

Investor Presentation | Asia Pacific

# TMT Webcast: China Tech vs. the World – A Tale of Two Cities

MORGAN STANLEY ASIA LIMITED+

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**S. Korea Technology**

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# Asia Weekday Webcasts

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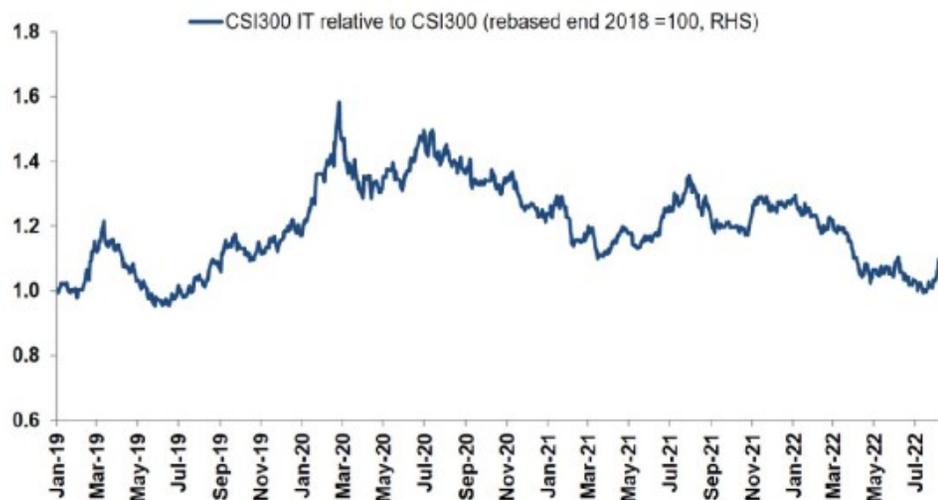
## Tuesday TMT

# Asia Technology

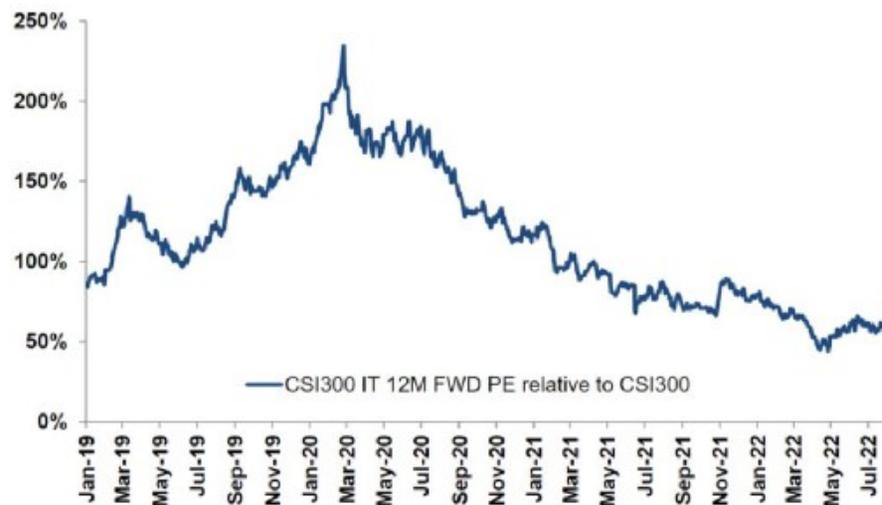
**Shawn Kim**

## China Tech Compared to The Rest of the World

CSI300 IT Relative Performance vs. CSI300



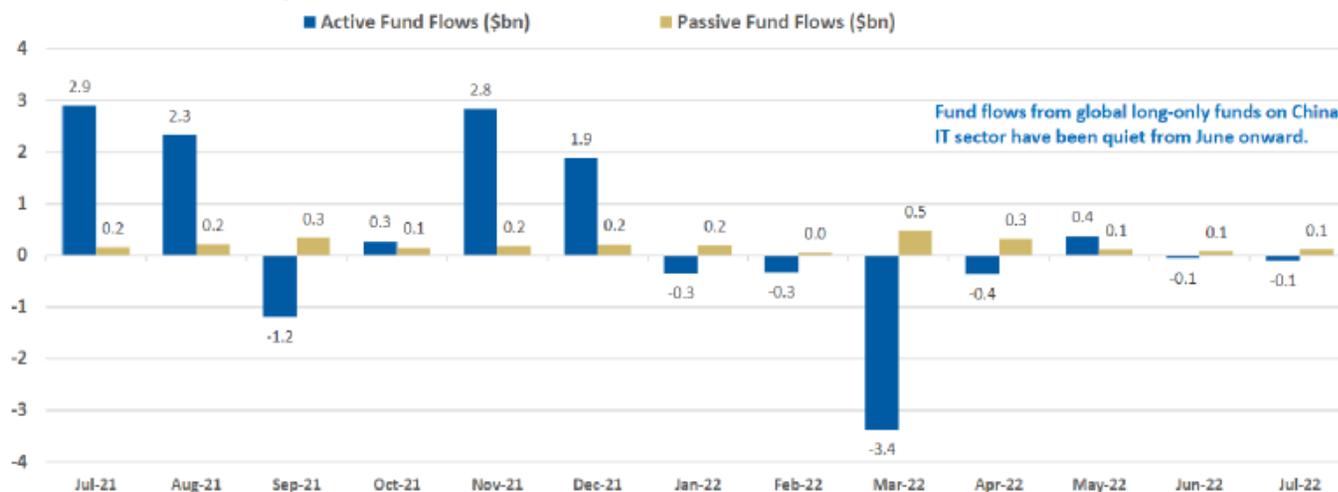
CSI300 IT 12-Month Forward PE vs. that of CSI 300



