

An aerial photograph of the Taipei skyline, featuring the prominent Taipei 101 skyscraper in the center. The city is densely packed with various high-rise buildings. The foreground shows some greenery, likely a park or forested area. The sky is filled with soft, white clouds. The entire image has a blue color overlay.

Taiwan Semiconductor Manufacturing Co., Ltd.  
Active GEM Fund Ownership Report  
3/31/2023



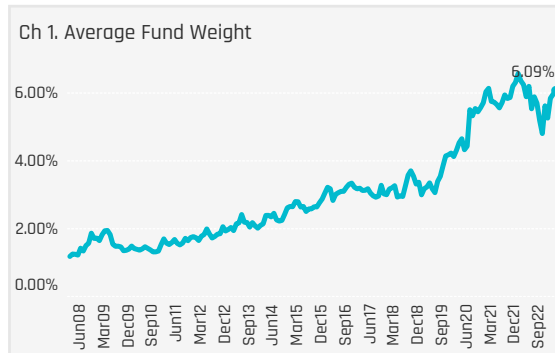
# Taiwan Semiconductor Manufacturing Co., Ltd. Active GEM Fund Ownership Report 3/31/2023

In this data report, we analyse Taiwan Semiconductor Manufacturing Co., Ltd. holdings among active GEM Funds. For benchmark comparisons, we use the iShares MSCI Emerging Markets ETF, proportionally adjusted to remove any cash holdings. The current fund sample spans 384 active funds with a combined AUM of \$400.95Bn.

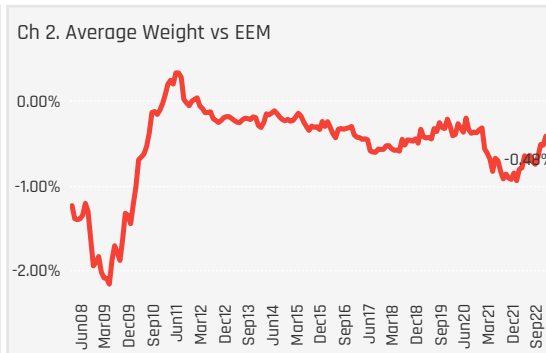
We analyse the latest published filings for all funds and aggregate together as of 3/31/2023. We show the most recent snapshot in positioning, time series data going back to 1/31/2008 and recent allocation shifts by the managers in our analysis.

All Cash Flow calculations are on a best estimates basis. We use monthly position changes and month end prices to estimate the net buying and selling value for each stock within each fund in our analysis.

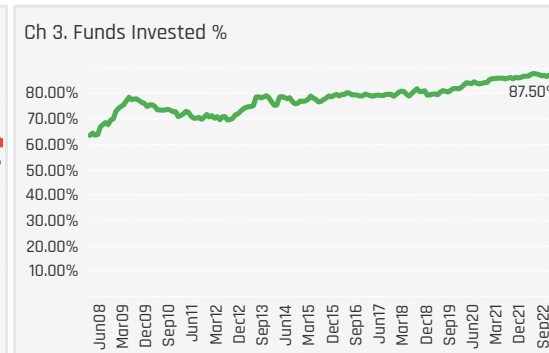
**Chart 1** The time series of average fund weight for Taiwan Semiconductor Manufacturing Co., Ltd.



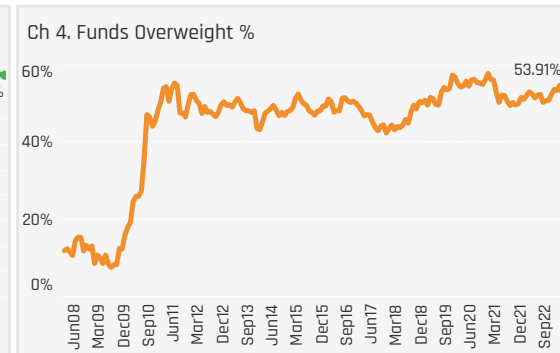
**Chart 2** The time series of average fund weight minus the benchmark EEM weight for Taiwan Semiconductor Manufacturing Co., Ltd.



**Chart 3** The time series of funds invested % for Taiwan Semiconductor Manufacturing Co., Ltd.



**Chart 4** The time series of Funds Overweight the EEM % for Taiwan Semiconductor Manufacturing Co., Ltd.



**Chart 5** Aggregated fund ownership data among active GEM funds, ranked by the most widely held stocks. Filtered for Taiwan stocks only, Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.

Ticker	Stock Name	Funds Invested %	Average Weight	Vs Benchmark	Fund AUM, \$
2330-TW	Taiwan Semiconductor Manufacturing Co., L.	87.50%	6.09%	-0.48%	\$26,922.38M
2454-TW	MediaTek Inc	51.04%	0.72%	0.13%	\$3,226.41M
2308-TW	Delta Electronics, Inc.	33.07%	0.39%	0.10%	\$1,386.38M
2317-TW	Hon Hai Precision Industry Co., Ltd.	32.81%	0.43%	-0.23%	\$1,353.31M
5871-TW	Challease Holding Co. Ltd.	27.34%	0.28%	0.12%	\$1,333.70M
6415-TW	Silergy Corp.	22.92%	0.16%	0.09%	\$1,015.97M
2303-TW	United Microelectronics Corp.	20.57%	0.15%	-0.17%	\$393.25M
3711-TW	ASE Technology Holding Co., Ltd.	18.75%	0.16%	-0.02%	\$512.86M
2891-TW	CTBC Financial Holding Company Ltd.	17.97%	0.15%	-0.04%	\$301.36M
2345-TW	Accton Technology Corp.	16.93%	0.15%	0.07%	\$685.40M
3037-TW	Unimicron Technology Corp.	15.36%	0.06%	-0.03%	\$233.59M
2301-TW	Lite-On Technology Corp.	15.10%	0.09%	0.01%	\$228.93M
2912-TW	President Chain Store Corporation	14.58%	0.13%	0.05%	\$367.32M
2881-TW	Fubon Financial Holding Co., Ltd.	14.58%	0.09%	-0.12%	\$303.09M
3034-TW	Novatek Microelectronics Corp.	14.06%	0.11%	-0.01%	\$276.86M
2379-TW	Realtek Semiconductor Corp	13.80%	0.07%	-0.01%	\$215.47M
2603-TW	Evergreen Marine Corp. (Taiwan) Ltd.	13.54%	0.04%	-0.04%	\$107.82M
1590-TW	Airtac International Group	13.28%	0.13%	0.04%	\$550.02M
8069-TW	E Ink Holdings Inc.	13.02%	0.08%	0.00%	\$166.40M
6409-TW	Voltronic Power Technology Corp.	12.76%	0.14%	0.09%	\$409.16M
1216-TW	Uni-President Enterprises Corp.	12.50%	0.11%	-0.07%	\$522.98M
6669-TW	Wiwynn Corp.	11.98%	0.10%	0.05%	\$407.05M
2882-TW	Cathay Financial Holdings Co., Ltd.	11.98%	0.08%	-0.10%	\$200.75M
2395-TW	Advantech Co., Ltd.	11.46%	0.13%	0.05%	\$266.53M
2474-TW	Catcher Technology Co., Ltd.	11.20%	0.06%	-0.01%	\$160.76M

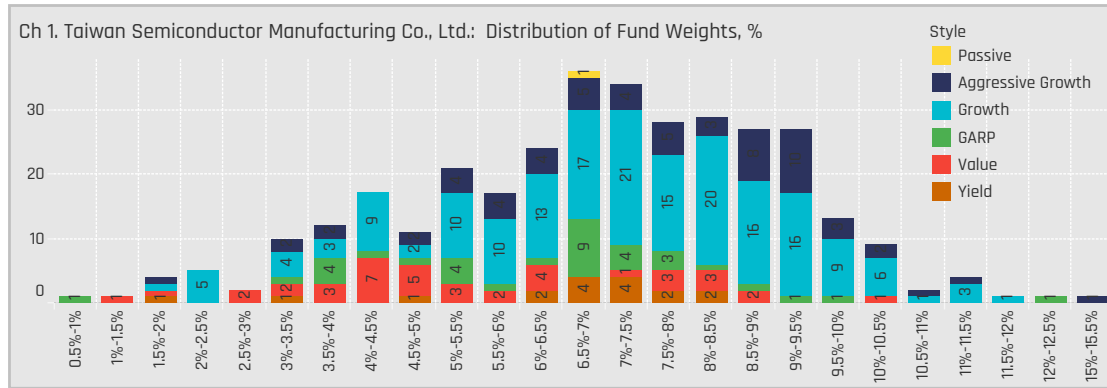
**Chart 6** Aggregated fund ownership data among active GEM funds, ranked by most widely held stocks. Filtered for Information Technology stocks only, Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.

Ticker	Stock Name	Funds Invested %	Average Weight	Vs Benchmark	Fund AUM, \$
2330-TW	Taiwan Semiconductor Manufacturing Co., L.	87.50%	6.09%	-0.48%	\$26,922.38M
005930-KR	Samsung Electronics Co., Ltd.	74.48%	2.98%	-0.58%	\$13,541.88M
500209-IN	Infosys Limited	54.17%	0.78%	-0.09%	\$3,110.05M
2454-TW	MediaTek Inc	51.04%	0.72%	0.13%	\$3,226.41M
000660-KR	SK hynix Inc.	47.66%	0.76%	0.19%	\$2,751.75M
532540-IN	Tata Consultancy Services Limited	35.42%	0.49%	-0.04%	\$3,144.32M
2308-TW	Delta Electronics, Inc.	33.07%	0.39%	0.10%	\$1,386.38M
2317-TW	Hon Hai Precision Industry Co., Ltd.	32.81%	0.43%	-0.23%	\$1,353.31M
006400-KR	Samsung SDI Co., Ltd	27.34%	0.39%	-0.08%	\$1,306.19M
005935-KR	Samsung Electronics Co Ltd Pfd Non-Voting	26.82%	0.52%	0.00%	\$1,324.53M
035420-KR	NAVER Corp.	25.00%	0.22%	-0.10%	\$800.16M
992-HK	Lenovo Group Limited	23.44%	0.20%	0.08%	\$501.52M
532281-IN	HCL Technologies Limited	23.44%	0.20%	-0.01%	\$621.08M
6415-TW	Silergy Corp.	22.92%	0.16%	0.09%	\$1,015.97M
601012-CN	LONGi Green Energy Technology Co., Ltd. Cla.	20.83%	0.18%	0.13%	\$460.58M
2303-TW	United Microelectronics Corp.	20.57%	0.15%	-0.17%	\$393.25M
GLOB-US	Globant SA	18.75%	0.18%	0.18%	\$608.45M
3711-TW	ASE Technology Holding Co., Ltd.	18.75%	0.16%	-0.02%	\$512.86M
2345-TW	Accton Technology Corp.	16.93%	0.15%	0.07%	\$685.40M
968-HK	Xinyi Solar Holdings Ltd.	15.89%	0.12%	0.03%	\$292.69M
3037-TW	Unimicron Technology Corp.	15.36%	0.06%	-0.03%	\$233.59M
2382-HK	Sunny Optical Technology (Group) Co., Ltd.	15.10%	0.08%	-0.05%	\$374.18M
2301-TW	Lite-On Technology Corp.	15.10%	0.09%	0.01%	\$228.93M
TOTS3-BR	TOTVS S.A.	14.84%	0.12%	0.08%	\$195.41M
036570-KR	NCsoft Corporation	14.58%	0.06%	-0.01%	\$323.04M



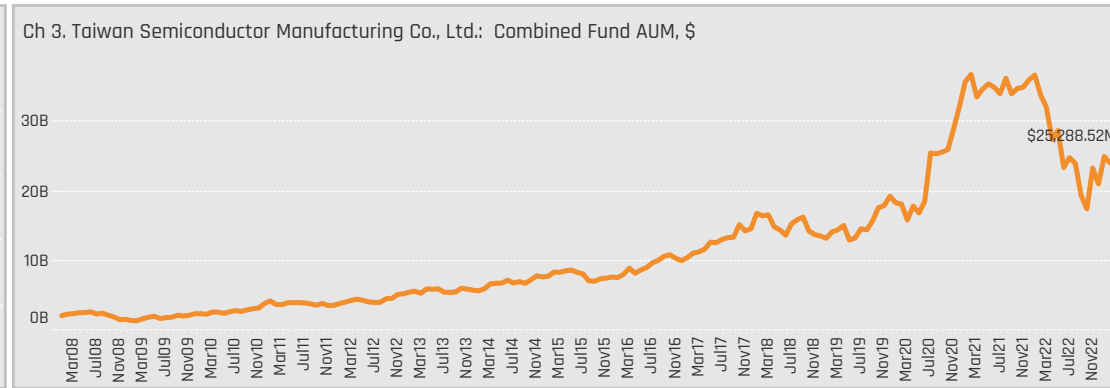
**Chart 1** The distribution of Taiwan Semiconductor Manufacturing Co., Ltd. weights among the 384 active GEM funds in our analysis, broken down by fund Style.

