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Quality Growth Opportunities within the Semiconductor Sector

Dr Ian Mortimer, CFA
Matthew Page, CFA

Risk & performance

Risk: The Guinness Global Innovators Fund is an equity fund. Investors should be willing and able to assume the risks of equity investing. The value of an investment and the income from it can fall as well as rise as a result of market and currency movement, and you may not get back the amount originally invested. Details on the risk factors are included in the Funds' documentation, available on our website (guinnessgi.com/literature).



The risk and reward indicator shows where the fund ranks in terms of its potential risk and return. The higher the rank the greater the potential reward but the greater the risk of losing money.

Performance: Past performance does not predict future returns.

Investors should note that fees and expenses are charged to the capital of the Fund. This reduces the return on your investment by an amount equivalent to the Ongoing Charges Figure (OCF). Returns for share classes with different OCFs will vary accordingly. Performance returns do not reflect any initial charge; any such charge will also reduce the return.

The funds are actively managed with the MSCI World Index used as a comparator benchmark only.

The Global Innovators Fund invests in companies that the Investment Manager deems to be innovative.

Portfolio Managers



Matthew Page, CFA

- Joined Guinness Asset Management in 2005
- Previously worked for Goldman Sachs as an analyst in Fixed Income Currencies and Commodities (FICC)
- Graduated from University of Oxford, with a Masters degree in Physics in 2004
- Manager of Global Innovators strategy since 2009
- Manager of Global Equity Income strategy since launch in 2010



Dr Ian Mortimer, CFA

- Joined Guinness Asset Management in 2006
- Graduated from University of Oxford, with a D.Phil. in Physics in 2006
- Graduated from University College London, University of London, with a Masters degree in Physics in 2003
- Manager of Global Innovators strategy since 2009
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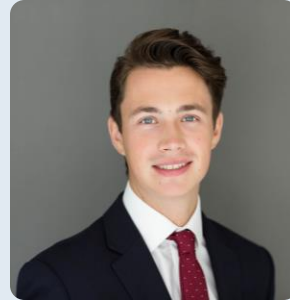
Analysts



Sagar Thanki, CFA

Analyst

- Joined Guinness Global Investors in 2017
- Prior to joining Guinness, Sagar worked at Bloomberg as an Equity and Portfolios Product Specialist, within the Financial Analytics and Sales department.
- Sagar graduated from Selwyn College, University of Cambridge, with a Master's degree in Economics
- He is a CFA Charterholder and has a Diploma in Investment Management having passed the IMC Certificate and CFA Certificate in ESG Investing.



Joseph Stephens, CFA

Analyst

- Joined Guinness Global Investors in 2018
- Prior to joining Guinness, Joseph interned at Goldman Sachs within the Operations department.
- Joseph has a Master's degree in Investment Management from Henley Business School, and a Master's degree in Mathematics from University of Bath.
- He is a CFA Charterholder and has passed the CFA Certificate in ESG Investing.



William Van Der Weyden

Analyst

- Joined Guinness Asset Management in 2021
- Will previously worked for St James's Place DFM as an Equity Analyst, specialising in the UK Tech and Telecommunications sectors.
- Will graduated from Homerton College, University of Cambridge, with a Master's degree in Management, following his BSc in Maths and Physics at the University of Bath.
- He has since passed the IMC qualification.

How do we think about
growth investing?

Philosophy

Innovation

Better products, better solutions, increased value for customer

Growth

Long pathways for growth via secular trends, reinvestment opportunities


Quality

Just because a company is innovative or growing, doesn't necessarily make it a good investment – return on capital, earnings, balance sheet strength critical










Conviction

Best ideas, equally-weighted, invest for the long-term, valuation discipline

Guinness innovation themes – our starting point

Themes	Sub Themes
 Advanced Health Care	Biotech, Genomics, Specialty Pharmaceuticals, MedTech
 Artificial Intelligence & Big Data	Machine Learning, Analytics, Autonomous Vehicles
 Clean Energy & Sustainability	Electric Vehicles, Circular Economy, Resource Efficiency
 Cloud Computing	Cyber Security, Networking, Software-as-a-Service
 Internet, Media & Entertainment	Social Networks, Streaming, Gaming, eLearning
 Mobile Technology & Internet of Things	Smartphones, Wearables, Smart Devices, 5G
 Next Gen Consumer	Ecommerce, Everything-as-a-Service, Healthy Living
 Payments & FinTech	Digital Wallet, Blockchain, Payments Infrastructure
 Robotics & Automation	Robots, Sensors, Logistics, 3D Printing

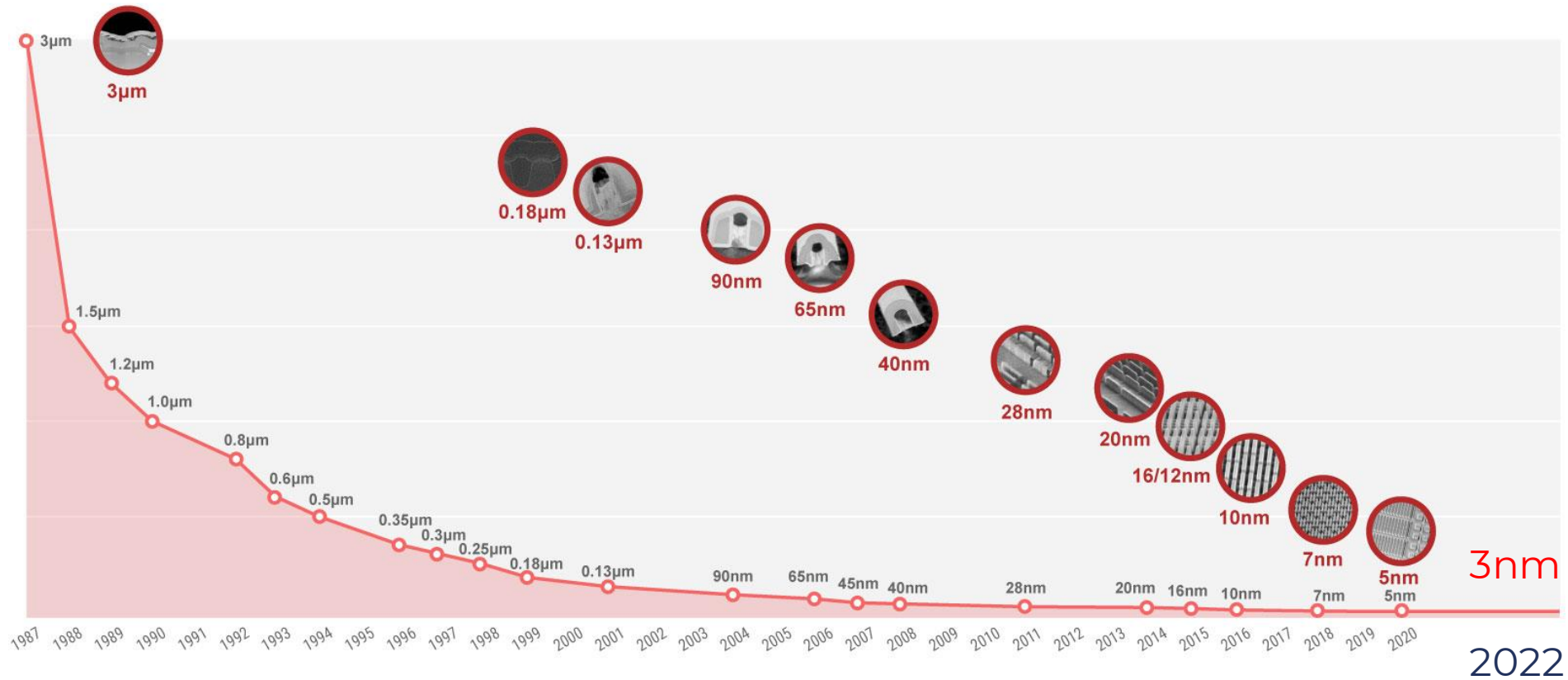
Guinness innovation themes – our starting point