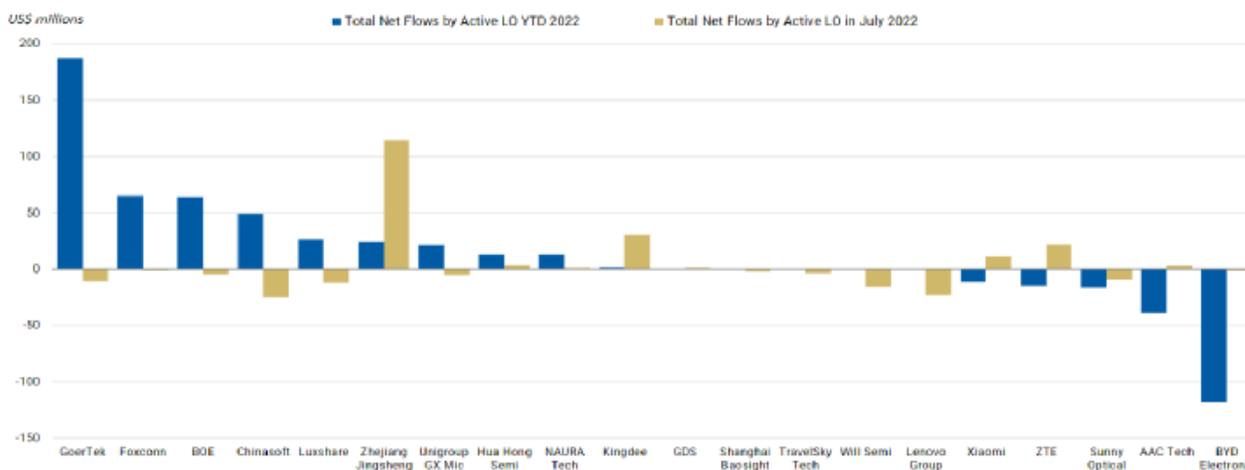
Source: Refinitiv, Morgan Stanley Research

