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Global Theme Machine

June Insights

CITI'S TAKE

Using the prism of the Citi Global Theme Machine, we analyse the dynamic attractiveness of 90 global Thematics mapped at the single-stock level over almost 10 years by 200+ Citi Research analysts across 5,500 listed companies, and seek to make connections to our broader Research. If interested in the full dataset, just let us know – we'd be very happy to discuss in more detail

Top Themes — Unsurprisingly, the Top 10 Thematic baskets in the Theme Machine model continue to see Resource-related baskets feature highly, with Ag Demand, Belt & Road, and Mining Capex the top 3 currently. We also find some intuitively compelling baskets in the Top 10 such as Smart Grids (critical for Energy Transition), Supply Chain Solutions (in a complex geopolitical world, read here for [more detail](#)), and Manufacturing Onshoring (the ongoing reflex to shorten supply chains for a variety of reasons). The Metaverse (see [here](#) and [here](#)) sneaks in at number 10.

Bottom Themes — The least attractive quintile continues to be dominated by Consumer-related and Biotech/Healthcare related thematics (these account for 13 of the bottom 16, with Tech themes the other 3 (Digital Leisure, Online/Ondemand Media (think Netflix), and Internet Business Models). Notwithstanding recent relative openings in China, the continued absence of the Chinese Consumer internationally weighs heavily on Consumer themes, allied with the challenges for people that come with rising inflation and cost of living in multiple countries.

Performance — How has the Theme Machine fared this year in light of myriad challenges of the market? To refute the often deep scepticism that a rising focus & performance of Thematics was 'merely a function of a bull market with cheap liquidity', we note that the Top Quintile portfolio has materially outperformed its MSCI World benchmark YTD. Although it has declined -6.8% YTD, over the same time period the bottom (least attractive) quintile of Themes was -18.1%, whilst MSCI World itself was -13%. So the approach of being long the Top Quintile, and short the MSCI World portfolio has returned a respectable +11.2% YTD, whilst a strategy which goes long the Top Quintile and short the Bottom Quintile has yielded +13.3% YTD. In addition to Resource baskets, specific thematics which saw strong performance in May include Green Mobility and EV, likewise Space, Novel Biothreats, Clean Tech, Solar. Home of the Future and Energy Efficiency saw noteworthy returns too (both almost +4%). Healthcare-related themes lagged the most.

What's Shifting — Jumps in attractiveness are notable in the Value factor for Connected Car, Metaverse, Wearable Tech, Supply Chains. In the Value factor, we find Belt & Road, Biodiversity, Home of the Future all in the most attractive top 5 on an absolute basis. See inside for more on Macro Risk factor exposures by Theme. For the Low Risk factor it is Video Gaming, Generics & Biosimilars, Food Innovation, Services Offshoring which stand out on an absolute basis, with Circular Economy, Space, Mobile Payments and Cyber also jumping up. Earnings Momentum and Price Mo are dominated by Resource themes. You can also find changes in Crowdedness by Themes.

See Appendix A-1 for Analyst Certification, Important Disclosures and Research Analyst Affiliations.

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Global Theme Machine Insights

Figure 1. Top & Bottom Ranked Themes by Overall Scores – we have included themes' ESG mapping, together with another set of rankings which excludes price momentum in response to questions as to how much our top themes are influenced by momentum. The below shows most themes remain at the top after excluding price momentum.

Portfolio	Theme	E/S/G/NR*	Overall	Overall excluding Price Momentum	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World			20 (2)	23	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
TOP RANKED THEMES										
Agriculture Demand	Resources	E	1 (1)	1	19 (17)	35 (20)	9 (14)	8 (9)	13 (25)	8 (5)
Belt & Road	Trade/Globalisation/Construction	S	2 (4)	3	3 (3)	5 (35)	19 (7)	4 (4)	85 (79)	6 (2)
Mining Capex	Resources	E	3 (13)	5	10 (6)	7 (36)	3 (5)	17 (23)	82 (85)	4 (22)
Scarce Resources	Resources	E	4 (26)	9	9 (7)	20 (42)	5 (8)	23 (55)	70 (69)	11 (43)
Smart Grids	Energy/Environment	E	5 (18)	8	26 (21)	74 (72)	11 (23)	6 (21)	15 (22)	9 (45)
Supply Chain Solutions (NEW)	Miscellaneous	NR	6 (3)	2	30 (38)	18 (5)	49 (26)	16 (7)	29 (40)	2 (1)
Global Trade	Trade/Globalisation/Construction	S	7 (8)	6	8 (11)	23 (44)	23 (17)	12 (8)	72 (70)	10 (8)
Hydro Energy	Energy/Environment	E	8 (20)	15	6 (4)	78 (86)	4 (24)	9 (19)	49 (52)	13 (25)
Biodiversity (NEW)	Environment	E	9 (12)	4	4 (9)	4 (19)	45 (47)	35 (57)	43 (32)	32 (7)
Nuclear Energy	Energy/Environment	E	10 (15)	17	24 (18)	71 (76)	7 (11)	5 (18)	48 (45)	14 (16)
Biofuels	Energy/Environment	E	11 (38)	18	16 (12)	2 (57)	2 (19)	55 (42)	88 (88)	7 (35)
Services Offshoring	Trade/Globalisation/Construction	S	12 (5)	10	75 (78)	34 (15)	36 (4)	7 (6)	3 (4)	22 (36)
Fossil Fuels	Energy/Environment	S	13 (42)	21	25 (16)	12 (79)	1 (3)	58 (67)	90 (90)	1 (14)
Manufacturing Onshoring	Industrial Trends	S	14 (5)	6	7 (10)	36 (47)	64 (34)	14 (5)	53 (41)	15 (6)
Metaverse (NEW)	Information Technology	NR	15 (9)	11	37 (48)	25 (6)	53 (60)	32 (16)	7 (6)	45 (27)
BOTTOM RANKED THEMES										
Value Healthcare Spend	Healthcare	S	77 (65)	74	83 (83)	59 (21)	75 (78)	79 (81)	10 (8)	62 (63)
Consumer Health and Wellness	Consumption	S	78 (75)	74	62 (61)	66 (53)	77 (76)	64 (63)	21 (19)	80 (75)
Online/OnDemand Media	Information Technology	NR	78 (79)	77	56 (55)	64 (40)	74 (77)	59 (69)	27 (28)	90 (85)
Luxury Spend	Consumption	S	80 (86)	79	61 (65)	15 (64)	76 (71)	67 (70)	84 (86)	71 (66)
Internet-driven business models	Information Technology	S	81 (83)	71	76 (79)	6 (7)	90 (88)	83 (83)	32 (36)	88 (86)
Global Tourism	Miscellaneous	S	82 (91)	87	86 (86)	8 (90)	42 (63)	82 (87)	91 (91)	68 (79)
Medical Tech	Healthcare	S	83 (77)	76	85 (85)	53 (18)	83 (80)	77 (76)	6 (10)	74 (81)
Aging Demographics Spend	Consumption	S	84 (81)	82	50 (56)	68 (65)	66 (67)	57 (64)	59 (48)	79 (77)
Healthcare IT	Healthcare	S	85 (71)	80	81 (82)	46 (13)	86 (86)	86 (88)	9 (7)	84 (64)
Generics & Biosimilars	Healthcare	S	86 (76)	83	77 (76)	82 (30)	84 (79)	71 (71)	2 (3)	87 (89)
Digital Leisure	Information Technology	S	87 (82)	85	73 (75)	17 (4)	87 (87)	81 (80)	60 (42)	91 (90)
Immunotherapy	Healthcare	S	88 (68)	88	90 (89)	50 (3)	89 (89)	89 (89)	33 (12)	78 (56)
Aging Demographic Healthcare Spend	Healthcare	S	89 (84)	89	84 (84)	80 (46)	80 (82)	85 (86)	24 (14)	82 (87)
DNA/Genetics	Healthcare	S	90 (87)	90	89 (90)	87 (51)	88 (84)	90 (90)	45 (27)	83 (82)
Biotech	Healthcare	S	91 (90)	91	91 (91)	89 (70)	91 (91)	91 (91)	79 (55)	77 (88)