**Chart 2** The largest Taiwan Semiconductor Manufacturing Co., Ltd. holders in our analysis, on a portfolio weight basis.



**Chart 3** The time-series of combined fund AUM in Taiwan Semiconductor Manufacturing Co., Ltd. stocks out of the \$400.95Bn in total active AUM in our analysis.

**Chart 4** The largest Taiwan Semiconductor Manufacturing Co., Ltd. holders in our analysis, on an \$ AUM basis.



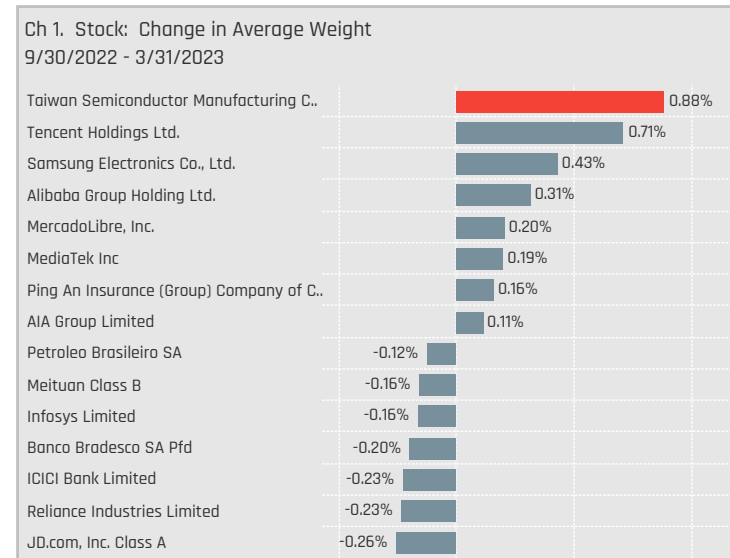
**Ch 2. Taiwan Semiconductor Manufacturing Co., Ltd.: Top Fund Holdings, %**

Fund Name	Style	Percentage
Gemequity	Aggressive Growth	15.17%
Amundi Funds Emerging Markets Equity ESG Improvers	GARP	12.36%
Templeton Developing Markets Trust	Growth	11.69%
Delaware VIP Trust - Emerging Markets Series	Growth	11.37%
JPMCB Emerging Markets Equity Focused Fund	Aggressive Growth	11.31%
Delaware Emerging Markets Fund	Growth	11.17%
FTIF SICAV - Emerging Markets Fund	Growth	11.14%
Raiffeisen Sustainable Emerging Markets Equities	Growth	10.65%
BNP Paribas Funds - Emerging Equity	Aggressive Growth	10.51%
Baillie Gifford Overseas Growth Fund - Emer. Mkts. Leading Co.	Growth	10.47%
Ashmore Emerging Markets Active Equity Fund	Growth	10.46%
Baillie Gifford Overseas Growth Funds ICVC - EM. Growth	Growth	10.44%
Nordea Emerging Market Equities	Value	10.23%
Putnam Emerging Markets Equity Fund	Aggressive Growth	10.20%
Danske Invest Emerging Markets Equity Fund (FI)	Growth	10.12%
Baillie Gifford Worldwide Funds Plc - Emer. Mkts. All Cap	Growth	10.09%
Natixis AM Funds - Global Emerging Equity	Aggressive Growth	10.08%
TIAA-CREF Emerging Markets Equity Fund	Growth	10.07%
Calvert Emerging Markets Equity Fund	Growth	9.99%
JPMorgan Emerging Markets Equity Fund	Aggressive Growth	9.95%
Vontobel Fund II - MTX Sustainable Emerging Markets Leaders X	GARP	9.89%
Fisher Invt. Inst. Fds. Plc - Emerging Markets Equity Fund	Growth	9.81%
Handelsbanken Tillvaextmarknad Tema	Growth	9.78%
Nordea 1 - Emerging Stars Equity Fund	Aggressive Growth	9.74%
Artisan Sustainable Emerging Markets Fund	Growth	9.73%
BlackRock Sustainable Emerging Markets Equity Fund	Growth	9.71%
Pictet - Emerging Markets	Growth	9.70%
Fidelity Funds SICAV - Emerging Markets Fund	Growth	9.64%
Jupiter Asset Mgmt. Series Plc - Global EM Focus Fd.	Aggressive Growth	9.62%
Schroder ISF - Emerging Markets	Growth	9.61%
Fisher Invt. Inst. Fds. Plc - Emerging Markets Eq. ESG Fund	Growth	9.57%
Martin Currie Emerging Markets Fund	Aggressive Growth	9.48%
Neuberger Berman Invt. Funds Plc - EM Sus. Eq. Fd.	Aggressive Growth	9.47%

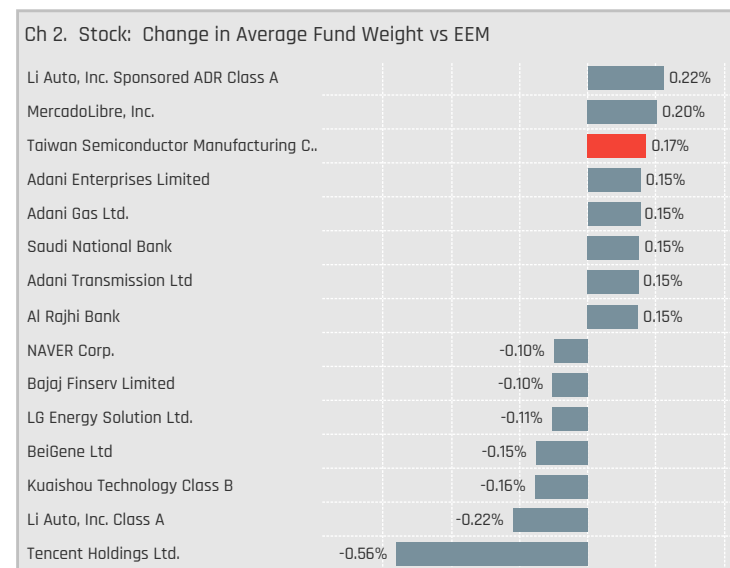
**Ch 4. Taiwan Semiconductor Manufacturing Co., Ltd.: Top Fund Holdings, \$**

Fund Name	Style	AUM (\$)
Fidelity Inv. Trust - Emerging Markets Opportunities Fund	Growth	\$1,934.13M
Invesco Developing Markets Fund	Growth	\$1,865.55M
iShares MSCI Emerging Markets ETF	Passive	\$1,633.86M
American Funds New World Fund	Growth	\$987.90M
JPMorgan Emerging Markets Equity Fund	Aggressive Growth	\$816.99M
T Rowe Price Emerging Markets Stock Fund	Aggressive Growth	\$663.61M
Fidelity Inv. Trust - Emerging Markets Fund	Aggressive Growth	\$592.69M
MFS Emerging Markets Equity Fund	Growth	\$552.81M
Delaware Emerging Markets Fund	Growth	\$544.56M
BlackRock Emerging Markets Fund Inc.	Growth	\$431.82M
Vontobel Fund - mtx Sustainable Emerging Markets Leaders	Growth	\$405.68M
Schroder ISF - Emerging Markets	Growth	\$404.95M
GQG Partners Emerging Markets Equity Fund	GARP	\$391.05M
Federated Hermes Invt. Funds - Global Emerging Markets Equity	Aggressive Growth	\$381.00M
Fidelity Funds SICAV - Emerging Markets Fund	Growth	\$347.32M
Allspring Emerging Markets Equity Fund	Growth	\$335.74M
Baron Emerging Markets Fund	Growth	\$312.48M
GS Funds - Emerging Markets Equity Portfolio	Growth	\$304.17M
JPMorgan Funds - Emerging Markets Opportunities Fund	Growth	\$282.01M
Nordea 1 - Emerging Stars Equity Fund	Aggressive Growth	\$253.44M
American Century Emerging Markets Fund	Growth	\$244.68M
Fidelity Institutional Funds - Emerging Markets Fund	Growth	\$241.92M
Calvert Emerging Markets Equity Fund	Growth	\$234.86M
Gemequity	Aggressive Growth	\$226.71M
UBS (Irl) Investor Selection Plc - Glb. Emer. Oppa. Fund	Growth	\$226.01M
BlackRock Global Funds - Emerging Markets Fund	Growth	\$217.71M
Fidelity Series Emerging Markets Fund	Growth	\$217.56M
Candriam Sustainable - Equity Emerging Market	Aggressive Growth	\$214.22M
Fidelity Advisor Focused Emerging Markets Fund	Growth	\$213.63M
JPMCB Emerging Markets Equity Focused Fund	Aggressive Growth	\$203.74M
JPMorgan Trust IV - Emerging Markets Research Enhanced Equity	Growth	\$200.56M
GS Funds - Emerging Markets CORE Equity Portfolio	GARP	\$195.18M
Principal Funds Inc. - Origin Emerging Markets Fund	Growth	\$193.98M

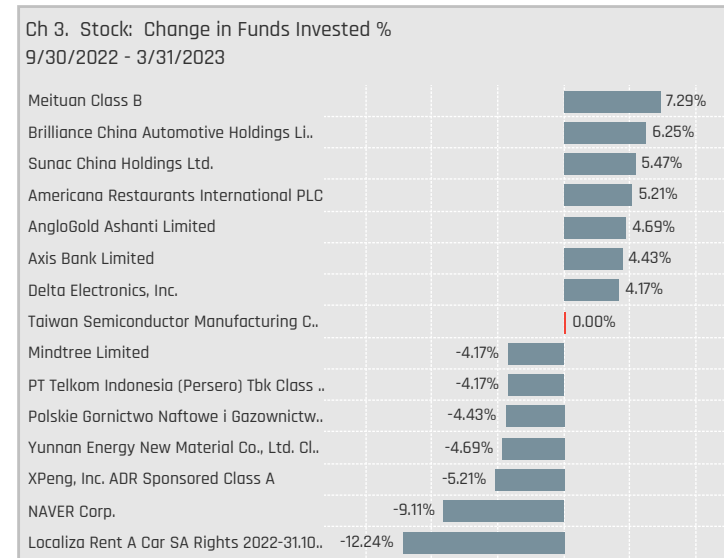
**Chart 1** The largest changes in average Stock weight between 9/30/2022 and 3/31/2023. Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.



