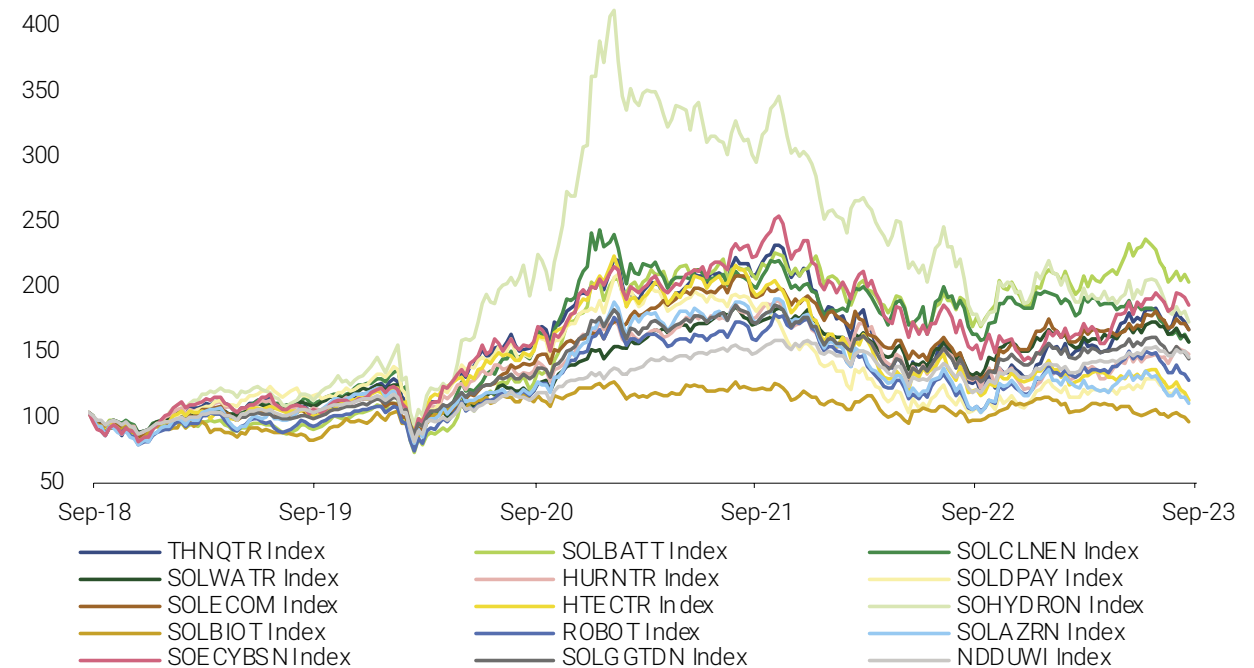
Performance commentary

In the third quarter of 2023, thematic strategies delivered negative returns with the exception of cyber security. Emerging cyber security remained flat. Clean energy and optical technology & photonics suffered the largest drawdowns, while ecommerce logistics and pharma breakthrough experienced more moderate losses.

Key risk

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Historical and simulated index performance*





L&G Thematic ETFs

Rolling 12 month performance to 30/09/2023

Index ticker	ETF ticker	2018	2019	2020	2021	2022	2023
THNQTR Index	AIAI	48.6%	2.1%	50.5%	33.4%	-40.2%	34.7%
SOLBATT Index	BATT	-3.9%	-11.4%	39.1%	68.5%	-19.9%	17.9%
SOLCLNEN Index	RENW	2.3%	8.2%	36.2%	34.5%	-18.7%	-6.4%
SOLWATR Index	GLUG	14.2%	7.0%	8.7%	43.4%	-23.0%	19.8%
HURNTR Index	USPY	36.7%	3.0%	27.6%	29.6%	-26.2%	15.6%
SOLDPAY Index	DPAY	46.8%	12.8%	29.8%	23.2%	-43.9%	7.9%
SOLECOM Index	ECOM	5.2%	0.0%	38.4%	38.5%	-34.1%	29.1%
HTECTR Index	DOCT	50.0%	-1.1%	50.1%	31.1%	-40.0%	-6.0%
SOHYDRON Index	HTWO	-	-	77.7%	49.9%	-41.7%	-5.1%
SOLBIOT Index	BIOT	18.0%	-20.6%	40.9%	4.5%	-19.1%	-0.7%
ROBOT Index	ROBO	9.4%	-8.2%	27.1%	35.8%	-35.2%	22.4%
SOLAZRN Index	LAZR	11.6%	1.8%	16.6%	45.8%	-40.6%	4.9%
SOECYBSN Index	ESPY	41.9%	0.5%	53.7%	40.6%	-31.3%	23.4%
SOLGGTDN Index	THMZ	-	-	-	31.7%	-26.2%	12.1%
NDDUWI Index	MSCI World	11.2%	1.8%	10.4%	28.8%	-19.6%	22.0%

Source: Bloomberg , all values are based in USD; as at 30 September 2023. Performance based on index levels gross of fees but net of dividend withholding taxes, where applicable. The effect of fees and charges would reduce the returns shown.

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Macro update

Economy and policy

Elevated oil prices on the back of uncertain supply supported energy, which was the best-performing sector in the quarter. On the other hand, utilities lagged.

Efforts to slow inflation remained pivotal for major central banks. In July, the US Federal Reserve raised rates again by 25bps to 5.25-5.50%. In August, the Bank of England raised rates by 25bps to 5.25%. The ECB raised rates by 25bps in both July and September to 4%, the highest level since the euro was established in 1999.

The G20 in India, with the theme of “One Earth, One Family, One Future”, concluded in September. World leaders discussed food security, climate, energy, development, health and digitalisation.

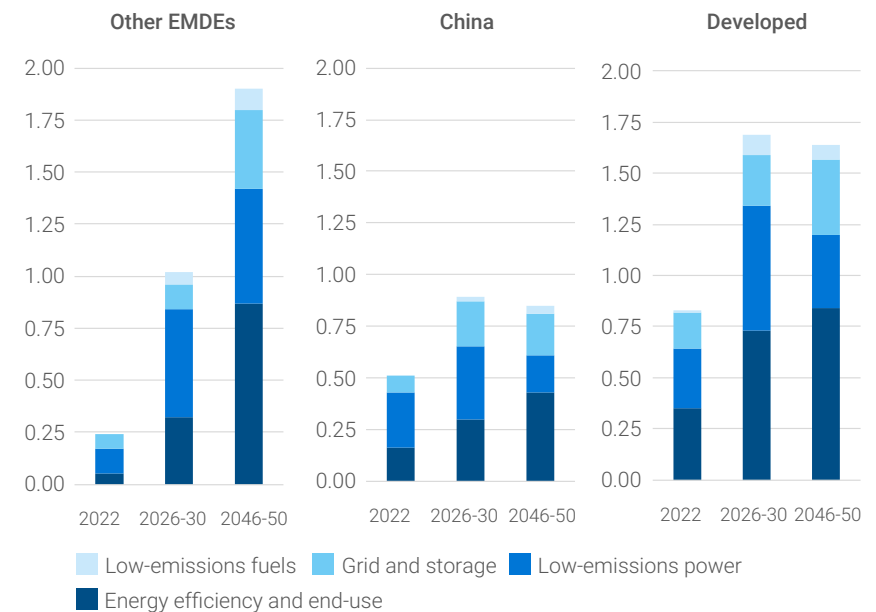
Source: LGIM, IEA, September 2023.

Climate news

According to the International Energy Association (IEA), today more than 80% of clean energy investment is taking place in advanced economies and China; more is needed in emerging and developing economies. The Net Zero Scenario sees clean energy investment increasing nearly threefold from the current level by 2030, but fivefold in emerging market and developing economies other than China.

Source: [IEA](#), September 2023

Clean energy investment needs by region/country in the Net Zero Scenario, 2022-2050



Source: [IEA](#), September 2023

For illustrative purposes only. The above information does not constitute a recommendation to buy or sell any security. There is no guarantee that any forecasts made will come to pass.



Macro update

Investment themes

Digital payments

In digitally advanced payment markets, contactless payments account for ~60% of in-store card transactions. Cash usage has declined to 20% of value in these regions, and in the most digital markets it is nearing only 5%. Mobile wallets and invisible checkouts are taking the spotlight as the next big step forward, with the lines between online and in-store transactions becoming blurred. According to Barclays Research, mobile wallets could reach >30% of European in-store payments by 2030.

Source: LGIM, Barclays Research, September 2023

Emerging cyber security

1,775 Chief Security Officers from large global companies were asked what technological advancements their company would utilise over the next five years to improve physical and cyber security. With the two becoming increasingly interlinked, AI, IoT and blockchain-based solutions featured across most responses.

Source: [Allied Universal](#), September 2023

Battery value-chain

BloombergNEF has tracked \$72 billion of announcements by automakers, battery manufacturers and other stakeholders as they look to capitalise on the lucrative tax credits offered in the US IRA. That said, EVs remain the main driver of battery capacity demand, and the cumulative value of EV sales across all segments is expected to hit \$8.8 trillion by 2030.

Source: BNEF, September 2023

Sources: LGIM, Barclays Research, Allied Universal, Bloomberg NEF, TI Insight.

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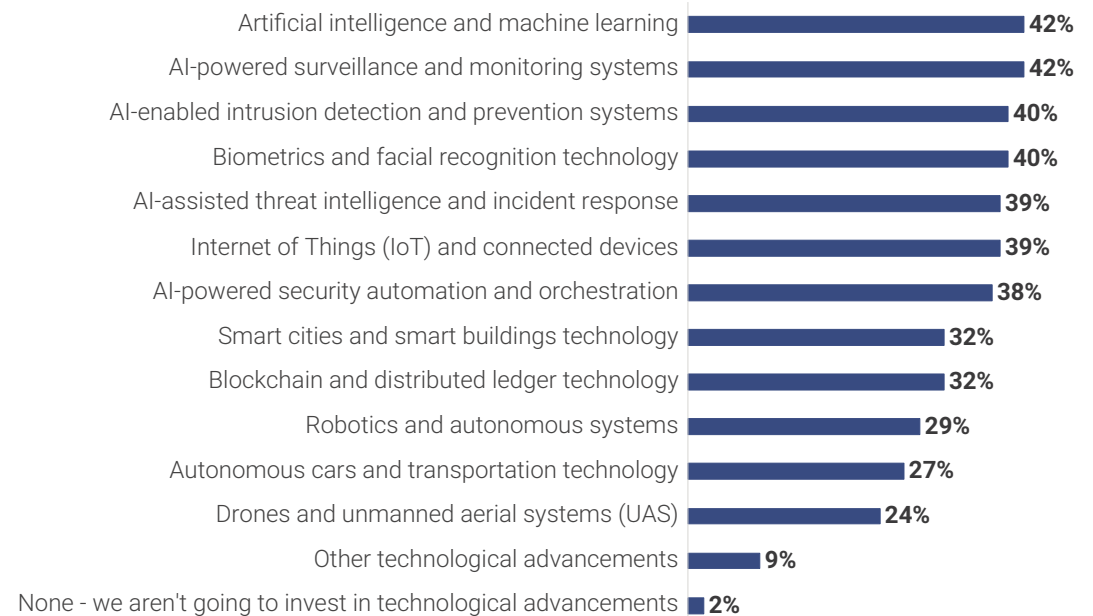
Did you know?

Ecommerce logistics

The British Museum, the largest museum in the world, has around 8 million items. Of these, some 2,000 items, including gems and jewellery, cannot be found, likely due to poor data capture and inventory control systems.

Source: [TI Insight](#), August 2023.

Planned technology advancements in the next five years



Source: [Allied Universal](#), September 2023.



ETF updates



Thematic investment insights

Want to stay ahead of the latest developments shaping the future of technology, energy and resources, and demographics? Our regular blogs and podcasts cover a wide range of key thematic investment topics.



Battery Value-Chain whitepaper:

The battery value-chain - How batteries and lithium are powering the energy transition

[Read here](#)



Battery Value-Chain blog part 2:

Could lithium supply constraints delay the energy transition?

[Read here](#)



Battery Value-Chain blog part 1:

What role will batteries and lithium play in the energy transition?

[Read here](#)



Battery Value-Chain podcast:

Positively charged: lithium and the electric vehicle revolution

[Listen here](#)



Thematic investing blog:

Technology overconcentration versus thematic diversification

[Read here](#)



Artificial Intelligence podcast:

Artificial Intelligence, investing, and you

[Listen here](#)



Clean Energy blog:

Capturing the energy transition opportunities

[Read here](#)



Artificial Intelligence blog:

Think AI is amazing? Wait until it meets quantum computing

[Read here](#)



Clean Water blog:

Is water the most overlooked natural resource?

[Read here](#)



Clean Water podcast:

Is water the most overlooked natural resource?

[Listen here](#)



ETF overlaps

Overlap across our themes

The following chart shows the overlap across our thematic range of investment strategies. When we design an investment strategy, we aim to provide pure exposure to the theme, which results in our thematic ETFs usually having little to no overlap, where possible. This allows investors to allocate according to their preferences and aim to reduce concentration risks in a portfolio.



	Artificial Intelligence	Battery Value-Chain	Clean Energy	Clean Water	Cyber Security	Digital Payments	Ecommerce Logistics	Emerging Cyber Security	Global Thematic	Healthcare Breakthrough	Hydrogen Economy	Pharma Breakthrough	Optical Technology & Photonics
Battery Value-Chain	2% (1)												
Clean Energy	2% (1)	8% (3)											
Clean Water	0% (0)	0% (0)	0% (0)										
Cyber Security	13% (7)	0% (0)	0% (0)	0% (0)									
Digital Payments	4% (3)	0% (0)	0% (0)	0% (0)	1% (1)								
eCommerce Logistics	3% (2)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)							
Emerging Cyber Security	15% (8)	0% (0)	0% (0)	0% (0)	43% (22)	2% (1)	0% (0)						
Global Thematic	14% (58)	16% (26)	11% (28)	9% (43)	10% (26)	0% (3)	12% (35)	15% (36)					
Healthcare Breakthrough	4% (3)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	13% (65)				
Hydrogen Economy	0% (0)	0% (0)	5% (2)	1% (1)	0% (0)	0% (0)	0% (0)	0% (0)	0% (2)	0% (0)			
Pharma Breakthrough	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	14% (26)	7% (5)	0% (0)		
Photonics	2% (1)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)	1% (10)	1% (1)	0% (0)	0% (0)	
Robotics and Automation	14% (11)	2% (2)	1% (1)	1% (1)	0% (0)	0% (0)	3% (3)	1% (1)	13% (70)	13% (9)	0% (0)	0% (0)	14% (10)

Source: LGIM, Bloomberg as at 30 September 2023. Figures represent % weight and number of stocks. Percentage overlap is calculated as the minimum of weight overlap between two portfolios.

For illustrative purposes only. The above information does not constitute a recommendation to buy or sell any security.



Artificial Intelligence

Company spotlight

Intuit

Based in California, Intuit operates in the financial technology sector, boasting one of the most extensive datasets in the industry. The company serves over 100 million clients across small businesses and individual consumers through a diverse range of fintech products, including TurboTax, QuickBooks, Credit Karma, Mint.com and Mailchimp. One of Intuit's primary goals is to simplify the complex and often burdensome task of financial administration, making it easier for both businesses and individuals to manage their finances. Intuit's Small Businesses and Self Employed segment is its biggest one, followed by Consumers (dedicated to income tax preparation), Credit Karma (performance finance platform) and ProTax (provision of accounting services).

Having invested more than \$20 billion in artificial intelligence (AI), Intuit has recently rolled out innovative AI-based solutions such as Intuit Assist. This advanced financial assistant is designed for small-to-medium businesses (SMBs) as well as individual consumers. It leverages generative AI technologies to offer features such as cash flow monitoring, anomaly detection and behavior-based analytics. Furthermore, it allows users to execute text queries, delivering visual, on-demand financial charts as responses.

For the fiscal year ended 31 July 2023, Intuit saw YoY revenue growth of 13%, taking total revenue to \$14.4 billion; a GAAP operating income increase of 22%, reaching \$3.1 billion; and an earnings-per-share (EPS) increment of 16%, standing at \$8.42 per share. Looking ahead, Intuit aims to achieve higher operational efficiency by synergising AI capabilities with human expertise. The company's expansive data assets also position it well for additional monetisation opportunities.

Last quarter performance commentary

The ROBO Global Artificial Intelligence Index returned -5.1% over the quarter.

This has been primarily driven by valuation contraction to 5.5x Forward EV/Sales (below 6.5X long-term average), despite the overall index seeing guidance raise on the top and bottom line, with 90% and 85.5% of members beating EPS and sales targets for the Q2 earnings season with growth rates of 64% and 14%, respectively.

Four of the 11 sub-sectors registered positive returns, spearheaded by Network & Security (17% weighting), which saw Darktrace, Varonis and CrowdStrike leading. This was closely trailed by the Consumer, Big Data / Analytics, and Cloud Providers subsectors (all nearly

flat/slightly up). Offsetting this, we saw declines in the Factory Automation, Healthcare and Ecommerce, and Semiconductor subsectors.

Big Data/Analytics saw heightened M&A, with Splunk acquired by Cisco at a 30% premium. This comes just months after former member New Relic was taken private by Francisco Partners and TPG. Alteryx is also exploring a sale.

It is important to note that we are still in the early stages of AI adoption, and that exposure to a broader AI semi basket may offer better risk-reward, especially as competitors ramp up offerings and the broader expected demand comes into focus. Regulatory threats such as EU initiatives around AI regulation and the Digital Markets Act to target anti-competitive behavior loom large for mega-tech companies – Alphabet, for example, faces anti-trust scrutiny.

THNQ's AI-focused Semiconductor subsector cooled -12%, with companies such as ASML (sole provider of UEV equipment required for making AI chips) down 20% and AMD (which recently had Microsoft CTO give a nod towards their GPUs) down 9.8%. Ultimately, it's clear that investment into AI infrastructure and enabling technologies is only just beginning to ramp up as we wrap up 2023 and enter 2024.

Source: LGIM, Bloomberg, ROBO Global®, as at 30 September 2023.