## From a Fund Flow Perspective

Monthly mutual fund flows toward MSCI China IT Index Constituents



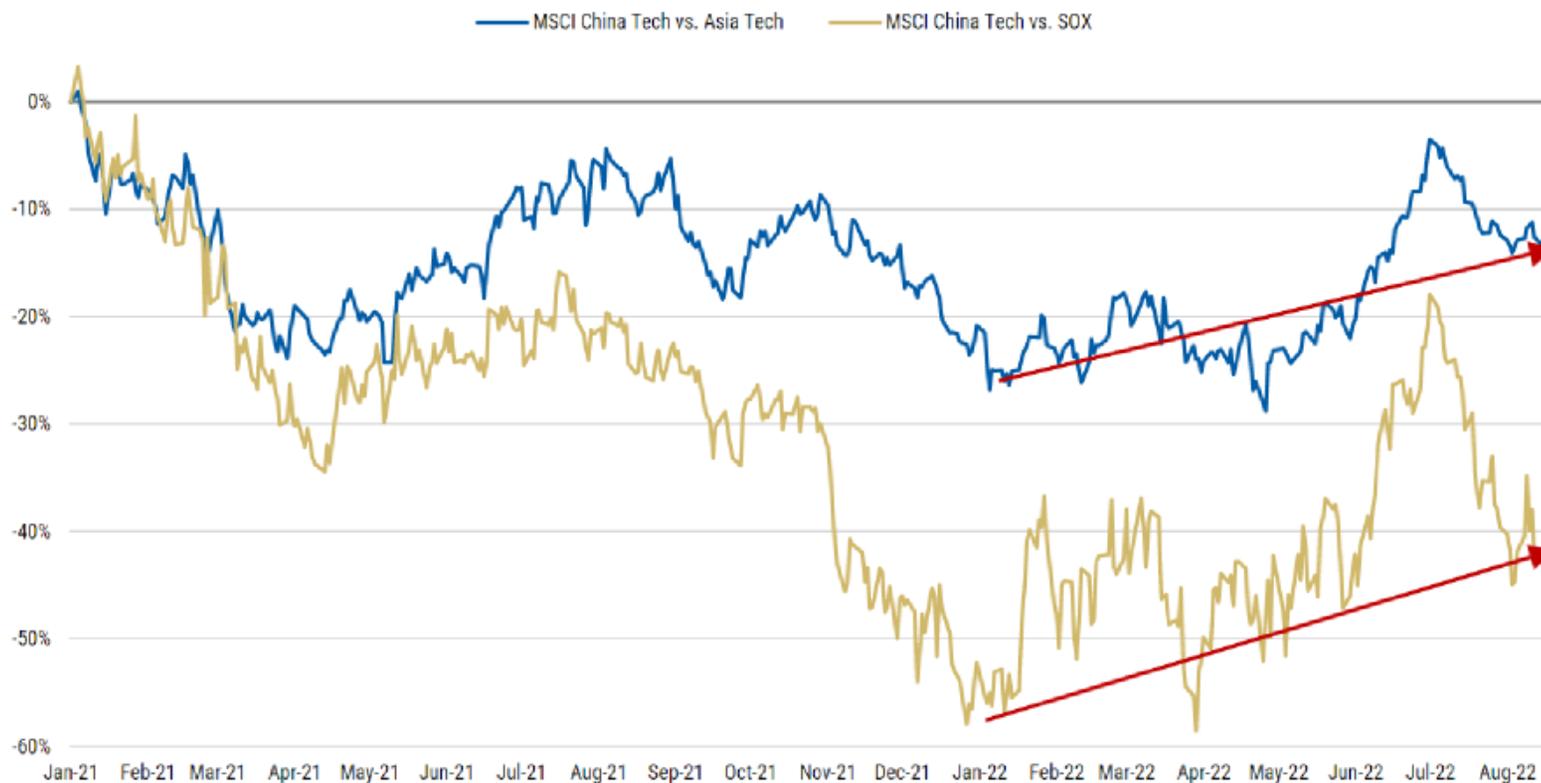
Monthly LO fund flows among the largest 20 names in MSCI China IT Index



Source: FactSet, Morningstar, EPFR, Morgan Stanley Research

## China Tech Outperforming YTD

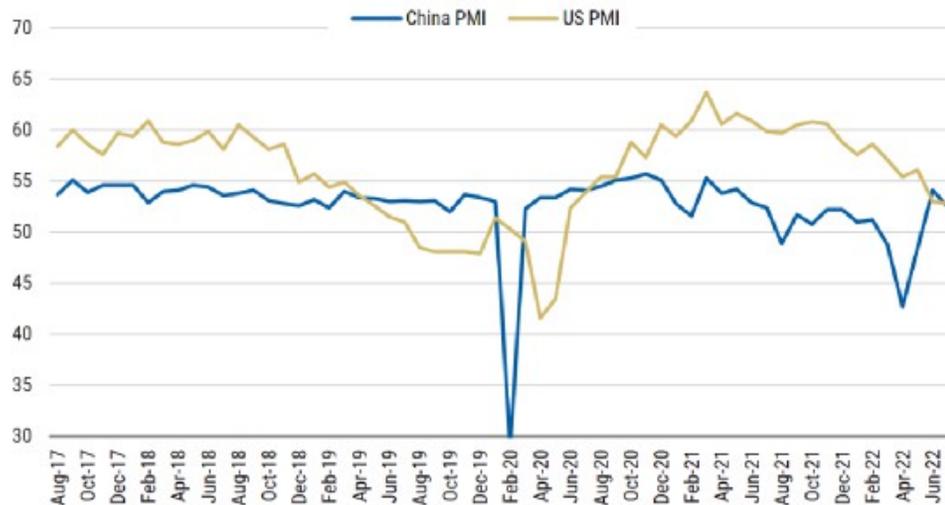
**China Tech Outperforming YTD – Both vs. MSCI Asia and SOX Tech although volatile  
But China Tech has underperformed SOX Index by 42% since 2021**