Themes	Sub Themes
 Advanced Health Care	Biotech, Genomics, Specialty Pharmaceuticals, MedTech
 Artificial Intelligence & Big Data	Machine Learning, Analytics, Autonomous Vehicles
 Clean Energy & Sustainability	Electric Vehicles, Circular Economy, Resource Efficiency
 Cloud Computing	Cyber Security, Networking, Software-as-a-Service
 Internet, Media & Entertainment	Social Networks, Streaming, Gaming, eLearning
 Mobile Technology & Internet of Things	Smartphones, Wearables, Smart Devices, 5G
 Next Gen Consumer	Ecommerce, Everything-as-a-Service, Healthy Living
 Payments & FinTech	Digital Wallet, Blockchain, Payments Infrastructure
 Robotics & Automation	Robots, Sensors, Logistics, 3D Printing

Semiconductor
demand across
almost all areas

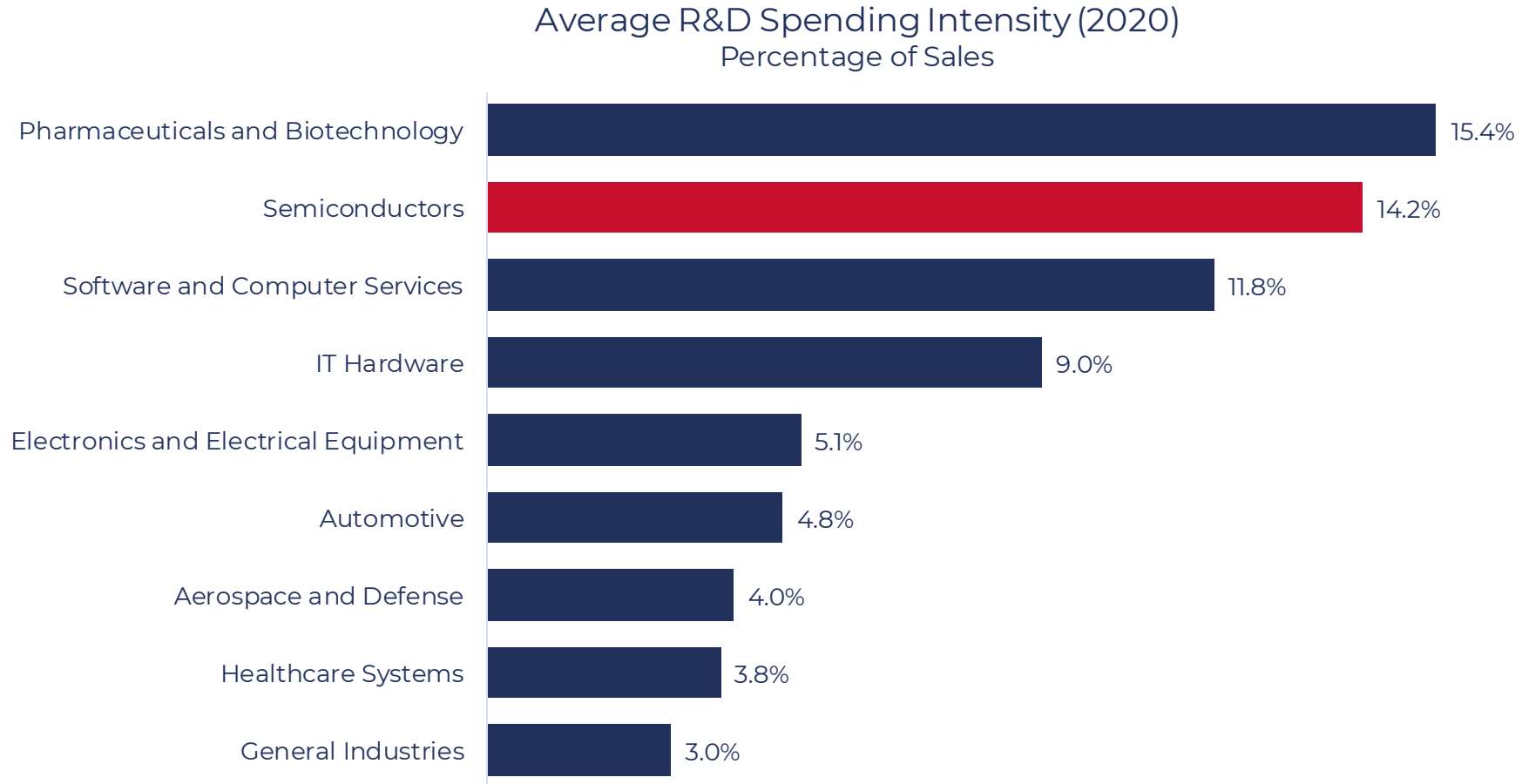
Innovation

Semiconductor innovation - deliver faster, more efficient chips

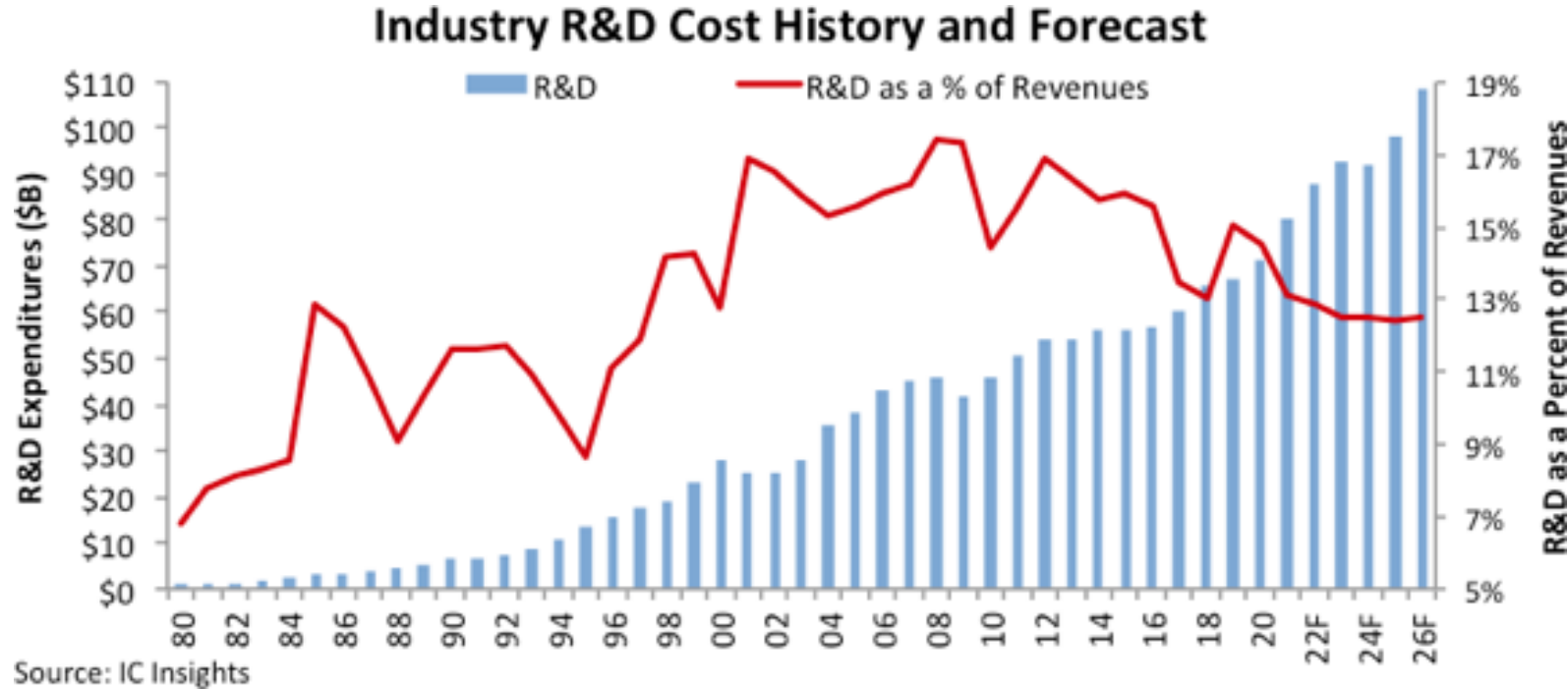


3nm technology will increase processing performance by 10% to 15%, and reduce power consumption by 25-30%