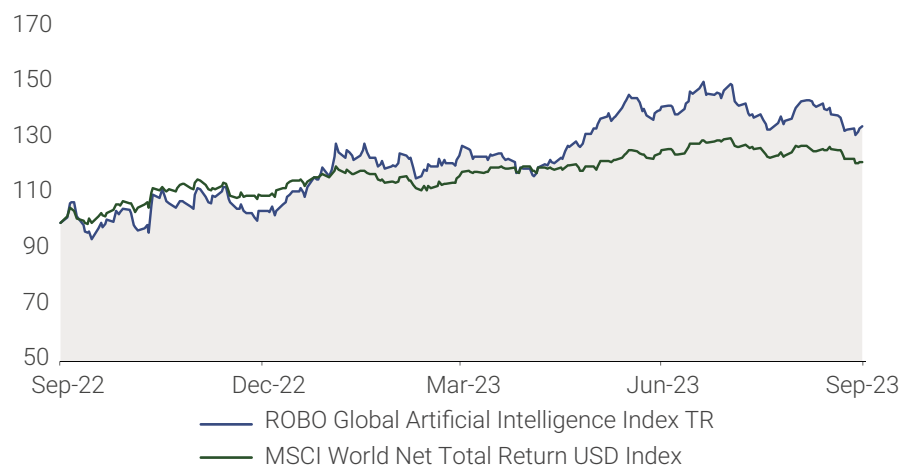
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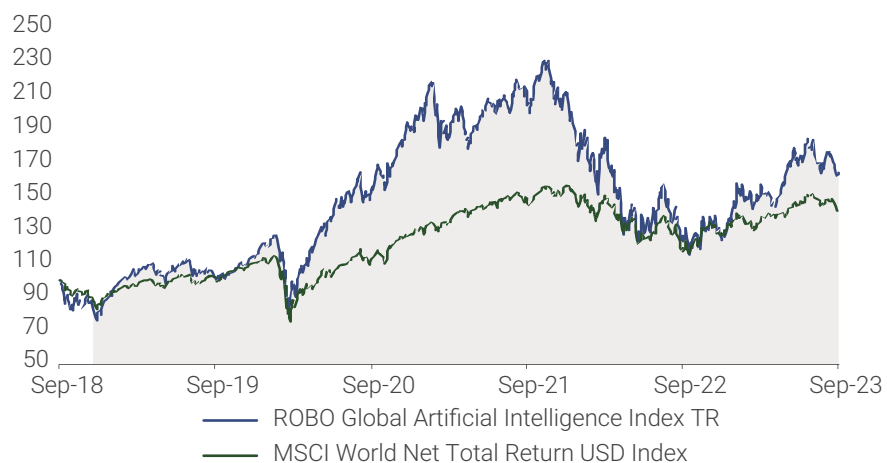
Artificial Intelligence

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-5.08%	34.75%	7.52%	65.19%
Annualized Return			2.45%	10.55%
Volatility	19.58%	27.41%	29.27%	29.74%
Sharpe Ratio	-96.46%	127.26%	8.37%	35.49%
Max Drawdown	-12.70%	-12.70%	-50.09%	-50.09%

Index total return contribution (QtD)

Top 5		Bottom 5	
Splunk Inc	▲ 0.76%	Ambarella Inc	▼ -0.66%
New Relic Inc	▲ 0.41%	Lemonade Inc	▼ -0.51%
Darktrace Plc	▲ 0.32%	Block Inc	▼ -0.45%
Atlassian Corp-A	▲ 0.26%	Cognex Corp	▼ -0.42%
Crowdstrike Ho-A	▲ 0.23%	C3.Ai Inc-A	▼ -0.41%

Portfolio composition

Latest additions	Latest deletions
no additions in Q3	New Relic
	Gen Digital
	Butterfly Network

Fund information

Ticker	AIAI LN	ISIN	IE00BK5BCD43
TER	0.49%	Inception date	02/07/2019
Currency	USD	Index inception date	14-Dec-18
Securities lending	No	Replication method	Physical

Key risk

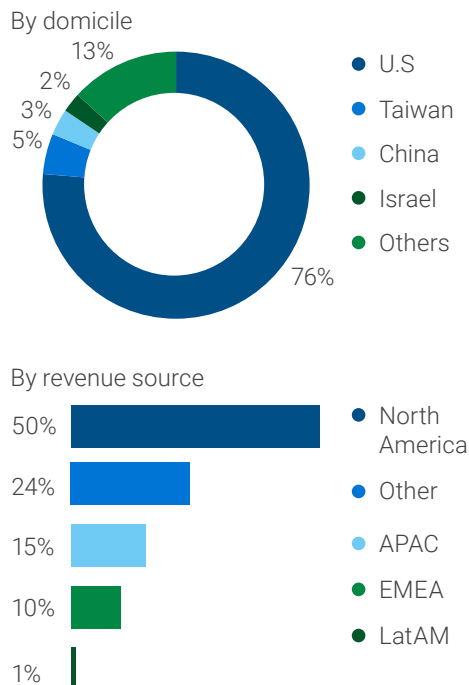
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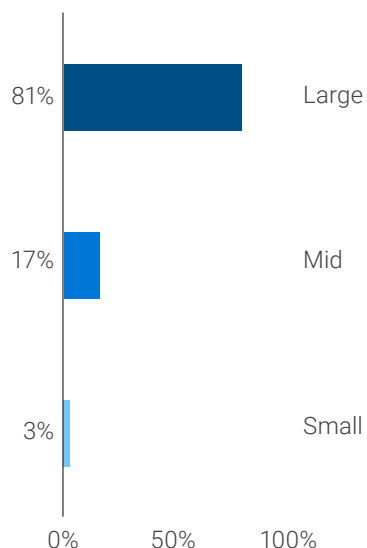
Artificial Intelligence

Characteristics

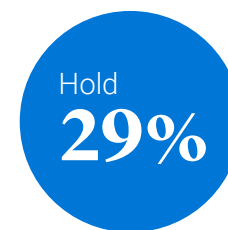
Geographical breakdown



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.26	1.09
Price/Sales	6.87	5.61
BPS	13.66	13.12
P/E Positive	45.04	29.13
ROE	9.73	6.34
Price/Book	7.78	6.69
P/E (1y fwd)	70.83	57.29
P/E (3y fwd)	42.12	35.23
Sales (1y fwd)	21,779	18,884
Sales (3y fwd)	29,915	26,430

Constituents overlap

S&P 500	15.0%
MSCI World	12.8%
Nasdaq 100	20.2%
Total stocks = 62	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

Consensus ratings do not constitute a recommendation to buy or sell any security.
The consensus ratings presented in this chart are not in relation to the L&G Thematic ETFs.

Key risk

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Battery Value-Chain

Company spotlight

NGK Insulators

Founded in 1919, NGK Insulators (NGK) is a Japanese manufacturer of ceramic exhaust gas catalyst carriers and insulators, as well as products for semiconductor production equipment applications. A core part of the company's business is supplying energy storage systems.

The "NAS battery" is NGK's flagship megawatt-level energy storage system that uses sodium and sulphur. The batteries feature high capacity, high energy density and long life. They are also compact, around a third the size of lead batteries. NAS batteries make it possible to implement peak load shaving and load balancing while helping stabilise renewable energy output, thereby contributing to power-saving measures, cutting energy costs and reducing environmental impact.

To further expand the adoption of NAS batteries, NGK announced a joint venture in February 2023 with Japanese electronics company Ricoh, named NR-Power Lab ([source](#)). NR-Power Lab will use NGK's large-capacity NAS batteries and Ricoh's renewable energy distribution platform to provide services that promote the widespread adoption of renewable energy. The battery's geographical presence is also expanding,

after being installed at the Nova nickel-copper-cobalt mine in Western Australia, which marked the first installation of NAS battery in Australia ([source](#)).

Additionally, NGK utilises its proprietary high-precision ceramics technologies to manufacture its "EnerCera" battery series. EnerCera is an ultra-thin, high-capacity and high-power rechargeable battery that uses NGK's "crystal-oriented ceramic plate" for its electrode. The battery has a self-supporting Internet of Things (IoT) device that can be used for a long period of time without battery replacement, which cuts operational costs and reduces the impact on the environment.

Last quarter performance commentary

The Solactive Battery Value-Chain Index returned -13.4% over the quarter.

In 2023, a pause in EV production subsidies in China, rising costs of materials and weaker demand in Europe put pressure on lithium prices, which started falling from their peak. As a result, battery-grade lithium miners weighed on performance. Allkem increased the capital cost estimates of some of its flagship projects, citing higher labour costs and material expenses; Pilbara reported lower revenues, which could impact margins despite declines in operating costs; the

performance of AMG Critical Materials was also affected by lower lithium prices and higher capex; Core Lithium was affected by output lower than study estimates due mainly to lower recoveries, mine plan adjustments and mining rates. While declining lithium prices could hurt lithium miners' revenues, economies of scale could be a long-term tailwind as projects are expanded over the coming years.

Auto manufacturers in the portfolio were hurt by weak downstream demand, with high interest rates and reduced consumer confidence pointing to lower demand and prices in Europe due to deteriorating economic conditions. Europe's probe into Chinese Electric Vehicle (EV) subsidies sparked further uncertainty. However, in a push to become more competitive, BMW is looking to create a high-voltage battery assembly site in Germany, which was favoured by the local population in a referendum, and Toyota announced its plan to triple EV production in 2025 compared with the 2024 plan.

The main contributors to performance were NGK Insulators (returned +13.1%), Nissan Motor (returned +8.4%) and Sebang Global Battery (+18.9%). The main detractors were EOS Energy (-50.5%), SolarEdge Technologies (-51.9%) and Livent (-32.9%).

Source: LGIM, Bloomberg, FastMarkets, Benchmark Mineral Intelligence, as at 30 September 2023.

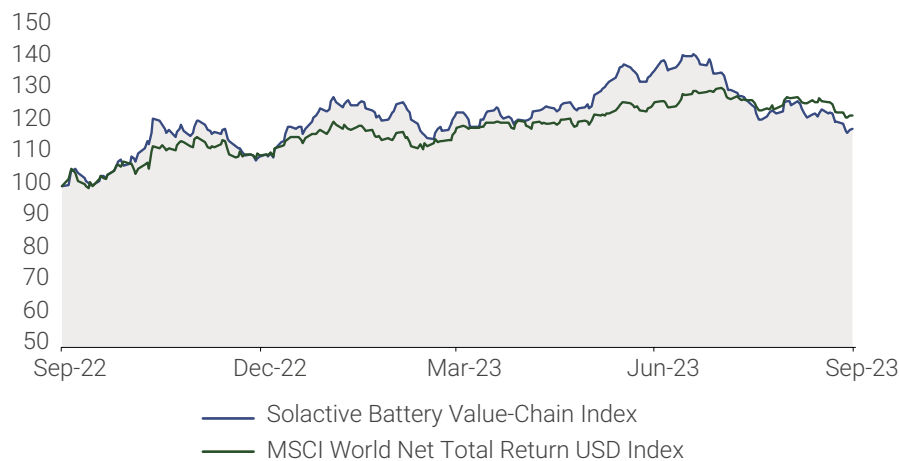
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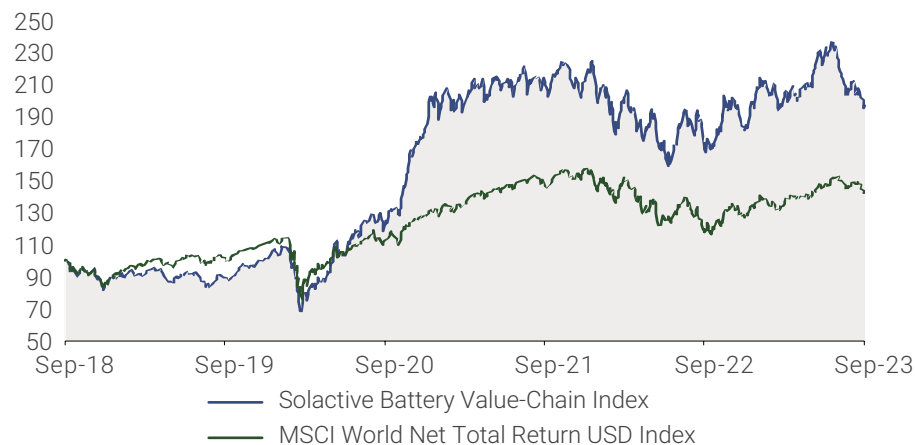
Battery Value-Chain

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	Qtd	1 year	3 years	5 years
Cumulative Return	-13.36%	17.92%	59.25%	96.30%
Annualized Return			16.81%	14.44%
Volatility	15.72%	17.75%	19.86%	21.07%
Sharpe Ratio	-278.41%	101.34%	84.63%	68.50%
Max Drawdown	-17.45%	-17.45%	-29.07%	-37.30%

Index total return contribution (Qtd)

Top 5		Bottom 5	
Ngk Insulators	▲ 0.33%	Eos Energy Enter	▼ -1.59%
Nissan Motor Co	▲ 0.28%	Solaredge Techno	▼ -1.56%
Sebang Global Ba	▲ 0.20%	Livent Corp	▼ -1.28%
Wartsila Oyj Abp	▲ 0.02%	Amg Critical Mat	▼ -1.25%
Calb Group Co Lt	▲ 0.00%	Allkem Ltd	▼ -1.23%

Portfolio composition

Latest additions	Latest deletions
no rebalance in Q3	no rebalance in Q3

Fund information

Ticker	BATT LN	ISIN	IE00BF0M2Z96
TER	0.49%	Inception date	23/01/2018
Currency	USD	Index inception date	03-Jan-18
Securities lending	No	Replication method	Physical

Key risk

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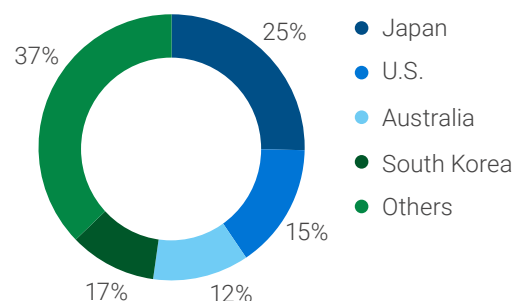


Battery Value-Chain

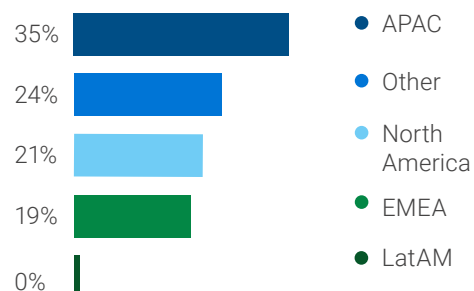
Characteristics

Geographical breakdown

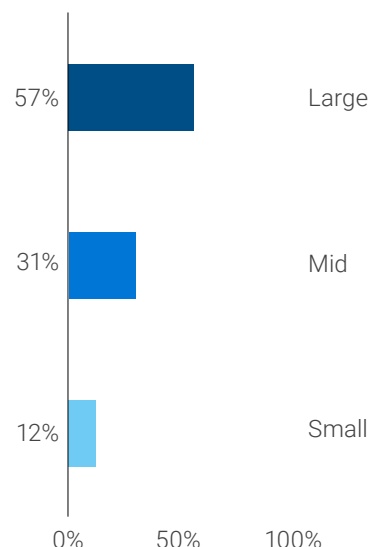
By domicile



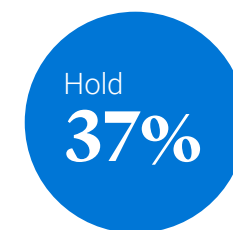
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.36	1.70
Price/Sales	1.08	0.79
BPS	16.72	15.13
P/E Positive	14.61	17.29
ROE	11.69	11.08
Price/Book	1.60	1.77
P/E (1y fwd)	31.51	13.75
P/E (3y fwd)	17.75	20.36
Sales (1y fwd)	31,658	39,628
Sales (3y fwd)	36,127	36,578

Constituents overlap

S&P 500	1.9%
MSCI World	1.8%
Nasdaq 100	3.2%
Total stocks = 32	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Clean Energy

Company spotlight

West Holdings

West Holdings (West) is a Japanese renewable energy business operator and solar power provider, founded in 1981. The company currently operates multiple solar-related businesses, including West FIT, built-to-order solar power systems for industrial customers, mega solar development and sales, mega solar revitalisation, wholesale electric power sales (West Green Power), and maintenance.

West FIT, which constructs multiple small-scale, non-subsidized solar power plants for packaged sale, has been a key pillar of growth for the company and West is aiming to further expand its operations across this business line. Given that the West FIT business involves the sale of power plants, growth in West FIT leads directly to growth in recurring West Green Power and maintenance business revenues.

While many companies in Japan are in the renewable energy business, West operates as a unique player with a niche solar power business. The company stands out given its focus on small to mid-sized solar power and unlike its competitors, West does not have an overreliance on one specific product category due to its diversified solar-related offerings.

West is at the forefront of the energy transition movement, having developed over 65,000 solar power projects of around 2GW in capacity in Japan and Thailand. To further this, in February 2022 the company partnered with Japan's largest power company, Jera, to build a minimum of 1GW of solar plant in Japan over the next five years ([source](#)). This will involve building large-scale solar power farms at over 7,000 sites, including former JERA power plant sites, and will sell the electricity to corporate customers seeking clean energy.

Last quarter performance commentary

The Solactive Clean Energy Index NTR returned -17.8% over the quarter.

As the sector requires large investments and projects tend to have a long-term nature, despite strong profit margins, rising borrowing costs and inflation represented significant headwinds. Over the quarter clean energy companies broadly declined on the back missed estimates, fears of overcapacity, higher interest rates in the US and Europe, high input costs, higher inventory as well as some smaller policy reforms.

In the US, the solar market took a hit from the Fed's aggressive tightening, which increased borrowing

costs for consumers. A new metering reform in California (NEM 3.0) that reduced the money credited to rooftop solar owners for sending excess power into the grid also hurt the market. According to the IEA, the amount of capital investment flowing into the solar sector is poised to overtake the amount of investment going into oil production for the first time ever in 2023.

Wind turbine costs, especially for European manufacturers, remained high in 2023. Moreover, wind farm developments are particularly vulnerable to rising interest rates due to high upfront investments, as well as long lead times. Offshore wind developments encountered supply-chain and capital-cost challenges, as well as uncertainty on tax credits in the US. However, commissioned offshore wind capacity is set to grow around 8x to 509GW by 2035 from 62GW in 2022. Additionally, Europe is expected to unveil a support package at the end of October to accelerate permitting, ensure stable supplies and improve current auctioning rules.

The main contributors to performance were West Holdings (returned +27.0%), Worley (+8.1%) and Mitsubishi Corp (+0.7%). The main detractors were SMA Solar Technology (-46.8%), Orsted (-42.2%) and SolarEdge Technologies (-51.9%).

Source: LGIM, Bloomberg, as at 30 September 2023.