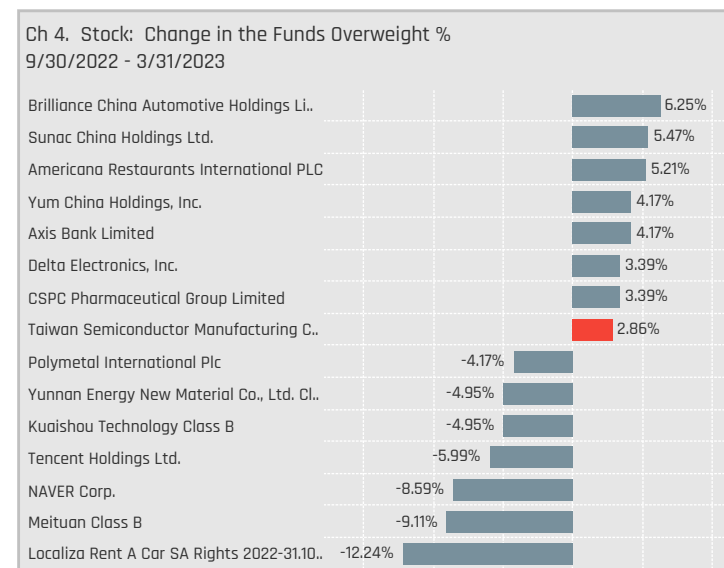
**Chart 2** Measures the largest changes in the average Stock weight vs EEM between 9/30/2022 and 3/31/2023. An increasing figure would indicate an increasing overweight or decreasing underweight. Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.



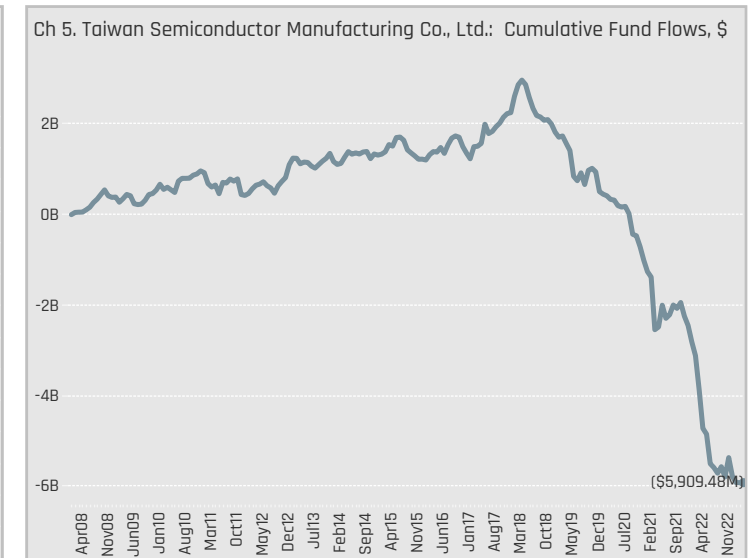
**Chart 3** Measures the largest changes in the percentage of funds invested in each Stock between 9/30/2022 and 3/31/2023. Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.



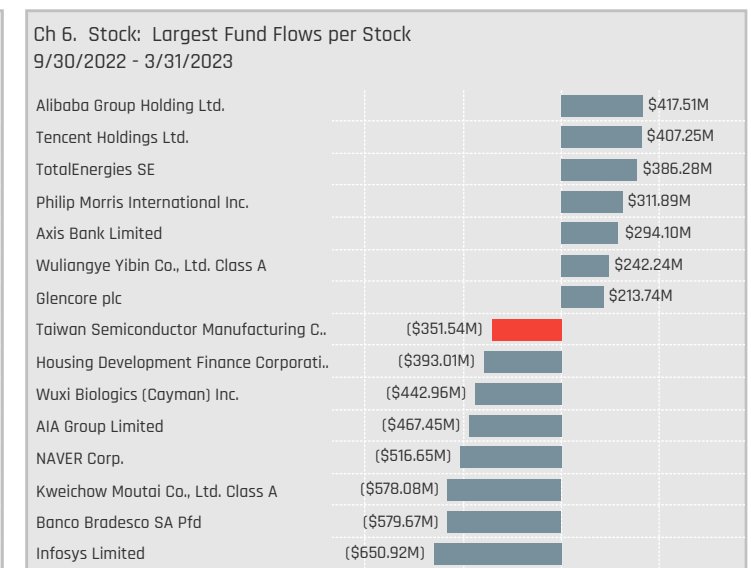
**Chart 4** Measures the largest changes in the percentage of funds overweight each Stock compared to the iShares MSCI Emerging Markets ETF between 9/30/2022 and 3/31/2023. Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.



**Chart 5** Shows the cumulative fund flows for Taiwan Semiconductor Manufacturing Co., Ltd. stocks among the 384 active GEM funds in our analysis. Monthly fund flows are estimated by multiplying the monthly change in stock position by the stock price for every position in every fund in our analysis.



**Chart 6** Measures the largest estimated fund flows for each Stock between 9/30/2022 and 3/31/2023. Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.



**Chart 1** The largest fund weight increases between 9/30/2022 - 3/31/2023.

**Chart 2** The largest fund weight decreases between 9/30/2022 - 3/31/2023

Both charts show the current weight and whether the weight change represented a new or closed position.

**Ch 1. Taiwan Semiconductor Manufacturing Co., Ltd.: Largest Increases in Position, %**

Fund Name	New or Close..	Latest Weight	Weight Change
DNB Global Emerging Markets			3.79%
Invesco Emerging Markets Innovators Fund	New		3.75%
Raiffeisen Sustainable Emerging Markets Equities			3.44%
Skagen Kon Tiki	New		3.41%
Fidelity Active Strategy - Emerging Markets Fund	New		3.35%
Amonis Equity Emerging Markets			3.33%
JOHCM Emerging Markets Opportunities Fund	New		3.29%
BNP Paribas Funds - Emerging Equity			3.26%
DWS Invest - ESG Global Emerging Markets Equities			3.25%
Fidelity Funds SICAV - Emerging Markets Fund			3.18%
Danske Invest Emerging Markets Equity Fund (FI)			3.13%
HSBC GIF - Global Emerging Markets Equity			3.01%
BlackRock Strategic Fds. - Emerging Markets Equity Strategies	New		2.99%
Fidelity Funds SICAV - Institutional Emerging Markets Equity			2.87%
DNB Fund - Brighter Future			2.78%
Oaktree (Lux.) Funds - Emerging Markets Equity			2.77%
GS Funds - Emerging Markets CORE Equity Portfolio			2.62%
TIAA-CREF Emerging Markets Equity Fund			2.52%
BlackRock Sustainable Emerging Markets Equity Fund			2.52%
Fidelity Institutional Funds - Emerging Markets Fund			2.46%

**Ch 2. Taiwan Semiconductor Manufacturing Co., Ltd.: Largest Decreases in Position, %**

Fund Name	New or Close..	Latest Weight	Weight Change
TCW Developing Markets Equity Fund	Close	0.00%	-4.60%
Amundi Funds - New Silk Road		6.44%	-3.00%
Robeco Umbrella Fund I NV - QI Emerging Sust. Cons. Equities	Close	0.00%	-2.88%
PGIM Jennison Emerging Markets Equity Opportunities Fund	Close	0.00%	-2.25%
BNY Mellon Emerging Markets Fund		6.83%	-1.55%
Lazard Emerging Markets Core Equity Portfolio		7.11%	-1.46%
Rondure New World Fund	Close	0.00%	-1.44%
GQG Partners Emerging Markets Equity Fund		3.78%	-1.26%
BlackRock Defensive Advantage Emerging Markets Fund	Close	0.00%	-1.24%
GMO Emerging Markets Fund		3.52%	-1.22%
Robeco Capital Gr. Fds. - QI EM Sust. Active Eq.		5.25%	-1.07%
Mercer Emerging Markets Equity Fund		4.13%	-0.58%
Invesco Funds - Emerging Markets Select Equity Fund		3.40%	-0.55%
Robeco Capital Gr. Fds. - QI Emerging Conservative Equities	Close	0.00%	-0.47%
Mirae Asset Discovery - Emerging Markets Fund		3.18%	-0.43%
Celsius Invt. Fd. SICAV - Sustainable Em. Markets		5.83%	-0.34%
BlackRock UCITS Funds - Emerging Markets Alpha Tilts Fund		7.71%	-0.10%
Artemis Investment Funds ICVC - Global Emerging Markets		4.24%	-0.08%
abrdn Emerging Markets Fund		7.80%	-0.01%
Orbis SICAV - Emerging Markets Equity Fund		4.78%	0.00%

**Chart 3** The largest buyers in US dollar terms between 9/30/2022 - 3/31/2023.

**Chart 4** The largest sellers in US dollar terms between 9/30/2022 - 3/31/2023

Both charts show the current AUM and whether the fund flow represented a new or closed position.

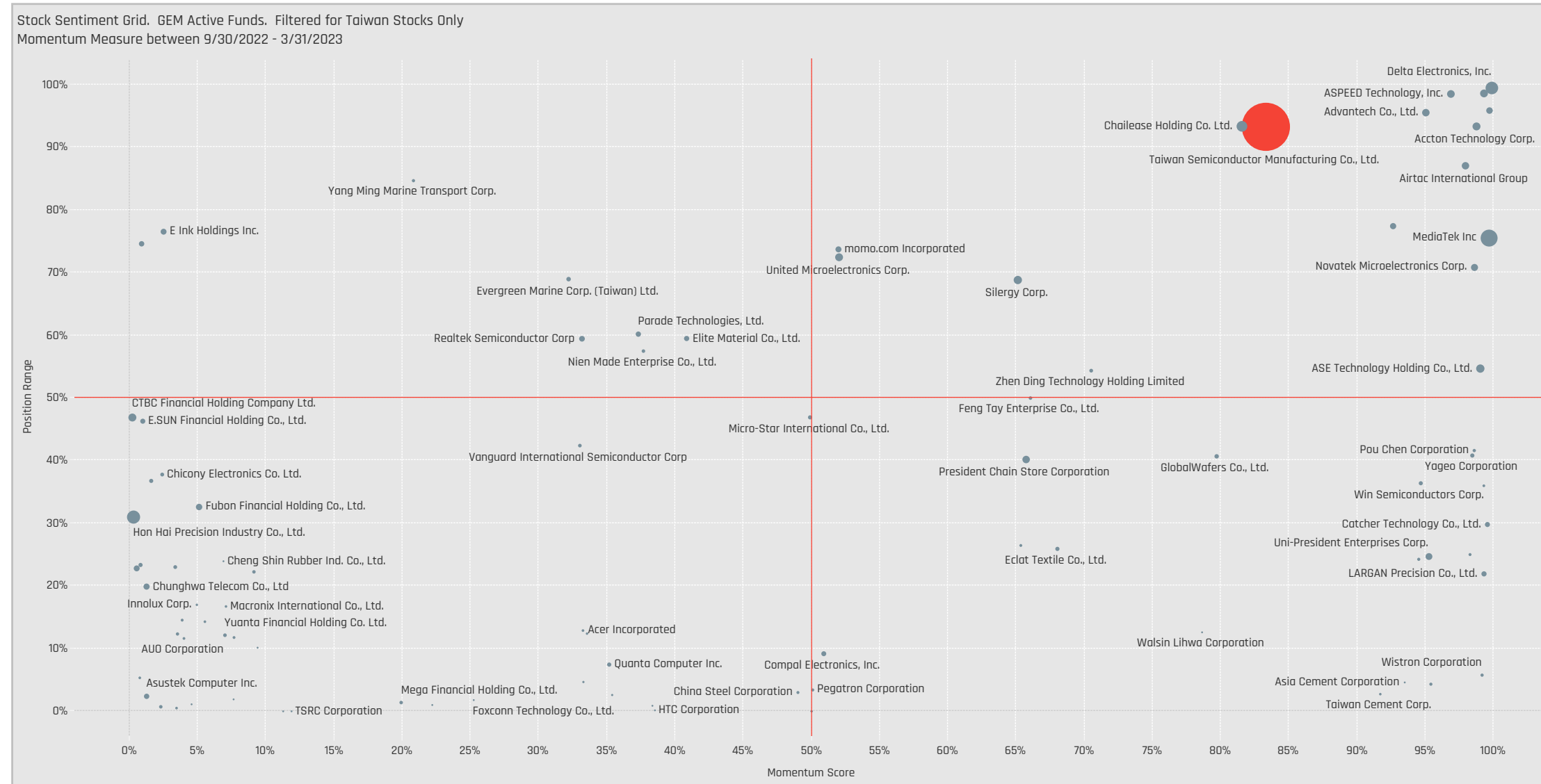
**Ch 3. Taiwan Semiconductor Manufacturing Co., Ltd.: Largest Fund Inflows, \$**