R&D spending intensity



R&D spending continues to grow – *future* innovation

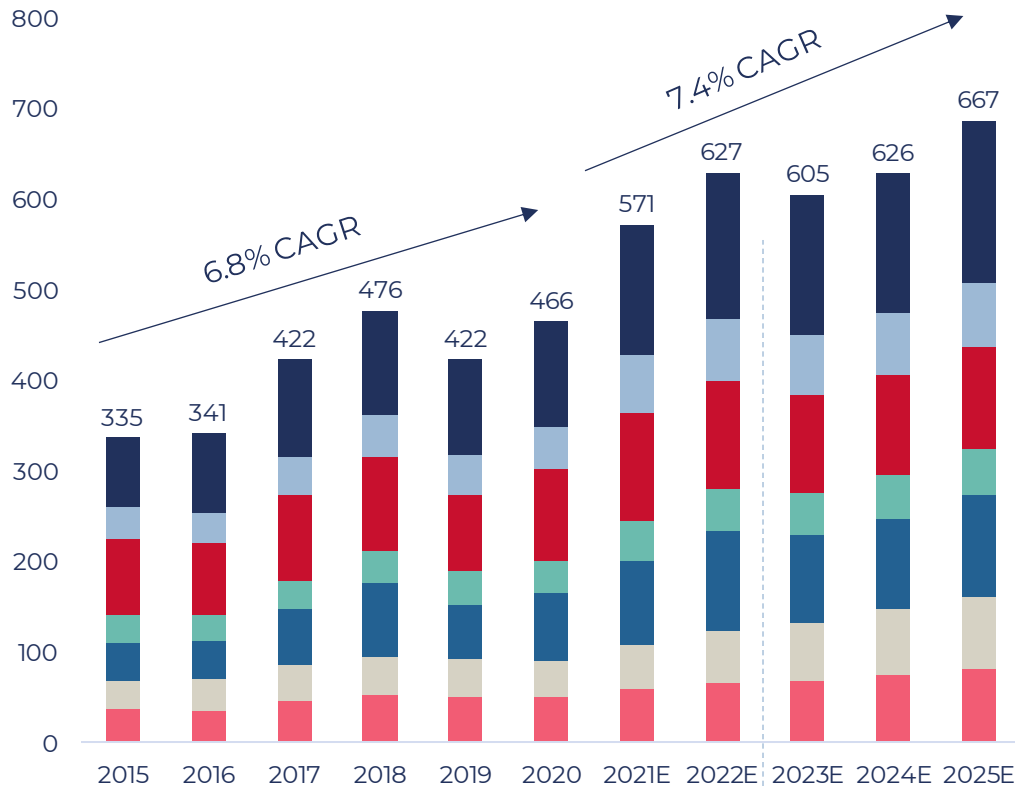


- The Semiconductor industry spent **\$71.4b** on R&D in 2021
- Expected to rise 9% to **\$80.5b** in 2022

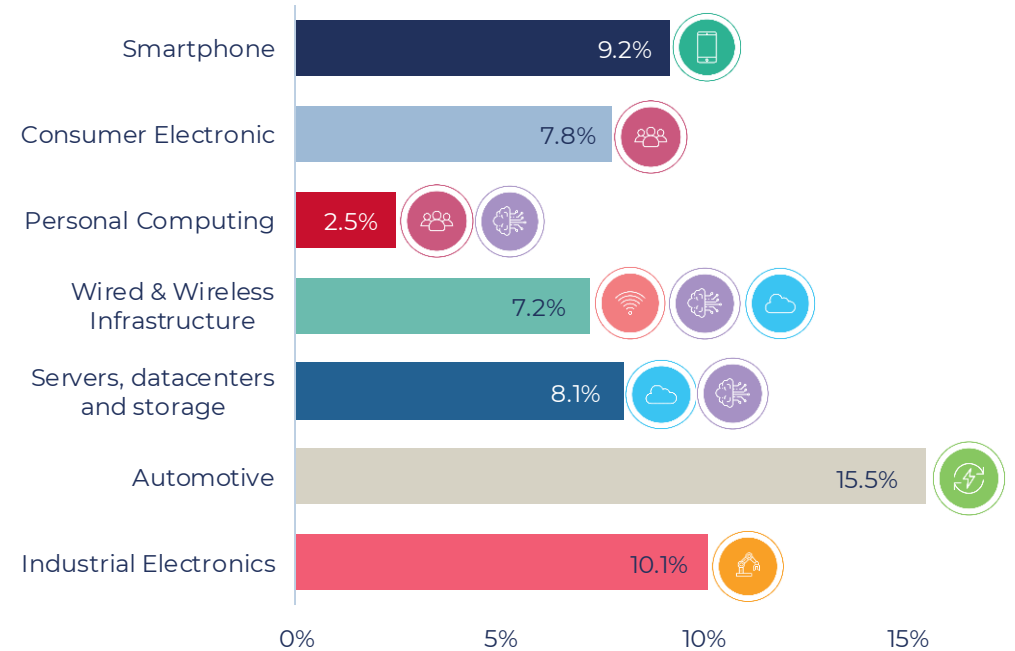
Growth

End market demand growth accelerating...

Semiconductor End-Market Size (\$,bn's)

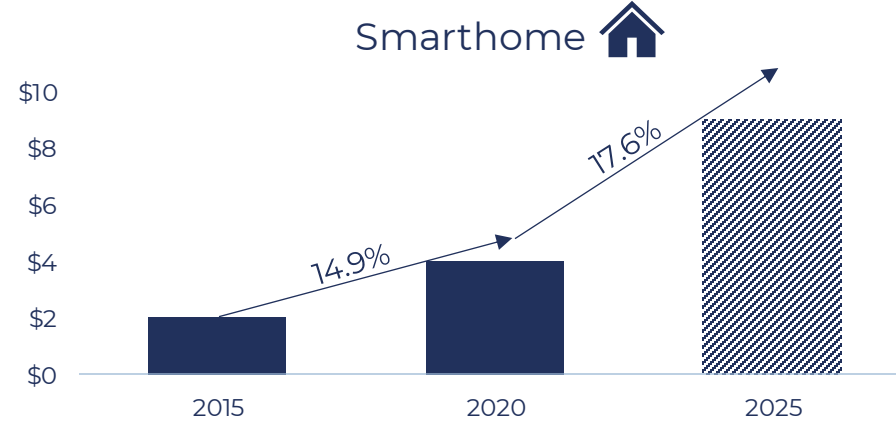
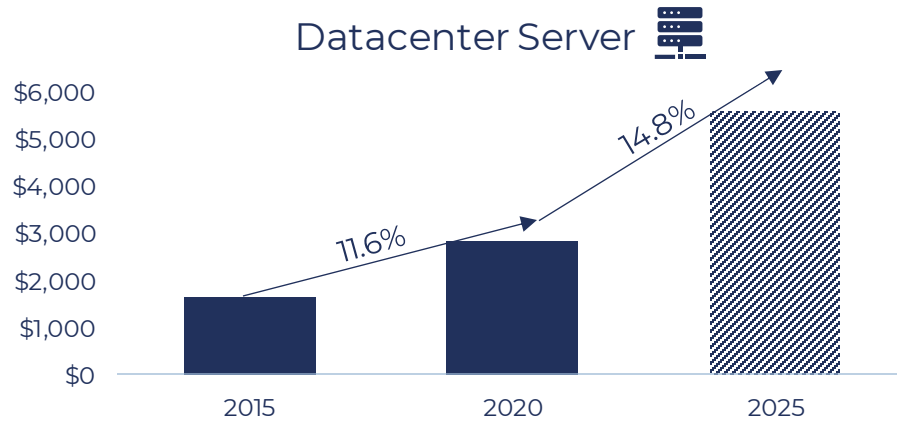
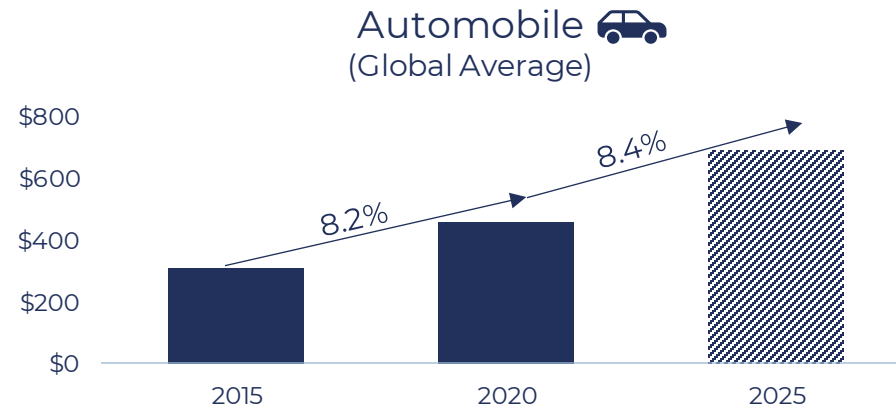
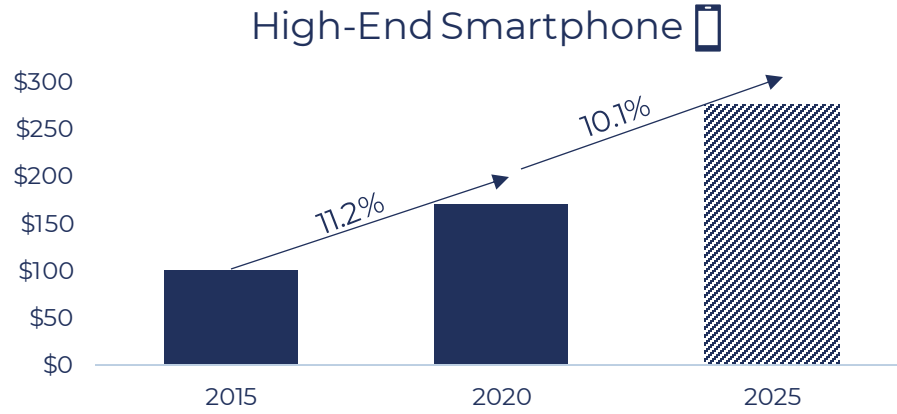