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Source: Citi Research

Figure 2. Stocks with High Exposures to Multiple Top/Bottom 15 Themes

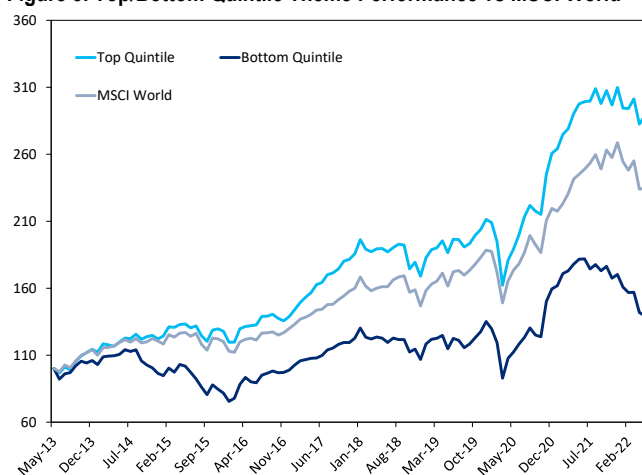
SEDOL	Stock Name	# of Themes	Exposure to Top 15 Themes	Market	Market Capitalisation	Currency	Current Price (9 June '22)	Ratings
BYZTSW7	HAPAG LLOYD	4	Supply Chain Solutions (NEW),Manufacturing Onshoring,Global	GERMANY	58,650	EUR	309.40	Neutral
B1WT5G2	DSV	4	Supply Chain Solutions (NEW),Manufacturing Onshoring,Global	DENMARK	35,055	DKK	1073.50	Buy
B142S60	KUEHNE UND NAGEL	4	Supply Chain Solutions (NEW),Manufacturing Onshoring,Global	SWITZERLAND	28,007	CHF	224.60	Sell
4253048	A P MOLLER MAERSK B	4	Supply Chain Solutions (NEW),Manufacturing Onshoring,Global	DENMARK	22,939	DKK	19320.00	Buy
2142784	FEDEX	3	Supply Chain Solutions (NEW),Global Trade,Belt & Road	UNITED STATES	56,739	USD	218.46	Buy
BLH9147	ATLAS	3	Supply Chain Solutions (NEW),Global Trade,Belt & Road	UNITED STATES	3,075	USD	12.51	Neutral
BD5ZXH8	MOL MAGYAR OLAJ-ES	3	Scarce Resources,Fossil Fuels,Biofuels	HUNGARY	6,187	HUF	2822.00	Buy
B1XQXC4	WHITEHAVEN COAL	3	Scarce Resources,Mining Capex,Fossil Fuels	AUSTRALIA	3,948	AUD	5.41	Neutral
6681960	NEW HOPE CORP.	3	Scarce Resources,Mining Capex,Fossil Fuels	AUSTRALIA	2,308	AUD	3.86	Neutral
6048156	AKR CORPORINDO	3	Mining Capex,Fossil Fuels,Biofuels	INDONESIA	1,613	IDR	1170.00	Buy

SEDOL	Stock Name	# of Themes	Exposure to Bottom 15 Themes	Market	Market Capitalisation	Currency	Current Price (9 June '22)	Ratings
B4X4D29	FLEURY ON	8	Value Healthcare Spend,Medical Tech,Healthcare IT,Generics &	BRAZIL	980	BRL	15.09	Neutral
B1G5XP1	AEDIFICA	6	Value Healthcare Spend,Medical Tech,Healthcare IT,Consumer Health	BELGIUM	3,881	EUR	100.20	Buy
BYYYH79	SHOP APOTHEKE EUROPE	6	Value Healthcare Spend,Internet-driven business models,Healthcare	GERMANY	1,767	EUR	89.58	Buy
BLB5635	BABYLON HOLDINGS A	6	Value Healthcare Spend,Internet-driven business models,Healthcare	UNITED STATES	421	USD	1.25	Neutral
BFH3N85	VEEVA SYSTEMS CL A	6	Immunotherapy,Healthcare IT,Generics &	UNITED STATES	26,898	USD	191.81	Buy
7110388	ROCHE HOLDING	5	Value Healthcare Spend,Immunotherapy,DNA/Genetics,Biotech,Aging	SWITZERLAND	229,865	CHF	321.00	Buy
2719951	EXACT SCIS	5	Value Healthcare Spend,Medical Tech,DNA/Genetics,Aging	UNITED STATES	8,379	USD	47.63	Neutral
B7FQV64	RAIA DROGASIL ON	5	Value Healthcare Spend,Generics & Biosimilars,Consumer Health and	BRAZIL	7,104	BRL	21.14	Neutral
B2QY968	HYPERMARCAS ON	5	Value Healthcare Spend,Generics & Biosimilars,Consumer Health and	BRAZIL	5,153	BRL	39.78	Buy
B92M677	ZUR ROSE	5	Value Healthcare Spend,Healthcare IT,Consumer Health and	SWITZERLAND	1,155	CHF	99.70	Neutral

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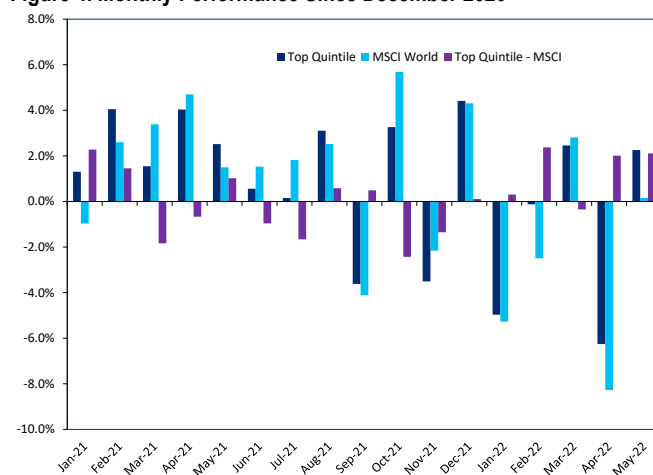
Figure 3. Top/Bottom Quintile Theme Performance vs MSCI World



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Source: Citi Research

Figure 4. Monthly Performance Since December 2020



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Source: Citi Research

Figure 5. Top Performing Themes in May (green denotes the top performing theme for the corresponding period)

Portfolio	Theme	E/S/G/NR*	Last Month Return	Last 3M Return	YTD Return	Last 12M Return	Last 3Y Return	SD of Last Month Ret vs 12M
MSCI World			0.15%	-5.5%	-12.8%	-4.4%	45.0%	0.11
Fossil Fuels	Energy/Environment	S	7.46%	9.9%	16.7%	17.9%	44.5%	1.36
Nuclear Energy	Energy/Environment	E	5.58%	0.3%	-4.2%	5.8%	97.2%	1.35
Energy Storage	Energy/Environment	E	4.97%	4.1%	4.1%	8.7%	62.6%	1.15
Green Mobility	Industrial Trends/Environment	E	4.73%	-5.0%	-9.2%	-4.0%	69.3%	1.14
Electric Vehicles	Industrial Trends/Environment	E	4.65%	-4.5%	-8.1%	-1.2%	77.0%	1.15
Novel Biothreats	Healthcare	E/S	4.62%	-5.3%	-16.1%	-8.0%	109.6%	1.00
Space Race	Miscellaneous	S	3.95%	-2.4%	0.3%	-13.5%	0.4%	1.01
Energy Efficiency	Environment	E	3.87%	-1.7%	-4.8%	-2.9%	43.7%	1.10
Clean Tech	Environment	E	3.86%	-2.1%	-4.9%	-3.6%	61.8%	0.94
Solar Energy	Energy/Environment	E	3.78%	2.7%	0.6%	4.7%	63.9%	0.83

* E: Environmental, S: Social, G: Governance, NR: Not Relevant

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Source: Citi Research

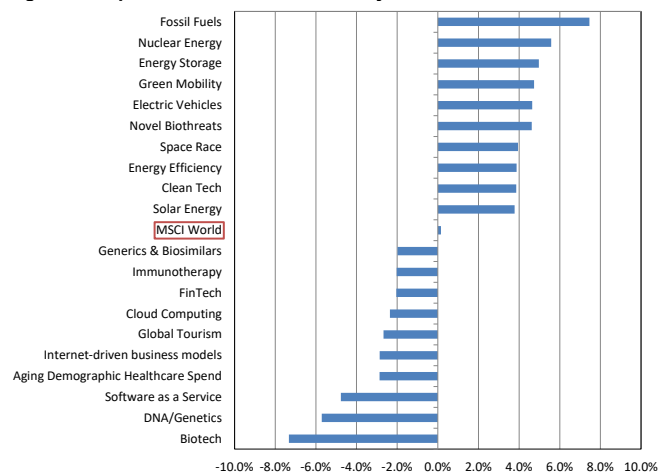
Figure 6. Bottom Performing Themes in May (Red denotes the bottom performing theme for the corresponding period)