Fund Name	New or Close..	Latest AUM, \$	Fund Flows, \$
BlackRock Emerging Markets Fund Inc.		\$431.82M	\$146.50M
Fidelity Funds SICAV - Emerging Markets Fund		\$347.32M	\$78.37M
iShares MSCI Emerging Markets ETF		\$1,633.86M	\$71.08M
GS Funds - Emerging Markets CORE Equity Portfolio		\$195.18M	\$56.59M
Fidelity Institutional Funds - Emerging Markets Fund		\$241.92M	\$53.64M
DWS Invest - ESG Global Emerging Markets Equities		\$66.30M	\$52.80M
Swedbank Robur Access Edge Emerging Markets		\$110.21M	\$45.19M
Skagen Kon Tiki	New	\$48.31M	\$43.59M
DNB Global Emerging Markets		\$71.55M	\$34.29M
BlackRock Global Funds - Emerging Markets Fund		\$217.71M	\$32.69M
Lazard Emerging Markets Equity Portfolio		\$93.61M	\$28.77M
Fidelity Funds SICAV - Sust. Emerging Markets Equity Fund		\$127.62M	\$25.06M
JOHCM Emerging Markets Opportunities Fund	New	\$25.71M	\$23.07M
Baron Emerging Markets Fund		\$312.48M	\$22.19M
American Funds Developing World Growth & Income Fund		\$93.64M	\$19.18M
TIAA-CREF Emerging Markets Equity Fund		\$159.65M	\$18.80M
Driehaus Mutual Funds - Emerging Markets Growth Fund		\$149.31M	\$17.27M
AB FCP I - Emerging Markets Growth Portfolio		\$62.47M	\$13.93M
Schroder ISF - Emerging Markets		\$404.95M	\$12.35M
Advisors Series Tr. - Pzena Emerging Markets Value Fund		\$32.69M	\$11.58M

**Ch 4. Taiwan Semiconductor Manufacturing Co., Ltd.: Largest Fund Outflows, \$**

Fund Name	New or Close..	Latest AUM, \$	Fund Flows, \$
Invesco Developing Markets Fund		\$1,865.55M	(\$295.02M)
GQG Partners Emerging Markets Equity Fund		\$391.05M	(\$207.03M)
abrdn Emerging Markets Fund		\$177.54M	(\$83.46M)
Nordea 1 - Emerging Stars Equity Fund		\$253.44M	(\$64.75M)
American Funds New World Fund		\$987.90M	(\$58.69M)
Vontobel Fund - mtX Sustainable Emerging Markets Leaders		\$405.68M	(\$53.30M)
GMO Emerging Markets Fund		\$41.69M	(\$38.54M)
Robeco QI Customized Emerging Markets Enhanced Index Eq. Fd.		\$104.27M	(\$34.19M)
Fisher Invt. Instl. Fds. Plc - Emerging Markets Eq. ESG Fund		\$17.18M	(\$31.31M)
JPMorgan Emerging Markets Equity Fund		\$816.99M	(\$27.30M)
T Rowe Price Emerging Markets Stock Fund		\$663.61M	(\$23.76M)
Amundi Funds - New Silk Road		\$27.96M	(\$21.85M)
Fisher Invt. Instl. Fds. Plc - Emerging Markets Equity Fund		\$65.73M	(\$21.04M)
Virtus Vontobel Emerging Markets Opportunities Fund		\$87.13M	(\$19.55M)
BNY Mellon Emerging Markets Fund		\$27.23M	(\$19.01M)
Causeway Emerging Markets Fund		\$94.23M	(\$18.49M)
Van Eck Emerging Markets Fund		\$61.01M	(\$18.39M)
Neuberger Berman Emerging Markets Equity Fund		\$50.18M	(\$16.35M)
PGIM Jennison Emerging Markets Equity Opportunities Fund	Close		(\$15.99M)
Touchstone Strategic Trust - Sands Capital E.M. Growth Fund		\$127.69M	(\$14.17M)

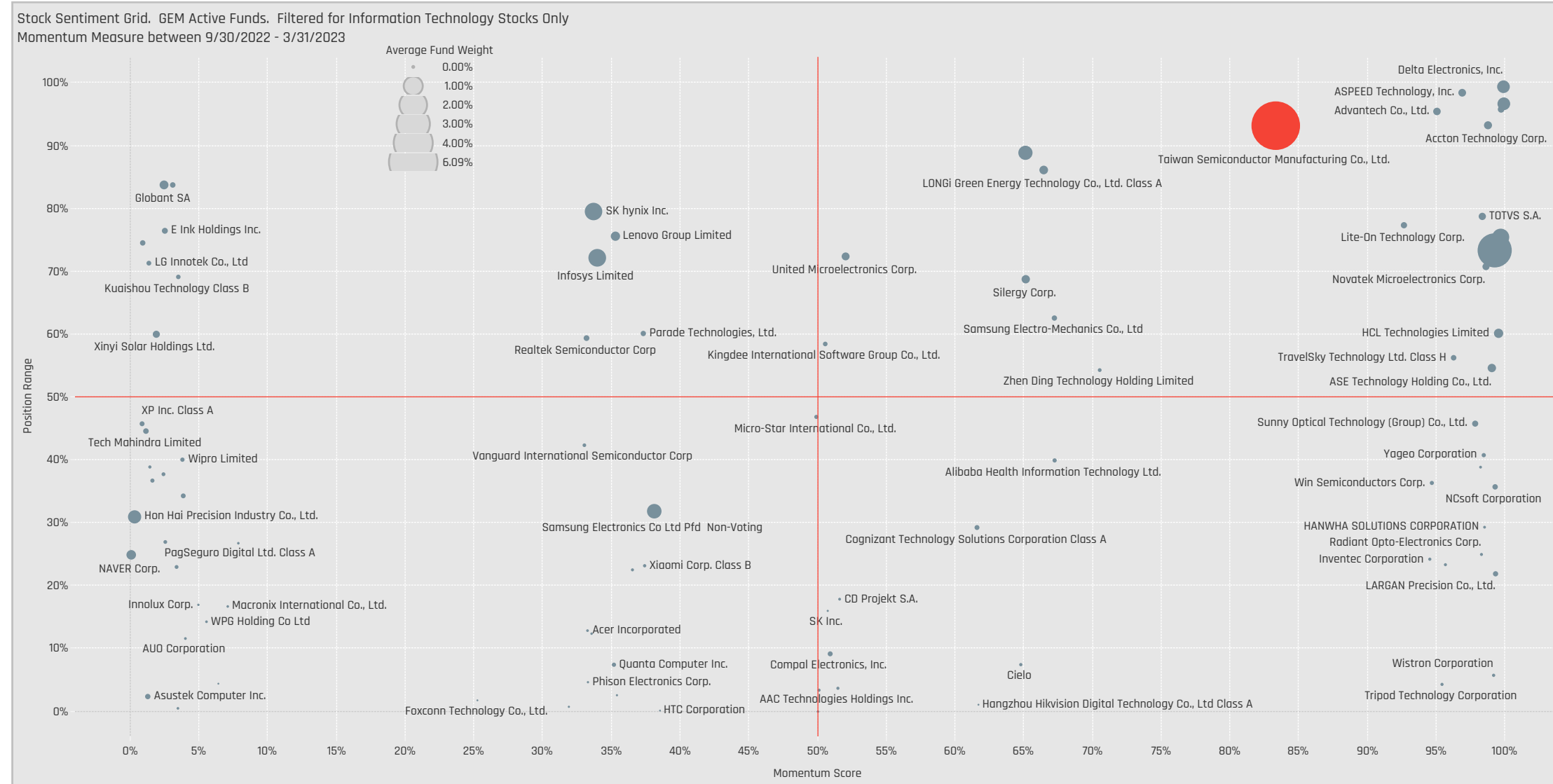
**Sentiment Grid:** We combine the latest Stock positioning, long-term positioning and short-term fund activity in the 'Sentiment Grid', below. The Y-Axis measures where today's ownership levels in each Stock sit relative to the long-term range. We calculate the Z-Score of today's average weight, funds invested % and funds o/w % relative to all monthly observations in our fund history (going back to 1/31/2008). A figure close to 100% would indicate today's positioning is close to its maximum ever level, a figure close to zero, the lowest. The X-axis provides a measure of short-term fund activity, or 'Momentum', by looking at the changes in average weight, funds invested % and funds o/w % between 9/30/2022 and 3/31/2023, relative to each Stock. A figure above 50% means a Stock has seen relative increases in ownership, a figure below 50% indicates a relative decrease in positioning. The size of the bubble represents the average weight of each Stock. The Grid is filtered for Taiwan stocks only.



Position Range: Average of:  
 Z-Score Average Weight vs history  
 Z-Score Funds Invested % vs history  
 Z-Score Funds O/W % vs history

Momentum Score: Average of:  
 Change in Average Weight (Percentile vs Peers)  
 Change in Funds Invested % (Percentile vs Peers)  
 Change in Funds O/W % (Percentile vs Peers)

**Sentiment Grid:** We combine the latest Stock positioning, long-term positioning and short-term fund activity in the 'Sentiment Grid', below. The Y-Axis measures where today's ownership levels in each Stock sit relative to the long-term range. We calculate the Z-Score of today's average weight, funds invested % and funds o/w % relative to all monthly observations in our fund history (going back to 1/31/2008). A figure close to 100% would indicate today's positioning is close to its maximum ever level, a figure close to zero, the lowest. The X-axis provides a measure of short-term fund activity, or 'Momentum', by looking at the changes in average weight, funds invested % and funds o/w % between 9/30/2022 and 3/31/2023, relative to each Stock. A figure above 50% means a Stock has seen relative increases in ownership, a figure below 50% indicates a relative decrease in positioning. The size of the bubble represents the average weight of each Stock. The Grid is filtered for Information Technology stocks only.