End Market Growth - 5 Year Forward CAGR



... as content per device increases

Semiconductor Content Per Device (\$)
 2015 – 2025 (Forecast)



Government incentives



US: U.S. Innovation and Competition Act, a **\$52bn** subsidy package passed in June 2021



EU: European Chips Act is a **€43bn** plan to double Europe's share of the chip market to 20% by 2030, Feb 2022



China: laid out **\$150** billion for 2014-2030, with the aim of reaching self-sufficiency in chips (goal of 70% by 2025, currently c. 16%). Additional incentives include tax breaks, and a 30% subsidy from the Shanghai municipal government in materials and equipment projects.

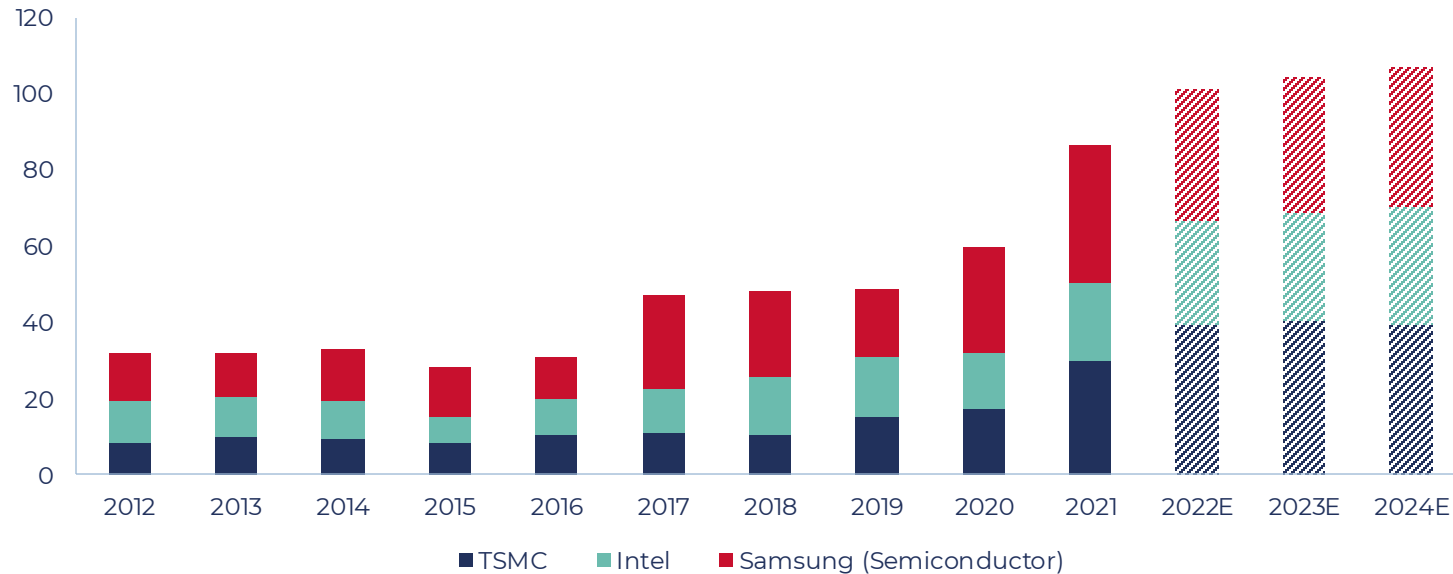


India: approved a **\$10bn** incentive plan to attract semiconductor and display manufacturers



Foundry capex

Capital Expenditure of 3 Largest Foundries (\$bn's)



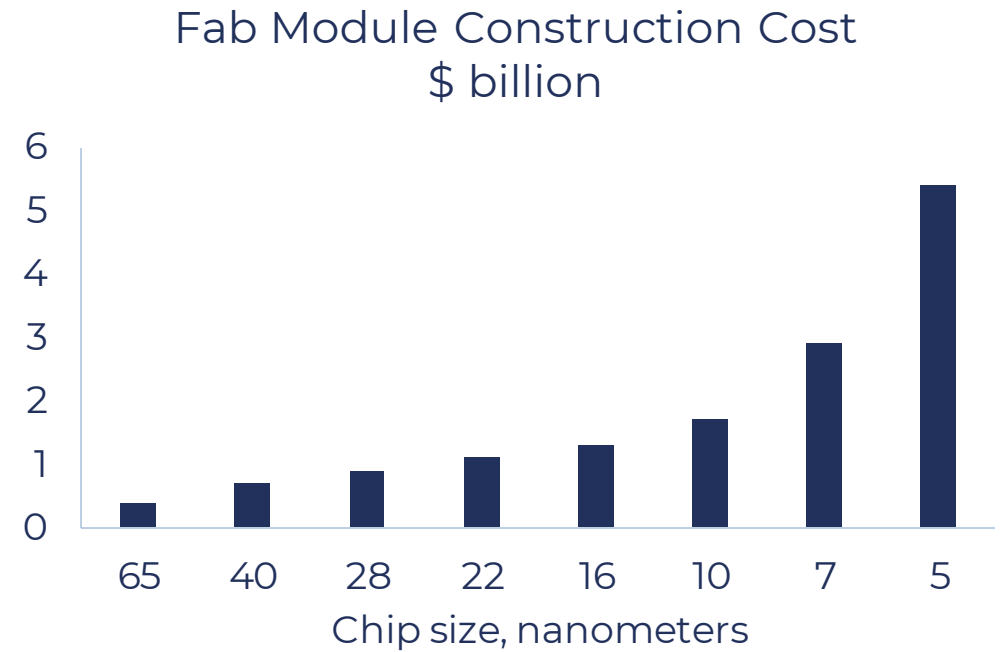
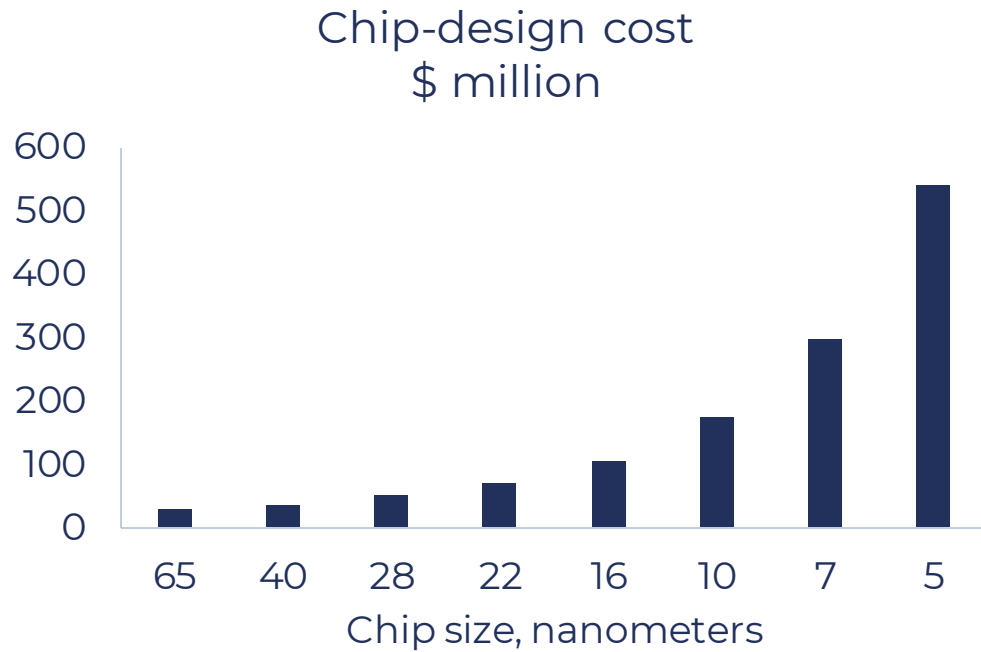
Source: Bloomberg, Goldman Sachs