Portfolio	Theme	E/S/G/NR*	Last Month Return	Last 3M Return	YTD Return	Last 12M Return	Last 3Y Return	SD of Last Month Ret vs 12M
MSCI World			0.15%	-5.5%	-12.8%	-4.4%	45.0%	0.11
Biotech	Healthcare	S	-7.33%	-24.0%	-37.6%	-45.6%	1.7%	-0.37
DNA/Genetics	Healthcare	S	-5.71%	-18.7%	-32.1%	-39.2%	14.1%	-0.31
Software as a Service	Information Technology	S	-4.77%	-15.3%	-26.2%	-21.1%	24.1%	-0.54
Aging Demographic Healthcare Spend	Healthcare	S	-2.87%	-11.7%	-19.8%	-24.2%	22.0%	-0.16
Internet-driven business models	Information Technology	S	-2.86%	-14.6%	-25.4%	-32.4%	13.0%	0.07
Global Tourism	Miscellaneous	S	-2.67%	-7.1%	-9.8%	-17.6%	2.8%	-0.32
Cloud Computing	Information Technology	S	-2.36%	-12.0%	-22.2%	-15.7%	48.2%	-0.23
FinTech	Financial	S	-2.04%	-10.2%	-15.8%	-19.2%	7.8%	-0.09
Immunotherapy	Healthcare	S	-2.02%	-14.6%	-29.8%	-39.3%	27.2%	0.33
Generics & Biosimilars	Healthcare	S	-1.98%	-8.9%	-17.5%	-19.8%	40.0%	-0.06

* E: Environmental, S: Social, G: Governance, NR: Not Relevant

Source: Citi Research

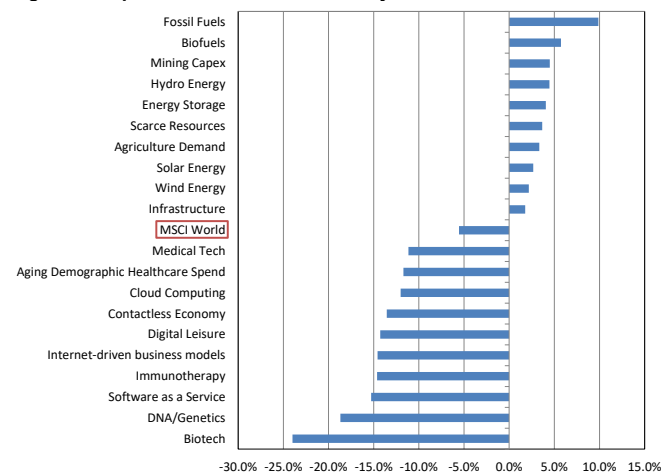
Figure 7. Top 10 & Bottom 10 Themes by Last month's Returns



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Source: Citi Research, MSCI

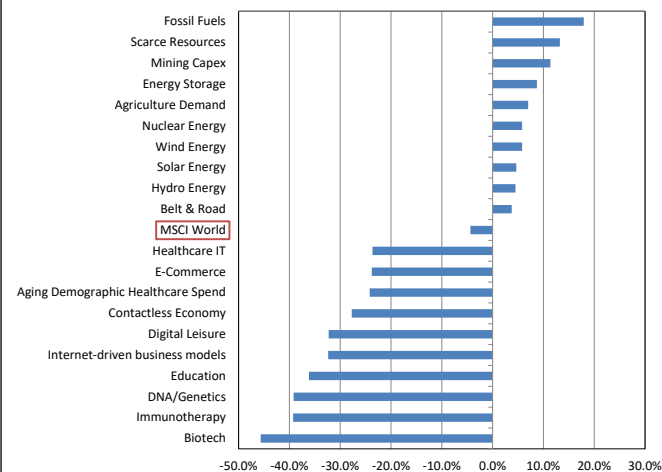
Figure 8. Top 10 & Bottom 10 Themes by Last 3 months' Returns



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Source: Citi Research, MSCI

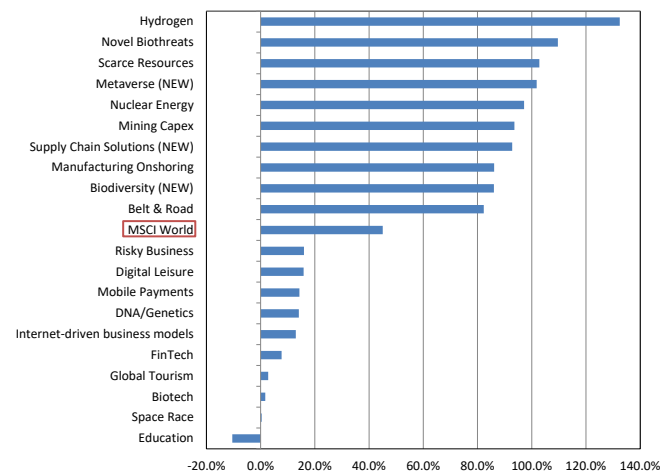
Figure 9. Top 10 & Bottom 10 Themes by Last 12 months' Returns



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Source: Citi Research, MSCI

Figure 10. Top 10 & Bottom 10 Themes by Last 3 Years' Returns



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Source: Citi Research, MSCI

Figure 11. Top 10 Most Significant Outperforming Themes Measured by Standard Deviation (green denotes the top performer)

Portfolio	Theme	E/S/G/NR*	SD of Last Month Ret vs 12M	Last Month Return	Last 3M Return	YTD Return	Last 12M Return	Last 3Y Return
MSCI World			0.11	0.15%	-5.5%	-12.8%	-4.4%	45.0%
Fossil Fuels	Energy/Environment	S	1.36	7.46%	9.9%	16.7%	17.9%	44.5%
Nuclear Energy	Energy/Environment	E	1.35	5.58%	0.3%	-4.2%	5.8%	97.2%
Electric Vehicles	Industrial Trends/Environment	E	1.15	4.65%	-4.5%	-8.1%	-1.2%	77.0%
Energy Storage	Energy/Environment	E	1.15	4.97%	4.1%	4.1%	8.7%	62.6%
Green Mobility	Industrial Trends/Environment	E	1.14	4.73%	-5.0%	-9.2%	-4.0%	69.3%
EM in DM	Miscellaneous	S	1.10	2.64%	-6.6%	-14.6%	-16.8%	19.6%
Home of the Future (NEW)	Environment	S	1.10	3.60%	-6.3%	-14.3%	-12.6%	64.8%
Energy Efficiency	Environment	E	1.10	3.87%	-1.7%	-4.8%	-2.9%	43.7%
Space Race	Miscellaneous	S	1.01	3.95%	-2.4%	0.3%	-13.5%	0.4%
Novel Biothreats	Healthcare	E/S	1.00	4.62%	-5.3%	-16.1%	-8.0%	109.6%

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Source: Citi Research, MSCI

Figure 12. Bottom 10 Significant Underperforming Themes Measured by Standard Deviation (red denotes the bottom performer)