Source: Refinitiv, Morgan Stanley Research

## Top-down Signs that Suggest a Stabilization in the Period Ahead

**PMI Divergence – A sharp contrast in China PMI vs. US ISM post unprecedented tightening...**



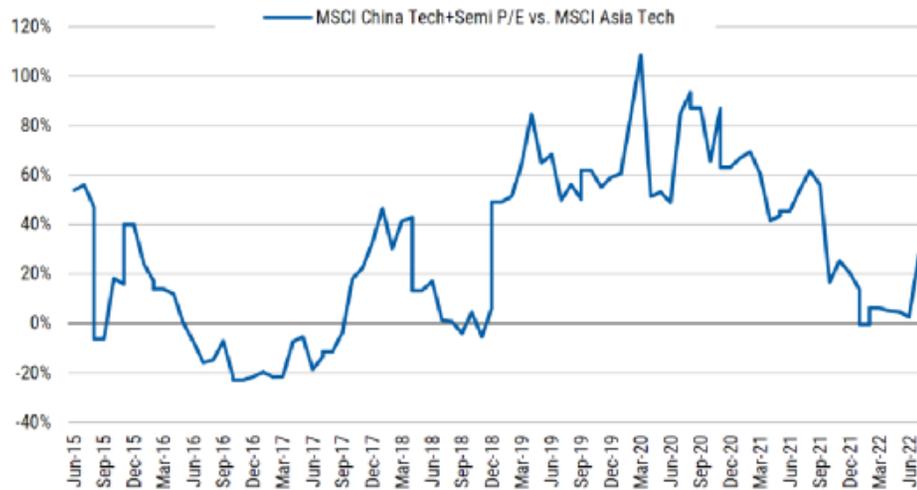
**...While the inflation gap unprecedented – China CPI vs. US CPI % YoY**



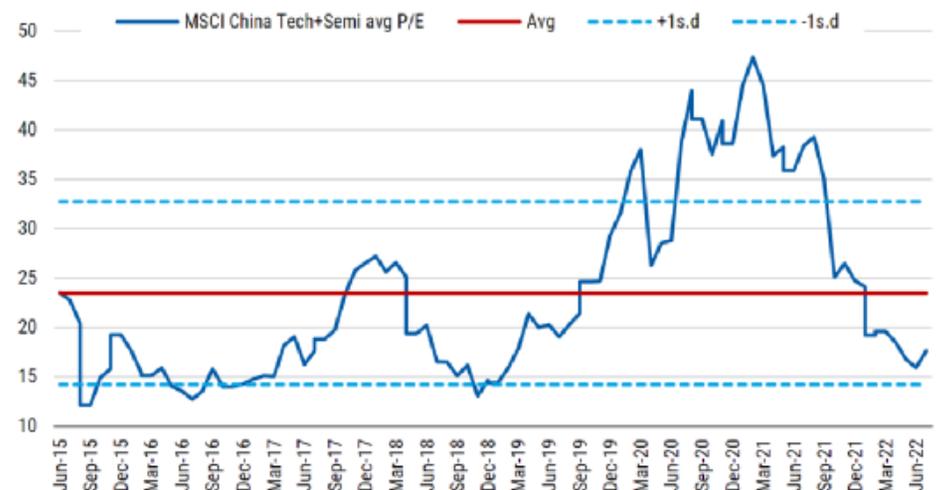
Source: Haver, Refinitiv, Morgan Stanley Research

## A Lot of Bad News Has Been Priced In

China Tech is no longer expensive relative to MSCI Asia Tech



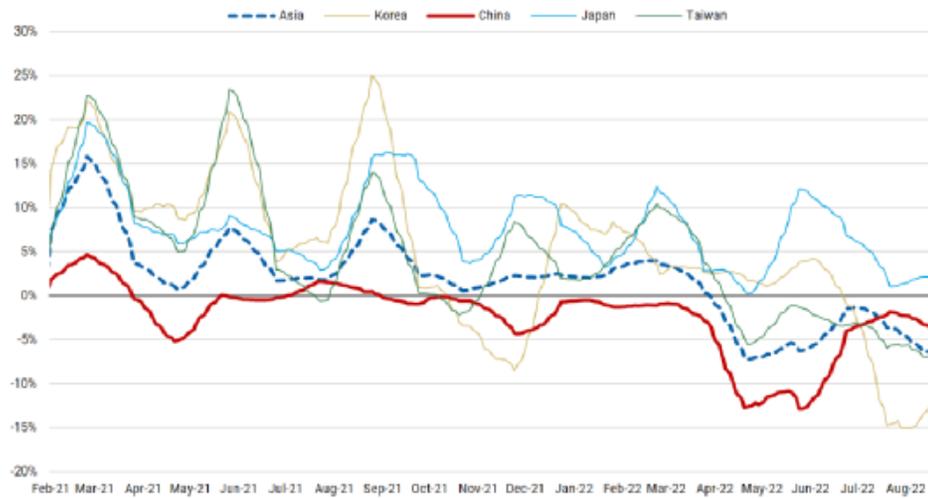
...And back to 2018 trough cycle multiples