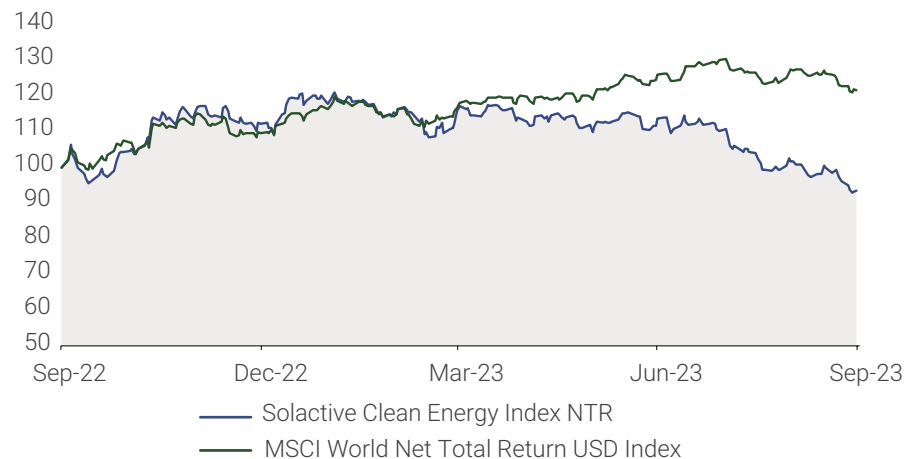
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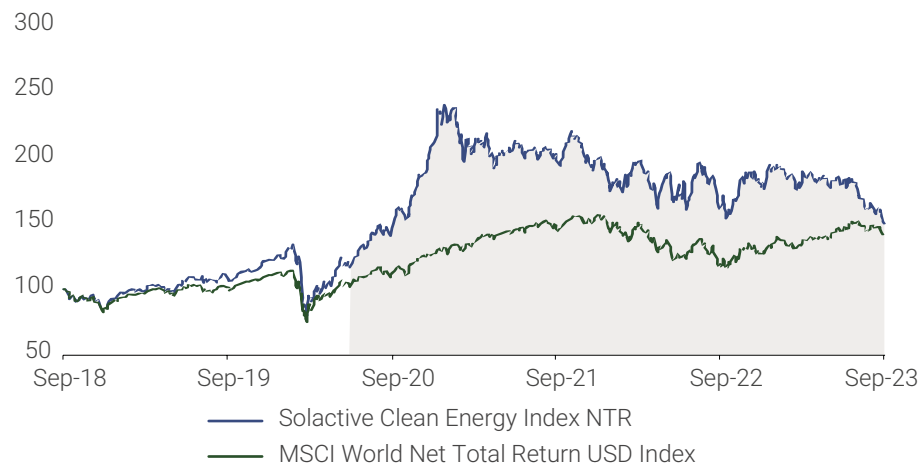
Clean Energy

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-17.75%	-6.41%	2.32%	50.83%
Annualized Return			0.77%	8.56%
Volatility	16.57%	19.56%	22.03%	22.68%
Sharpe Ratio	-328.10%	-32.87%	3.49%	37.75%
Max Drawdown	-18.89%	-23.32%	-37.68%	-40.72%

Index total return contribution (QtD)

Top 5		Bottom 5	
West Holdings Co	▲ 0.83%	Sma Solar Techno	▼ -1.81%
Worley Ltd	▲ 0.70%	Orsted A/S	▼ -1.16%
Mitsubishi Corp	▲ 0.60%	Solaredge Techno	▼ -1.11%
Nordex Se	▲ 0.54%	Canadian Solar I	▼ -0.90%
Array Technologi	▲ 0.48%	Alfen N.V.	▼ -0.89%

Portfolio composition

Latest additions	Latest deletions
Toyota Tsusho	Grenergy
Mitsubishi Electric Corp	Nordex
Hanwha Solutions	Obrascon Huarte Lain
	Ormat Technologies
	Schneider Electric
	Soltec Power Holdings

Fund information

Ticker	RENW LN	ISIN	IE00BK5BCH80
TER	0.49%	Inception date	11/11/2020
Currency	USD	Index inception date	26-Jun-20
Securities lending	No	Replication method	Physical

Key risk

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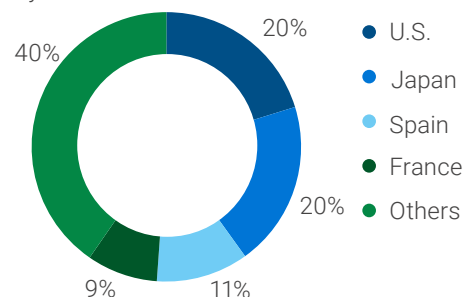


Clean Energy

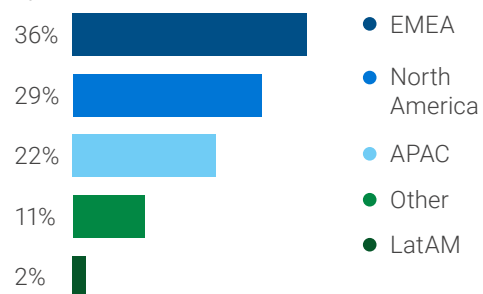
Characteristics

Geographical breakdown

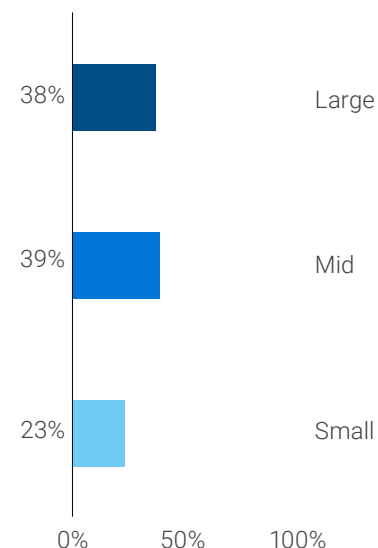
By domicile



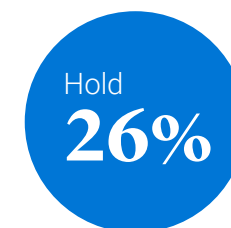
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.22	1.08
Price/Sales	1.33	1.52
BPS	12.94	11.81
P/E Positive	18.85	22.74
ROE	11.38	10.73
Price/Book	1.64	2.31
P/E (1y fwd)	30.51	37.04
P/E (3y fwd)	17.21	29.55
Sales (1y fwd)	16,513	16,598
Sales (3y fwd)	17,738	16,354

Constituents overlap

S&P 500	2.4%
MSCI World	2.1%
Nasdaq 100	3.1%
Total stocks = 38	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Clean Water

Company spotlight

Primo Water

US-based Primo is a leading pure-play digital water solutions provider in North America, Europe and Israel focused on healthy and sustainable hydration solutions. The company operates largely under a recurring revenue model. Its offering consists of its innovative water dispensers, which are sold through major retailers and online at various price points or leased to customers.

Primo's "razorblade" offering comprises Water Direct, Water Exchange and Water Refill. The Water Direct business delivers sustainable hydration solutions across the company's 21-country footprint direct to customers. Through the Water Exchange and Water Refill businesses, Primo offers purified pre-filled water in multi-gallon format containers at over 13,000 locations and self-service drinking water refill units at c.22,000 locations, respectively, in North America. Primo also offers water filtration units across its 21-country footprint, representing a top five position.

The company's water solutions aim to expand consumer access to purified, spring and mineral water to promote a healthier, more sustainable lifestyle while simultaneously reducing plastic waste and pollution. Primo is committed to its water stewardship standards and has partnered with the International Bottled Water

Source: LGIM, Bloomberg, Global Water Intelligence, as at 30 September 2023.

Association in North America as well as with Watercoolers Europe, which ensure strict adherence to safety, quality, sanitation and regulatory standards.

A key strategy for growth for Primo has been acquisitions: it has acquired 18 companies since 2020 (source: Bloomberg). Key transactions include the acquisition of Highland Mountain Water in July 2022, the US-based independent distributor of Primo's Mountain Valley premium water brand ([source](#)); acquisition of Sip-Well in January 2022, the Belgium-based distributor of water solutions ([source](#)); and acquisition of Get Fresh in October 2021, the distributor of water solutions in northern and eastern Poland ([source](#)).

Last quarter performance commentary

The Solactive Clean Water Index NTR returned -7.4% over the quarter.

According to a CDP report, \$2.3 trillion in commercial opportunities could be unlocked if the private sector acts on water security (source). Latina America's largest water utility, Sabesp, is looking to sell the state's controlling stake next year to attract investors with a long-term vision to improve infrastructure and achieve universalisation. Sabesp was among the best-performing utilities over the quarter. According to industry body

Abcon Sindcon, without a big change in investment, bringing piped water service to 99% of the Brazilian population could take until 2091, and ensuring wastewater service for 90% of the population until 2060.

Over the quarter Watts Water Technologies announced the acquisition of Bradley to expand its footprint in industrial and commercial water markets, and American Water Works announced the acquisition of Audubon Water to deliver infrastructure improvements that will ensure access to safe drinking water. On the policy front, the US Environmental Protection Agency (EPA) announced funding worth \$7.5bn for the Water Infrastructure, Finance and Innovation Act (WIFIA), which targets investment in economically stressed communities, progress on lead service line replacement, addressing PFAS and emerging contaminants, mitigating the impacts of drought and supporting water innovation and resilience.

Similarly to other themes, clean water companies are facing higher labour, capital, energy, and materials/commodity costs. Utilities (the worst-performing sector globally over the quarter) and water engineering companies were weak, while some water technology and digital solutions companies delivered positive performance. The main contributors to performance were Primo Water (returned +10.6%), Sulzer (+11.5%) and Gorman-Rupp (+14.7%). The main detractors were Xylem (-18.9%), Energy Recovery (-24.1%) and Mueller Water Products (-21.5%).

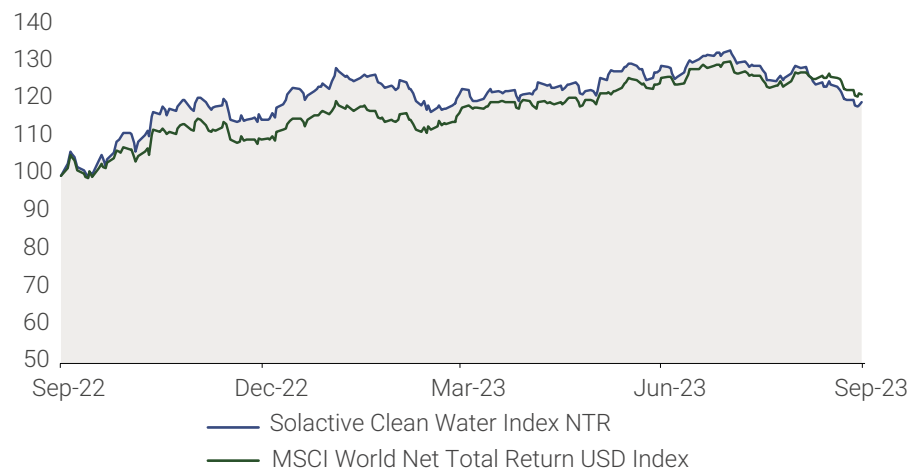
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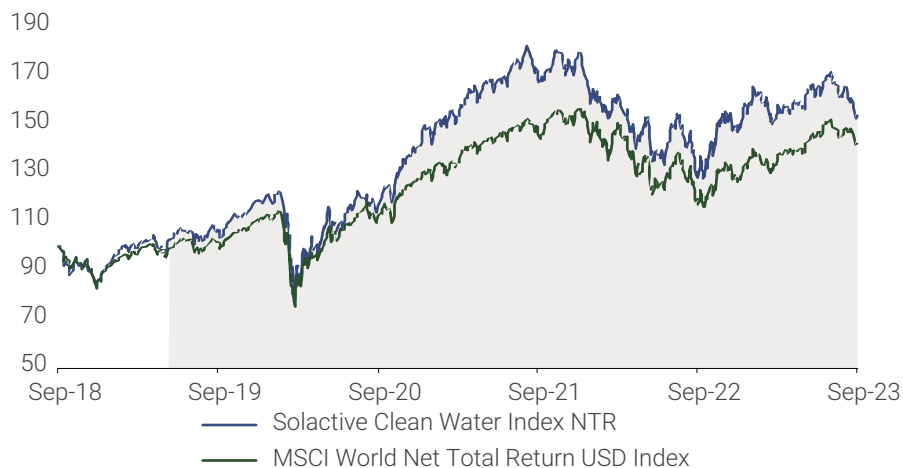
Clean Water

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QTD	1 year	3 years	5 years
Cumulative Return	-7.42%	19.77%	32.20%	53.65%
Annualized Return			9.77%	8.97%
Volatility	11.07%	16.67%	16.48%	20.03%
Sharpe Ratio	-240.59%	119.03%	59.27%	44.77%
Max Drawdown	-11.15%	-11.15%	-29.87%	-36.00%

Index total return contribution (QTD)

Top 5		Bottom 5	
Primo Water Corp	▲ 0.18%	Xylem Inc	▼ -0.76%
Sulzer Ag-Reg	▲ 0.15%	Energy Recovery	▼ -0.59%
Gorman-Rupp Co	▲ 0.11%	Mueller Water-A	▼ -0.51%
Zurn Elkay Water	▲ 0.11%	Itron Inc	▼ -0.41%
Ferguson Plc	▲ 0.09%	Middlesex Water	▼ -0.39%

Portfolio composition

Latest Additions	Latest Deletions
Consolidated Water	China Water Affairs
Halma	Kitz Corp
Industrie De Nora	Norma Group
Cadiz	
Torishima Pump	

Fund information

Ticker	GLUG LN	ISIN	IE00BK5BC891
TER	0.49%	Inception date	02/07/2019
Currency	USD	Index inception date	07-Jun-19
Securities lending	No	Replication method	Physical

Key risk

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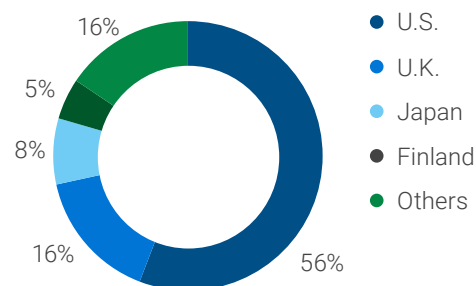


Clean Water

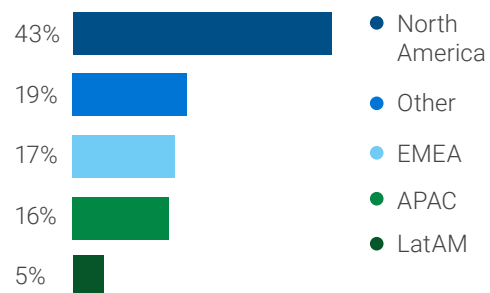
Characteristics

Geographical breakdown

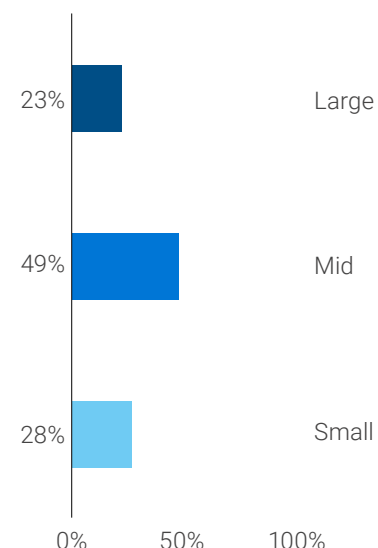
By domicile



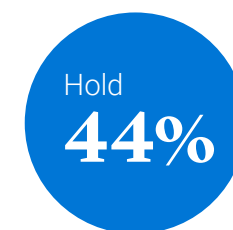
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.80	1.58
Price/Sales	2.83	2.69
BPS	14.22	12.53
P/E Positive	24.91	24.27
ROE	12.51	12.41
Price/Book	3.05	2.69
P/E (1y fwd)	30.05	24.43
P/E (3y fwd)	24.52	22.24
Sales (1y fwd)	2,512	2,598
Sales (3y fwd)	2,765	2,187

Constituents overlap

S&P 500	0.6%
MSCI World	0.5%
Nasdaq 100	0.0%
Total stocks = 54	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
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Key risk

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Cyber Security

Company spotlight

Qualys

Qualys provides cloud security and compliance solutions through a software as-a-service (SaaS) model, primarily with renewable annual subscriptions, and operates through wholly owned subsidiaries globally. Qualys introduced its first cloud solution, Vulnerability Management, in 2000. Qualys is now one of the leading providers of cloud-based security, compliance and IT solutions with more than 10,000 subscription customers worldwide, including industry leaders such as Coca-Cola, Alphabet, Citibank and Toyota.

Qualys has a highly scalable cloud platform which helps customers not only detect, but also prioritise, risk across asset classes and environments while remediating vulnerabilities much faster than alternatives. Its high-margin recurring revenue model with no capex/maintenance costs acts as a good value proposition for its partners.

According to the company, the uncertain macro and heightened threat environment are driving security stack consolidation necessary for clear security outcomes. The company is well positioned to capitalise on the cloud transformation markets and has a total addressable market that is estimated to increase by 42% to \$64 billion by 2026.

Source: LGIM, Bloomberg, Nasdaq, as at 30 September 2023.

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In Q2 2023, Qualys expanded its partnership with Amazon's AWS, which is now making Qualys new product bundles aimed at SMBs/SMEs available in AWS' marketplace. Qualys also focuses on acquisitions as a way to boost its growth. In 2022, it has acquired Blue Hexagon, enabling them to leverage their clouds platform with AI capabilities across all assets and applications. Other notable acquisitions are Kandor Soft Labs Private in 2021 (user-defined workflows) and Spell Security Private Limited (Endpoint Detection and Response).

As per the most recent guidance released in Q2, the company expects revenue growth of around 13% year-on-year in FY 2023.

Last quarter performance commentary

The ISE Cyber Security UCITS NTR Index returned +1.0% over the quarter.

Cyber security revenues are expected to grow at an annual rate of 10.7% this year, and from 2023 to 2028 the market is expected to keep growing at 10.5% CAGR, with the solutions segment leading the pace over services (source: Statista, Nasdaq, September 2023). The US Cybersecurity and Infrastructure Security Agency (CISA)'s director announced that the Cyber Incident Reporting for Critical Infrastructure Act signed in March 2022 would be ready by early 2024 at the latest.

Attacks and breaches over the quarter affected US casino chain Caesars Entertainment, US hospitality provider MGM Resorts, Japanese watch maker SEIKO and cosmetics giant Estee Lauder.

New cyber security products launched in the quarter involved supply chain, observability and cloud solutions. Qualys introduced a software risk management solution to help clients detect, manage and reduce supply chain risks; Darktrace introduced HEAL to help organisations remediate and recover from cyber attacks; Splunk rolled out Splunk Edge Hub and Splunk AI as well as other product innovations to enhance observability and security; and Akamai introduced an API security tool; and CrowdStrike introduced CrowdStrike Counter Adversary Operations to counter identity-based threats

Most notably, Cisco acquired Splunk at a 31% premium to leverage its AI, security and observability tools within Cisco's cyber security segment. Tenable also announced the acquisition of Israeli cloud security provider Ermetic and Check Point announced the acquisition of Perimeter 81, a provider of Secure Access Service Edge and Zero Trust Network solutions.