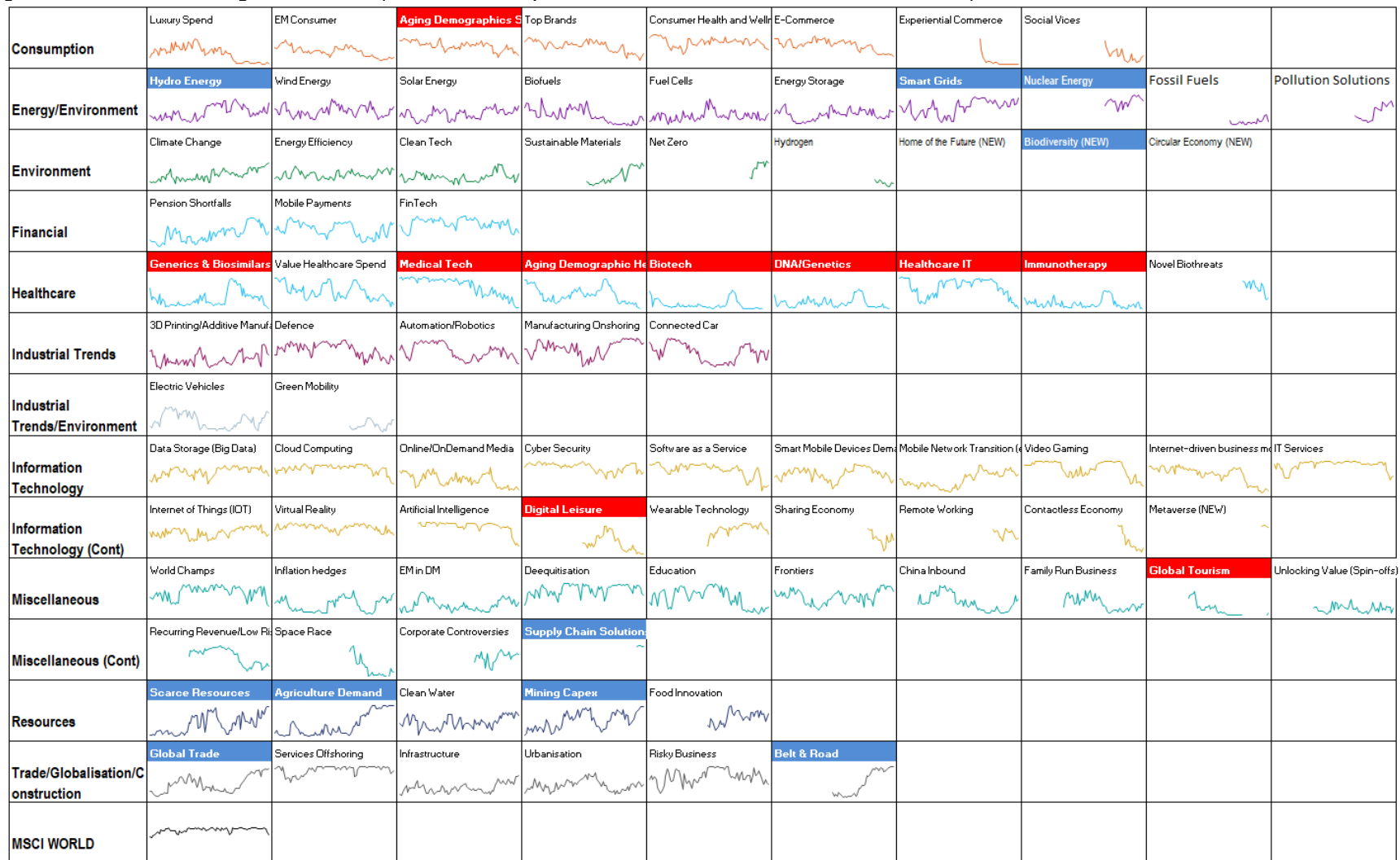
Portfolio	Theme	E/S/G/NR*	SD of Last Month Ret vs 12M	Last Month Return	Last 3M Return	YTD Return	Last 12M Return	Last 3Y Return
MSCI World			0.11	0.15%	-5.5%	-12.8%	-4.4%	45.0%
Software as a Service	Information Technology	S	-0.54	-4.77%	-15.3%	-26.2%	-21.1%	24.1%
Biotech	Healthcare	S	-0.37	-7.33%	-24.0%	-37.6%	-45.6%	1.7%
Global Tourism	Miscellaneous	S	-0.32	-2.67%	-7.1%	-9.8%	-17.6%	2.8%
DNA/Genetics	Healthcare	S	-0.31	-5.71%	-18.7%	-32.1%	-39.2%	14.1%
Cloud Computing	Information Technology	S	-0.23	-2.36%	-12.0%	-22.2%	-15.7%	48.2%
Recurring Revenue/Low Risk of Disruption	Miscellaneous	S	-0.18	-1.79%	-7.8%	-14.1%	-13.7%	19.4%
Cyber Security	Information Technology	S	-0.17	-1.11%	-6.5%	-12.2%	-6.0%	51.4%
Aging Demographic Healthcare Spend	Healthcare	S	-0.16	-2.87%	-11.7%	-19.8%	-24.2%	22.0%
Scarce Resources	Resources	E	-0.15	0.45%	3.7%	9.3%	13.2%	102.8%
Data Storage (Big Data)	Information Technology	S	-0.14	-1.54%	-9.1%	-17.5%	-12.0%	53.4%

* E: Environmental, S: Social, G: Governance, NR: Not Relevant

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Figure 13. Overall Theme Rankings Since Jan 2016 (blue denotes the top 10 themes and red for the bottom 10 themes this month)



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Source: Citi Research

Top/Bottom 10: Change in Ranking

The following table shows the rank changes in themes over the past three months.

Figure 14. Largest Upward and Downward (in italics) Moves in Rankings When Compared to Previous Quarter in Brackets

Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI WORLD 20 (2)	MSCI WORLD 79 (80)	MSCI WORLD 65 (12)	MSCI WORLD 16 (2)	MSCI WORLD 2 (2)	MSCI WORLD 16 (13)	MSCI WORLD 30 (3)
Fossil Fuels 13 (42)	Connected Car 20 (34)	Global Tourism 8 (90)	Clean Tech 35 (72)	Wind Energy 28 (62)	Connected Car 44 (62)	Infrastructure 20 (62)
Energy Storage 19 (47)	China Inbound 28 (40)	Experiential Commerc 3 (74)	Green Mobility 33 (59)	Scarce Resources 23 (55)	Circular Economy (NE 37 (54)	Software as a Service 18 (60)
Biofuels 11 (38)	Metaverse (NEW) 37 (48)	Fossil Fuels 12 (79)	Hydrogen 15 (37)	Energy Storage 38 (61)	Space Race 40 (57)	IT Services 28 (67)
Infrastructure 25 (49)	Sustainable Material 33 (42)	Biofuels 2 (57)	Space Race 46 (68)	Biodiversity (NEW) 35 (57)	Mobile Payments 47 (60)	Smart Grids 9 (45)
Scarce Resources 4 (26)	Wearable Technology 15 (24)	Family Run Business 28 (81)	Wind Energy 6 (28)	Clean Water 15 (33)	FinTech 26 (38)	Defence 49 (84)
Wind Energy 24 (45)	Supply Chain Solutio 30 (38)	Space Race 33 (83)	Global Tourism 42 (63)	Recurring Revenue/Lo 42 (59)	Agriculture Demand 13 (25)	Scarce Resources 11 (43)
Energy Efficiency 39 (56)	Sharing Economy 45 (53)	Luxury Spend 15 (64)	Hydro Energy 4 (24)	China Inbound 31 (46)	Supply Chain Solutio 29 (40)	Biofuels 7 (35)
Experiential Commerc 73 (89)	Urbanisation 22 (30)	EM Consumer 37 (80)	Pollution Solutions 34 (52)	Smart Grids 6 (21)	Cyber Security 23 (33)	Energy Storage 24 (50)
Inflation hedges 29 (44)	Education 53 (60)	Mobile Payments 19 (52)	Solar Energy 13 (31)	Pension Shortfalls 33 (48)	Green Mobility 62 (71)	Education 54 (76)
Climate Change 42 (56)	Net Zero 39 (45)	Belt & Road 5 (35)	Biofuels 2 (19)	Inflation hedges 30 (45)	Electric Vehicles 66 (74)	Recurring Revenue/Lo 48 (69)
...
Artificial Intelligence 66 (51)	Wind Energy 27 (22)	IT Services 62 (29)	FinTech 73 (58)	Family Run Business 53 (40)	Pension Shortfalls 54 (44)	Novel Biothreats 35 (11)
Wearable Technology 32 (16)	Nuclear Energy 24 (18)	Healthcare IT 46 (13)	EM in DM 60 (44)	Biofuels 55 (42)	Aging Demographic He 24 (14)	Green Mobility 42 (18)
Virtual Reality 36 (20)	Clean Tech 59 (52)	Aging Demographic He 80 (46)	Urbanisation 37 (21)	Internet of Things (27 (13)	Biodiversity (NEW) 43 (32)	Biodiversity (NEW) 32 (7)
Automation/Robotics 71 (53)	Mobile Network Trans 35 (27)	Medical Tech 53 (18)	Data Storage (Big Da 56 (35)	Metaverse (NEW) 32 (16)	Cloud Computing 22 (11)	Pension Shortfalls 60 (34)
Immunotherapy 88 (68)	Fossil Fuels 25 (16)	World Champs 58 (22)	Supply Chain Solutio 49 (26)	Unlocking Value (Spi 36 (20)	Aging Demographics S 59 (48)	Frontiers 36 (4)
Cloud Computing 63 (42)	Solar Energy 41 (29)	DNA/Genetics 87 (51)	3D Printing/Additive 71 (48)	Education 72 (56)	Manufacturing Onshor 53 (41)	Automation/Robotics 76 (44)
Deequitisation 34 (7)	Space Race 78 (64)	Value Healthcare Spe 59 (21)	World Champs 38 (9)	Connected Car 60 (43)	Digital Leisure 60 (42)	Deequitisation 58 (20)
3D Printing/Additive 46 (17)	Hydrogen 52 (37)	Video Gaming 39 (1)	Mobile Payments 55 (25)	Wearable Technology 48 (24)	DNA/Genetics 45 (27)	Wearable Technology 69 (29)
Novel Biothreats 57 (27)	Energy Storage 49 (33)	Immunotherapy 50 (3)	Manufacturing Onshor 64 (34)	Automation/Robotics 56 (32)	Immunotherapy 33 (12)	3D Printing/Additive 65 (19)
World Champs 62 (10)	Deequitisation 54 (31)	Generics & Biosimila 82 (30)	Services Offshoring 36 (4)	Circular Economy (NE 75 (41)	Biotech 79 (55)	World Champs 89 (12)

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Source: Citi Research

Top/Bottom 5: Valuation

Figure 15. Valuation Top/Bottom 5 Theme Rankings (shaded column, previous ranking in parenthesis)