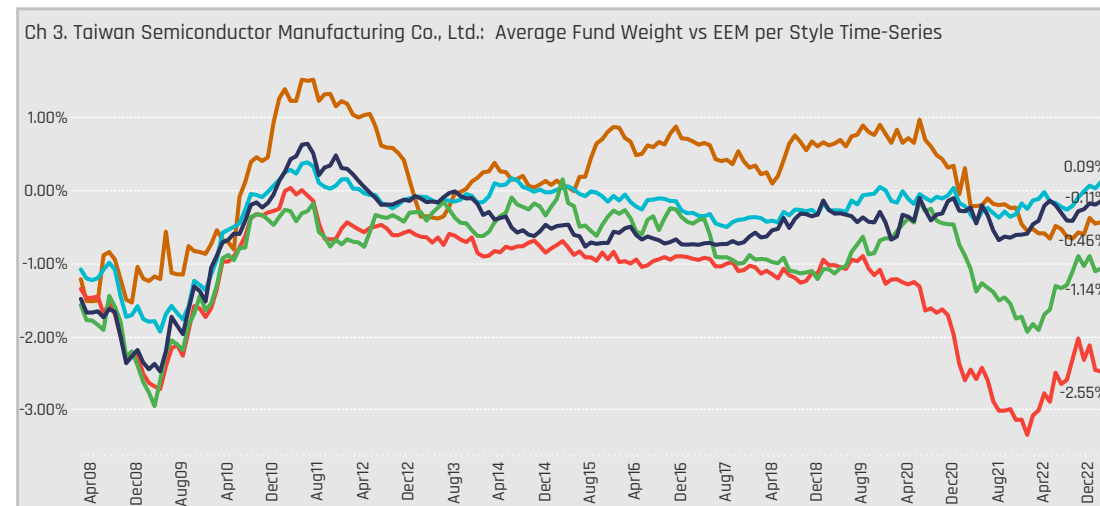
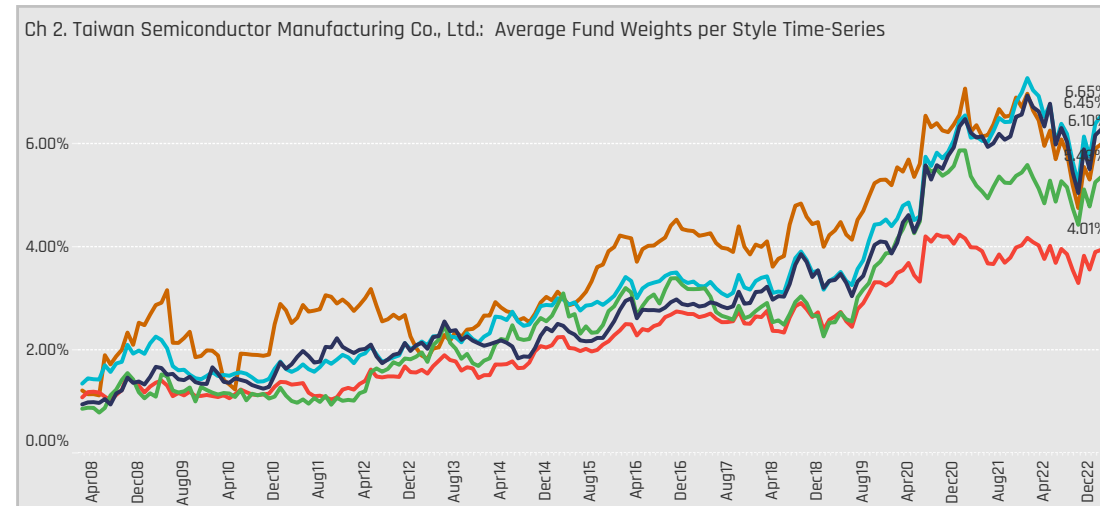
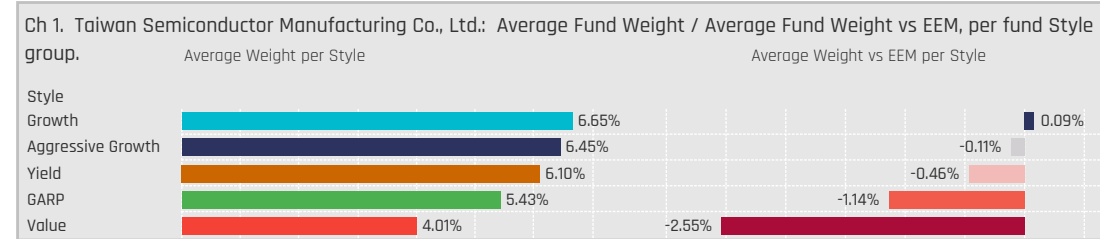
Position Range: Average of:  
 Z-Score Average Weight vs history  
 Z-Score Funds Invested % vs history  
 Z-Score Funds O/W % vs history

Momentum Score: Average of:  
 Change in Average Weight (Percentile vs Peers)  
 Change in Funds Invested % (Percentile vs Peers)  
 Change in Funds O/W % (Percentile vs Peers)



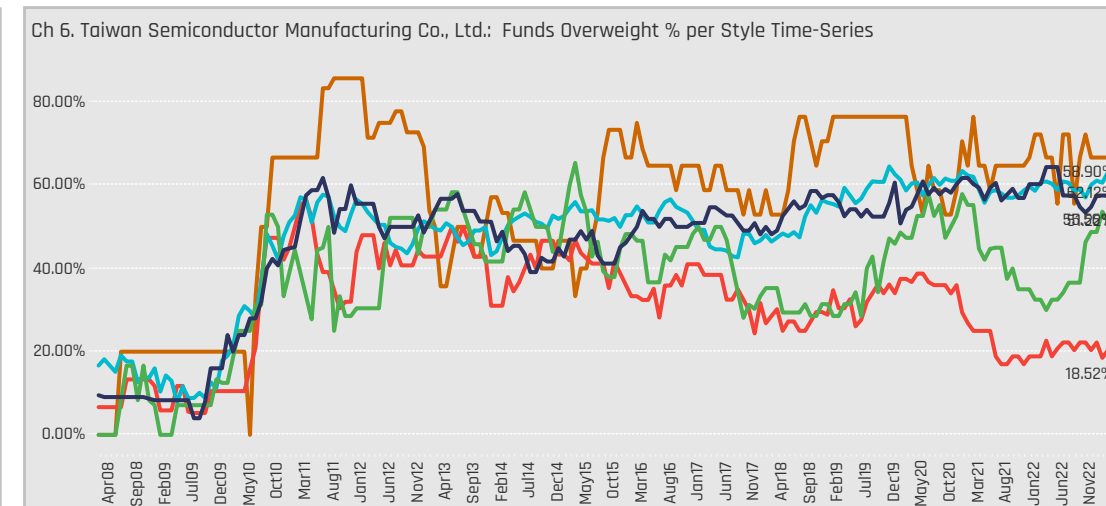
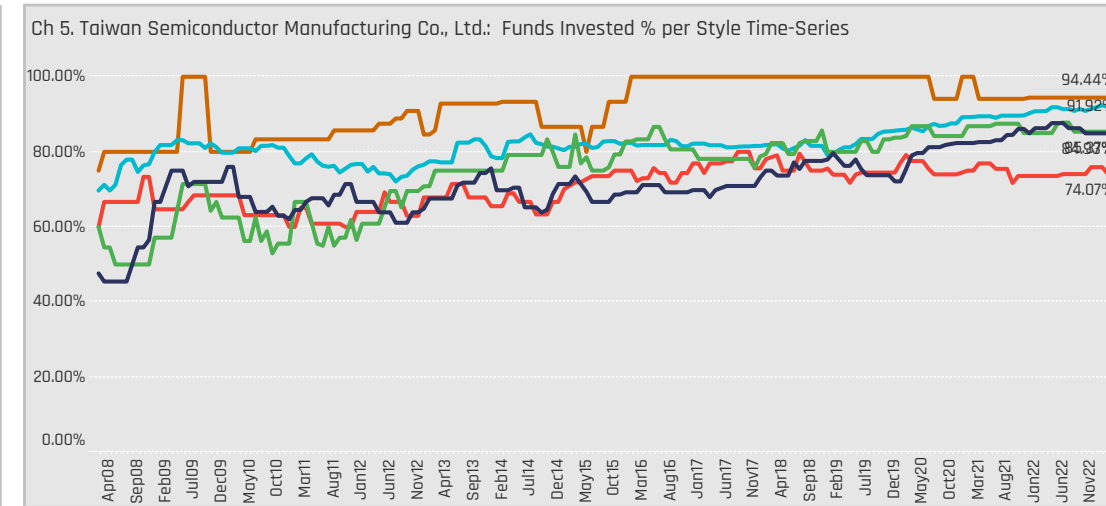
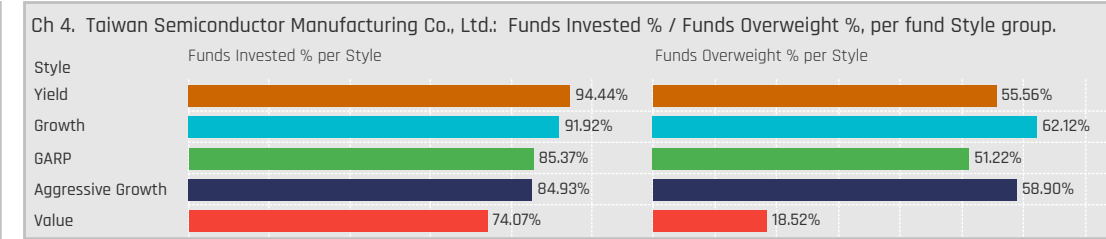
**Chart 1** The average weights in Taiwan Semiconductor Manufacturing Co., Ltd. stock and the average weights vs the iShares MSCI Emerging Markets ETF, split by fund Style.

**Charts 2 & 3** The time series of average fund weights in Taiwan Semiconductor Manufacturing Co., Ltd. stock and average weights vs iShares MSCI Emerging Markets ETF, split by fund Style.



**Chart 4** The percentage of funds invested in Taiwan Semiconductor Manufacturing Co., Ltd. stocks and the percentage of funds overweight, split by fund Style.