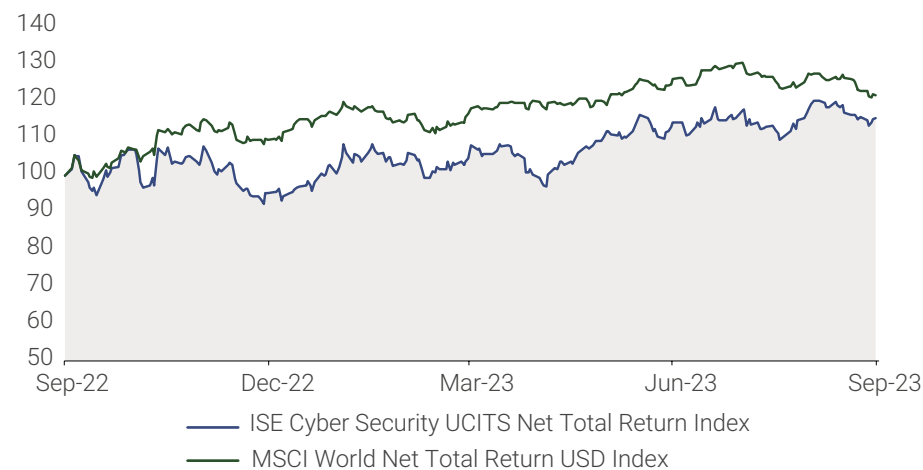
The main contributors to performance were Splunk (returned +37.9%), Darktrace (+25.6%) and Fastly (+21.6%). The main detractors were Fortinet (-22.4%), Trend Micro (-21.2%) and BlackBerry (-14.8%).



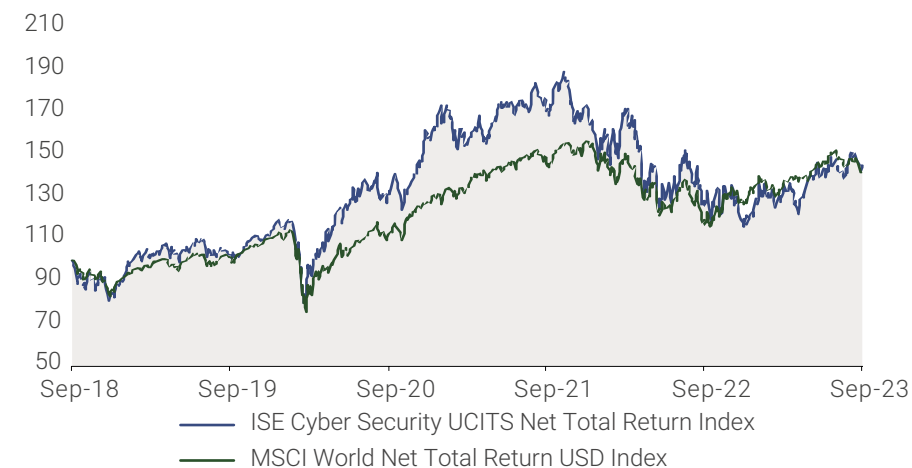
Cyber Security

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	1.03%	15.60%	10.52%	45.24%
Annualized Return			3.40%	7.75%
Volatility	18.55%	24.49%	24.60%	25.24%
Sharpe Ratio	22.57%	63.92%	13.81%	30.70%
Max Drawdown	-7.26%	-14.49%	-38.67%	-38.67%

Index total return contribution (QtD)

Top 5		Bottom 5	
Splunk Inc	▲ 1.56%	Fortinet Inc	▼ -0.90%
Darktrace Plc	▲ 1.16%	Trend Micro Inc	▼ -0.87%
Fastly Inc -CI A	▲ 0.88%	Blackberry Ltd	▼ -0.71%
Akamai Technolog	▲ 0.79%	Atos Se	▼ -0.44%
Qualys Inc	▲ 0.75%	Juniper Networks	▼ -0.42%

Portfolio composition

Latest additions	Latest deletions
Open Text Corp	no deletions in Q3

Fund information

Ticker	USPY LN	ISIN	IE00BYPLS672
TER	0.69%	Inception date	28/09/2015
Currency	USD	Index inception date	31-Aug-15
Securities lending	No	Replication method	Physical

Key risk

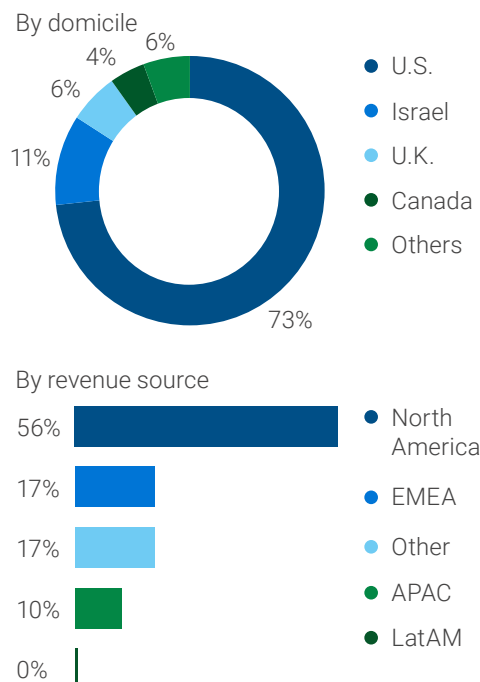
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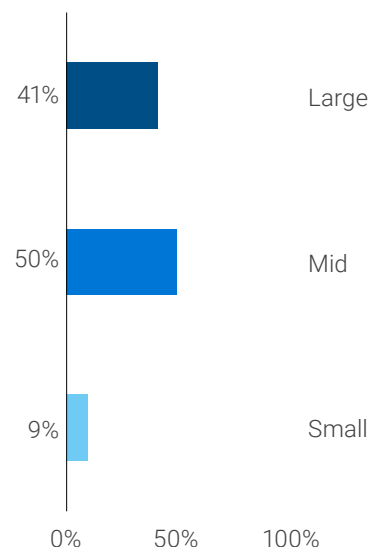
Cyber Security

Characteristics

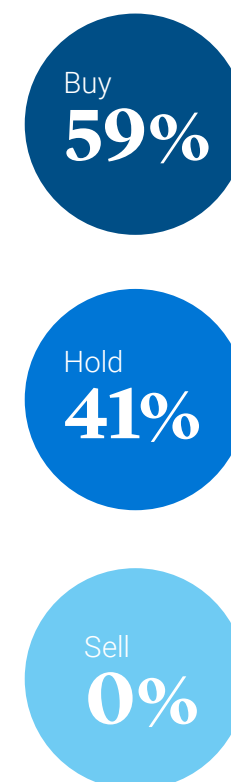
Geographical breakdown



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	0.11	0.74
Price/Sales	3.86	3.81
BPS	6.88	7.97
P/E Positive	27.27	25.87
ROE	2.65	3.68
Price/Book	3.64	3.79
P/E (1y fwd)	28.39	23.58
P/E (3y fwd)	24.16	24.15
Sales (1y fwd)	3,218	3,480
Sales (3y fwd)	3,236	3,085

Constituents overlap

S&P 500	1.0%
MSCI World	1.0%
Nasdaq 100	3.4%
Total stocks = 41	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

The value of an investment and any income taken from it is not guaranteed and can go down as well as up; You may not get back the amount you originally invested.



Digital Payments

Company spotlight

Remitly

Founded in 2011, Remitly is a US-based mobile native remittances company, focused on providing immigrants and their families with secure and easy-to-use financial services for cross-border money transfer. Its main product is its core remittance platform via its mobile app. In addition, the company is focused on expanding its offering through new products, including Passbook, a mobile wallet with linked debit cards, as well as an API product called Remitly for Developers to help third parties integrate remittances for their customers.

Remitly provides a strong customer value proposition for digital remittances in terms of convenience and ease of use. As opposed to in-person remittance channels, Remitly's product is differentiated in its ability to provide customers with a guaranteed time for when funds will be made available in the send market and providing expedited delivery within minutes for Express transfers.

The company has experienced rapid growth, accelerated both by the addition of new corridors, as well as accelerated digitisation during the pandemic. In 2022, Remitly processed \$28.6bn of send volume ([source](#)), representing a CAGR of c.59% from 2019. It

has 17 send markets and over 115 receive markets, operating over 1,700 corridors with 355k cash pickup locations. The company began by focusing on the US-Philippines channel, and has since expanded its send and receive markets, with plans to continue adding corridors.

In January 2023, Remitly acquired Rewire, an Israeli-based remittance and financial services platform for migrant workers ([source](#)). The transaction further expands the company's geographical footprint and bolsters its complementary remittance product platform.

Last quarter performance commentary

The Solactive Digital Payments Index NTR returned -10.0% over the quarter.

The European Commission issued the Payment Services Directive 3 (PSD3), the follow-up to PSD2, which was launched in January 2016. Among the goals are to combat and mitigate payment fraud; to improve consumer rights; to level the field between bank and non-bank payment providers; and to remove obstacles to open banking, facilitating data sharing and improving customer control of digital payments. In advanced economies, where enterprise in-store innovation has traditionally focused on the checkout experience, technologies such as 'just walk out' and

self-scan are expected to increase demand for invisible payments.

Mercedes adopted Mastercard's Secure Card on File to allow drivers to digitally pay for fuelling services directly from their cars with a fingerprint sensor. This service is available at 3,600 service stations in Germany and aims to provide customers with a more seamless and integrated payments ecosystem.

Visa and Mastercard announced the acquisition of Brazilian cloud-based issuing and core banking platform Pismo, while Brookfield Asset Management announced the acquisition of Network International. Both transactions are expected to complete by the end of the year. Against a backdrop of economic uncertainty and high living costs, consumer spending volumes have been slow. According to a survey by Marqeta, UK and US consumers have turned to embedded finance offerings to gain support to reduce spending and guide savings. In partnership with Visa and Marqeta, Veem released a virtual card to facilitate spending and access to funds for small business. American Express announced improvements to its small businesses card members clients to enhance their digital experience and manage cash flows more efficiently.

The main contributors to performance were Dlocal (returned +57.1%), Remitly (+34.0%) and Payoneer (+27.2%). The main detractors were Adyen (-56.9%), Expensify (-59.3%) and Nuvei (-49.0%).

Source: LGIM, Bloomberg, Barclays Research, as at 30 September 2023.

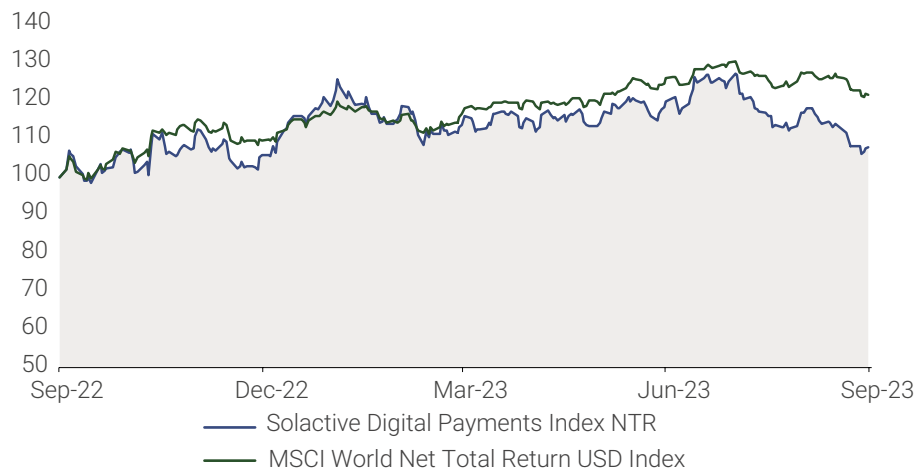
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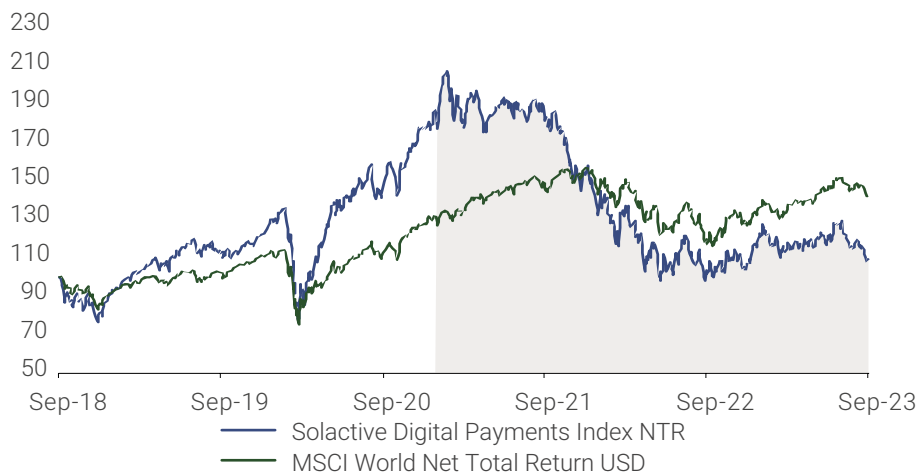
Digital Payments

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-10.03%	7.93%	-25.39%	9.22%
Annualized Return			-9.32%	1.78%
Volatility	18.41%	23.70%	25.98%	27.63%
Sharpe Ratio	-187.78%	33.59%	-35.87%	6.44%
Max Drawdown	-16.51%	-16.51%	-52.89%	-52.89%

Index total return contribution (QtD)

Top 5		Bottom 5	
Dlocal Ltd	▲ 1.18%	Adyen Nv	▼ -1.48%
Remit Global Inc	▲ 0.85%	Expensify Inc-A	▼ -1.34%
Payoneer Global	▲ 0.73%	Nuvei Corp-Sub V	▼ -1.08%
Marqeta Inc-A	▲ 0.54%	Block Inc	▼ -0.91%
Global Payments	▲ 0.36%	Euronet Worldwid	▼ -0.76%

Portfolio composition

Latest additions	Latest deletions
no rebalance in Q3	no rebalance in Q3

Fund information

Ticker	DPAY LN	ISIN	IE00BF92J153
TER	0.49%	Inception date	27/05/2021
Currency	USD	Index inception date	26-Jan-21
Securities lending	No	Replication method	Physical

Key risk

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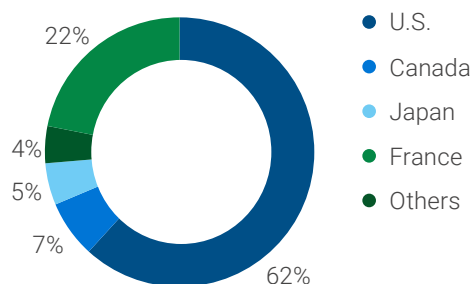


Digital Payments

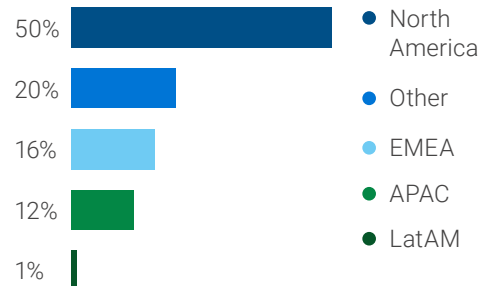
Characteristics

Geographical breakdown

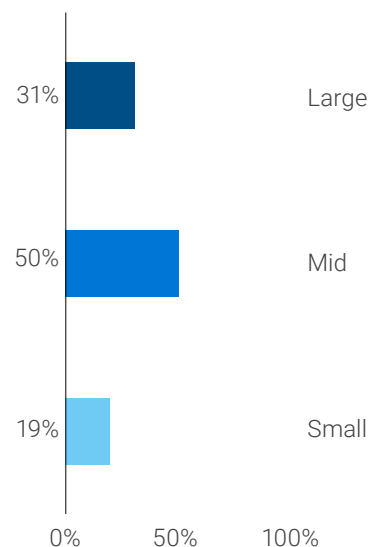
By domicile



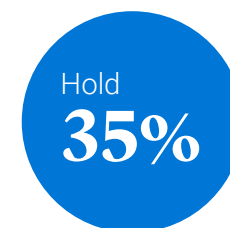
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	0.46	0.71
Price/Sales	2.32	3.32
BPS	7.97	9.57
P/E Positive	31.89	29.13
ROE	3.68	3.39
Price/Book	2.75	3.03
P/E (1y fwd)	30.33	21.32
P/E (3y fwd)	14.76	19.99
Sales (1y fwd)	4,961	5,252
Sales (3y fwd)	5,696	4,992

Constituents overlap

S&P 500	2.7%
MSCI World	1.9%
Nasdaq 100	0.6%
Total stocks = 40	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Ecommerce Logistics

Company spotlight

Rakuten

Rakuten is a Japanese technology conglomerate operating 70+ businesses spanning ecommerce, digital content, communications and fintech. Founded in 1997, Rakuten has over 17,000 employees and partner staff worldwide.

Rakuten is best known for its strong presence in Japan's ecommerce market through Rakuten Ichiba, which is the largest ecommerce company in Japan (25% market share, based on product sales) and third largest ecommerce marketplace company worldwide (source: JP Morgan Research, April 2021).

A key objective for the company has been to further integrate its ecommerce business through expansion of in-house logistics. Rakuten supports the merchants on its platform through Rakuten Super Logistics (RSL), which includes shipping and other value-added services such as fulfilment of orders and inventory control. Across ecommerce logistics, Rakuten has been a leader in innovation. In March 2022, RSL announced its partnership with the automation solutions provider Zebra Technologies, to use Zebra's autonomous mobile robots (AMRs) to improve the efficiency and productivity of its fulfilment operations ([source](#)).

Rakuten also aims to market its mobile business through Japan Post and utilise the latter's network as point of sales for Rakuten's relatively nascent mobile business. In line with this, in Q2 2021 Rakuten and Japan Post announced a strategic partnership whereby Japan Post would invest \$1.4bn for an 8.3% stake, along with establishing JP Rakuten Logistics, a joint venture between the two companies ([source](#)). This allows Rakuten to benefit from Japan Post's wide logistical network by building a joint delivery system along with using Japan Post's over 24k locations as fulfilment centres.

Last quarter performance commentary

The Solactive eCommerce Logistics Index returned -3.1% over the quarter.

Amazon announced a strategic collaboration with Anthropic to allow AWS customers to use AI models and incorporate generative AI capabilities into their work. Maersk announced the implementation of AI-enabled robotic solutions from October 2023 in one of its UK warehouses, to sort orders three times faster, improve batch inventory picking by 33% and handle all stock keeping unit assortments compared with manual systems – all in time for the peak season.

The ecommerce logistics market is being impacted by inflation on multiple fronts. On the retail side, consumers are moving to staples on the back of higher borrowing costs. Companies are facing soaring fuel prices and higher transportation, labour and maintenance costs. With higher input prices, businesses are seeking savings in supplier relationships and inventory strategies. Logistics supply chains became less efficient as businesses started storing more goods to hedge against price spikes. The additional space required increased storage costs, and the larger number of delivery trucks at ports created queues and delays. Hence it is especially important to plan strategically in today's environment.

The market has seen large logistics players acquire smaller specialised start-ups to expand market presence in areas such as AI-powered routing and tracking systems, with the rise of e-commerce and demand for last-mile delivery services. GXO announced the acquisition of fulfilment provider PFSweb at a 56% premium, and bpost acquired fulfilment provider Active Ants.

The main contributors to performance were Ryder System (returned +27.1%), Rakuten (+18.7%) and Japan Post (+13.9%). The main detractors were Shopify (-15.4%), and DHL Group (-16.5%) and JD Logistics (-18.5%).

Source: LGIM, Bloomberg, Transport Intelligence Logistics, as at 30 September 2023.