Portfolio	Theme	Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World		20 (2)	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
Pension Shortfalls	Financial	43 (30)	1 (1)	88 (88)	30 (18)	33 (48)	54 (44)	60 (34)
Risky Business	Trade/Globalisation/Construction	49 (49)	2 (2)	86 (87)	17 (10)	25 (28)	80 (73)	67 (80)
Belt & Road	Trade/Globalisation/Construction	2 (4)	3 (3)	5 (35)	19 (7)	4 (4)	85 (79)	6 (2)
Biodiversity (NEW)	Environment	9 (12)	4 (9)	4 (19)	45 (47)	35 (57)	43 (32)	32 (7)
Home of the Future (NEW)	Environment	18 (14)	5 (5)	67 (37)	58 (65)	22 (27)	36 (30)	17 (15)
***	***	***	***	***	***	***	***	***
World Champs	Miscellaneous	62 (10)	87 (87)	58 (22)	38 (9)	1 (1)	39 (34)	89 (12)
Software as a Service	Information Technology	64 (68)	88 (88)	22 (8)	81 (74)	87 (85)	19 (23)	18 (60)
DNA/Genetics	Healthcare	90 (87)	89 (90)	87 (51)	88 (84)	90 (90)	45 (27)	83 (82)
Immunotherapy	Healthcare	88 (68)	90 (89)	50 (3)	89 (89)	89 (89)	33 (12)	78 (56)
Biotech	Healthcare	91 (90)	91 (91)	89 (70)	91 (91)	91 (91)	79 (55)	77 (88)

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Source: Citi Research

Top/Bottom 5: Growth

Figure 16. Growth Top/Bottom 5 Theme Rankings (shaded column, previous ranking in parenthesis)

Portfolio	Theme	Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World		20 (2)	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
Sharing Economy	Information Technology	50 (55)	45 (53)	1 (2)	69 (81)	68 (65)	31 (35)	64 (57)
Biofuels	Energy/Environment	11 (38)	16 (12)	2 (57)	2 (19)	55 (42)	88 (88)	7 (35)
Experiential Commerce	Consumption	73 (89)	69 (74)	3 (74)	61 (66)	73 (78)	89 (89)	63 (70)
Biodiversity (NEW)	Environment	9 (12)	4 (9)	4 (19)	45 (47)	35 (57)	43 (32)	32 (7)
Belt & Road	Trade/Globalisation/Construction	2 (4)	3 (3)	5 (35)	19 (7)	4 (4)	85 (79)	6 (2)
***	***	***	***	***	***	***	***	***
DNA/Genetics	Healthcare	90 (87)	89 (90)	87 (51)	88 (84)	90 (90)	45 (27)	83 (82)
Pension Shortfalls	Financial	43 (30)	1 (1)	88 (88)	30 (18)	33 (48)	54 (44)	60 (34)
Biotech	Healthcare	91 (90)	91 (91)	89 (70)	91 (91)	91 (91)	79 (55)	77 (88)
Unlocking Value (Spin-offs)	Miscellaneous	69 (65)	23 (25)	90 (91)	32 (39)	36 (20)	87 (87)	70 (72)
Deequitisation	Miscellaneous	34 (7)	54 (31)	91 (67)	10 (1)	3 (3)	28 (31)	58 (20)

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Source: Citi Research

Top/Bottom 5: Price Momentum

Figure 17. Price Momentum Top/Bottom 5 Theme Rankings (shaded column, previous ranking in parenthesis)

Portfolio	Theme	Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World		20 (2)	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
Fossil Fuels	Energy/Environment	13 (42)	25 (16)	12 (79)	1 (3)	58 (67)	90 (90)	1 (14)
Biofuels	Energy/Environment	11 (38)	16 (12)	2 (57)	2 (19)	55 (42)	88 (88)	7 (35)
Mining Capex	Resources	3 (13)	10 (6)	7 (36)	3 (5)	17 (23)	82 (85)	4 (22)
Hydro Energy	Energy/Environment	8 (20)	6 (4)	78 (86)	4 (24)	9 (19)	49 (52)	13 (25)
Scarce Resources	Resources	4 (26)	9 (7)	20 (42)	5 (8)	23 (55)	70 (69)	11 (43)
***	***	***	***	***	***	***	***	***
Digital Leisure	Information Technology	87 (82)	73 (75)	17 (4)	87 (87)	81 (80)	60 (42)	91 (90)
DNA/Genetics	Healthcare	90 (87)	89 (90)	87 (51)	88 (84)	90 (90)	45 (27)	83 (82)
Immunotherapy	Healthcare	88 (68)	90 (89)	50 (3)	89 (89)	89 (89)	33 (12)	78 (56)
Internet-driven business models	Information Technology	81 (83)	76 (79)	6 (7)	90 (88)	83 (83)	32 (36)	88 (86)
Biotech	Healthcare	91 (90)	91 (91)	89 (70)	91 (91)	91 (91)	79 (55)	77 (88)

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Source: Citi Research

Top/Bottom 5: Quality

Figure 18. Quality Top/Bottom 5 Theme Rankings (shaded column, previous ranking in parenthesis)

Portfolio	Theme	Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World		20 (2)	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
World Champs	Miscellaneous	62 (10)	87 (87)	58 (22)	38 (9)	1 (1)	39 (34)	89 (12)
Deequitisation	Miscellaneous	34 (7)	54 (31)	91 (67)	10 (1)	3 (3)	28 (31)	58 (20)
Belt & Road	Trade/Globalisation/Construction	2 (4)	3 (3)	5 (35)	19 (7)	4 (4)	85 (79)	6 (2)
Nuclear Energy	Energy/Environment	10 (15)	24 (18)	71 (76)	7 (11)	5 (18)	48 (45)	14 (16)
Smart Grids	Energy/Environment	5 (18)	26 (21)	74 (72)	11 (23)	6 (21)	15 (22)	9 (45)
***	***	***	***	***	***	***	***	***
Software as a Service	Information Technology	64 (68)	88 (88)	22 (8)	81 (74)	87 (85)	19 (23)	18 (60)
Contactless Economy	Information Technology	70 (74)	68 (70)	16 (11)	85 (90)	88 (84)	34 (29)	50 (61)
Immunotherapy	Healthcare	88 (68)	90 (89)	50 (3)	89 (89)	89 (89)	33 (12)	78 (56)
DNA/Genetics	Healthcare	90 (87)	89 (90)	87 (51)	88 (84)	90 (90)	45 (27)	83 (82)
Biotech	Healthcare	91 (90)	91 (91)	89 (70)	91 (91)	91 (91)	79 (55)	77 (88)

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Source: Citi Research

Top/Bottom 5: Low Risk

Figure 19. Low Risk Top/Bottom 5 Theme Rankings (shaded column, previous ranking in parenthesis)

Portfolio	Theme	Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World		20 (2)	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
Video Gaming	Information Technology	67 (58)	71 (69)	39 (1)	72 (83)	63 (73)	1 (1)	86 (83)
Generics & Biosimilars	Healthcare	86 (76)	77 (76)	82 (30)	84 (79)	71 (71)	2 (3)	87 (89)
Services Offshoring	Trade/Globalisation/Construction	12 (5)	75 (78)	34 (15)	36 (4)	7 (6)	3 (4)	22 (36)
IT Services	Information Technology	40 (37)	66 (63)	62 (29)	54 (49)	43 (36)	4 (2)	28 (67)
Food Innovation	Resources	23 (22)	48 (54)	85 (71)	29 (27)	37 (25)	5 (5)	12 (31)
***	***	***	***	***	***	***	***	***
Unlocking Value (Spin-offs)	Miscellaneous	69 (65)	23 (25)	90 (91)	32 (39)	36 (20)	87 (87)	70 (72)
Biofuels	Energy/Environment	11 (38)	16 (12)	2 (57)	2 (19)	55 (42)	88 (88)	7 (35)
Experiential Commerce	Consumption	73 (89)	69 (74)	3 (74)	61 (66)	73 (78)	89 (89)	63 (70)
Fossil Fuels	Energy/Environment	13 (42)	25 (16)	12 (79)	1 (3)	58 (67)	90 (90)	1 (14)
Global Tourism	Miscellaneous	82 (91)	86 (86)	8 (90)	42 (63)	82 (87)	91 (91)	68 (79)

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Source: Citi Research

Top/Bottom 5: Earnings Momentum

Figure 20. Earnings Momentum Top/Bottom 5 Theme Rankings (shaded column, previous ranking in parenthesis)

Portfolio	Theme	Overall	Valuation	Growth	Price Momentum	Quality	Low Risk	Earnings Momentum
MSCI World		20 (2)	79 (80)	65 (12)	16 (2)	2 (2)	16 (13)	30 (3)
Fossil Fuels	Energy/Environment	13 (42)	25 (16)	12 (79)	1 (3)	58 (67)	90 (90)	1 (14)
Supply Chain Solutions (NEW)	Miscellaneous	6 (3)	30 (38)	18 (5)	49 (26)	16 (7)	29 (40)	2 (1)
Inflation hedges	Miscellaneous	29 (44)	42 (41)	72 (89)	14 (6)	30 (45)	76 (75)	3 (17)
Mining Capex	Resources	3 (13)	10 (6)	7 (36)	3 (5)	17 (23)	82 (85)	4 (22)
Sustainable Materials	Environment	16 (25)	33 (42)	30 (39)	50 (53)	18 (11)	64 (65)	5 (10)
***	***	***	***	***	***	***	***	***
Generics & Biosimilars	Healthcare	86 (76)	77 (76)	82 (30)	84 (79)	71 (71)	2 (3)	87 (89)
Internet-driven business models	Information Technology	81 (83)	76 (79)	6 (7)	90 (88)	83 (83)	32 (36)	88 (86)
World Champs	Miscellaneous	62 (10)	87 (87)	58 (22)	38 (9)	1 (1)	39 (34)	89 (12)
Online/OnDemand Media	Information Technology	78 (79)	56 (55)	64 (40)	74 (77)	59 (69)	27 (28)	90 (85)
Digital Leisure	Information Technology	87 (82)	73 (75)	17 (4)	87 (87)	81 (80)	60 (42)	91 (90)

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Source: Citi Research

Which Themes are Crowded in Europe?