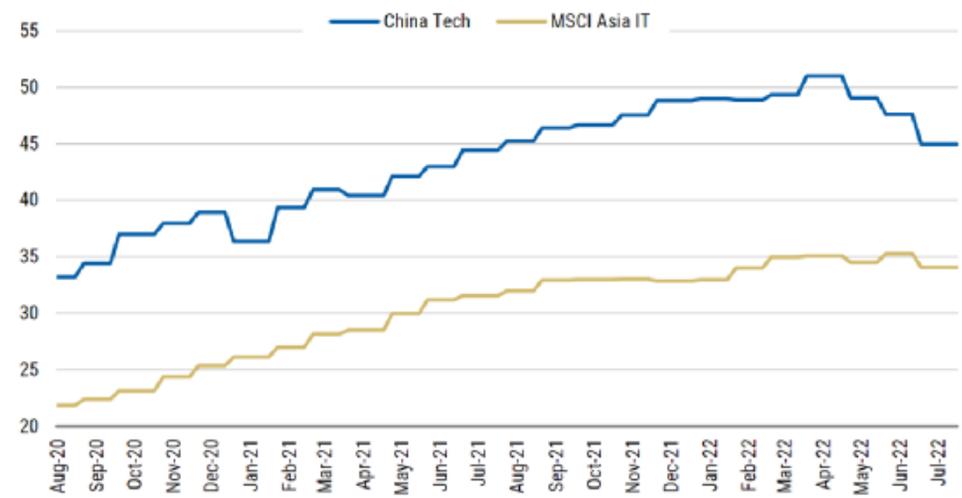
Source: Refinitiv, Morgan Stanley Research