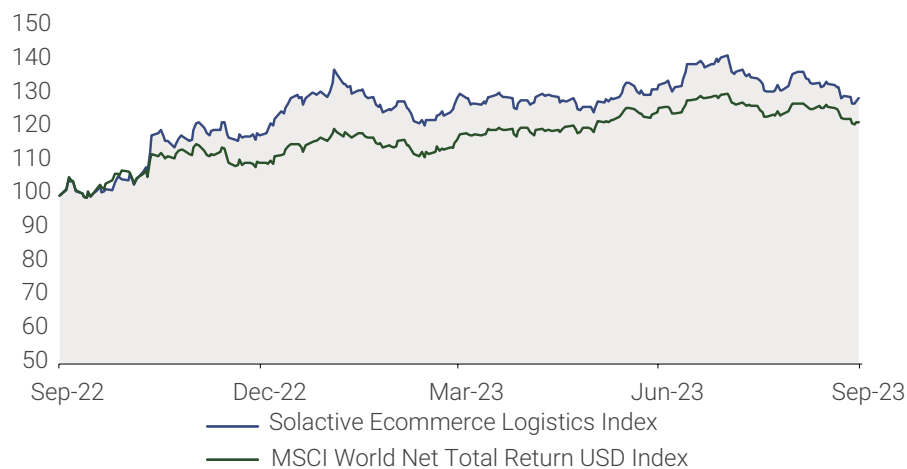
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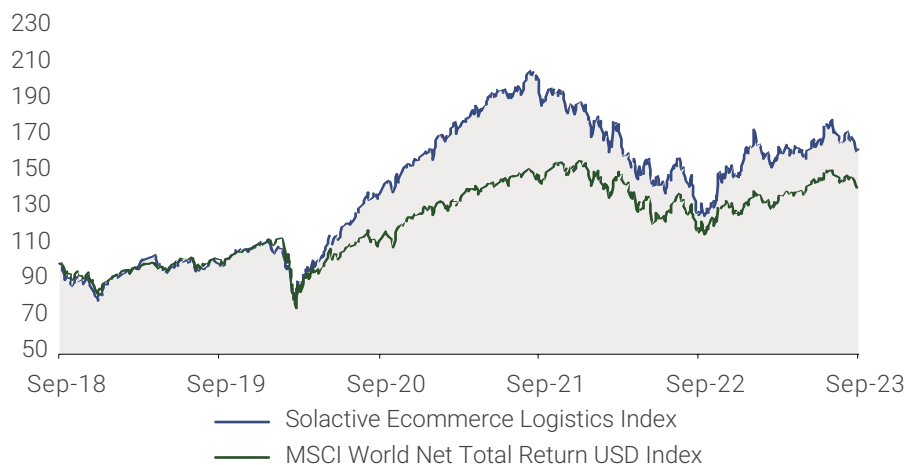
Ecommerce Logistics

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	Qtd	1 year	3 years	5 years
Cumulative Return	-3.05%	29.13%	17.82%	63.05%
Annualized Return			5.63%	10.27%
Volatility	14.15%	17.99%	17.12%	17.63%
Sharpe Ratio	-82.62%	162.52%	32.86%	58.23%
Max Drawdown	-10.24%	-11.91%	-39.20%	-39.20%

Index total return contribution (QtD)

Top 5		Bottom 5	
Ryder System Inc	▲ 0.72%	Shopify Inc - A	▼ -0.57%
Rakuten Group In	▲ 0.38%	Dhl Group	▼ -0.47%
Japan Post Holdi	▲ 0.33%	Jd Logistics Inc	▼ -0.45%
Fedex Corp	▲ 0.20%	Zalando Se	▼ -0.45%
Bpost Sa	▲ 0.20%	Sps Commerce Inc	▼ -0.38%

Portfolio composition

Latest additions	Latest deletions
no rebalance in Q3	no rebalance in Q3

Fund information

Ticker	ECOM LN	ISIN	IE00BF0M6N54
TER	0.49%	Inception date	23/01/2018
Currency	USD	Index inception date	03-Jan-18
Securities lending	No	Replication method	Physical

Key risk

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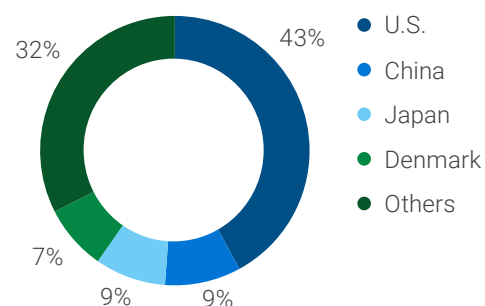


Ecommerce Logistics

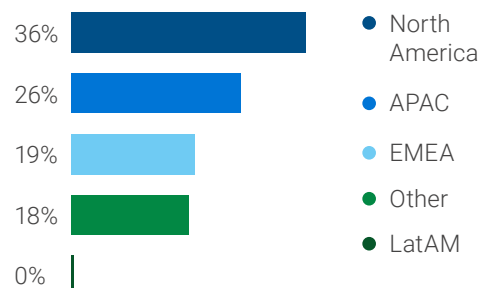
Characteristics

Geographical breakdown

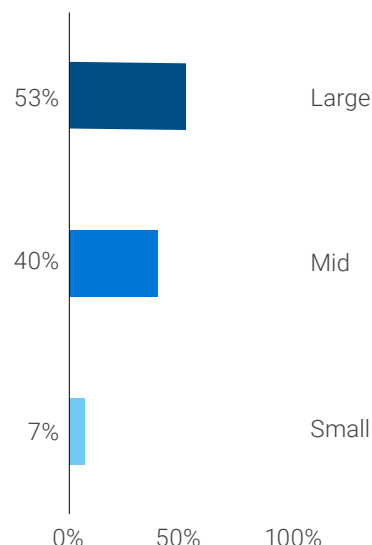
By domicile



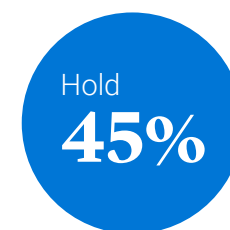
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	2.48	2.89
Price/Sales	0.79	0.62
BPS	16.37	14.09
P/E Positive	14.89	9.65
ROE	11.25	12.50
Price/Book	2.29	1.83
P/E (1y fwd)	23.65	26.20
P/E (3y fwd)	12.98	13.18
Sales (1y fwd)	48,020	43,110
Sales (3y fwd)	56,211	51,914

Constituents overlap

S&P 500	5.2%
MSCI World	4.2%
Nasdaq 100	3.7%
Total stocks = 38	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Emerging Cyber Security

Company spotlight

Dell

Dell is one of the world's leading computer brands and suppliers of PCs that also designs, develops and manufactures IT infrastructure and related software for servers and storage. In addition to its strong PC presence, Dell offers end-to-end cybersecurity solutions for organisations. Through its solutions, Dell helps organisations defend c.3.8 trillion cyber threats annually ([source](#)). The company's solutions cover three distinct verticals of Protection, Resilience and Confidence.

Protection helps organisations prevent cyber attacks across any cloud and any workload, utilising professional services and SaaS consumption to ease IT burden. Under Resilience, Dell helps organisations prepare for quick recovery and minimize the impact to operations after a cyber attack. Such solutions include CloudIQ, a cloud-based AI application with proactive monitoring, machine learning and predictive analytics to help reduce cyber risk. Thirdly, Confidence brings together solutions including cyber security advisory services and supply chain security to provide end-to-end security coverage.

Dell's Trusted Platform Module (TPM) enables hardware-embedded security solutions: BitLocker Drive Encryption is a solution which automatically encrypts the system drive to keep data safe – Data

Source: LGIM, Bloomberg, as at 30 September 2023.

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Execution Prevention prevents unauthorised applications such as malware from running in memory.

In March 2023, Dell rolled out a series of new cyber security-centric solutions, further strengthening its capabilities within the cyber security space ([source](#)). The solutions include Managed Detection and Response Pro Plus, a 24x7 threat detection and investigation tool, helping safeguard IT environments. Additionally, the roll-out included a partnership with CrowdStike (US-based cyber security technology company), offering organisations a suite of defences that accelerate threat investigation and response to protect critical areas of enterprise risk: endpoints and cloud workloads, identity and data.

Last quarter performance commentary

The Solactive Emerging Cyber Security Index NTR returned -0.7% over the quarter.

Hardware security modules, which establish a secure environment in which cryptographic processes can be carried out, are estimated to grow at a 16.5% CAGR to 2033. ([source](#)).

TEMATYS projected a fivefold increase in the emerging quantum economy market from less than \$500mn in 2022 to \$2.5bn in 2030. Leading the way will be commercial applications for quantum sensing and

metrology, along with quantum cryptographic systems that provide ultrasecure communications ([source](#)). During the quarter, IonQ announced an expanded relationship with the US Air Force Research Lab (AFRL). In this landmark agreement, IonQ's enterprise-grade systems will be used to advance the quantum communication, networking and computing capabilities of US defence technologies. In 2018, the Congress created the National Quantum Initiative (NQI) to secure funding for quantum R&D. This partnership is another step towards advancing quantum technology and its applications within national security.

Trend Micro was recognised as a leader in Attack Protection in Rigorous MITRE Engenuity ATT&CK® Evaluations, Mitek as a leader in account opening protection by Liminal, and SentinelOne as a high-rated vendor in Endpoint Protection Platforms by Gartner Peer Insight Customer Choice.

Check Point acquired Perimeter 81 to expand in network security solutions such as secure access service edge (SASE). According to Gartner, the SASE solutions market is likely to surpass \$20bn by 2026 ([source](#)).

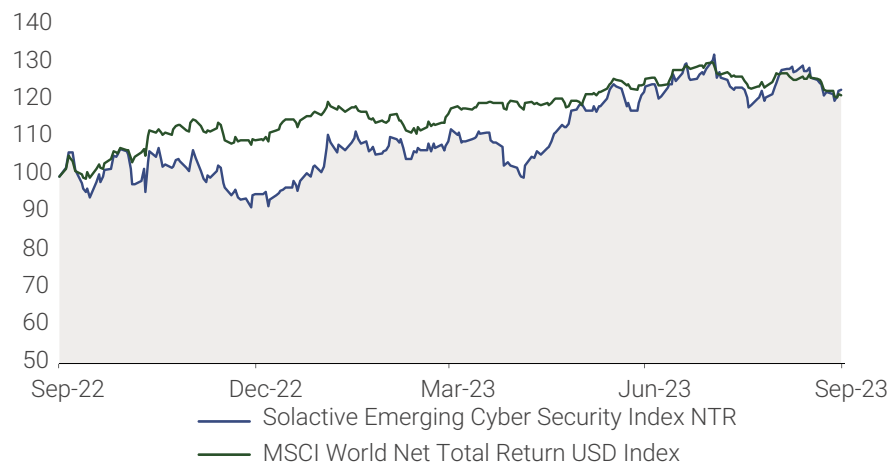
The main contributors to performance were Dell Technologies (returned +28.2%), Fastly (+21.6%) and Elan Microelectronics (+30.4%). The main detractors were Fortinet (-22.4%), OneSpan (-27.6%) and Renesas (-18.3%).



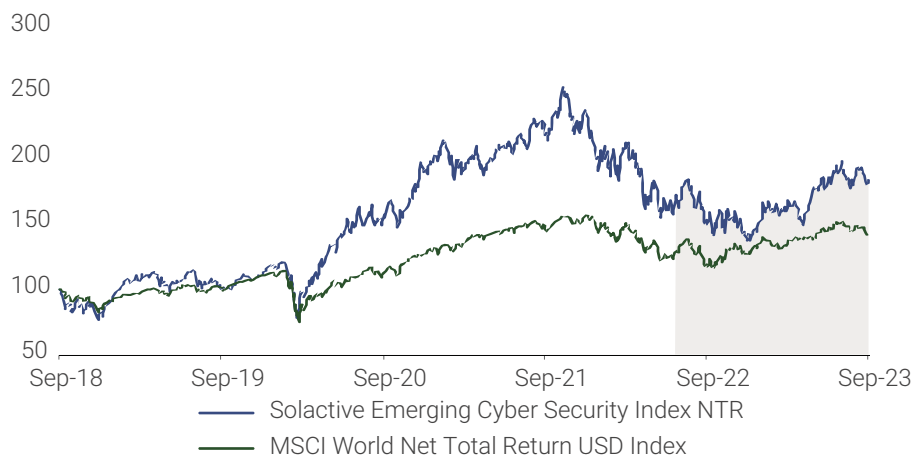
Emerging Cyber Security

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-0.66%	23.37%	19.25%	84.24%
Annualized Return			6.05%	12.99%
Volatility	20.89%	27.40%	27.70%	29.17%
Sharpe Ratio	-12.51%	85.61%	21.85%	44.55%
Max Drawdown	-10.54%	-14.90%	-46.08%	-46.08%

Index total return contribution (QtD)

Top 5		Bottom 5	
Dell Techn-C	▲ 0.77%	Fortinet Inc	▼ -0.73%
Fastly Inc -CI A	▲ 0.73%	Onespan Inc	▼ -0.67%
Elan	▲ 0.67%	Renesas Electron	▼ -0.66%
Darktrace Plc	▲ 0.64%	Trend Micro Inc	▼ -0.52%
Qualys Inc	▲ 0.45%	Infineon Tech	▼ -0.48%

Portfolio composition

Latest additions	Latest deletions
Egis Technology	Identiv
Microchip Technology	Rackspace Technology
	Telos

Fund information

Ticker	ESPY LN	ISIN	IE000ST40PX8
TER	0.49%	Inception date	07/09/2022
Currency	USD	Index inception date	18-Jul-22
Securities lending	No	Replication method	Physical

Key risk

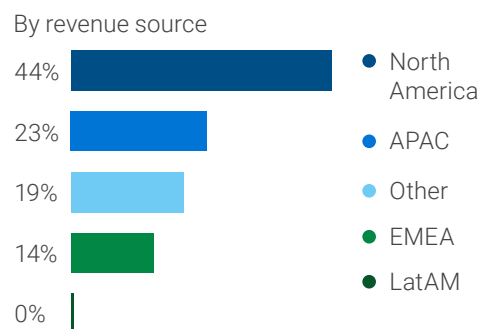
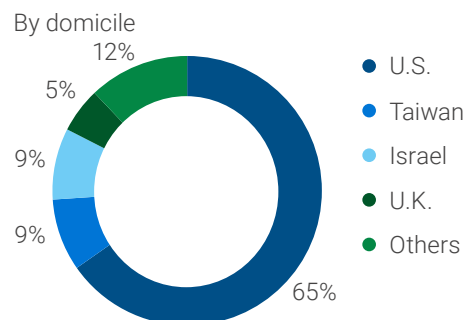
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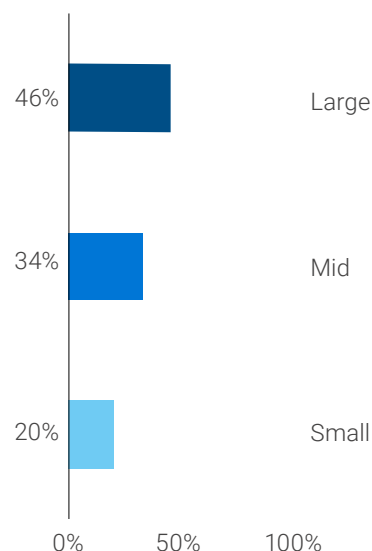
Emerging Cyber Security

Characteristics

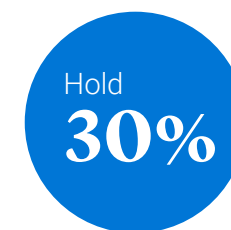
Geographical breakdown



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	0.52	0.53
Price/Sales	5.11	4.86
BPS	6.99	6.37
P/E Positive	27.92	25.21
ROE	6.57	2.57
Price/Book	5.23	4.34
P/E (1y fwd)	37.48	25.64
P/E (3y fwd)	23.15	23.97
Sales (1y fwd)	5,559	5,752
Sales (3y fwd)	6,844	5,928

Constituents overlap

S&P 500	2.1%
MSCI World	1.8%
Nasdaq 100	6.4%
Total stocks = 37	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Global Thematic

Last quarter performance commentary

The Solactive L&G Global Thematic Index NTR returned -8.8% over the quarter. The Index returned +3.0% in July, -5.1% in August and -6.7% in September.

The second calendar quarter earnings season started with approximately 70% of companies having reported. On average, earnings contracted, especially in the materials and energy sectors, while earnings and sales surprises were in positive territory, with strong reports from the utility and consumer discretionary sectors.

Monetary tightening continued in July. The Fed raised interest rates by 0.25% and Chair Jerome Powell said the economy would need to slow further for inflation to “credibly” return to the 2% target. The hike, the Fed’s 11th in its last 12 meetings, set the benchmark overnight interest rate in the 5.25%-5.50% range. The ECB raised its deposit rate to its highest level since 2000, from 3.50% to 3.75%, and signalled that more increases might be needed to bring down inflation against a worsening economic backdrop. During the month, the NATO summit in Vilnius also took place, offering Ukraine security assurances, but no clear path to membership.

The main contributors to performance in July were Emerging Cyber Security and Artificial Intelligence. Most stocks delivered positive performance, and in the

Emerging Cyber Security theme quantum computing hardware and software company IonQ continued to be the leading contributor. The main detractors from performance were once again Clean Energy and Battery Value-Chain.

Except for energy, all sectors in broad equity indices posted negative returns in August, particularly utilities and materials. The rally of oil prices on the back of the attempt by OPEC+ to limit supply supported positive returns in the energy sector. At the start of the month equity markets were shaken by Fitch’s downgrade of the US sovereign rating to AA+ from AAA. The agency cited likely fiscal deterioration over the next three years and repeated debt ceiling negotiations. Inflation remained in the headlines as central banks such as the US Federal Reserve (Fed) and the European Central Bank (ECB) signalled that further hikes could be necessary in the future unless inflation eases. The Bank of England (BoE) raised rates by 25bps to 5.25% on the back of falling but still too high inflation, which remained well above the 2% target. Weak PMI figures in August suggested a spread of Europe’s manufacturing and services slowdown, while numbers in the US were stronger. Over the course of the month the US dollar appreciated.

The main detractors in August were Clean Energy and Battery Value-Chain. While visible growth in clean energy tied to government and corporate de-

carbonisation goals, ESG mandates, increasing grid instability and rising utility rates is ubiquitous, these themes faced headwinds in recent weeks such as missed estimates, fears of overcapacity, higher interest rates in the US and Europe, high input costs, higher inventory as well as some smaller policy reforms. Emerging Cyber Security, Robotics and Automation and Artificial Intelligence retreated after a positive start to the year, and remained among the top contributors to performance on a YTD basis.

September was a challenging month on the back of continued macro pressures. Only Emerging Cyber Security posted positive returns, while Healthcare Breakthrough and Clean Energy were the main detractors from performance.

The themes that contributed the most to performance over the quarter were Emerging Cyber Security (returned -0.7%) and Ecommerce Logistics (-3.1%), while Clean Energy (-17.8%) and Battery Value-Chain (-13.4%) detracted the most.