Given the rise in flows into thematic ETFs and thematic instruments in general over the past few years, to what extent are our themes crowded? Citi Quant's Crowding Model assigns a composite score to stocks belonging to regional benchmarks based on five individual crowding measures (see our Quant Crowding report [here](#) for a more detailed description). Whilst there's no consensus on whether crowding is a risk or tailwind, it's informative to know where the crowds are investing.

Figure 21. Top 10 EU Theme Portfolios by largest Decrease/Increase in Crowding

Portfolio	Theme	May-22	Apr-21	Change
Wearable Technology	Information Technology	0.18%	0.21%	-14.37%
Energy Storage	Energy/Environment	0.12%	0.13%	-10.35%
Hydrogen	Environment	0.19%	0.22%	-9.98%
Pollution Solutions	Energy/Environment	0.20%	0.22%	-7.69%
Recurring Revenue/Low Risk of Disruption	Miscellaneous	0.07%	0.07%	-7.62%
Hydro Energy	Energy/Environment	0.37%	0.40%	-7.51%
World Champs	Miscellaneous	1.16%	1.25%	-7.42%
Inflation hedges	Miscellaneous	0.11%	0.12%	-7.10%
Smart Grids	Energy/Environment	0.27%	0.29%	-7.03%
Defence	Industrial Trends	0.50%	0.54%	-6.80%
***	***	***	***	***
Food Innovation	Resources	0.30%	0.27%	10.67%
Mobile Payments	Financial	0.09%	0.08%	11.71%
Unlocking Value (Spin-offs)	Miscellaneous	0.33%	0.30%	11.91%
Space Race	Miscellaneous	1.22%	1.08%	12.99%
Global Trade	Trade/Globalisation/Construction	0.10%	0.09%	13.30%
Manufacturing Onshoring	Industrial Trends	0.33%	0.29%	14.32%
Smart Mobile Devices Demand	Information Technology	0.08%	0.07%	14.66%
Cyber Security	Information Technology	0.12%	0.10%	15.13%
Mobile Network Transition (eg 5G)	Information Technology	0.12%	0.10%	16.52%
Deequitisation	Miscellaneous	1.66%	1.14%	45.32%

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Source: Citi Research

In Europe, Wearable Tech, Energy Storage and Hydrogen have seen the largest decrease in their crowding score. We note that, whilst Defence has seen a relatively large decline in its crowding score, it remains highly crowded at the absolute level, similarly Pollution Solutions. On the other end of the spectrum, Deequitisation, Mobile Network Transition and Cyber Security rank the highest in terms of the largest increase in their crowding score. Currently the most crowded themes include Deequitisation, Space Race and World Champs; the three least crowded themes include EM Consumer, E-Commerce and Ageing Demographics.

Which Themes are Crowded in USA?

The themes containing US stocks only which saw the largest decrease in their Crowding score include Biodiversity, Sharing Economy and Circular Economy; the former of the three actually ranks amongst the top 10 themes by forward attractiveness though (see Figure 1) and is currently the most crowded theme on an absolute basis.

Figure 22. Top 10 US Theme Portfolios by largest Decrease/Increase in Crowding

Portfolio	Theme	May-22	Apr-21	Change
Biodiversity (NEW)	Environment	1.71%	2.21%	-22.49%
Sharing Economy	Information Technology	0.47%	0.52%	-9.61%
Circular Economy (NEW)	Environment	0.40%	0.44%	-9.36%
Space Race	Miscellaneous	1.42%	1.53%	-6.92%
Nuclear Energy	Energy/Environment	0.57%	0.60%	-5.38%
Agriculture Demand	Resources	0.40%	0.42%	-4.65%
Pension Shortfalls	Financial	0.25%	0.26%	-4.22%
Sustainable Materials	Environment	0.36%	0.38%	-3.94%
FinTech	Financial	0.10%	0.10%	-3.39%
Manufacturing Onshoring	Industrial Trends	0.27%	0.28%	-3.03%
***	***	***	***	***
DNA/Genetics	Healthcare	0.27%	0.25%	6.78%
Fuel Cells	Energy/Environment	0.28%	0.26%	7.41%
Hydrogen	Environment	0.26%	0.24%	7.62%
Medical Tech	Healthcare	0.25%	0.23%	7.72%
Hydro Energy	Energy/Environment	0.23%	0.22%	8.05%
China Inbound	Miscellaneous	0.44%	0.40%	9.33%
Frontiers	Miscellaneous	0.19%	0.17%	9.38%
Energy Storage	Energy/Environment	0.18%	0.16%	10.59%
Contactless Economy	Information Technology	0.26%	0.23%	10.63%
Risky Business	Trade/Globalisation/Construction	0.23%	0.20%	15.55%

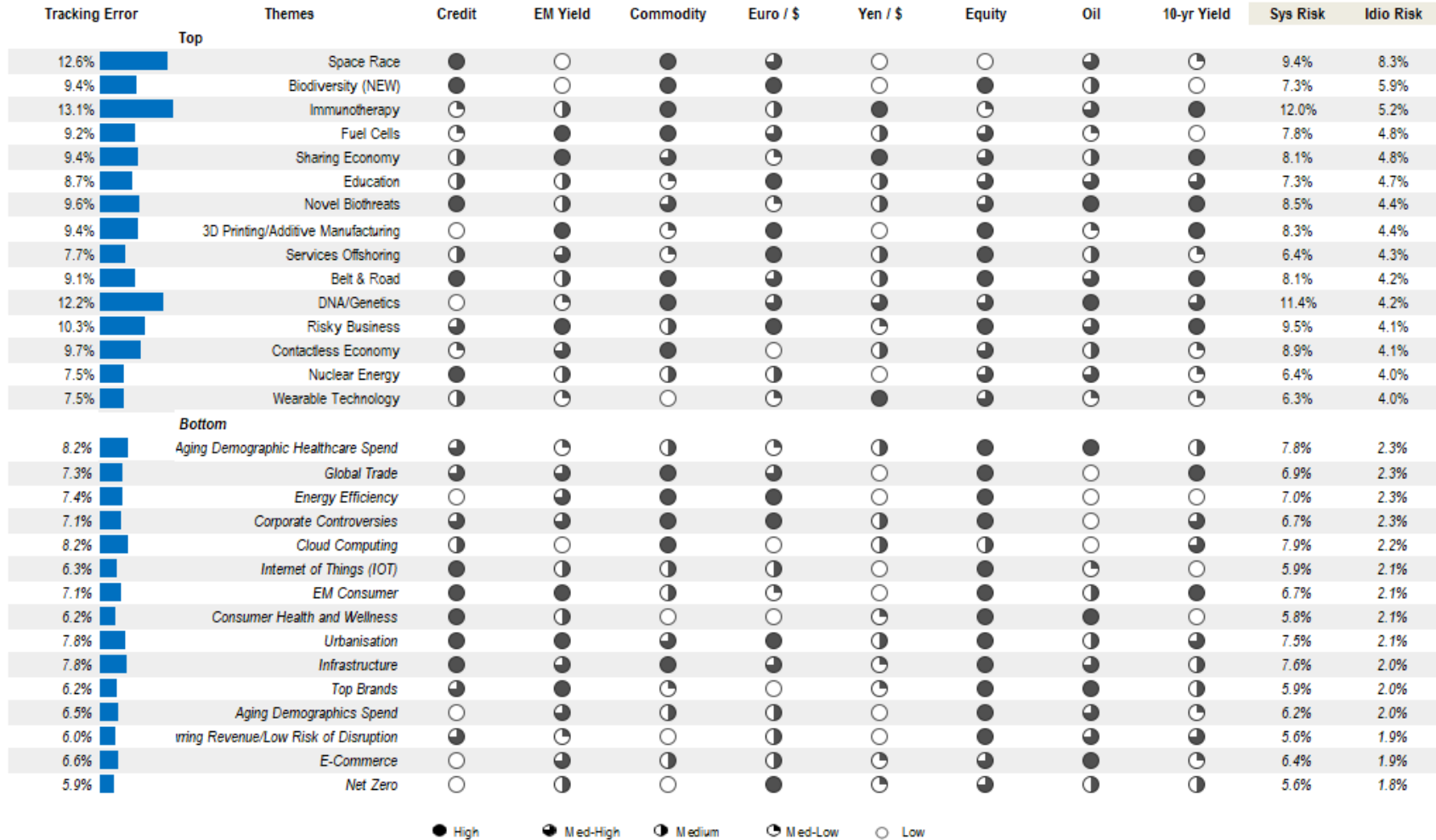
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Source: Citi Research

Themes which became more crowded over the past month include Risky Business (dominated by Financials, Insurance firms in particular), Contactless Economy and Energy Storage in contrast to Europe where this theme has seen a relatively large decline in its crowded score. We note that, apart from Biodiversity, World Champs and Space Race are the most crowded currently (as they are in Europe) whereas the least crowded themes currently include the same least crowded themes as in Europe: EM Consumer, E-Commerce and Aging Demographics.