## Earnings Revision Breadth Hit Bottom In 2Q

**MSCI China IT earnings revision breadth capitulated in 2Q22 and less bad vs. the rest of Asia**

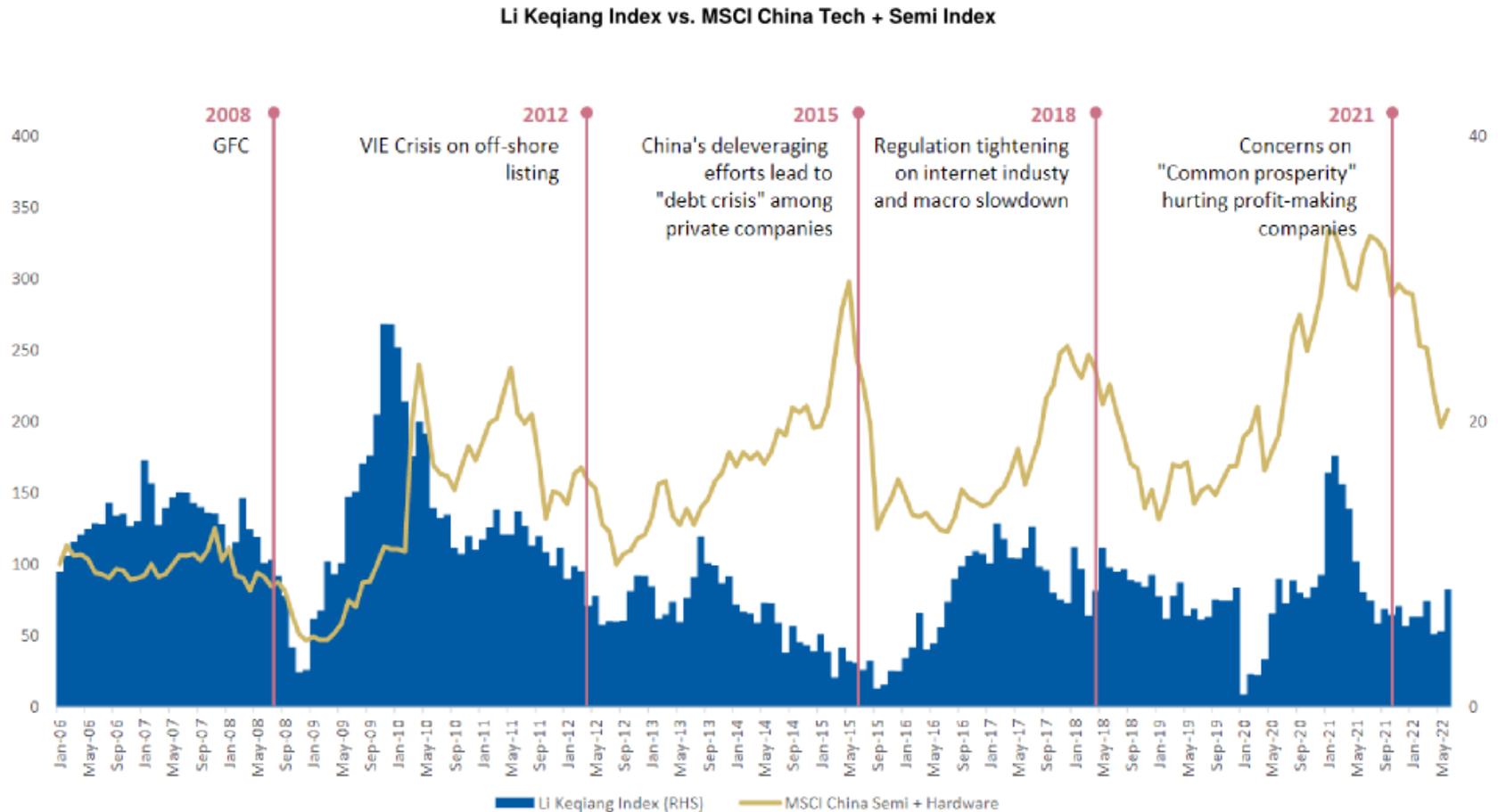


**MSCI China Tech vs. Asia IT absolute EPS**



Source: Refinitiv, Morgan Stanley Research

## Structural Drivers Remain Unchanged



Source: Refinitiv, Morgan Stanley Research

## Stock Recommendation List

### Top Pick List

| Company name                          | Ticker    | Sub-segment        | MS Rating | Share Price (Local Curr) | Price Target (Local Curr) | Upside (%) | One-Liner   | Coverage Analyst |
|---------------------------------------|-----------|--------------------|-----------|--------------------------|---------------------------|------------|---|------------------|
| <b>China Tech</b>                     |           |                    |           |                          |                           |            |   |                  |
| Sino Wealth Electronic                | 300327.SZ | BMIC               | OW        | 45.64                    | 58.00                     | 27%        | We believe Sino Wealth plays an important role in MCU and AMOLED TDDI localization in China, and think its BMIC business could enjoy high growth in the next 3-5 years.                                     | Yen, Daniel      |
| Shanghai Fudan Microelectronics       | 1385.HK   | FPGA               | OW        | 35.65                    | 39.30                     | 10%        | We believe Shanghai Fudan could benefit from China's specialty FPGA localization and the company can outperform during the semi down-cycle in view of limited consumer exposure.                            | Dai, Daisy       |
| Sunny Optical                         | 2382.HK   | Optical Component  | OW        | 117.20                   | 150.00                    | 28%        | We believe investors will have less concerns on earnings post weak 1H22 results. Looking into 2H22, there are new catalysts including iPhone order penetration and new VR and vehicle growth opportunities. | Meng, Andy       |
| Luxshare Precision Industry Co., Ltd. | 002475.SZ | Apple Supply Chain | OW        | 37.40                    | 40.00                     | 7%         | We like Luxshare for its increasing supply share within Apple hardware devices and we believe this will drive a meaningful YoY profit recovery in 2H22 onward.  | Shih, Sharon     |
| BOE Technology                        | 000725.SZ | Panel              | OW        | 3.95                     | 5.30                      | 34%        | Despite the unfavorable dynamics in the display sector, its valuation of 1.0x P/B is close to the historical trough. We see value emerging for mid to long term investors.                                  | Yang, Derrick    |
| <b>China Tech Proxy</b>               |           |                    |           |                          |                           |            |   |                  |
| Alchip Technologies Ltd               | 3661.TW   | IC Design          | OW        | 765.00                   | 1,420.00                  | 86%        | We believe Alchip's revenue momentum will pick up in 2H22 thanks to improving ABF substrate supply, followed by a strong 2023 outlook underpinned by robust HPC clients' demand.                            | Chan, Charlie    |
| Andes Technology Corp                 | 6533.TW   | IC Design          | OW        | 311.00                   | 360.00                    | 16%        | Andes is well-positioned to capture the RISC-V share gain opportunity with 17 years of CPU IP experience, while its reaccelerating China business in 2H22 act as a strong near-term catalyst.               | Chan, Charlie    |
| Nuvoton Technology Corporation        | 4919.TW   | BMIC               | OW        | 123.50                   | 168.00                    | 36%        | A great proxy to play in auto market, and we also spot its structural margin expansion thanks to solid execution in acquisition and multiple new products.  | Yen, Daniel      |