On a stock-level basis, the main contributors to performance were Darktrace (returned +25.6%), Innovent Biologics (+29.2%) and Dell Technologies (+28.2%). The main detractors were SolarEdge Technologies (-51.9%), SMA Solar Technology (-46.8%) and PTC Therapeutics (-44.9%).

Source: LGIM, Bloomberg, as at 30 September 2023.

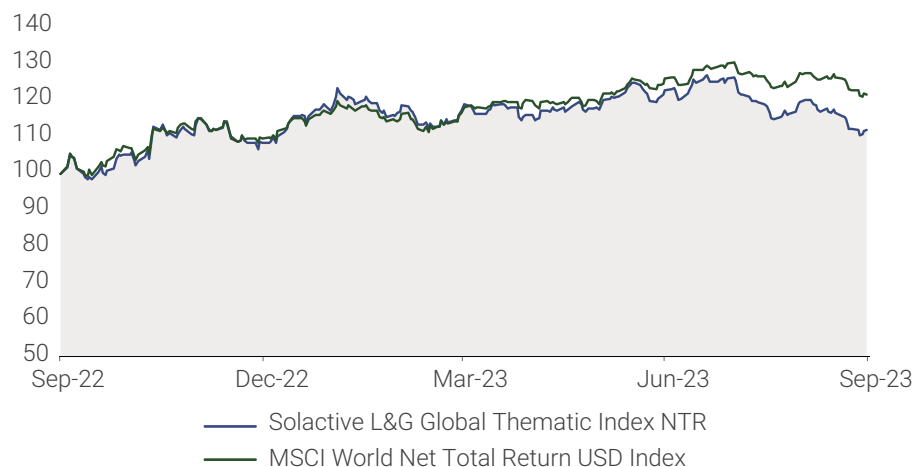
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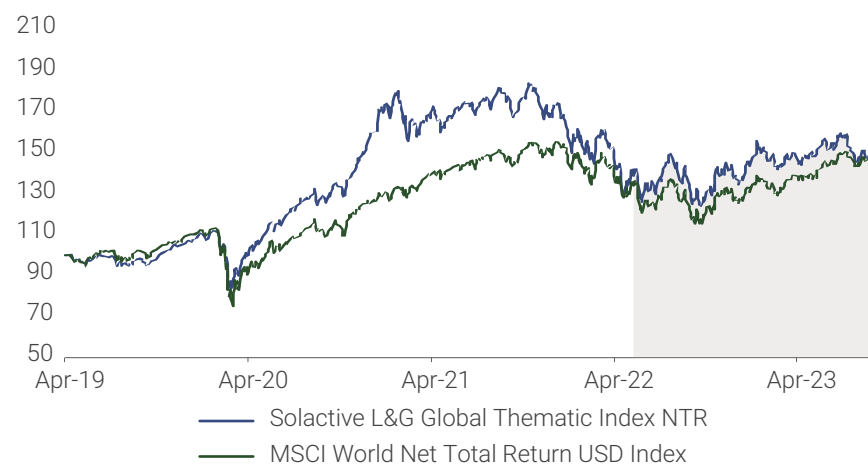
Global Thematic

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years
Cumulative Return	-8.81%	12.10%	8.98%
Annualized Return			2.91%
Volatility	13.31%	17.01%	17.91%
Sharpe Ratio	-232.51%	71.37%	16.27%
Max Drawdown	-12.99%	-12.99%	-32.55%

Index total return contribution (QtD)

Top 5		Bottom 5	
Darktrace Plc	▲ 0.13%	Solaredge Techno	▼ -0.50%
Innovent Biologi	▲ 0.11%	Sma Solar Techno	▼ -0.27%
Dell Techn-C	▲ 0.11%	Ptc Therapeutics	▼ -0.22%
Fastly Inc -CI A	▲ 0.10%	Emergent Biosolu	▼ -0.19%
Elan	▲ 0.07%	Allkem Ltd	▼ -0.17%

Portfolio composition

Latest additions	Latest deletions
no rebalance in Q3	no rebalance in Q3

Fund information

Ticker	THMZ LN	ISIN	IE000VTOHNZ0
TER	0.6%	Inception date	07/09/2022
Currency	USD	Index inception date	30-May-22
Securities lending	No	Replication method	Physical

Key risk

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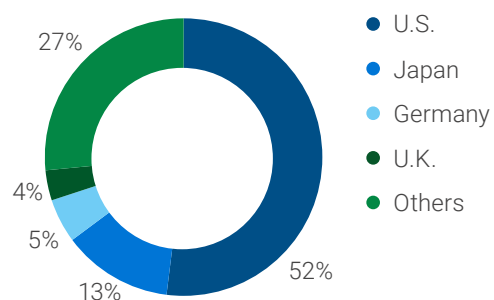


Global Thematic

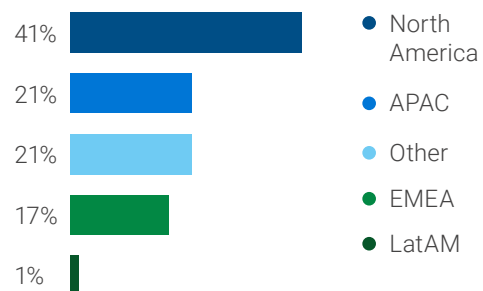
Characteristics

Geographical breakdown

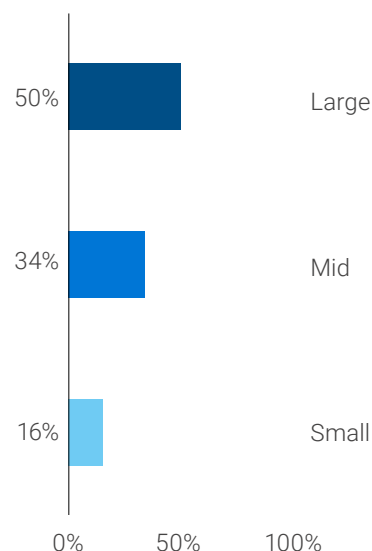
By domicile



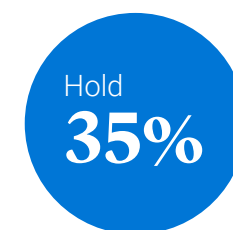
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.36	1.21
Price/Sales	3.06	3.30
BPS	13.79	12.62
P/E Positive	24.80	22.65
ROE	9.92	10.05
Price/Book	3.02	3.05
P/E (1y fwd)	32.93	30.85
P/E (3y fwd)	22.05	23.04
Sales (1y fwd)	12,714	12,724
Sales (3y fwd)	15,578	14,371

Constituents overlap

S&P 500	11.6%
MSCI World	13.0%
Nasdaq 100	10.2%
Total stocks = 375	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
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Key risk

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Healthcare Technology

Company spotlight

Regeneron

Regeneron Pharmaceuticals is an American biotechnology company that engages in the development of life-changing medicines for serious diseases. With nine US Food and Drug Administration (FDA) approved medicines, the company's primary products include Eylea, used to treat a common cause of blindness in the elderly; Dupixent, prescribed for eczema and asthma treatment (with pending FDA approval for "hives" this year); and Libtayo, a precision immunotherapy approved for multiple cancers.

Regeneron's medicines marketed in the US are sold mainly to wholesalers and specialty distributors that serve pharmacies, hospitals, government agencies, physicians and other healthcare providers.

During Q2 2023, the company posted robust results, boasting an 11% YoY revenue increase to \$3.2 billion, surpassing expectations as Eylea sales reached \$2.4 billion globally. Profitability also tracked ahead, as net income grew by approximately 14% YoY to \$968 million.

Also, during the quarter, Regeneron entered into an agreement with BARDA to develop an advanced COVID-19 monoclonal antibody therapy as part of the government's "Project Next Gen", winning a \$326

million contract. Additionally, Regeneron received two FDA drug approvals, including Eylea (HD), which provides comparable results to regular Eylea with fewer doses. They have a very strong pipeline with 35 different drugs in clinical development and ongoing studies in phase 3 focused on cancer, pulmonary and allergy treatments.

The company continues to invest heavily into R&D, at an estimated \$4.4 billion in 2023 (~36% of 2023 estimated revenues) and is accelerating traditional drug development through its proprietary VelociSuite technologies as well as research initiatives like the Regeneron Genetics Center, one of the world's largest genetics sequencing efforts. Ultimately, investors are gaining confidence in both their sales and pipeline execution.

Last quarter performance commentary

The ROBO Global Healthcare Technology and Innovation Index returned -15.8% over the quarter.

Year-on-year growth is still facing the tail-end of COVID-19 comparisons. The Q2 earnings season presented outperformance overall vs expectations, with +80% of companies beating Sales and EPS expectations with targeted full-year growth of 4.2% sales and 18.8% EPS, which is projected to further see profitability with ~10% sales and 26% EPS growth, according to FactSet consensus.

All nine HTEC subsectors saw a decline in the third quarter of 2023, with Precision Medicine down just 4%, with performance from Regeneron and Biomarin leading. The largest subsector, Medical instruments, saw a decline of 24%, providing some of the biggest discounts on blue-chip healthcare leaders since March 2020. Insulet and Dexcom fell in tandem with recent attention towards GLP-1 weight-loss drugs (e.g. Wegovy and Mounjaro), which according to ROBO Global is a temporary market overreaction. Boston Scientific, one of the most trusted names in cardiovascular, Rhythm and Neuro medical instruments, announced multiple positive catalysts such as margin expansion and the acquisition of Relievant Medsystems, which has the only FDA-cleared product for a type of lower back pain. While innovative healthcare technology companies faced a challenging quarter, these companies are a pillar of modern healthcare, and the long-term outlook remains positive. The latest reports on companies within the Process Automation subsector suggest a pickup in pharma activity and new pipelines after a subdued year. Ginkgo Bioworks, the leading synthetic biology and cell engineering firm, stands to benefit as it expands partnerships leveraging its robotics, AI and automation solutions.

The diagnosis and treatment of cancer continues to see progress. Exact Science, a pioneer in liquid biopsy and non-invasive testing for cancers, recently raised guidance and had a top and bottom-line beat.

Source: LGIM, Bloomberg, ROBO Global®, as at 30 September 2023.

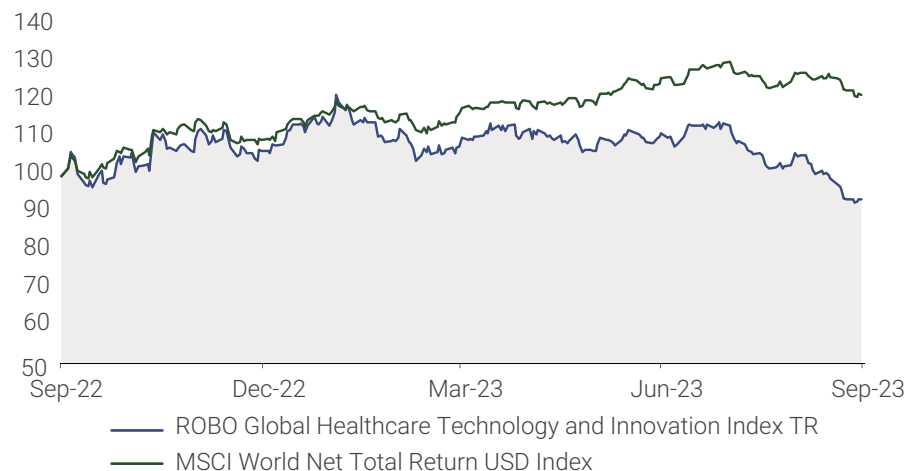
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Healthcare Technology

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-15.81%	-6.02%	-26.03%	9.73%
Annualized Return			-9.58%	1.87%
Volatility	15.52%	22.51%	25.36%	25.87%
Sharpe Ratio	-321.41%	-26.84%	-37.76%	7.25%
Max Drawdown	-18.73%	-23.71%	-50.75%	-50.75%

Index total return contribution (QtD)

Top 5		Bottom 5	
Regeneron Pharm	▲ 0.21%	Insulet Corp	▼ -0.79%
Azenta Inc	▲ 0.13%	Omniceil Inc	▼ -0.67%
Danaher Corp	▲ 0.05%	Novocure Ltd	▼ -0.60%
Medpace Holdings	▲ 0.04%	Masimo Corp	▼ -0.57%
Veeva Systems-A	▲ 0.03%	3D Systems Corp	▼ -0.55%

Portfolio composition

Latest additions	Latest deletions
Ginkgo Bioworks Holdings	Codexis
	Butterfly Network
	Cerus Corp
	3D Systems

Fund information

Ticker	DOCT LN	ISIN	IE00BK5BC677
TER	0.49%	Inception date	02/07/2019
Currency	USD	Index inception date	01-May-19
Securities lending	No	Replication method	Physical

Key risk

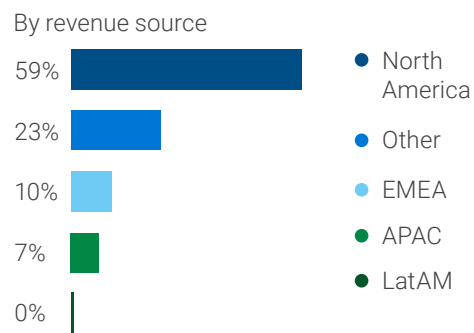
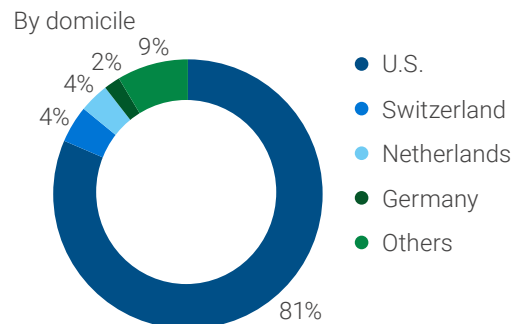
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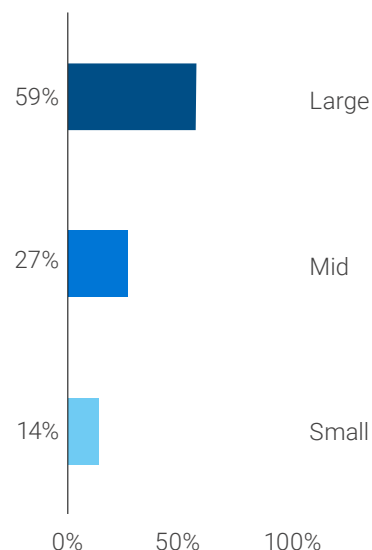
Healthcare Technology

Characteristics

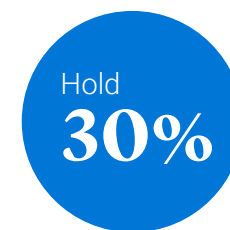
Geographical breakdown



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.79	1.31
Price/Sales	4.21	4.19
BPS	19.76	16.35
P/E Positive	32.18	25.49
ROE	7.78	5.95
Price/Book	3.24	3.50
P/E (1y fwd)	31.22	33.64
P/E (3y fwd)	23.11	22.24
Sales (1y fwd)	6,305	5,607
Sales (3y fwd)	7,871	7,389

Constituents overlap

S&P 500	4.2%
MSCI World	3.5%
Nasdaq 100	3.7%
Total stocks = 68	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Hydrogen Economy

Company spotlight

SFC Energy

Founded in 2000, SFC Energy (SFC) is a leading provider of hydrogen and direct methanol fuel cells for stationary and mobile hybrid power solutions. SFC includes the Clean Energy and Clean Power Management business segments. The company distributes its products worldwide and has sold more than 65,000 fuel cells to date, making it the number-one manufacturer of fuel cells. Headquartered in Germany, the company operates production facilities in the Netherlands, Romania, Canada and India.

Within the Clean Energy segment, the company manufactures the EFOY Hydrogen fuel cell, which is self-sufficient and uninterrupted over long periods of time to bridge power grid failures. The fuel cell modules switch on fully automatically and take over the load no more than 20 seconds after a power failure. SFC also manufactures EFOY Pro fuel cells, which are used for off-grid power generation. The fuel cells can further be applied to power mobile homes, vans and boats.

Within the Clean Power Management segment, SFC offers custom power supply solutions and specialty coils for highly sensitive, demanding industrial applications such as intelligent drive solutions to save energy and extend motor life.

Source: LGIM, Bloomberg, as at 30 September 2023.

To continue its pace of innovation and growth, SFC expanded its strategic partnership with Johnson Matthey, the UK-based chemicals company, with the aim of accelerating joint value creation in the hydrogen fuel cell market ([source](#)). Under the new partnership, Johnson Matthey will produce fuel cell components for SFC, providing SFC a stable supply chain and allowing it to further expand its range of products which are planned to begin production in Q4 2023.

Last quarter performance commentary

The Solactive Hydrogen Economy Index NTR returned -13.9% over the quarter.

The hydrogen industry has been affected by project delays, mainly caused by late subsidy policy specifications, and technical issues that have emerged in the first large production batches. Despite a slowdown in capacity expansion, after a very optimistic period, electrolyser shipments are set to double in both 2023 and 2024 ([source](#)).

Subsidies announced for green hydrogen have quadrupled over the last two years to cross \$280 billion, with the US standing ahead thanks to \$137bn expected to flow to eligible projects over the next 10 years. The US IRA's \$13bn of planned spending and the

Infrastructure and Investment Jobs Act's \$9.5bn have made the US the world leader in public hydrogen support and funding (source: Bloomberg, September 2023). Further guidance is needed on how infrastructure will be developed and offtake agreements will be structured. The current hydrogen infrastructure that consists of production facilities, pipelines, tanks, trucks and fuelling stations for grey hydrogen will need to be expanded to connect the new hubs that come online. The European Commission, which set a maximum premium of \$4.5/kg over 10 years, is trying to catch up, but is limited by the EU Innovation Fund budget, while US tax credits are uncapped and offering a maximum \$3/kg price.

Industrie De Nora's expertise in electrode technologies is likely to be used by Acwa Power, the world's largest private water desalination company, as the enabling factor for the sustainable production of green hydrogen.

The main contributors to performance were Toyota Motor (returned +12.0%), Nippon Sanso (+10.7%) and Hyzon Motors (+30.4%). The main detractors were FuelCell Energy (-40.7%), Orsted (-42.2%) and Plug Power (-26.9%).