"It's now consensus within the industry that there is a clear path to \$1 trillion semiconductor market before the end of the decade. That would represent a high single-digit compound annual growth rate from where we are today. In other words, it took the industry more than five decades to reach \$0.5 trillion of annual revenues and we will add another \$0.5 trillion within the next six to eight years"

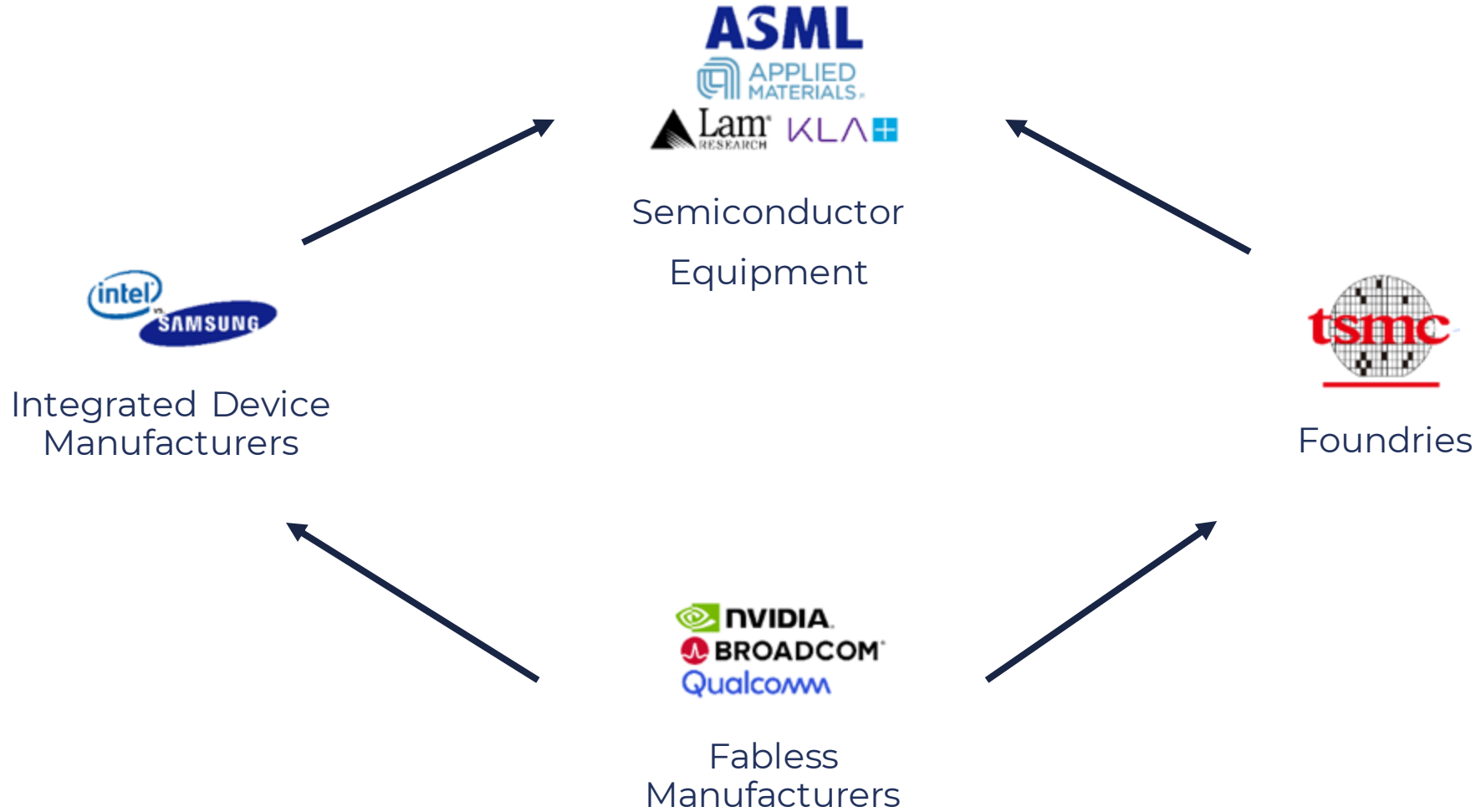
Gary E. Dickerson (AMAT CEO)

- TSMC \$100bn over 2021-2023
- Intel \$100bn on chip plants 2022-2032
- Samsung \$150bn in foundry unit until 2030

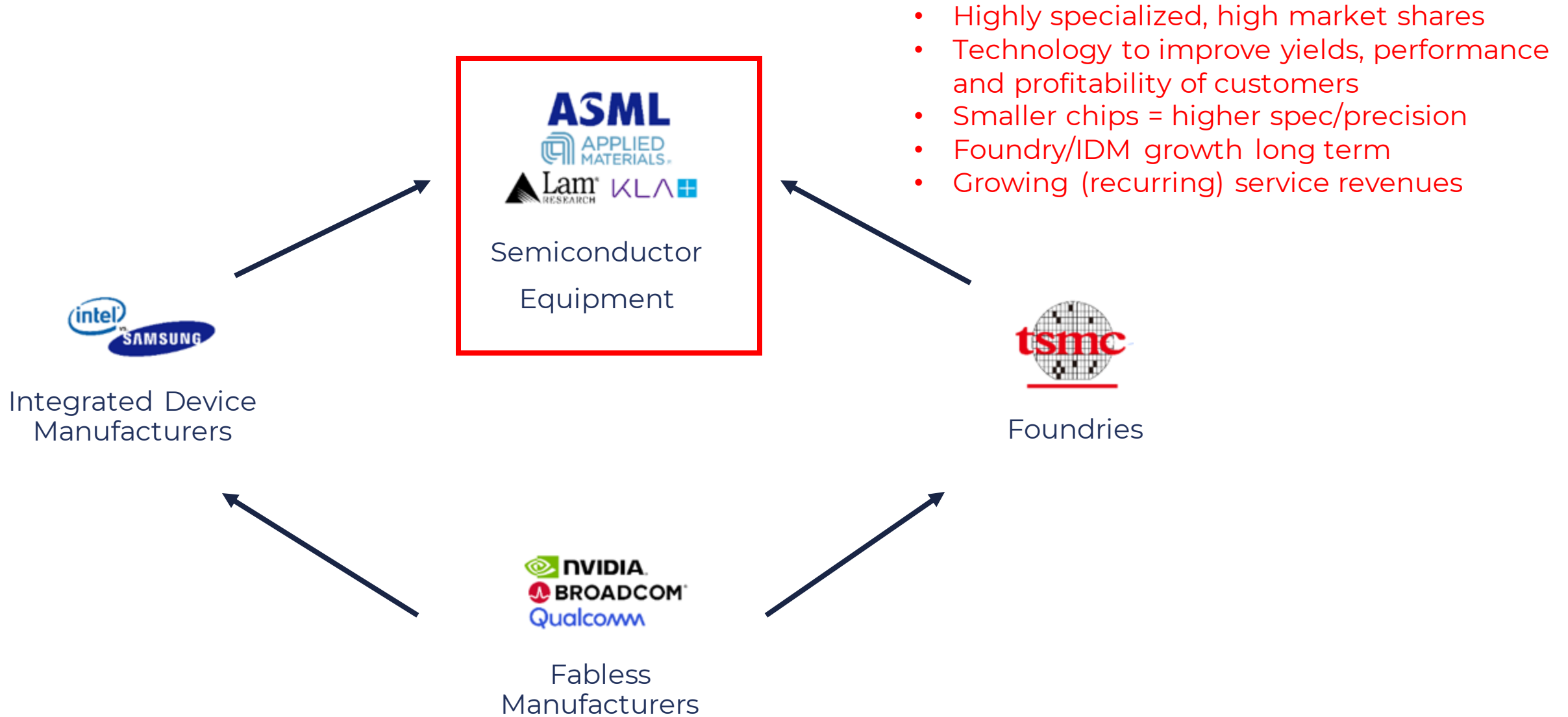
Increasing capital intensity with increasing complexity