### China Self-sufficiency List

| Company name                             | Ticker    | MS Rating | Share Price (Local Curr) | Price Target (Local Curr) | Upside (%) | Mkt Cap (\$ mn) | P/E   |       | P/B   |       | EV/EBITDA |       | ROE   |       | Div Yield |       | Coverage Analyst |  |
|--|-----------|-----------|--------------------------|---------------------------|------------|-----------------|-------|-------|-------|-------|-----------|-------|-------|-------|-----------|-------|------------------|--|
|  |           |           |                          |                           |            |                 | 2022E | 2023E | 2022E | 2023E | 2022E     | 2023E | 2022E | 2023E | 2022E     | 2023E |                  |  |
| <b>BMIC</b>                              |           |           |                          |                           |            |                 |       |       |       |       |           |       |       |       |           |       |                  |  |
| Sino Wealth Electronic                   | 300327.SZ | OW        | 45.64                    | 58.00                     | 27%        | 2,238           | 34.0  | 29.9  | 9.5   | 7.8   | 31.1      | 26.6  | 33.8% | 31.8% | 1.1%      | 1.2%  | Yen, Daniel      |  |
| Nuvoton Technology Corporation           | 4919.TW   | OW        | 123.50                   | 168.00                    | 36%        | 1,644           | 13.1  | 13.4  | 3.5   | 3.3   | 6.4       | 6.1   | 25.5% | 25.8% | 4.9%      | 4.9%  | Yen, Daniel      |  |
| <b>Power Semis</b>                       |           |           |                          |                           |            |                 |       |       |       |       |           |       |       |       |           |       |                  |  |
| China Resources Microelectronics Limited | 688396.SS | UW        | 56.38                    | 50.00                     | -11%       | 10,072          | 40.8  | 52.5  | 4.6   | 4.4   | 23.7      | 29.1  | 19.2% | 13.3% | 1.0%      | 0.9%  | Wu, Ray          |  |
| Hangzhou Silan Microelectronics Co. Ltd. | 600460.SS | EW        | 43.19                    | 50.00                     | 16%        | 8,643           | 45.2  | 34.1  | 7.4   | 6.1   | 24.7      | 19.3  | 33.7% | 19.0% | 0.2%      | 0.1%  | Dai, Daisy       |  |
| StarPower Semiconductor Ltd              | 603290.SS | OW        | 415.60                   | 420.00                    | 1%         | 9,755           | 111.2 | 91.4  | 13.6  | 12.1  | 86.4      | 69.6  | 34.6% | 12.8% | 0.1%      | 0.2%  | Wu, Ray          |  |
| <b>FPGA</b>                              |           |           |                          |                           |            |                 |       |       |       |       |           |       |       |       |           |       |                  |  |
| Unigroup Guoxin Microelectronics Co Ltd  | 002049.SZ | OW        | 227.65                   | 241.00                    | 6%         | 20,266          | 45.5  | 30.9  | 13.3  | 9.5   | 40.2      | 26.6  | 39.3% | 41.6% | 0.2%      | 0.3%  | Dai, Daisy       |  |
| Shanghai Fudan Microelectronics          | 1385.HK   | OW        | 35.65                    | 39.30                     | 10%        | 3,701           | 24.9  | 24.9  | 6.2   | 5.0   | 16.8      | 15.7  | 26.8% | 32.2% | 0.2%      | 0.4%  | Dai, Daisy       |  |
| <b>IC Design</b>                         |           |           |                          |                           |            |                 |       |       |       |       |           |       |       |       |           |       |                  |  |
| Alchip Technologies Ltd                  | 3661.TW   | OW        | 765.00                   | 1,420.00                  | 86%        | 1,922           | 25.2  | 16.8  | 9.1   | 7.2   | 14.6      | 10.4  | 38.3% | 48.8% | 1.7%      | 2.8%  | Chan, Charlie    |  |
| Andes Technology Corp                    | 6533.TW   | OW        | 311.00                   | 360.00                    | 16%        | 492             | 42.5  | 40.2  | 2.9   | 3.0   | 79.4      | 25.3  | 7.7%  | 8.0%  | 0.8%      | 2.0%  | Chan, Charlie    |  |
| <b>Semi Cap</b>                          |           |           |                          |                           |            |                 |       |       |       |       |           |       |       |       |           |       |                  |  |
| ACM Research Inc                         | ACMR.O    | OW        | 16.57                    | 28.00                     | 69%        | 979             | 26.8  | 17.9  | 2.2   | 1.7   | 19.3      | 12.8  | 32.5% | 26.9% | 1.0%      | 0.0%  | Chan, Charlie    |  |
| Advanced Micro-Fabrication Equipment Inc | 688012.SS | OW        | 136.80                   | 175.00                    | 28%        | 12,368          | 84.7  | 73.8  | 13.2  | 11.2  | 111.5     | 89.6  | 23.2% | 18.5% | 0.0%      | 0.0%  | Chan, Charlie    |  |
| <b>Memory</b>                            |           |           |                          |                           |            |                 |       |       |       |       |           |       |       |       |           |       |                  |  |
| GigaDevice Semiconductor Beijing Inc     | 603986.SS | EW        | 119.30                   | 120.00                    | 1%         | 11,682          | 36.1  | 33.8  | 5.4   | 4.9   | 27.8      | 25.6  | 21.9% | 16.3% | 1.1%      | 1.3%  | Yen, Daniel      |  |