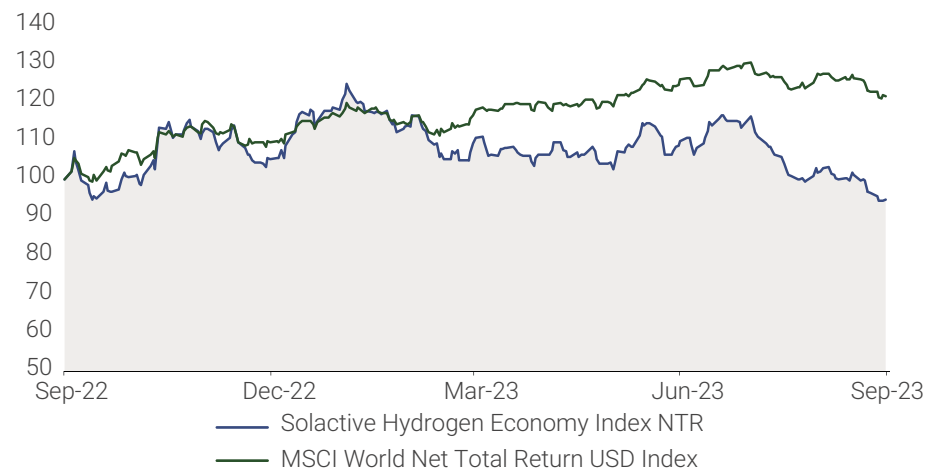
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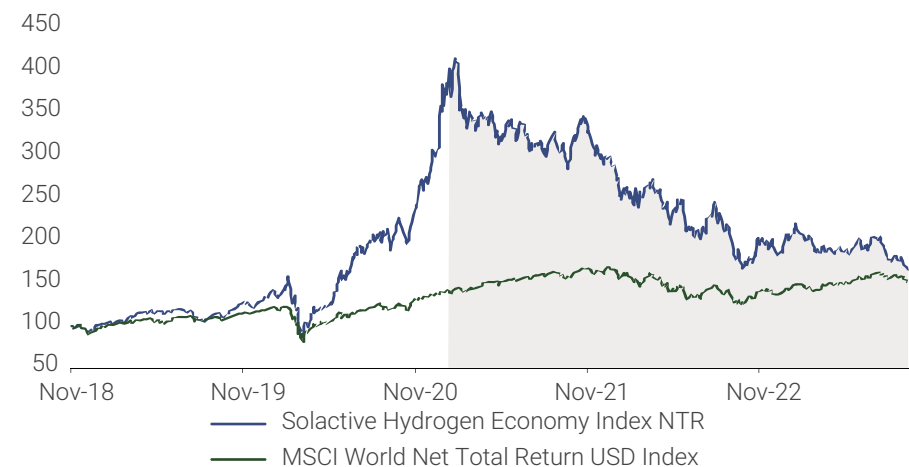
Hydrogen Economy

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QTD	1 year	3 years
Cumulative Return	-13.89%	-5.12%	-17.03%
Annualized Return			-6.04%
Volatility	17.68%	23.18%	27.96%
Sharpe Ratio	-255.19%	-22.16%	-21.61%
Max Drawdown	-19.21%	-24.62%	-59.99%

Index total return contribution (QTD)

Top 5		Bottom 5	
Toyota Motor	▲ 0.62%	Fuelcell Energy	▼ -2.12%
Nippon Sanso Hol	▲ 0.55%	Orsted A/S	▼ -2.03%
Hyzon Motors Inc	▲ 0.20%	Plug Power Inc	▼ -1.44%
Ceres Power Hold	▼ -0.02%	Doosan Fuel Cell	▼ -1.42%
Itm Power Plc	▼ -0.05%	Chemours Co	▼ -1.39%

Portfolio composition

Latest additions	Latest deletions
no rebalance in Q3	no rebalance in Q3

Fund information

Ticker	HTWO LN	ISIN	IE00BMYDM794
TER	0.49%	Inception date	10/02/2021
Currency	USD	Index inception date	26-Jan-21
Securities lending	No	Replication method	Physical

Key risk

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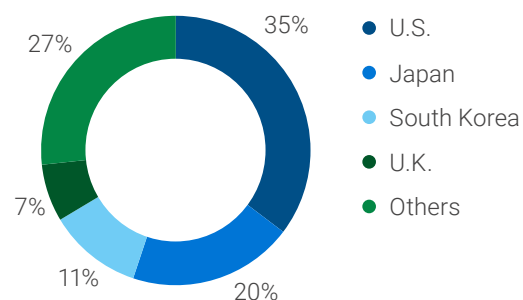


Hydrogen Economy

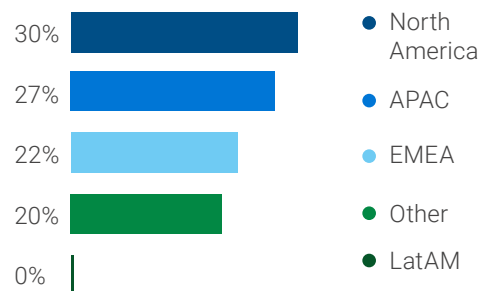
Characteristics

Geographical breakdown

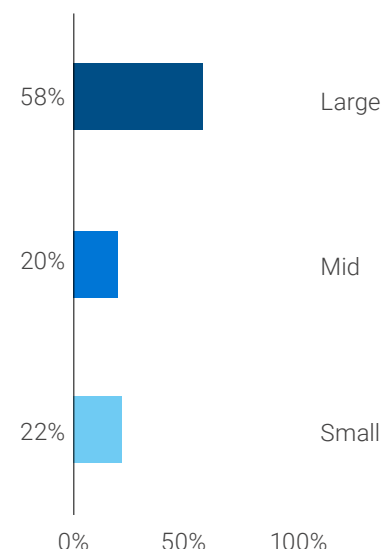
By domicile



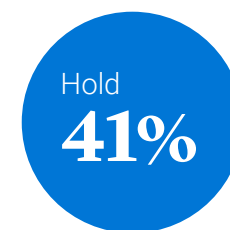
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	0.11	1.21
Price/Sales	2.78	3.45
BPS	6.21	9.27
P/E Positive	16.42	14.67
ROE	3.90	5.61
Price/Book	1.85	2.67
P/E (1y fwd)	20.14	15.44
P/E (3y fwd)	19.18	20.18
Sales (1y fwd)	25,474	25,162
Sales (3y fwd)	22,827	21,119

Constituents overlap

S&P 500	0.8%
MSCI World	1.1%
Nasdaq 100	0.0%
Total stocks = 27	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Optical Technology & Photonics

Company spotlight

Fabrinet

Fabrinet is a leading provider of advanced optical packaging and precision optical, electro-mechanical and electronic manufacturing services to original equipment manufacturers (OEMs) of complex products. Fabrinet focuses on low-volume production of high-complexity products, including optical communication components, modules and sub-systems, industrial lasers, and medical/automotive sensors.

Founded in 2000, the company's main two campuses are located in Thailand, with further manufacturing facilities in the US, China, Japan and Israel. With a c.50% market share (source: JP Morgan Research, July 2019), Fabrinet is leader in the in the optical component manufacturing services market. Given the smaller presence of competitors, Fabrinet is well positioned to continue to gain share as OEMs increasingly look to utilise outsourcing partners as they focus on their core capabilities. The company further differentiates from its competitors with its Thailand presence – most of its competitors leverage China. Roughly 77% of Fabrinet's manufacturing footprint by square footage is in Thailand. This offers OEMs the opportunity to diversify their manufacturing footprint geographically.

Source: LGIM, Bloomberg, as at 30 September 2023.

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Additionally, Fabrinet is a pure play into the growth outlook for the optical communication industry, which is set to benefit from the multi-year investment into optical infrastructure across all geographies as telecom service providers deploy 5G networks.

Global strategic partnerships have also been a key area of growth for the company. In August 2023, Nokia partnered with Fabrinet to become the first telecom vendor to manufacture fibre broadband optical modules in the US, for use in the US Department of Commerce Broadband Equity, Access and Deployment (BEAD) programme ([source](#)). The multi-rate optical modules will be manufactured at Fabrinet's California facility, with production starting in 2024.

Last quarter performance commentary

The Solactive EPIC Optical Technology & Photonics Index NTR returned -16.7% over the quarter.

Silicon photonics is an area of photonics that combines the silicon integrated circuit and the semiconductor laser – two of the most important inventions of the 20th century, according to Intel – enabling faster data transfers over long distances. This has become a key building block in data centres and is clearly an area of growth given the increasing amounts of data that are produced and exchanged and growing demand for fast internet connections.

According to MarketsandMarkets, the silicon photonics market was valued at \$1.3bn in 2022 and is projected to reach \$5bn by 2028, growing at a CAGR of 28.5%, gathering revenues particularly fast in India, South Korea, China and Japan. The technology has been used for a decade already but only for networking chips. With the advent of ChatGPT, semiconductor companies are looking to grow this area. TSMC, which is already developing some of the most advanced AI chips on the market, is looking to develop a silicon photonics integration system to boost energy efficiency and computing power.

The German government signed off €300m worth of funding for ams-OSRAM to support R&D in innovative optical solutions across many areas such as UV-C LEDs for disinfection, near-infrared emitters for lidar for autonomous driving and microLEDs for display technologies.

HOYA Vision Care introduced Super HiVision Meiryo EX4, a new anti-reflective ophthalmic lens with industry-leading scratch resistance, durability, long-term cleanability and UV protection.

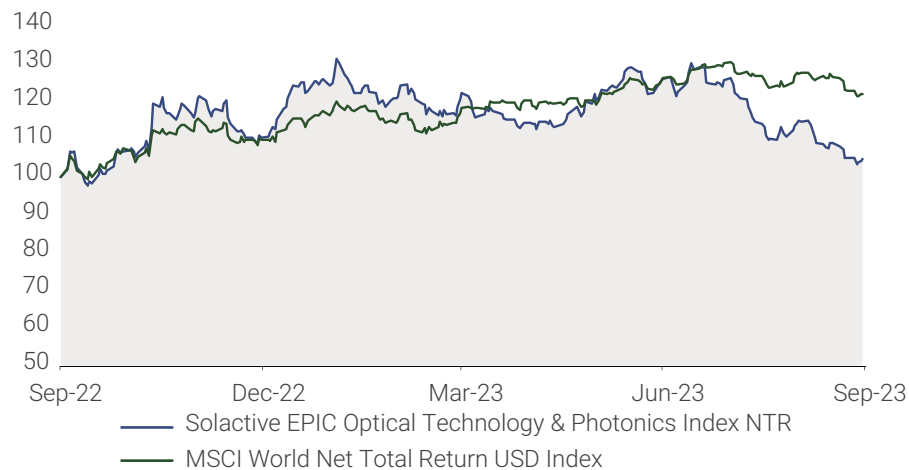
The main contributors to performance were Fabrinet (returned +28.3%), Gentex (+11.7%) and Aixtron (+8.5%). The main detractors were Lightwave Logic (-35.9%), nLight (-32.6%) and ams-OSRAM (-34.5%).



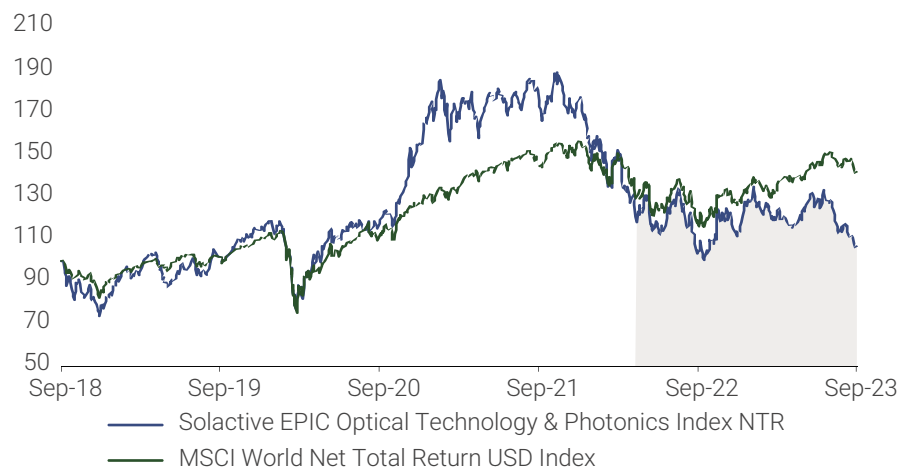
Optical Technology & Photonics

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-16.68%	4.88%	-9.17%	7.75%
Annualized Return			-3.16%	1.50%
Volatility	17.14%	21.74%	22.95%	23.69%
Sharpe Ratio	-302.95%	22.52%	-13.78%	6.35%
Max Drawdown	-20.47%	-21.26%	-46.90%	-46.90%

Index total return contribution (QtD)

Top 5		Bottom 5	
Fabrinet	▲ 0.96%	Lightwave Logic	▼ -1.13%
Gentex Corp	▲ 0.28%	Nlight Inc	▼ -1.05%
Aixtron Se	▲ 0.26%	Ams-Osram Ag	▼ -0.93%
Lasertec Corp	▲ 0.14%	Luminar Technolo	▼ -0.91%
Bystronic Ag	▼ -0.04%	Hexagon Ab-B	▼ -0.86%

Portfolio composition

Latest additions	Latest deletions
Everlight Electronics	Bystronics
	El.En.
	Luna Innovations

Fund information

Ticker	LAZR LN	ISIN	IE000QNJA0X1
TER	0.49%	Inception date	07/09/2022
Currency	USD	Index inception date	06-May-22
Securities lending	No	Replication method	Physical

Key risk

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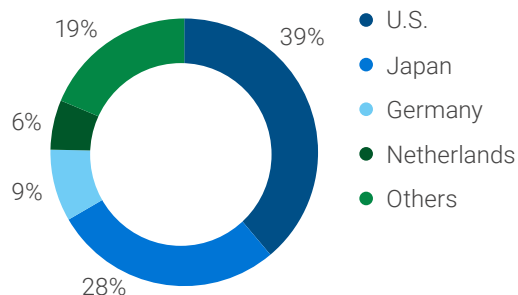


Optical Technology & Photonics

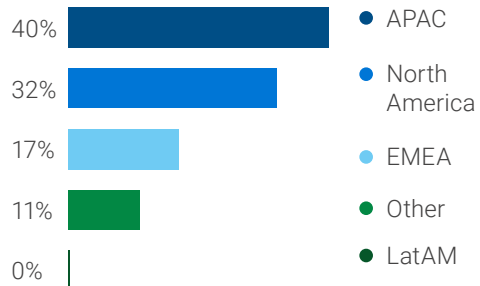
Characteristics

Geographical breakdown

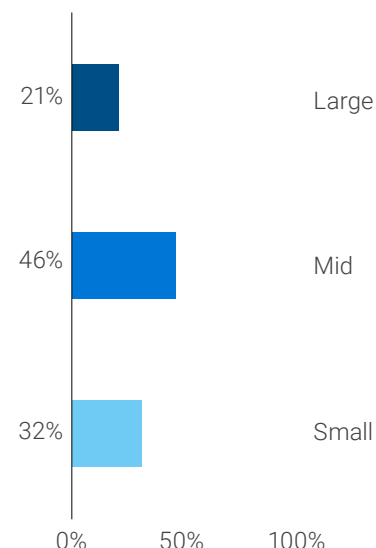
By domicile



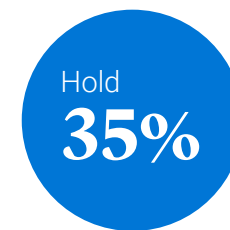
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.07	1.03
Price/Sales	2.30	3.00
BPS	13.49	12.26
P/E Positive	23.65	20.80
ROE	9.32	11.27
Price/Book	2.22	2.59
P/E (1y fwd)	40.70	25.50
P/E (3y fwd)	23.51	26.01
Sales (1y fwd)	2,745	2,835
Sales (3y fwd)	3,301	3,176

Constituents overlap

S&P 500	0.1%
MSCI World	0.8%
Nasdaq 100	0.0%
Total stocks = 34	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Pharma Breakthrough

Company spotlight

Halozyne Therapeutics

Founded in 1998, US-based Halozyne is a biopharmaceutical company bringing disruptive solutions to significantly improve patient experiences and outcomes for emerging and established therapies for the cancer, diabetes and dermatology disease markets. The company also advises and supports its biopharmaceutical partners in key aspects of new drug development. The company's solutions are segmented into Technology Platforms and Commercial Products.

Under Technology Platforms, Halozyne's commercially validated ENHANZE drug delivery technology aims to reduce the treatment burden for patients, including potentially reducing treatment administration from hours-long IV infusions to subcutaneous (SC) injections (i.e., under the skin injections) delivered in minutes. This drug delivery technology allows for large volume SC injection with increased dispersion and absorption of co-administered therapies. Halozyne has collaborations and licensing agreements for ENHANZE with many leading pharmaceutical companies, including Roche, Pfizer, AbbVie and Bristol-Myers Squibb (source: annual report 2022).

Under its Commercial Products business line, Halozyne inherited the remaining three FDA-approved

products (XYOSTED, TLANDO and NOCDURNA) after its acquisition of the US-based specialty pharmaceutical company, Antares Pharma, for \$960m in April 2022 ([source](#)). In addition to the commercial products, the acquisition further provided Halozyne a best-in-class, diversified, royalty revenue generating auto injector platform business that offers broad licensing opportunity.

Halozyne's offerings are unique within the market, as there are very few competitors that focus on third-party SC formulation technologies. As a result, Halozyne is well positioned to benefit as a potential preferred partner of choice for all US/European biotech and pharmaceutical companies looking to formulate an IV drug into an SC drug.

Last quarter performance commentary

The Solactive Pharma Breakthrough Value Index returned -5.3% over the quarter.

The pharma industry has been shaken by the impact of the IRA, with the US accounting for 40% of the global market ([source](#)). The objective is to negotiate drug prices for high-spend drugs and limit incentives for small molecule and some orphan drugs manufacturers. By 1 October 1, manufacturers of the first 10 drugs that Medicare selected for price negotiation will have to submit data and sign

agreements to participate in the first round and agree to a fair price.

The pharma sector was affected by uncertainty and a more wary approach to dealmaking following scrutiny by the Federal Trade Commission on Amgen's acquisition of Horizon Therapeutics. Additionally, companies are seeking to mitigate 'cliff-drops' from the looming exclusivity expiry of certain blockbuster drugs such as Bristol Myers-Squibb and Pfizer's Eliquis. Finally, the sector was impacted by the change of pace in regulatory approval by the FDA with tighter regulation on Accelerated Approvals, and uncertainty on R&D areas of spending with many incumbent segments on the rise such as RNA-based and gene editing medicines.

In July the FDA approved Beyfortus, a respiratory tract disease prevention drug developed by AstraZeneca, Sanofi and Sobi, Qdenga, Takeda's dengue vaccine, Cyfendus, Emergent BioSolutions' anthrax vaccine, among other drugs.

The main contributors to performance were Innovent Biologics (returned +29.3%), JCR Pharmaceuticals (+14.7%) and Horizon Therapeutics (+12.5%). The main detractors were PTC Therapeutics (-44.9%), Traveer Therapeutics (-41.8%) and Emergent BioSolutions (-53.7%). PTC Therapeutics announced a strategic prioritisation and workforce reduction to focus on R&D and commercial infrastructure development.

Source: LGIM, Bloomberg, Evaluate Pharma, as at 30 September 2023.