Semiconductor value chain (simplified)



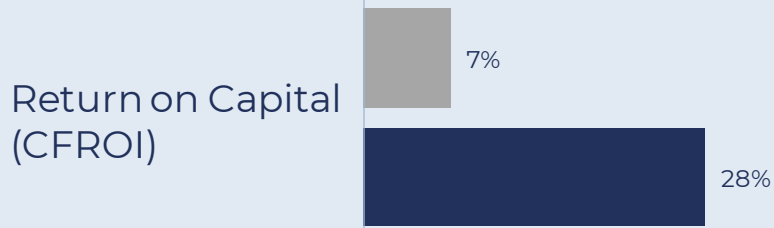
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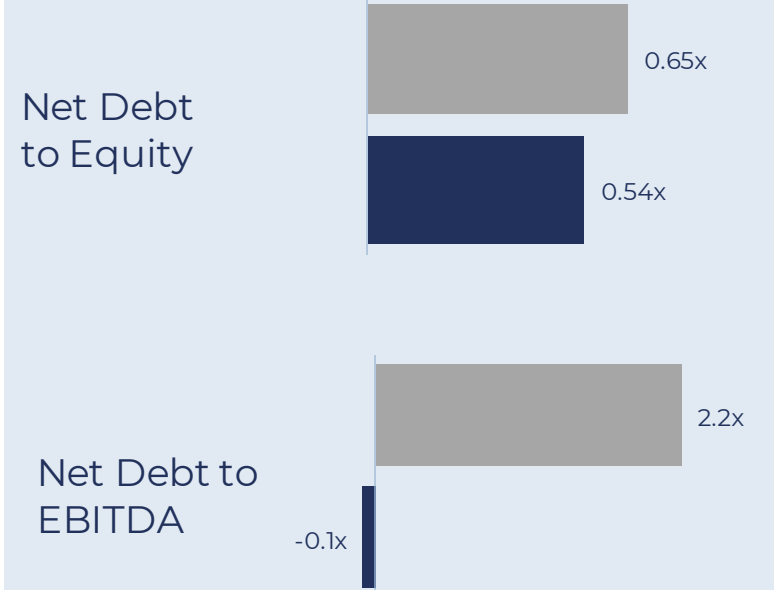
Quality

Semi equipment financial measures ('Big 5')