Idiosyncratic Risk and Relative Macro Exposures

Figure 23. Using Citi's Global Macro Risk Model (GRAM), We Show Top 15 and Bottom 15 Themes Based on Idiosyncratic Risk Relative to MSCI World Benchmark. Also Shown Are Themes Relative Exposures to GRAM Macro Factors Compared to the 84 Themes. For e.g. Immunotherapy Is in the Top Quintile of all Themes Based on Credit but Bottom Quintile for EUR/USD



Source: Citi Research

Update to our SDG Mapping

Incorporating New Themes for 2022

Figure 24. UN SDG Theme Mapping (continues next page)

	1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS
3D Printing/Additive Manufacturing	L		L					L	L		M	H	L				L
Aging Demographic Healthcare Spend											L						
Aging Demographics Spend											L						
Agriculture Demand							- M	- L	- L	- L	- L	- L			- L		
Artificial Intelligence	L	L	M	L		L	L	L	M		M	M	L			L	
Automation/Robotics	- L	M	L	L		M	M	L	M	- L	H	M	L		M		
Belt & Road	L	L	L	L	L	L	L	M	M		L				- L		
Biodiversity (NEW)	M	H	M			H			M	M	M	H	H	H	H	L	L
Biofuels																	
Biotech	L	H	H			L		L	M	L	L						
China Inbound							L	L		L	L						
Circular Economy (NEW)	H	M	L			L		L	H	M	M	H	H	M	M	L	L
Clean Tech	L	L	M			H	H	M	H	L	H	H	H	L	L	L	
Clean Water	H	H	H	L		H	L	M	M	M	H	H	H	H	L	L	
Climate Change	M	M	M			M	M	H	H	L	H	H	H	L	L	L	L
Cloud Computing	L	L	M	L	L	L		L	M		M	M	L				
Connected Car			M				M	L	M		H	L					
Consumer Health and Wellness			H		L			L			L	L					
Contactless Economy (NEW)			M	M					H	M	L						
Corporate Controversies (New)	- M	- L	- L		- H			- M	- L	- M		- L				- H	
Cyber Security																	
Data Storage (Big Data)	L	L	M	L		L	L	L	M	L	M	L	L	L	L	H	
Dequitsation																	
Defence	- M	- L			- L				M	- L						M	
Digital Leisure				L	L			L	L						L		
DNA/Genetics			H					L	M	L							
E-Commerce				L				M	M			L					
Education	H	M	M	H	H			M	M	H	M	H	M			H	H
Electric Vehicles			M				H	M	M			H	H		M		
EM Consumer								M	L								
EM in DM	L	L		L	L		L	M	L	L		L					
Energy Efficiency	L	L	M			L	H	H	H	L	H	H	H			L	
Energy Storage	L	L	L			L	H	L	H	L	H	H	H	L	L	L	L
Experiential Commerce					L			M	M	L	M	H	L	L	L		
Family Run Business								M	L								
FinTech	M	M	L	H	L			M	M	M	M	L				L	L
Food Innovation	H	H	M	L		M	M	M	M	M	M	H	M	L	M		
Fossil Fuels			- H			- M	- H	- L	- M		- M	- H	- H	- H	- H		
Frontiers	L	L	L	L	L		L	M	L	M	M						
Fuel Cells		L	L			L	H	L	H	L	H	H	H			L	
Generics & Biosimilars	L	L	H					L	M	L							
Global Tourism								M	H								
Global Trade	L	M	L	L	L	L	M	H	H	H	M	- L	- L			M	M
Green Mobility			H			H	H	H	H	L	H	H	H	L	M	L	M
Healthcare IT	L		H		M		H	L	M	M	M	M					

Source: Citi Research

Figure 25. UN SDG Theme Mapping Continued

	1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS
Home of the Future (NEW)	H		M			H	H	M	H	H	H	H	H				M
Hydro Energy	L	L	L			- M	H	L	H	L	H	H	H	M		L	
Hydrogen			M			L	H	M			H			L	H		
Immunotherapy			H						L								
Inflation hedges																	
Infrastructure	H	M	M	M	L	H	H	M	H	H	H			L	L	M	M
Internet of Things (IOT)	L	L	L	L	L	L	L	M	H	L	M	M	L	L	L	L	
Internet-driven business models			L	L	M			H	M	M	L	L					
IT Services	L	L	L	L		L	L	L	M		L	L	L			L	
Luxury Spend									L								
Manufacturing Onshoring	L							L	L		M	M					
Medical Tech	L		H		L			M	M	L	M	M					
Metaverse (NEW)	L		M	M	M			M	H	M	L	L	L			L	
Mining Capex						- M	- L		L			- L	- L	- L	- L		
Mobile Network Transition (eg 5G)	L	L	L	L				L	H	L	M						
Mobile Payments	M	M	L	H	L			M	M	M	M					L	
Net Zero			H			H	H	L	M		M	H	H	H	H		L
Novel Biothreats			H						L	L					L	L	L
Nuclear Energy						- M	L		L	L	L		L		L		
Online/OnDemand Media				L	L				L	L			L			L	
Pension Shortfalls								L									
Pollution Solutions			H			H	H	L	H	L	H	H	H	H	H	L	L
Recurring Revenue/Low Risk of Disruption	L	L		L	L			L	L	L							
Remote Working									H	L	M	H	M	M	H		
Risky Business					L						L		L				
Scarce Resources	- L	- M				- M	L					- L	- L	- L	- L		
Services Offshoring	L							M	M	M							
Sharing Economy									H	L	M	H	M	M	H		
Smart Grids	L	L	L			L	H	L	H	L	H	H	M			L	L
Smart Mobile Devices Demand	L	L		M	L	L		M	M	L						M	
Social Vices			- L														
Software as a Service				M	L			M	M						M		
Solar Energy	L	L	M			L	H	L	H	L	H	H	H			L	
Space Race									M								
Supply Chain Solutions (NEW)	M	L	M	L	L	M		H	M	H	L	H	L	M	M	M	L
Sustainable Materials			L	M		H		M	M		H	H	M	H			
Top Brands		- L				- L					L	L			- M		
Unlocking Value (Spin-offs)								L	L								
Urbanisation	M	M	M	M	L	M	M	M	M	M	H				L	L	L
Value Healthcare Spend	L		H		M			M	M	L							
Video Gaming				L	L			L									
Virtual Reality			L	M					M		L	L	L				
Wearable Technology			M						L								
Wind Energy	L	L	M			L	H	M	H	L	H	H	H		M	L	
World Champs	L			L	L	L	L	M	M	M	L	M	L				

Source: Citi Research

Previously Published Research

Figure 26. Research Reports (since 2009)