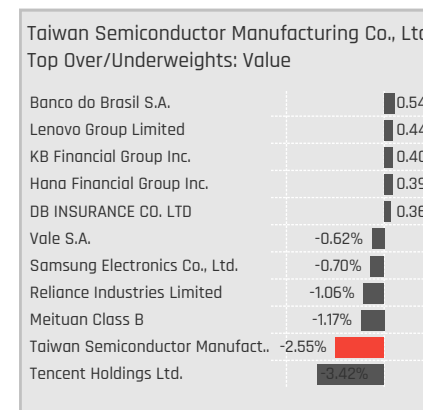
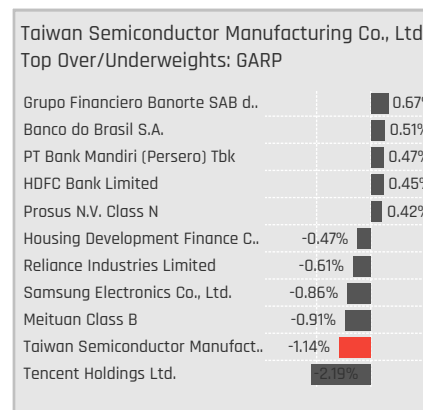
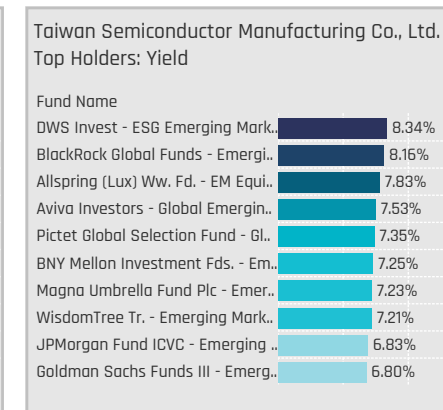
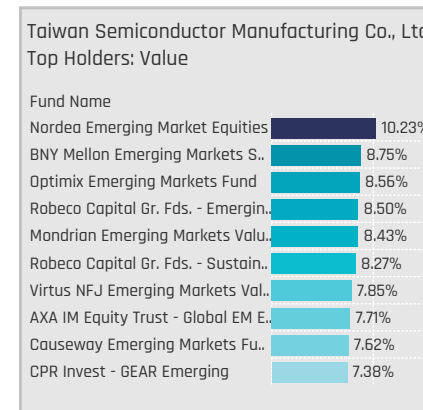
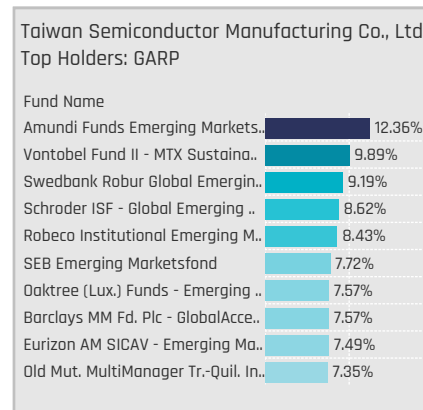
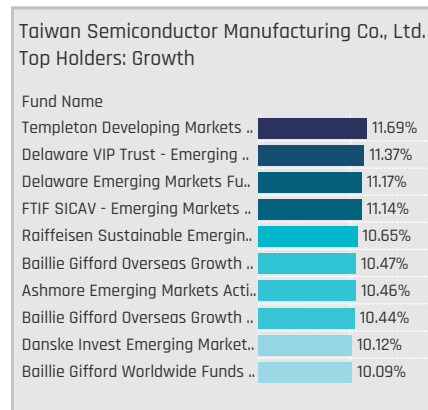
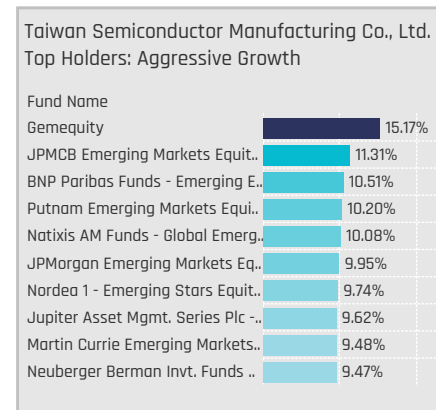
**Chart 5 & 6** The time series of the percentage of funds invested in Taiwan Semiconductor Manufacturing Co., Ltd. stocks and the percentage of funds overweight, split by fund Style.



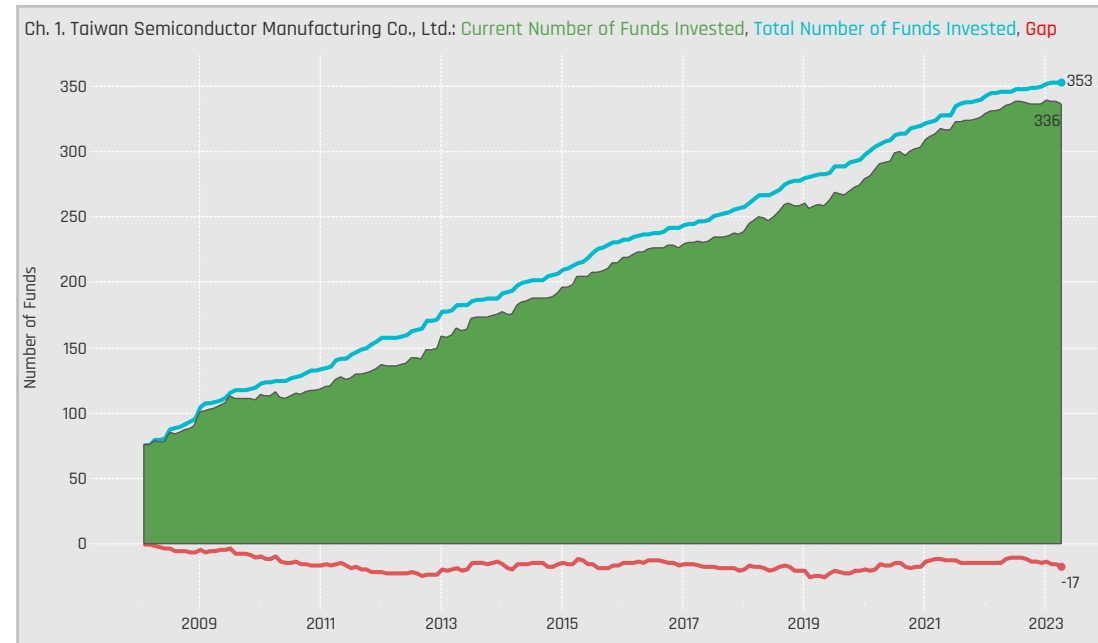
**Top Row:** For each Style category, each chart shows the largest holders in Taiwan Semiconductor Manufacturing Co., Ltd.

**Middle Row:** For each Style category, each chart shows the most widely held stocks and the corresponding average fund weights, with Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.

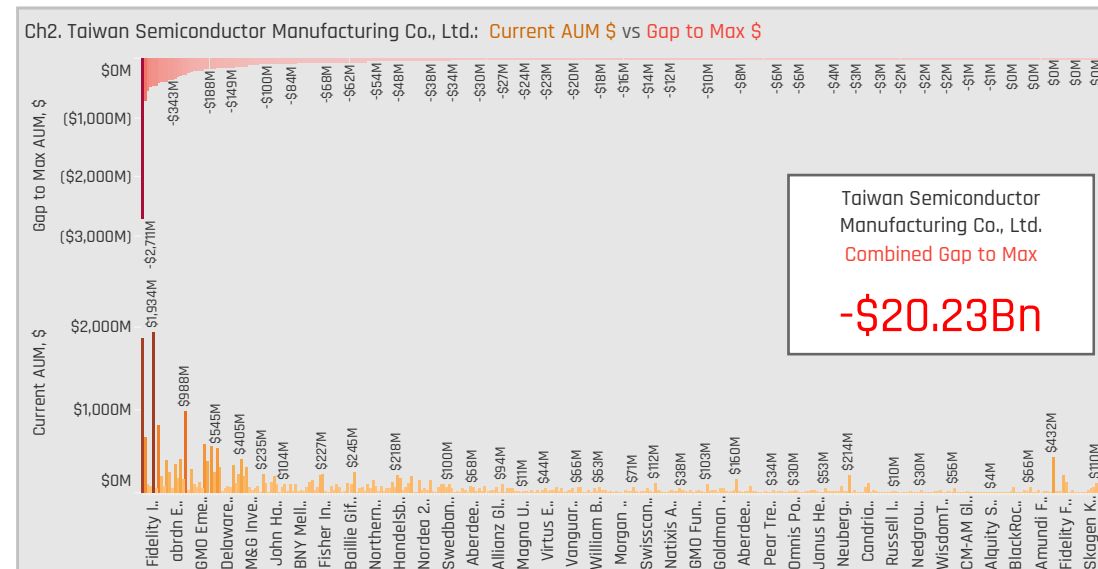
**Bottom Row:** For each Style category, each chart shows the largest stock overweights and underweights, with Taiwan Semiconductor Manufacturing Co., Ltd. highlighted in red.



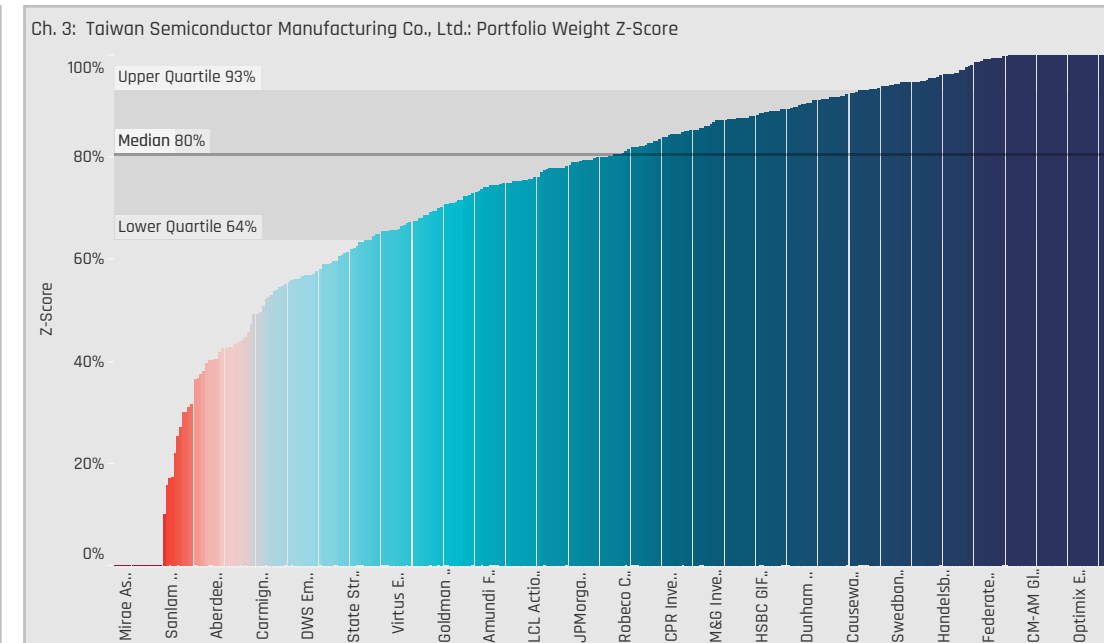
**Chart 1** The blue line shows the total number of funds (out of 384) who have ever owned Taiwan Semiconductor Manufacturing Co., Ltd. stock. The green area shows the number of funds invested at any one time and the red line the difference. A downward sloping red line means existing investors are closing out positions, a rising red line means previous investors are buying back in.



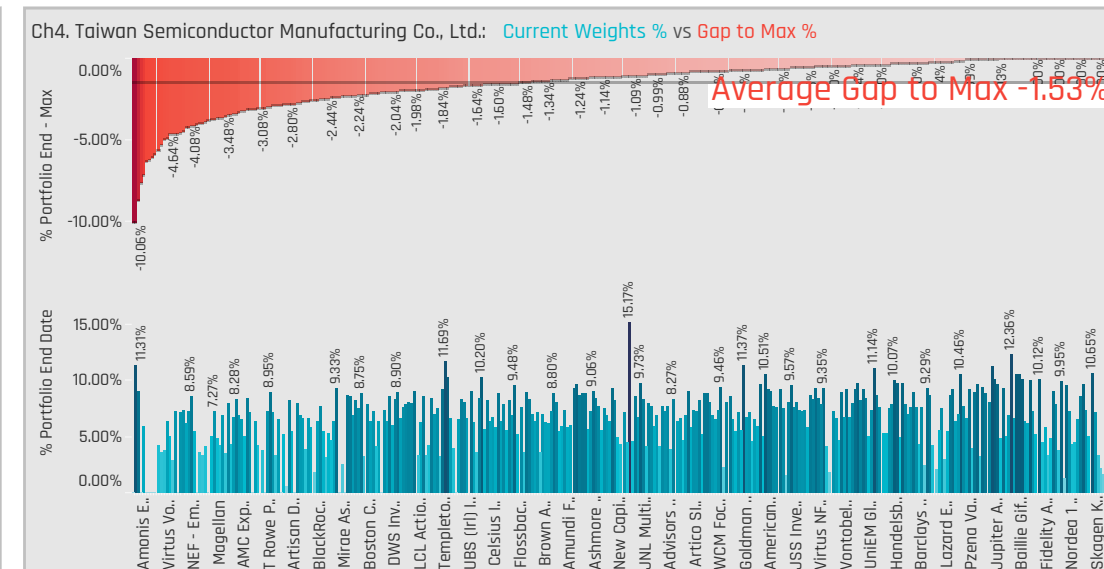
**Chart 2** The orange lines show the current AUM in Taiwan Semiconductor Manufacturing Co., Ltd. for each fund. The red lines show the gap between today's weight and the maximum weight for each fund.