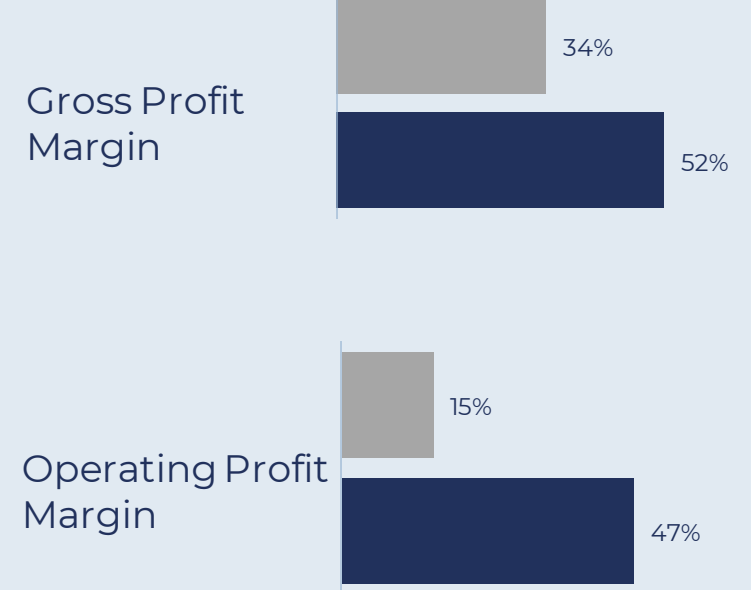
Returns



Balance Sheet



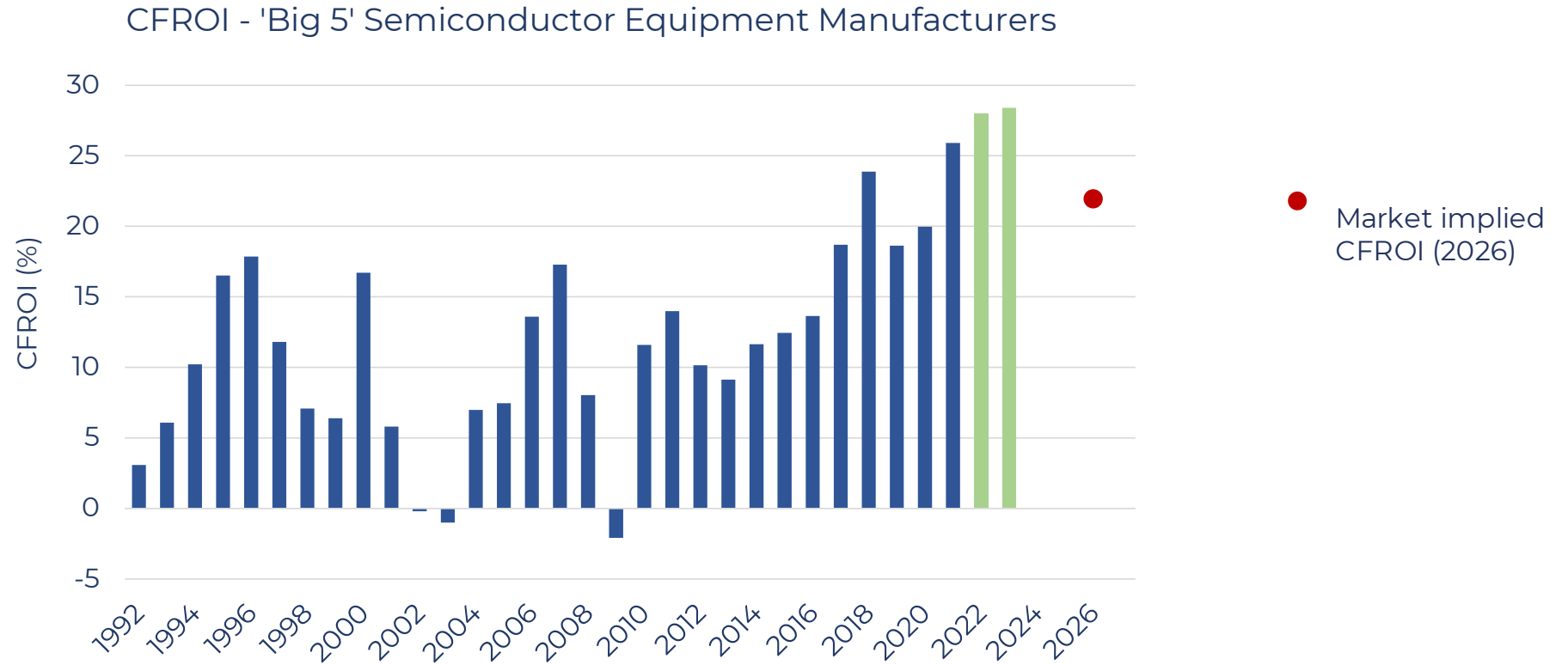
Margins



■ Average Peer Group

■ MSCI World

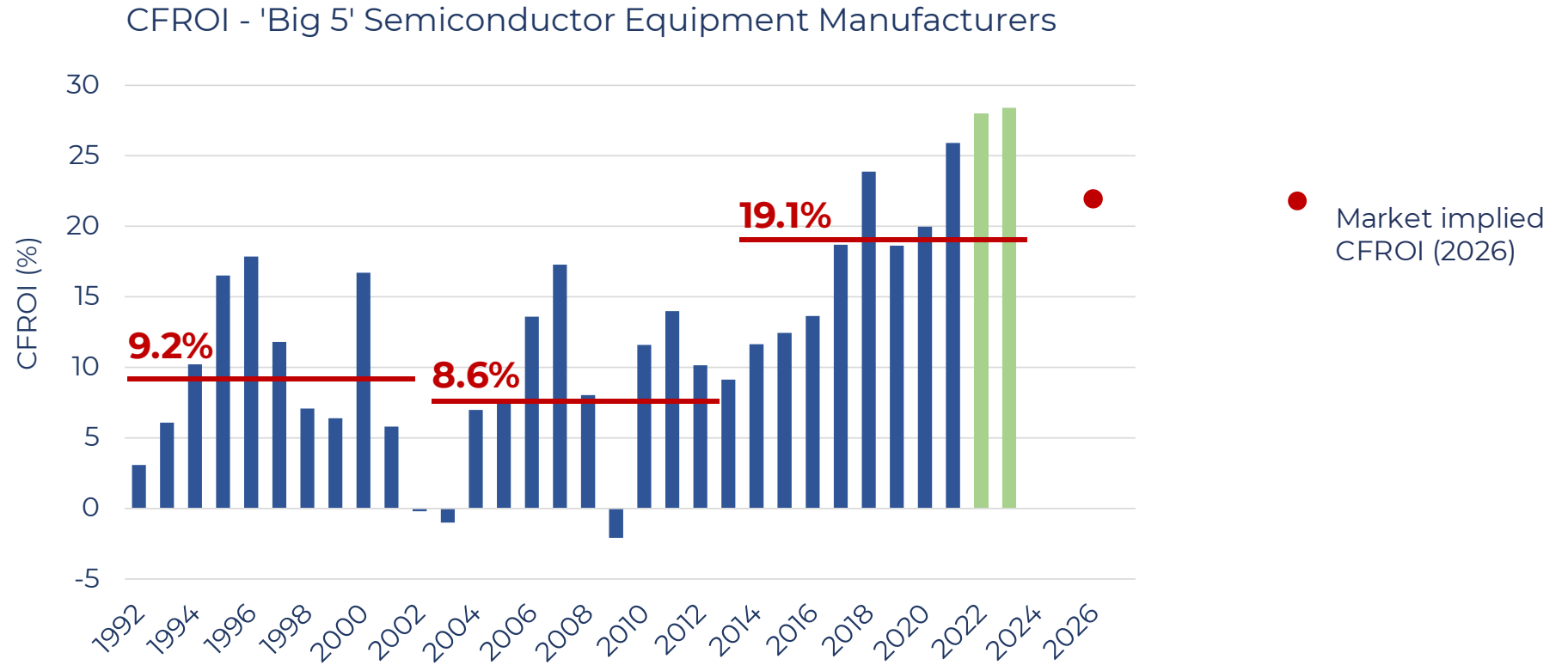
Semi equipment companies see growing return on capital



Peers consist of five largest Semiconductor Equipment Manufacturers by Market Cap: **ASML, Applied Materials, Tokyo Electron, Lam Research, KLA**

Source: Guinness Global Investors, Credit Suisse Holt (data as at 09.06.2022)

Semi equipment companies see growing return on capital



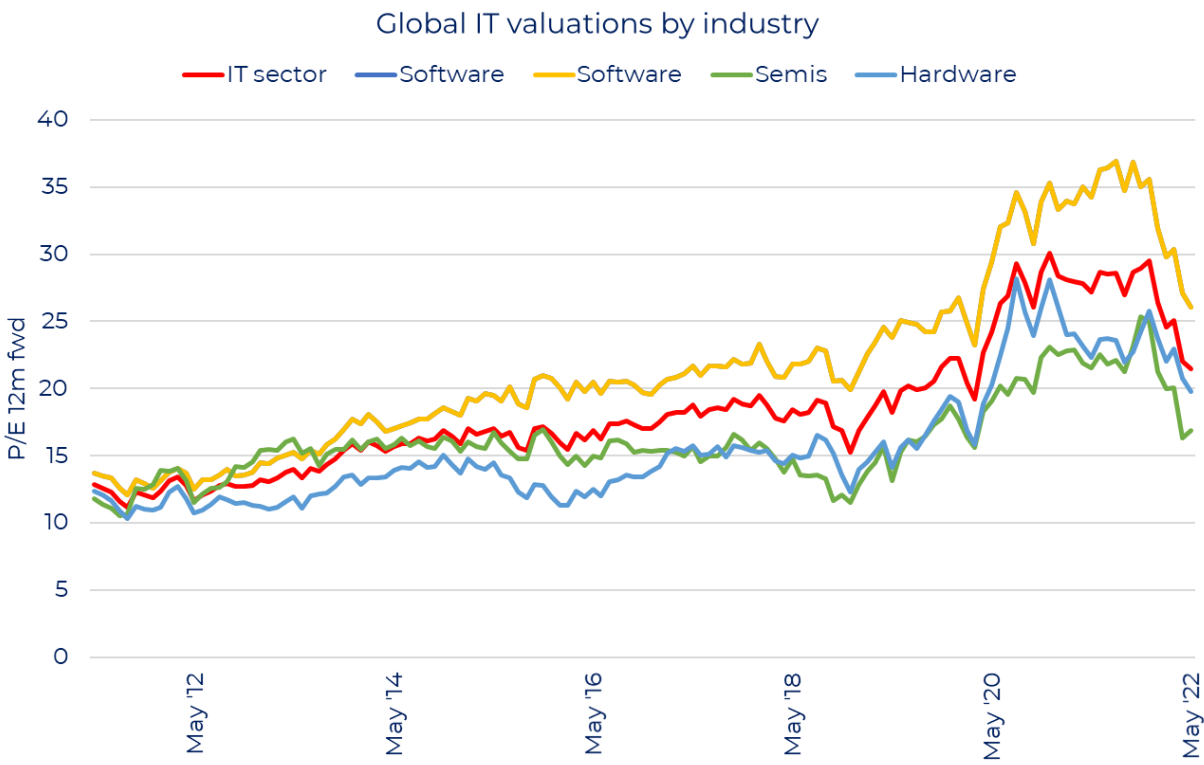
Semiconductor equipment companies have become less cyclical

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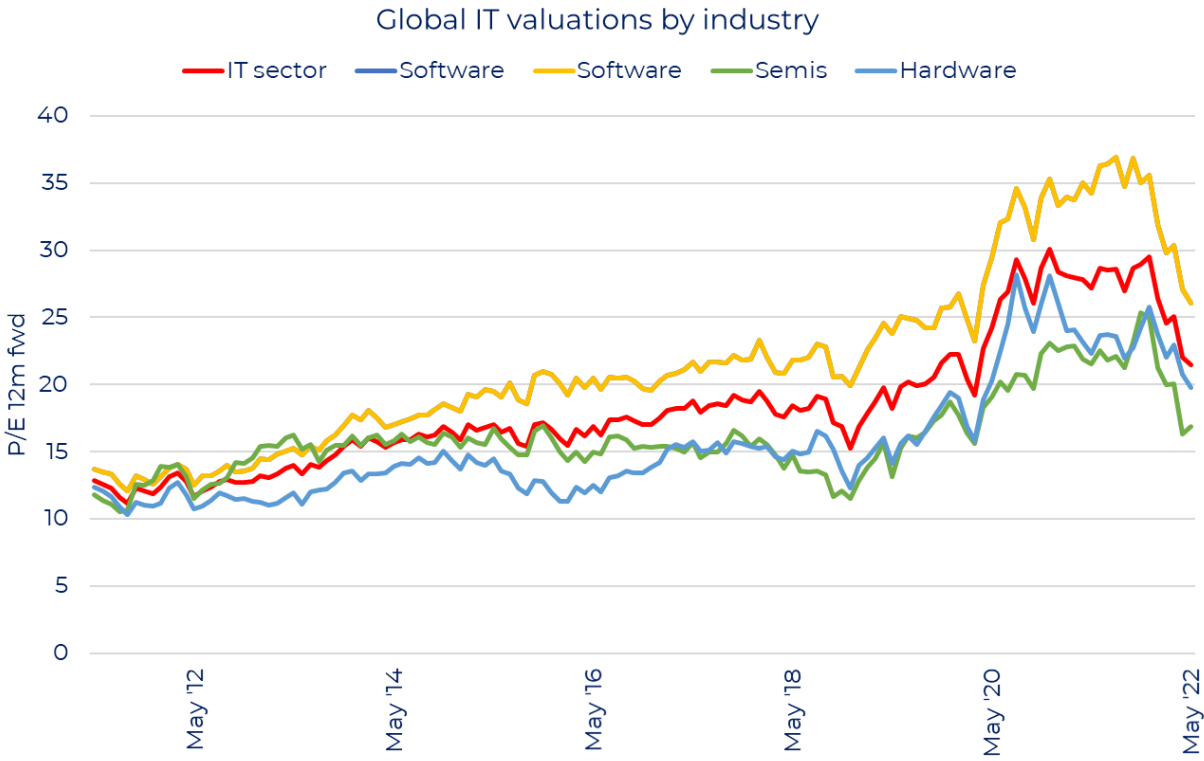
Conviction