Date	Research Theme	Report Link
26-Jul-21	Machine Learning	Searching for Alpha: Practical Considerations in Building Neural Networks for Stock Selection
22-Jul-21	ESG	ESG Insights: Indexed ESG Funds – A Widespread Implementation Choice
22-Jun-21	Factor	Searching for Alpha: Go with the Stock Connect Flow, for a Sharpe of 4
18-Jun-21	Factor	Searching for Alpha: Overlaying Price Mo. and Short Interest to avoid drawdowns and improve returns
15-Jun-21	ESG	ESG Insights: ESG Fundamental Characteristics
13-Apr-21	ESG	ESG Insights: Following the ESG Herd: Has ESG become a Crowded Trade?
29-Mar-21	Machine Learning	Searching for Alpha: Pairs Trading: Applying Machine Learning to Pairs Trading
09-Mar-21	Positioning	Regime Modelling using Futures Positioning: Futures vs. Cash – A Distant but Meaningful Relationship
18-Feb-21	ESG	ESG Insights: The ESG 'Premium': How does ESG compare to other Factors?
01-Feb-21	Event	Searching for Alpha: Asia Earnings Surprise: Predicting Asia Earnings Surprises
14-Jan-21	ESG	ESG Insights: Where Machines do it Better: Inferred ESG Ratings Data
30-Oct-20	Factor	Searching for Alpha: China A Alpha – Smoothing Price Momentum
16-Oct-20	Factor	Under the Microscope: Overlapping Momentum
14-Sep-20	Positioning	Equity Markets Positioning Model: Introducing the EMP
11-Sep-20	Factor	Searching for Alpha: Combining ESG and Risk Premia Investment: A Double Screen Approach
08-Sep-20	Factor	Searching for Alpha: Factoring Short Interest: Measuring and Profiting from Information in Shorts
28-May-20	Machine Learning	Searching for Alpha: Machine Learning - SHAP Value as Factor Selection Criterion
28-Feb-20	Machine Learning	Searching for Alpha: Machine Learning: Leveraging Return Forecasts
21-Feb-20	Factor	Searching for Alpha: China A Alpha – Sector-rel. Value Is Powerful, Choose Sector Mappings Wisely
03-Oct-19	Machine Learning	Searching for Alpha: Machine Learning: Beyond Random Forest for Stock Selection
23-Sep-19	Event	Searching for Alpha: Earnings Surprise: Managing Expectations
05-Mar-19	Machine Learning	Searching for Alpha: Machine Learning: Interpreting Machine Learning Predictions
07-Feb-19	Misc	Searching for Alpha: GAAP vs. Non-GAAP: Which Earnings does the Market Price?
21-Nov-18	Positioning	Searching for Alpha: Style Crowding in Asia: Getting Ahead of the Crowd
17-Sep-18	Event	Searching for Alpha: Earnings Surprise: Using ML to Forecast Earnings Surprises & Returns
13-Sep-18	ESG	Searching for Alpha: The ESG Edge: ESG Investing – A Step Forward
03-Sep-18	Machine Learning	Searching for Alpha: Machine Learning: Interacting Machine Learning and Factors
03-May-18	Positioning	Measuring the Crowded Trade: Introduction to our Crowding Composite for individual stocks
14-Mar-18	Factor	Searching for Alpha: Profiting from Capex: Look To Capex Announcements
07-Sep-17	Rotation	Searching for Alpha: Tactical Style Rotation: Using Risk and Return to Manage Style Exposure
10-Mar-17	Misc	Searching for Alpha: Big Data: Navigating New Alternative Datasets
13-Sep-17	Factor	Searching for Alpha: Betting Against (Accurate) Beta
19-Sep-16	Factor	Searching for Alpha: Competitive Advantage: Survival of the Fittest
09-Sep-16	Factor	Searching for Alpha: Financial Strength Redux
14-Apr-16	Rotation	Searching for Alpha: Dynamic Style Weighting: Risk-Based Equity Style Allocation
04-Mar-16	Smart Beta	Long-Only Pure Style Portfolios: No Shorts Please
18-Feb-16	Factor	Industry Alpha Insights: Banks: One Size Does Not Fit All
21-Sep-15	Factor	Under the Microscope: Stock Momentum Conflation
15-Sep-15	Allocation	Searching for Alpha: Macro Moves Markets: Economic Data, Expectations and Market Pricing
23-Mar-15	Rotation	Searching for Alpha: Style Timing: Style Performance, Trading Volumes and Investor Agreement
13-Mar-15	Misc	World Radar Screen: Refining Our Global Search for Alpha
18-Feb-15	Factor	Searching for Alpha: Networking with Analysts: Modelling Analyst Forecast Dependence
01-Oct-14	Smart Beta	The Rise of Low Risk Investing: Is It Getting Crowded Out There?
27-Mar-14	Factor	Under the Microscope: Five Innovations In Momentum Investing
07-Mar-14	Factor	Searching for Alpha: Timing Price Momentum: When Does Momentum Move?
27-Nov-13	Smart Beta	Equity Risk Premia Investing: A New Methodology for Monitoring Style Performance
23-Jul-13	Allocation	Stock Market Country Selection: Changes to a Well-Established Model
02-Jul-13	Factor	Searching for Alpha: Digging For Dividends: QUARI - Quality with A Reliable Income
24-Jun-13	Misc	Global Theme Machine: An Objective Way of Identifying Attractive Investment Themes
25-Mar-13	Factor	Searching for Alpha: Purifying Analyst Recommendations: Removing Beta to get to the Alpha
06-Nov-12	Factor	Searching for Alpha: Tangible Benefits of Intangibles: Brand, Respect & Intellectual Capital
09-Mar-12	Smart Beta	Low-Risk Portfolio Strategies: Sharpe Ratio Maximisation and Multi-Asset Applications
28-Feb-12	Rotation	Macro Risk and Style Rotation: A Guide Rather than a Prescription
14-Sep-11	Factor	Searching for Alpha: Accruals Volatility - A New Approach to Quality Investing
24-Aug-11	Allocation	Industry Alpha Insights: Four Approaches to Tactical Industry Selection
17-Mar-11	Misc	Industry Alpha Insights: Quantifying Industry-Specific Fundamentals
18-Nov-10	Smart Beta	Low-Risk Equity Portfolios: More than just Minimum Variance
15-Nov-10	Allocation	Under the Microscope: Measuring Systemic Risk - The Absorption Ratio
14-Jun-10	Factor	Under the Microscope: Optionality in Valuation
31-Mar-10	Event	Searching for Alpha: Earnings Surprise: Still Profiting from Surprises
29-Jan-10	Factor	Momentum in Japan: Looking at Price, Trading Values and Earnings
15-Oct-09	Rotation	Searching for Alpha: Style Rotation: Optimising Style Rotation Strategies

Source: Citi Research

Citi Quant Research Team

Figure 27. Citi Quantitative Research Teams

Global Quantitative Research

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Companies Mentioned:

Roche Holding AG (ROG.S; SFr318.05; 1; 09 Jun 22; 17:30) | AKR Corporindo (AKRA.JK; Rp1170.0; 1; 09 Jun 22; 16:00) | Exact Sciences Corporation (EXAS.O; US\$49.49; 2; 08 Jun 22; 16:00) | Kuehne & Nagel International (KNIN.S; SFr227.0; 3; 09 Jun 22; 17:30) | DSV (DSV.CO; Dkr1038.0; 1; 09 Jun 22; 17:00) | A.P. Møller - Mærsk A/S (MAERSKb.CO; Dkr19150.0; 1; 09 Jun 22; 17:00) | MOL Group (MOLB.BU; Ft2746.0; 1; 09 Jun 22; 17:00) | FedEx Corp. (FDX.N; US\$217.17; 1; 08 Jun 22; 16:00) | New Hope Corporation Limited (NHC.AX; A\$3.86; 2; 09 Jun 22; 16:00) | Atlas Corp (ATCO.N; US\$12.76; 2; 08 Jun 22; 16:00) | Whitehaven Coal Ltd (WHC.AX; A\$5.41; 2; 09 Jun 22; 16:00) | Aedifica (AOO.BR; €99.05; 1; 09 Jun 22; 17:30) | RD (RADL3.SA; R\$20.97; 2; 08 Jun 22; 18:00) | Hypera SA (HYPE3.SA; R\$39.93; 1; 08 Jun 22; 18:00) | Fleury (FLRY3.SA; R\$15.1; 2; 08 Jun 22; 18:00) | Veeva Systems Inc (VEEV.N; US\$191.45; 1; 08 Jun 22; 16:00) | Hapag Lloyd AG (HLA.G.F; €329.8; 2H; 08 Jun 22; 20:00) | Shop Apotheke Europe (SAEG.DE; €89.78; 1; 09 Jun 22; 17:30) | Zur Rose Group AG (ROSEG.S; SFr99.15; 2; 09 Jun 22; 17:30) | Babylon Holdings Ltd (BBLN.N; US\$1.27; 2H; 08 Jun 22; 16:00)

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Appendix A-1

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The Firm has made a market in the publicly traded equity securities of Zur Rose Group AG on at least one occasion since 1 Jan 2021.

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Data current as of 31 Mar 2022	12 Month Rating			Catalyst Watch		
	Buy	Hold	Sell	Buy	Hold	Sell
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% of companies in each rating category that are investment banking clients	62%	66%	54%	69%	60%	68%
Citi Research Quantitative World Radar Screen Model Coverage	30%	40%	30%			
% of companies in each rating category that are investment banking clients	43%	31%	26%			
Citi Research Quantitative Latam Radar Screen Model Coverage	21%	59%	21%			
% of companies in each rating category that are investment banking clients	77%	71%	57%			
Citi Research Quantitative Asia Radar Screen Model Coverage	20%	60%	20%			
% of companies in each rating category that are investment banking clients	42%	24%	18%			
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Citigroup Global Markets Limited	Chris Montagu
Citigroup Global Markets Asia Limited	Chris Ma

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