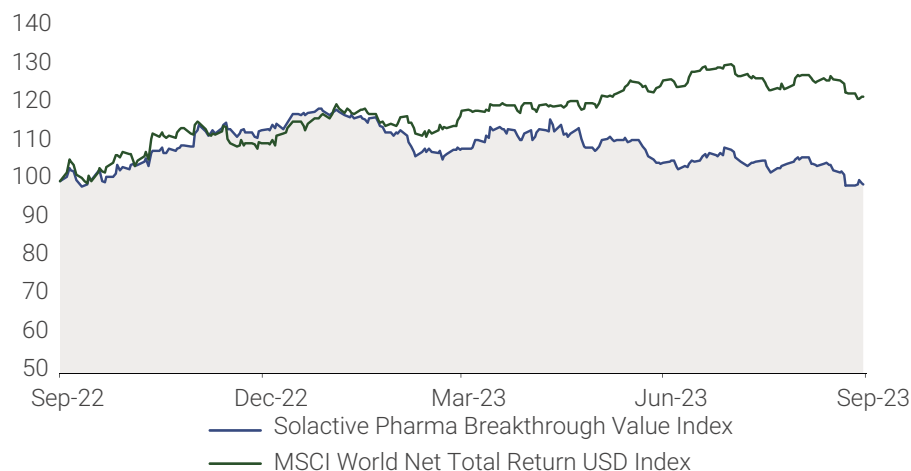
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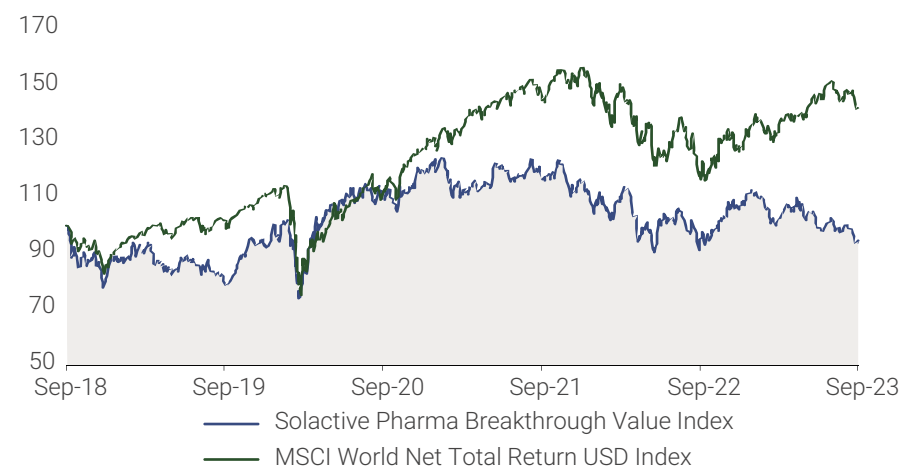
Pharma Breakthrough

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



*Source: Bloomberg as at 30 September 2023, all values are based in USD. The backtested index data has been sourced from the index provider and is based on what they perceive to be reasonable assumptions and objective data; The index data is gross of fees/costs but is net of withholding taxes. The effect of fees and charges would reduce the returns shown. Shaded area indicates live period of the index.

Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-5.27%	-0.72%	-16.05%	-6.05%
Annualized Return			-5.67%	-1.24%
Volatility	12.28%	15.17%	16.74%	19.65%
Sharpe Ratio	-159.04%	-4.75%	-33.88%	-6.31%
Max Drawdown	-9.19%	-17.04%	-27.20%	-27.35%

Index total return contribution (QtD)

Top 5		Bottom 5	
Innovent Biologi	▲ 0.70%	Ptc Therapeutics	▼ -1.38%
Jcr Pharmaceutic	▲ 0.43%	Traverse Therapeu	▼ -1.24%
Horizon Therapeu	▲ 0.40%	Emergent Biosolu	▼ -1.00%
Chugai Pharma Co	▲ 0.36%	Eisai Co Ltd	▼ -0.64%
Ipsen	▲ 0.36%	Ultragenyx Pharm	▼ -0.63%

Portfolio composition

Latest additions	Latest deletions
InnoCare Pharma	SciClone Pharmaceuticals
Ionis Pharmaceuticals	Ultragenyx Pharmaceutical
Pharma Mar	Clinuvel Pharmaceuticals
Pharming Group	Bluebird Bio
Royalty Pharma	Xencor
Sino Biopharmaceutical	Emergent Biosolutions
Takeda	

Fund information

Ticker	BIOT LN	ISIN	IE00BF0H7608
TER	0.49%	Inception date	23/01/2018
Currency	USD	Index inception date	03-Jan-18
Securities lending	No	Replication method	Physical

Key risk

The value of an investment and any income taken from it is not guaranteed and can go down as well as up; You may not get back the amount you originally invested. Simulated and past performance is not a guide to the future. The above information does not constitute a recommendation to buy or sell any security.

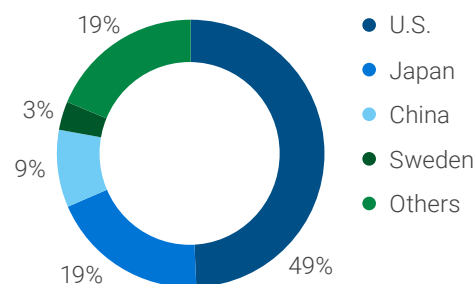


Pharma Breakthrough

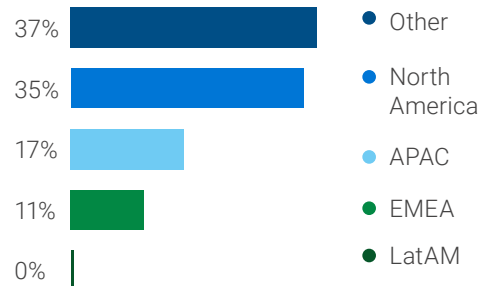
Characteristics

Geographical breakdown

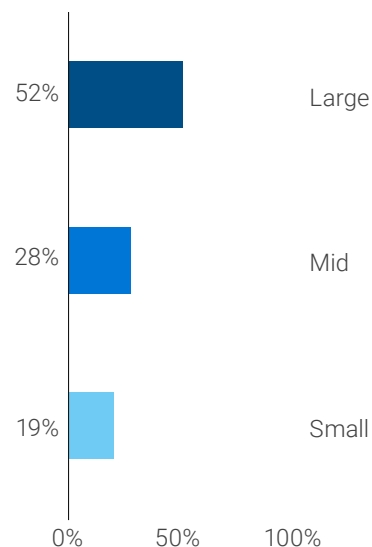
By domicile



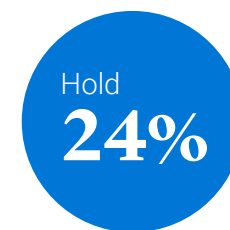
By revenue source



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	0.95	1.07
Price/Sales	4.33	5.14
BPS	10.41	10.73
P/E Positive	25.09	21.30
ROE	7.76	12.11
Price/Book	2.93	3.42
P/E (1y fwd)	23.57	27.45
P/E (3y fwd)	19.51	19.65
Sales (1y fwd)	4,967	3,822
Sales (3y fwd)	5,807	5,497

Constituents overlap

S&P 500	0.7%
MSCI World	0.9%
Nasdaq 100	1.4%
Total stocks = 33	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

Consensus ratings do not constitute a recommendation to buy or sell any security.
The consensus ratings presented in this chart are not in relation to the L&G Thematic ETFs.

Key risk

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Robotics & Automation

Company spotlight

Yokogawa Electric

Japan-based Yokogawa Electric provides industrial process automation, offering testing, measurement and control solutions to various industries such as energy, materials, life sciences and food. With a strong presence in the APAC region and expanding coverage in Europe and North America, Yokogawa has been strategically investing and expanding its business segments into energy transition and life sciences. In November 2021 it acquired Insilico Biotechnology, which specialises in Bioprocess Digital Twins.

Yokogawa leverages AI, robotics and other technologies to co-create across industries, showcasing its diversified portfolio, with large projects representing only around 15% of control systems, their largest segment. The company supports key technologies behind the energy transition, including battery manufacturing processes (mixing, coating, drying, pressing, filling and inspection) and nuclear energy control systems and instrumentation, which are critical for upgrading old plants and establishing new ones. The company continues to focus on digital transformation, offering end-to-end solutions targeting industrial autonomy and operational excellence, covering the entire value chain of supply: facility lifecycle planning, design, construction,

commissioning, and startup to production/manufacturing and maintenance.

In its recent fiscal Q1 2023 earnings report, Yokogawa showed a receding impact of COVID-19 on related projects, maintaining predictable sales and orders. Although not a high growth stock, Yokogawa trades at 16.5x March 2024 earnings and 1.4x March 2024 EV/sales. Yokogawa's recent acquisitions and investments, such as Fluence Analytics, Votiva and Dublix Technology, demonstrate its commitment to expanding its business segments and enhancing its technological capabilities, positioning the company for sustainable growth and a more efficient, environmentally friendly future.

Last quarter performance commentary

The ROBO Global Robotics and Automation UCITS Index returned -13.5% over the quarter.

The Index remains up over 12% year-to-date. Revenue growth slowed from 9% in 2022 to a projected 6% in 2023 but is expected to reaccelerate to over 7% in 2024. EPS growth is estimated to go from 12% in 2023 to 18% in 2024. Most recent Q2 earnings saw an average 11.59% EPS surprise versus expectations.

Ongoing labour scarcities, fragile supply chains and geopolitical shifts toward reshoring are catalysing

demand for robotic solutions. Geographically, we're seeing investment diversifying away from China into the EU, North America and, significantly, India. Cobots and Autonomous Mobile Robots (AMRs) are one of the fastest-growing robotics segments, albeit this remains a nascent area. Rockwell Automation's acquisition of Clearpath Robotics underscored this trend.

All 11 ROBO subsectors declined, with Manufacturing and Industrial Automation, the largest subsector by weight (17%), down -11.8% with mixed results. New build delays stretching into 2024-2025, mainly due to labour shortages and regulatory constraints, have temporarily stalled otherwise strong momentum. A recent NAM poll highlighted workforce retention as the primary hurdle for manufacturers (72% of respondents). Robotics pioneer Fanuc, meanwhile, celebrated a milestone with its millionth robot delivery.

The disruptive potential of generative AI has yet to significantly impact investor sentiment around robotics. Many incumbents stand to gain from adopting AI to improve operational efficiencies and enhance capabilities. This, combined with easing inventory levels and the long runway for energy transition spending, could reinvigorate lagging subsectors such as Sensing and Actuation to rebound as addressable markets expand and demand reverts.

Source: LGIM, Bloomberg, ROBO Global®, as at 30 September 2023.

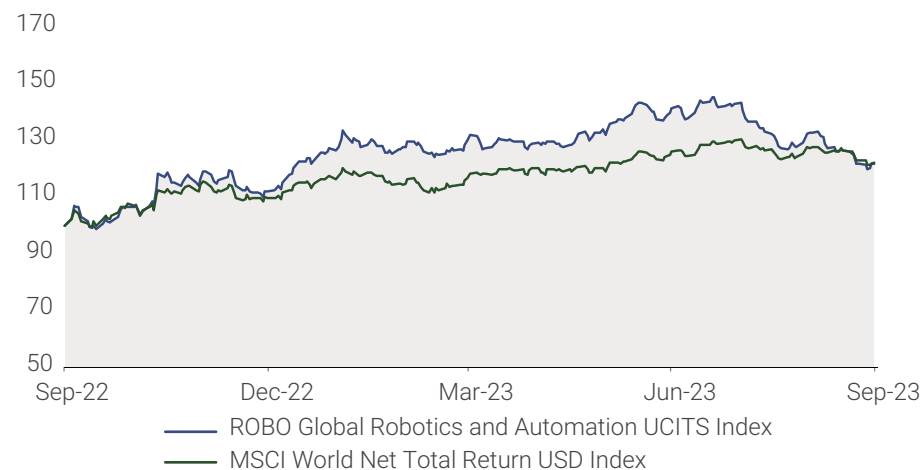
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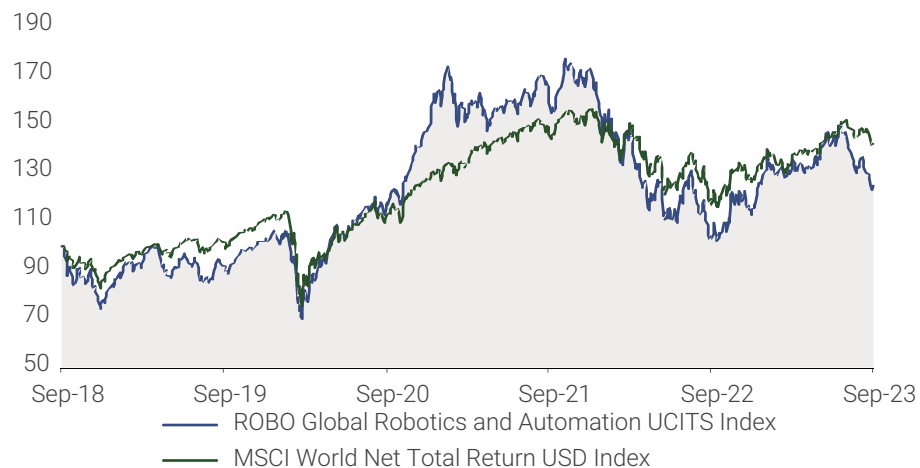
Robotics & Automation

Performance

Historical and simulated performance (1y)



Historical and simulated performance (5y)



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Index performance*

Index performance*	QtD	1 year	3 years	5 years
Cumulative Return	-13.50%	22.39%	7.68%	25.65%
Annualized Return			2.50%	4.67%
Volatility	14.99%	19.22%	20.17%	21.56%
Sharpe Ratio	-294.29%	116.96%	12.40%	21.66%
Max Drawdown	-17.62%	-17.62%	-42.65%	-42.65%

Index total return contribution (QtD)

Top 5		Bottom 5	
Ocado Group Plc	▲ 0.28%	Omniceil Inc	▼ -0.60%
Toyota Industrie	▲ 0.18%	3D Systems Corp	▼ -0.60%
Azenta Inc	▲ 0.13%	Autostore Holdin	▼ -0.51%
Yokogawa Elec	▲ 0.07%	Ambarella Inc	▼ -0.49%
Natl Instruments	▲ 0.05%	Harmonic Drive	▼ -0.47%

Portfolio composition

Latest additions	Latest deletions
Emerson Electric	National Instruments

Fund information

Ticker	ROBO LN	ISIN	IE00BMW3QX54
TER	0.8%	Inception date	27/10/2014
Currency	USD	Index inception date	17-Jun-14
Securities lending	No	Replication method	Physical

Key risk

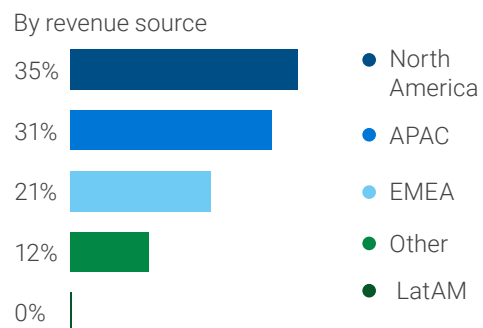
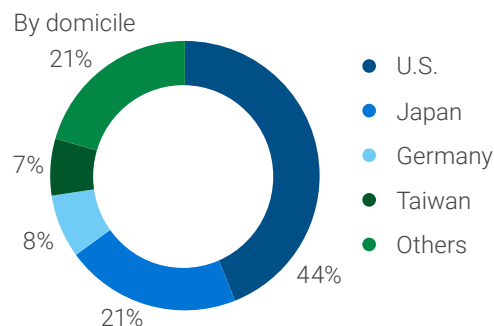
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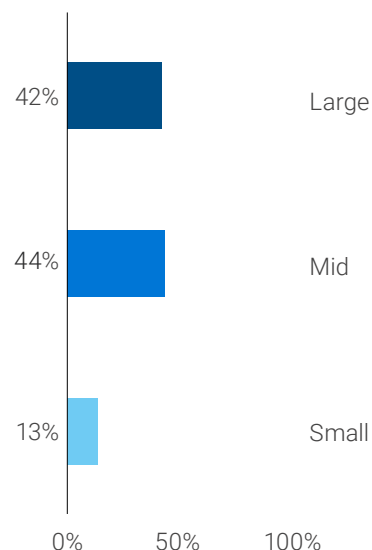
Robotics & Automation

Characteristics

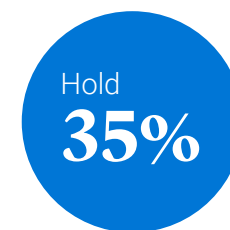
Geographical breakdown



Market cap breakdown



Third party analyst stock consensus ratings**



Key ratios

	Current	Q3 2022
EPS	1.70	1.42
Price/Sales	3.21	2.94
BPS	15.80	15.19
P/E Positive	24.82	22.02
ROE	11.14	10.42
Price/Book	3.04	3.32
P/E (1y fwd)	38.34	28.21
P/E (3y fwd)	25.21	23.20
Sales (1y fwd)	6,010	6,437
Sales (3y fwd)	7,031	6,568

Constituents overlap

S&P 500	3.6%
MSCI World	3.8%
Nasdaq 100	4.8%
Total stocks = 78	

Source: Bloomberg, LGIM; All values are based in USD; As close of 30 September 2023.
Please refer to end of this report for all definitions. **Consensus ratings are based on the average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months.

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Key risk

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Glossary

Calculation methodology for performance statistics:

Cumulative return: Total return of the index net of withholding taxes over the given period.

Annualized return: Annualized total return of the index net of withholding taxes over the given period.

Volatility: Annualized standard deviation of daily returns over the given period.

Max drawdown: Maximum % loss from the peak to the trough in the given period.

Large cap: Companies whose market cap is larger than \$5bn.

Mid cap: Companies whose market cap is comprised between \$2bn and \$5bn.

Sharpe ratio: Annualised excess return divided by annualised volatility.

Small cap: Companies whose market cap is lower than \$2bn.

Third party analyst stock consensus ratings: Average of recommendations for each underlying stock made by analysts on Bloomberg within the last 12 months. Consensus ratings do not constitute a recommendation to buy or sell any security. The consensus ratings presented in this chart are not in relation to the L&G Thematic ETFs.

Calculation methodology for key ratios statistics:

EPS: Median of last 12 months earnings per share for each index component.

Price/sales: Median of stock prices divided by sales per share of all index components.

BPS: Median of total equity divided by the number of shares of all index components.

P/E positive: Median of stock price divided by positive earnings per share for each index components.

ROE: Median of net income divided by the average total common equity for each index component.

Price/book: Median of stock prices divided by the total equity per share for each index component.

P/E (1y fwd): Median of stock price divided by index estimated earnings next year for each index component.

P/E(3y fwd): Median of stock price divided by index estimated earning in three years for each index component.

Sales (1y fwd): Average of estimated sales next year for each index component.

Sales (3y fwd): Average of estimated sales in three years for each index component.

Contact us:

For any questions on this report, please contact your usual LGIM representative or email fundsales@lgim.com. All calls are recorded. Call charges will vary.



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Key risks

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