Valuation

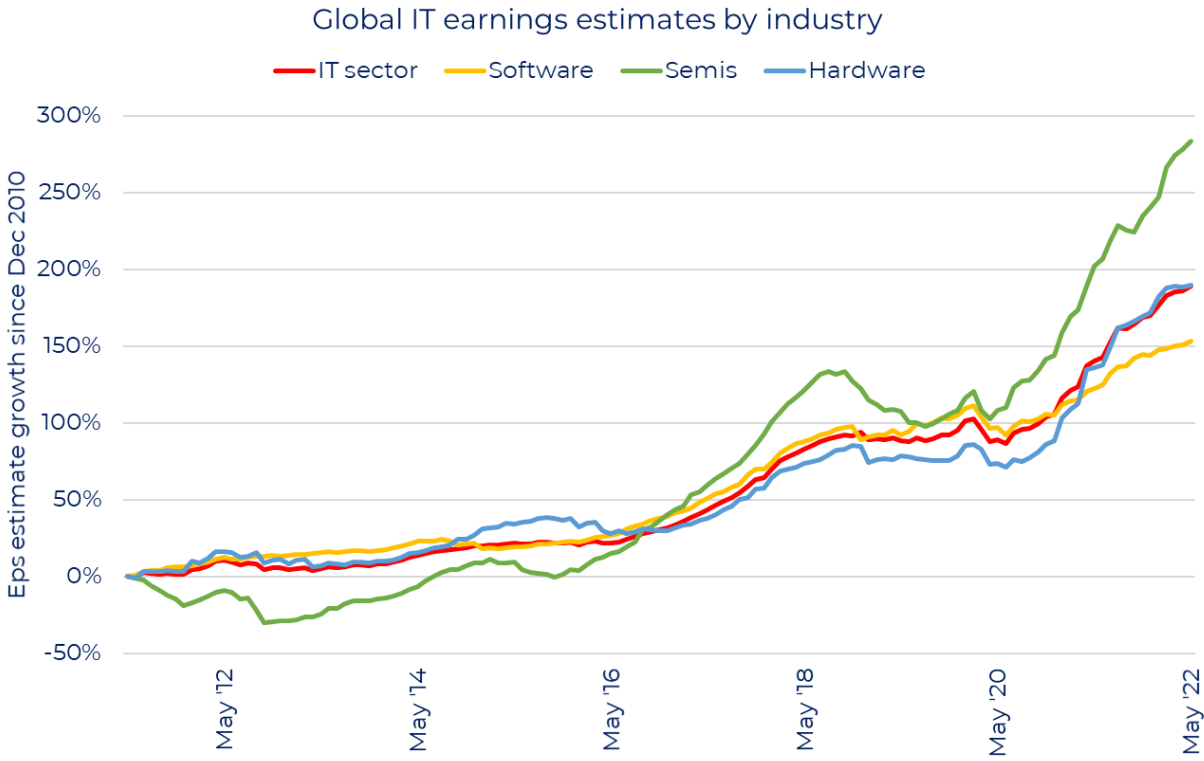


Semiconductor industry has re-rated the least within IT sector industries since 2010...

Conviction Valuation



Semiconductor industry has re-rated the least within IT sector industries since 2010...



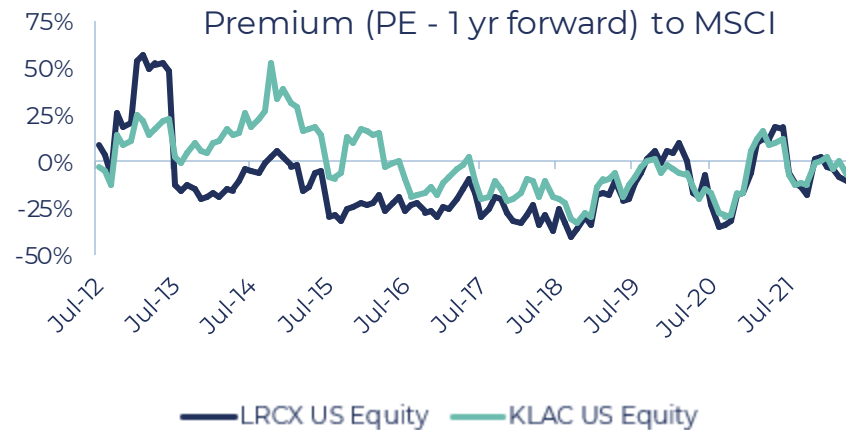
... but has seen highest earnings estimate growth

Lam Research & KLA



- Market leader in dry-etch and deposition markets
- Market cap: \$72bn
- Servicing 30% revenue
- Buybacks, dividends \$4bn

- Market leader in process diagnostics and control (>50% market share)
- Market cap: \$55bn
- Servicing 25% revenue
- Buybacks, dividends \$3bn



- Market multiples, with faster growth, better quality characteristics, long-term secular demand
- Dominant market positions, wide moats, closer customer entrenchment with increasing complexity
- Potential for longer term multiple re-rating if less cyclical (PC/smartphone vs high performance computing)

Thank you

Important Information

Issued by Guinness Global Investors a trading name of Guinness Asset Management Limited, which is authorised and regulated by the Financial Conduct Authority.

This report is primarily designed to inform you about Guinness Global Innovators Fund. Any investment decision should take account of the subjectivity of the comments contained in the report. It is provided for information only and all the information contained in it is believed to be reliable but may be inaccurate or incomplete; any opinions stated are honestly held at the time of writing, but are not guaranteed. The contents of the document should not therefore be relied upon. It should not be taken as a recommendation to make an investment in the Fund or to buy or sell individual securities, nor does it constitute an offer for sale.

Documentation

The documentation needed to make an investment, including the Prospectus, the Key Investor Information Document (KIID) and the Application Form, is available in English from www.guinnessfunds.com or free of charge from:-

- the Manager: Link Fund Manager Solutions (Ireland) Ltd (LFMSI), 2 Grand Canal Square, Grand Canal Harbour, Dublin 2, Ireland; or,
- the Promoter and Investment Manager: Guinness Asset Management Ltd, 18 Smith Square, London SW1P 3HZ.

LFMSI, as UCITS Man Co, has the right to terminate the arrangements made for the marketing of funds in accordance with the UCITS Directive.

Investor Rights

A summary of investor rights in English is available here: <https://www.linkgroup.eu/policy-statements/irish-management-company/>

Residency

In countries where the Fund is not registered for sale or in any other circumstances where its distribution is not authorised or is unlawful, the Fund should not be distributed to resident Retail Clients. **THIS INVESTMENT IS NOT FOR SALE TO U.S. PERSONS.**

Structure & regulation

The Fund is a sub-fund of Guinness Asset Management Funds PLC (the "Company"), an open-ended umbrella-type investment company, incorporated in Ireland and authorised and supervised by the Central Bank of Ireland, which operates under EU legislation. The Fund has been approved by the Financial Conduct Authority for sale in the UK. If you are in any doubt about the suitability of investing in this Fund, please consult your investment or other professional adviser.

Switzerland

This is an advertising document. The prospectus and KIID for Switzerland, the articles of association, and the annual and semi-annual reports can be obtained free of charge from the representative in Switzerland, Carnegie Fund Services S.A., 11, rue du Général-Dufour, 1204 Geneva, Switzerland, Tel. +41 22 705 11 77, www.carnegie-fund-services.ch. The paying agent is Banque Cantonale de Genève, 17 Quai de l'Île, 1204 Geneva, Switzerland.

Telephone calls will be recorded and monitored.

11/07/2023 PS, GBP