**Chart 3** The Z-Score of current weights versus history for all current and previous holders of Taiwan Semiconductor Manufacturing Co., Ltd.. A value of 100% means today's weight is the highest on record for that fund, zero the lowest.



**Chart 4** Blue lines show the current weight in Taiwan Semiconductor Manufacturing Co., Ltd. for each fund. The red lines show the gap between today's weight and the maximum weight for each fund.

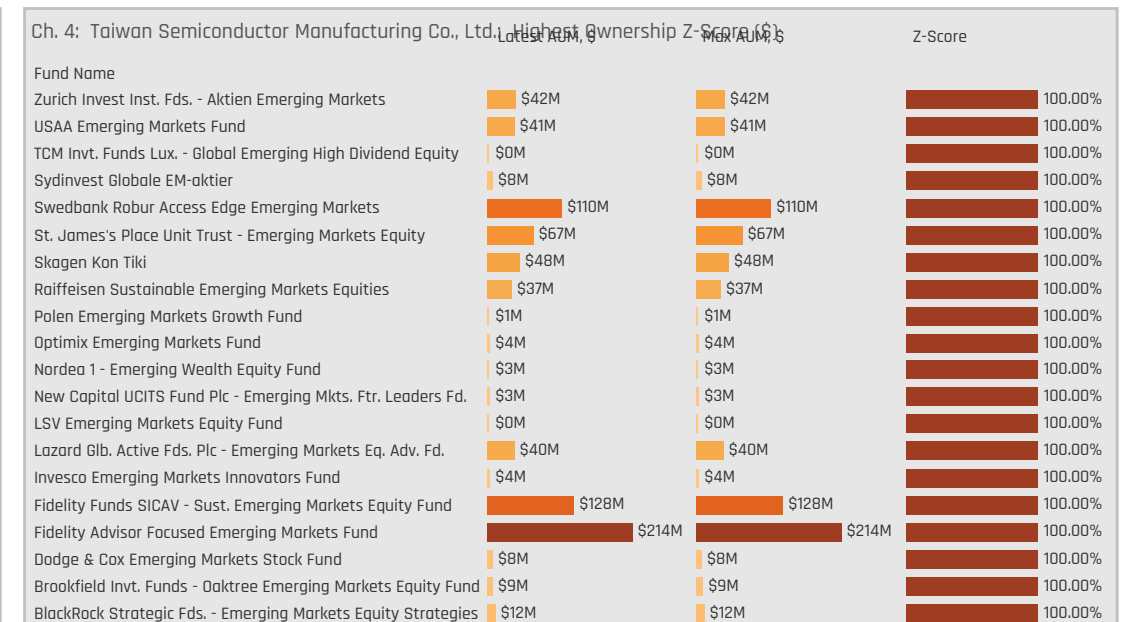
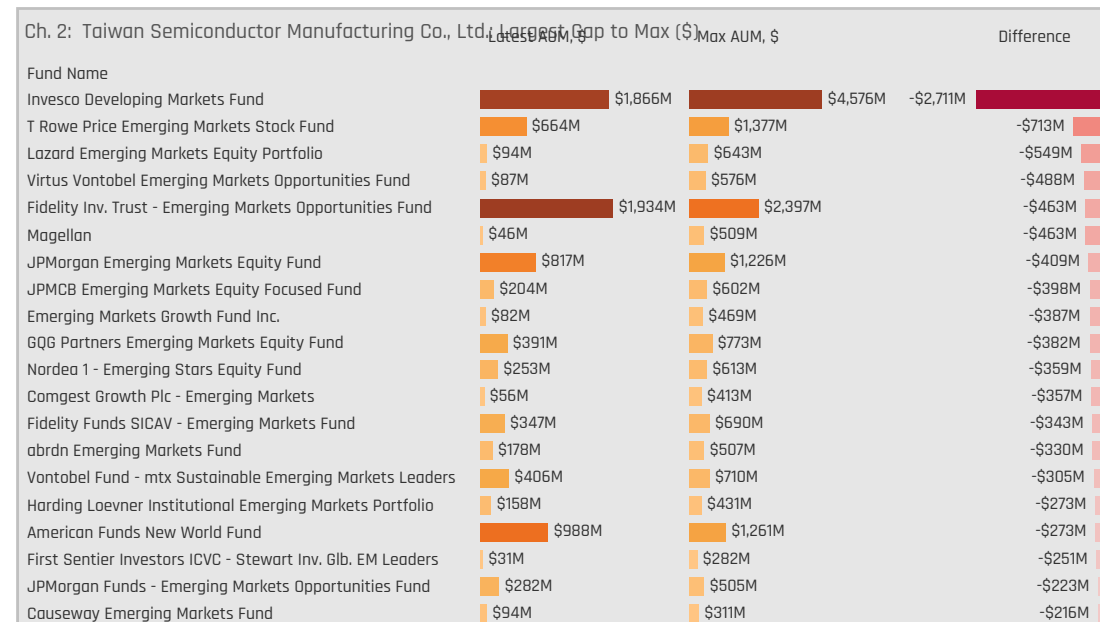
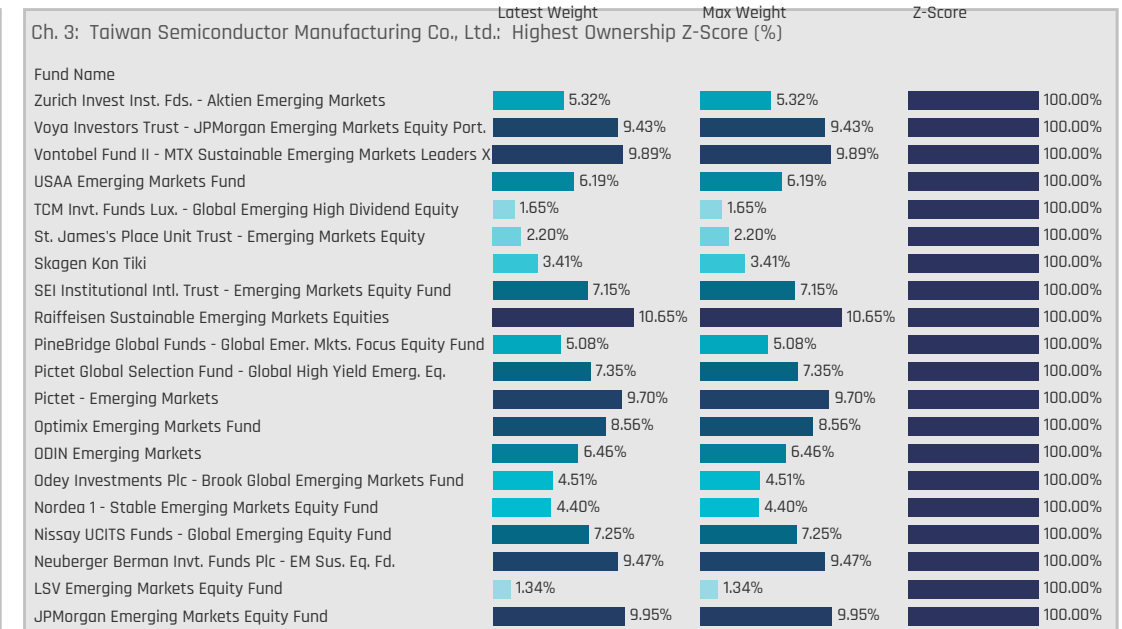
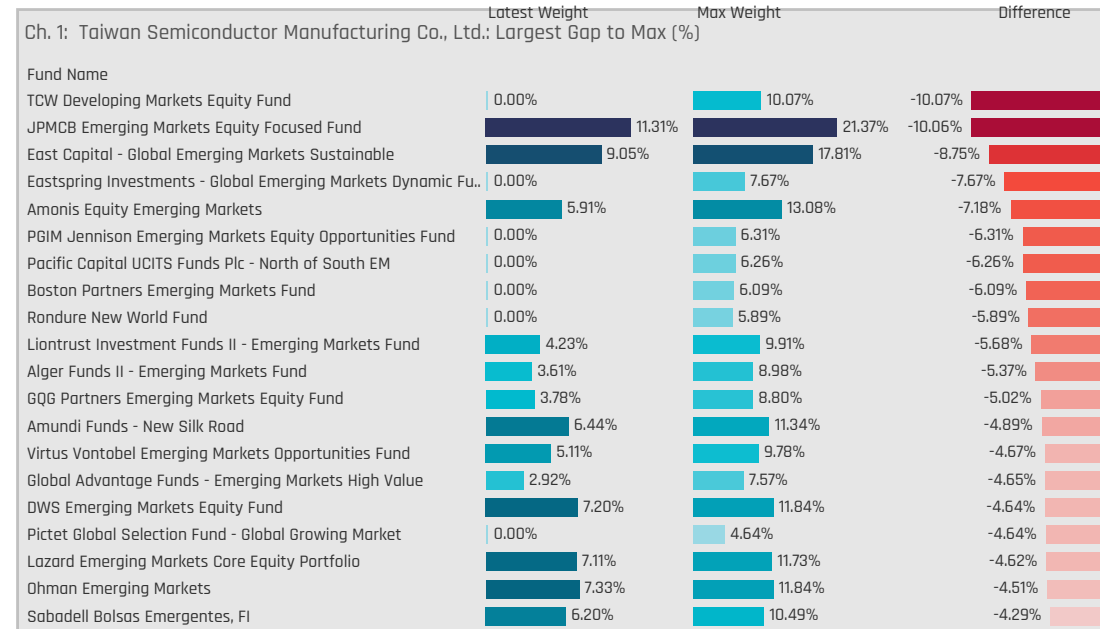


**Chart 1** Current fund weight, maximum fund weight and difference for Taiwan Semiconductor Manufacturing Co., Ltd. stocks.

**Chart 2** Current fund AUM, maximum fund AUM and \$ difference for Taiwan Semiconductor Manufacturing Co., Ltd. stocks

**Chart 3** Current fund weight, maximum fund weight and Z-Score for Taiwan Semiconductor Manufacturing Co., Ltd. stocks, ranked by Z-Score

**Chart 4** Current fund AUM, maximum AUM and Z-Score for Taiwan Semiconductor Manufacturing Co., Ltd. stocks, ranked by Z-Score.





# Taiwan Semiconductor Manufacturing Co., Ltd.



## Flow Potential

**Chart 1** Current fund weight, maximum fund weight and the difference for Taiwan Semiconductor Manufacturing Co., Ltd. stocks. Filtered for funds that have bought in to Taiwan Semiconductor Manufacturing Co., Ltd. between 9/30/2022 - 3/31/2023

**Chart 2** Current fund AUM, maximum fund AUM and the USD difference for Taiwan Semiconductor Manufacturing Co., Ltd. stocks. Filtered for funds that have bought in to Taiwan Semiconductor Manufacturing Co., Ltd. between 9/30/2022 - 3/31/2023

**Chart 3** Current fund weight, maximum fund weight and Z-Score for Taiwan Semiconductor Manufacturing Co., Ltd. stocks, ranked by Z-Score. Filtered for funds that have sold Taiwan Semiconductor Manufacturing Co., Ltd. between 9/30/2022 - 3/31/2023 and have a % Z-Score of above 50%.

**Chart 4** Current fund AUM, maximum AUM and Z-Score for Taiwan Semiconductor Manufacturing Co., Ltd. stocks, ranked by Z-Score. Filtered for funds that have sold Taiwan Semiconductor Manufacturing Co., Ltd. between 9/30/2022 - 3/31/2023 and have a % Z-Score of above 50%.

Fund Name	Latest Weight	Max Weight	Difference	Fund Flows, \$
<b>Ch. 1: Taiwan Semiconductor Manufacturing Co., Ltd.: Largest Gap to Max (%) and Buying between 9/30/2022 - 3/31/2023</b>				
East Capital - Global Emerging Markets Sustainable	9.05%	17.81%	-8.75%	\$1M
Amonis Equity Emerging Markets	5.91%	13.08%	-7.18%	\$2M
Global Advantage Funds - Emerging Markets High Value	2.92%	7.57%	-4.65%	\$0M
Ohman Emerging Markets	7.33%	11.84%	-4.51%	\$0M
BNY Mellon Investment Fds. - Emerging Income Fund	7.25%	11.49%	-4.24%	\$1M
Baring Emerging Markets Umbrella Fd. - Global Emerging	8.59%	12.75%	-4.16%	\$2M
JPMorgan Funds - Emerging Markets Dividend Fund	6.55%	9.76%	-3.22%	\$3M
Alquity SICAV - Future World Fund	8.41%	11.61%	-3.20%	\$1M
Allianz Global Investors Fund - Best Styles EM Equity SRI	5.16%	8.02%	-2.86%	\$0M
JPMorgan Fund ICVC - Emerging Markets Income Fund	6.83%	9.56%	-2.72%	\$5M
AB FCP II - Emerging Market Value Portfolio	1.85%	4.44%	-2.59%	\$0M
FTIF SICAV - Emerging Markets Sustainability Fund	9.33%	11.74%	-2.41%	\$0M
DWS Invest - ESG Global Emerging Markets Equities	8.59%	10.92%	-2.33%	\$53M
MassMutual Premier Strategic Emerging Markets Fund	7.48%	9.73%	-2.25%	\$1M
Cullen Emerging Markets High Dividend Fund	3.21%	5.44%	-2.23%	\$4M
Boston Common ESG Impact Emerging Markets Fund	6.45%	8.65%	-2.20%	\$0M
Pear Tree Axiom Emerging Markets World Equity Fund	7.87%	9.90%	-2.03%	\$0M
Pacific Select Fund - Emerging Markets Portfolio	8.09%	10.10%	-2.02%	\$4M
BlackRock Funds I ICAV - Advantage Emerging Markets Equity F.	7.98%	9.95%	-1.98%	\$0M
LDL Actions Emergents	6.22%	8.19%	-1.97%	\$0M

Fund Name	Latest Weight	Max Weight	Z-Score	Fund Flows, \$
<b>Ch. 3: Taiwan Semiconductor Manufacturing Co., Ltd.: Z-Score (%) &gt; 50% and selling between 9/30/2022 - 3/31/2023</b>				
Vontobel Fund II - MTX Sustainable Emerging Markets Leaders X	9.89%	9.89%	100.00%	(\$1M)
SEI Institutional Intl. Trust - Emerging Markets Equity Fund	7.15%	7.15%	100.00%	(\$3M)
Pictet - Emerging Markets	9.70%	9.70%	100.00%	\$1M
JPMorgan Emerging Markets Equity Fund	9.95%	9.95%	100.00%	(\$27M)
GS Funds - Emerging Markets Equity Portfolio	9.10%	9.10%	100.00%	(\$13M)
Calvert Emerging Markets Equity Fund	9.99%	9.99%	100.00%	(\$9M)
Baillie Gifford Worldwide Funds Plc - Emer. Mkts. All Cap	10.09%	10.09%	100.00%	(\$1M)
Baillie Gifford Overseas Growth Funds ICVC - EM. Growth	10.44%	10.44%	100.00%	(\$5M)
Baillie Gifford Overseas Growth Fund - Emer. Mkts. Leading Co.	10.47%	10.47%	100.00%	(\$13M)
SEI Global Master Fund Plc - Emerging Markets Equity Fund	6.93%	6.95%	99.75%	(\$3M)
Natixis AM Funds - Global Emerging Equity	10.08%	10.13%	99.43%	\$0M
Federated Hermes Invt. Funds - Global Emerging Markets Equity	8.78%	8.85%	99.28%	(\$7M)
TT International Funds Plc - Emerging Markets Unconstrained	9.12%	9.21%	98.25%	(\$6M)
CT (Lux) III - Responsible Global Emerging Markets Equity	8.65%	8.92%	96.96%	(\$3M)
Handelsbanken Tillvaextmarknad Tema	9.78%	10.14%	96.19%	(\$6M)
Allspring (Lux) Ww. Fd. - EM Equity Income Fund	7.83%	8.21%	95.46%	\$0M
Robeco QI Customized Emerging Markets Enhanced Index Eq. Fd.	7.89%	8.21%	95.46%	(\$34M)
Lazard Emerging Markets Strategic Equity Portfolio	5.42%	5.64%	95.30%	\$0M
Fisher Invt. Instl. Fds. Plc - Emerging Markets Equity Fund	9.81%	10.16%	95.04%	(\$21M)

Fund Name	Latest AUM, \$	Max AUM, \$	Difference	Fund Flows, \$
<b>Ch. 2: Taiwan Semiconductor Manufacturing Co., Ltd.: Largest Gap to Max (\$) and Buying between 9/30/2022 - 3/31/2023</b>				
Lazard Emerging Markets Equity Portfolio	\$94M	\$643M	-\$549M	\$29M
Emerging Markets Growth Fund Inc.	\$82M	\$469M	-\$387M	\$3M
Fidelity Funds SICAV - Emerging Markets Fund	\$347M	\$690M	-\$343M	\$78M
JPMorgan Funds - Emerging Markets Opportunities Fund	\$282M	\$505M	-\$223M	\$1M
MFS Emerging Markets Equity Fund	\$553M	\$741M	-\$188M	\$10M
Fidelity Institutional Funds - Emerging Markets Fund	\$242M	\$429M	-\$187M	\$54M
Baron Emerging Markets Fund	\$312M	\$478M	-\$166M	\$22M
CIF - Emerging Markets Growth Fund (LUX)	\$19M	\$184M	-\$165M	\$1M
Schroder ISF - Emerging Markets	\$405M	\$540M	-\$135M	\$12M
Principal Funds Inc. - Origin Emerging Markets Fund	\$194M	\$324M	-\$130M	\$8M
M&G Investment Funds (7) OEIC - Global Emerging Markets Fun..	\$30M	\$145M	-\$115M	\$5M
Nordea Emerging Market Equities	\$87M	\$194M	-\$107M	\$2M
Pacific Select Fund - Emerging Markets Portfolio	\$61M	\$149M	-\$88M	\$4M
Aviva Investors - Global Emerging Markets Core Fund	\$104M	\$190M	-\$86M	\$2M
Fidelity Funds SICAV - Institutional Emerging Markets Equity	\$21M	\$101M	-\$80M	\$3M
BlackRock Global Funds - Emerging Markets Fund	\$218M	\$289M	-\$72M	\$33M
William Blair Emerging Markets Growth Fund	\$61M	\$126M	-\$65M	\$0M
Lazard Glb. Active Fds. Plc - Emerging Markets Equity Fund	\$9M	\$72M	-\$63M	\$4M
Ninety One Glb. Strat. Fd. - Emerging Markets Equity	\$117M	\$179M	-\$62M	\$3M
American Funds Developing World Growth & Income Fund	\$94M	\$150M	-\$57M	\$19M

Fund Name	Latest AUM, \$	Max AUM, \$	Z-Score	Fund Flows, \$
<b>Ch. 4: Taiwan Semiconductor Manufacturing Co., Ltd.: Z-Score (\$) &gt; 50% and selling between 9/30/2022 - 3/31/2023</b>				
Artemis Investment Funds ICVC - Global Emerging Markets	\$19M	\$19M	98.11%	(\$1M)
Fidelity SAI Emerging Markets Value Index Fund	\$112M	\$126M	86.51%	(\$6M)
Vontobel Fund II - MTX Sustainable Emerging Markets Leaders..	\$33M	\$38M	86.29%	(\$1M)
Jupiter Global Emerging Markets Fund	\$3M	\$3M	84.36%	\$0M
Fidelity Inv. Trust - Emerging Markets Opportunities Fund	\$1,934M	\$2,397M	80.69%	\$0M
Ashmore Emerging Markets Equity Fund	\$10M	\$12M	80.29%	\$0M
Handelsbanken Tillvaextmarknad Tema	\$181M	\$229M	78.83%	(\$6M)
Dunham Emerging Markets Stock Fund	\$9M	\$12M	77.91%	\$0M
SEB Emerging Marketsfond	\$33M	\$43M	77.60%	(\$4M)
American Funds New World Fund	\$988M	\$1,261M	77.54%	(\$59M)
Allianz Global Investors Fund - GEM Equity High Dividend	\$8M	\$10M	76.68%	\$0M
Fidelity Series Emerging Markets Fund	\$218M	\$266M	76.29%	(\$4M)
Brown Advisory Emerging Markets Select Fund	\$35M	\$46M	75.73%	(\$3M)
Fidelity Inv. Trust - Emerging Markets Fund	\$593M	\$783M	75.34%	(\$13M)
RBC Funds Trust - Emerging Markets Equity Fund	\$152M	\$208M	73.17%	(\$1M)
SEI Institutional Intl. Trust - Emerging Markets Equity Fund	\$106M	\$142M	72.83%	(\$3M)
Swedbank Robur Global Emerging Markets	\$100M	\$135M	72.79%	(\$6M)
Schroder ISF - Global Emerging Market Opportunities	\$134M	\$183M	71.39%	(\$6M)
Segall Bryant & Hamill Emerging Markets Fund	\$3M	\$4M	71.13%	\$0M

## Style Classifications

Each fund is split into a Style category based on the P/E and P/B ratios of their portfolio compared to the benchmark

**Aggressive Growth:** At least 70% of the portfolio in stocks with a higher P/E than the iShares MSCI Emerging Markets ETF average, and at least 70% with a higher P/B ratio.

**Growth:** At least 50% of the portfolio in stocks with a higher P/E than the iShares MSCI Emerging Markets ETF average, and at least 50% with a higher P/B ratio.

**Value:** Either by the fund description, or at least 50% of the portfolio in stocks with a lower P/E ratio than the iShares MSCI Emerging Markets ETF average, and at least 50% with a lower P/B ratio

**Yield:** As per the fund description only (i.e Yield, Dividend, Income funds).

**GARP:** All other iterations that do not fit under the above classifications.

## Ownership Measures

We track GEM Fund ownership across sectors, industries and stocks using a variety of calculations. They are listed below:

**Average Weight:** The sum of all fund weights in any measure (region, country, sector, industry, stock) divided by the total number of funds (384) in the analysis.

**Average Weight vs EEM:** The average weight minus the weight in the iShares MSCI Emerging Markets ETF (cash removed and weights adjusted).

**Funds Invested %:** The total number of funds with any exposure to a measure divided by the total number of funds (384) in the analysis.

**Funds O/W:** The total number of funds overweight a measure versus the EEM, divided by the total number of funds (384) in the analysis.

**AUM, \$:** The combined AUM allocated to a particular measure across the 384 active GEM funds in our analysis, in US Dollars