E = Morgan Stanley Research estimates Source: Refinitiv, Morgan Stanley Research

# Asia ex-Japan Quantitative Research

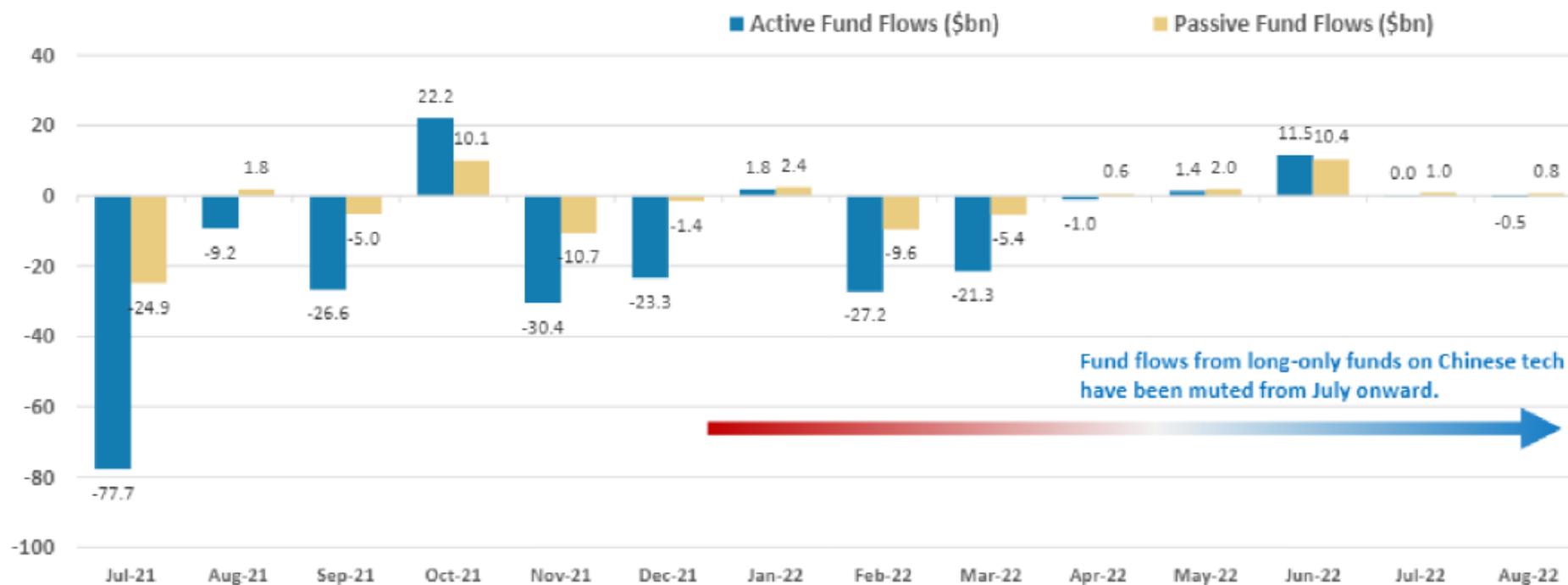
**Gilbert Wong**

## Stock-level Active Long-only Fund Flows (US\$m) since July 2021 – Top 30 Issuers in the Nasdaq Golden Dragon China

| Issuer Name                           | GICS Industry Group    | Total Net Flows by Active LO YTD 2022 | Total Net Flows by Active LO since July 2021 | AUG MTD        | Jul-22      | Jun-22          | May-22         | Apr-22         | Mar-22            | Feb-22            | Jan-22         | Dec-21            | Nov-21            | Oct-21          | Sep-21            | Aug-21           | Jul-21            |
|---------------------------------------|------------------------|---------------------------------------|--|----------------|-------------|-----------------|----------------|----------------|-------------------|-------------------|----------------|-------------------|-------------------|-----------------|-------------------|------------------|-------------------|
| Tencent Holdings                      | Media & Entertainment  | (28,849.7)                            | (68,818.4)                                   | (110.0)        | (447.2)     | (2,371.1)       | (2,995.6)      | (211.2)        | (13,856.9)        | (11,217.3)        | 2,379.5        | (6,674.1)         | (4,472.6)         | 6,613.5         | (8,930.7)         | (237.7)          | (24,277.1)        |
| Alibaba Group Holding                 | Retailing              | (2,864.9)                             | (60,910.7)                                   | (208.5)        | 6.0         | 8,475.3         | (1,744.1)      | (4,738.5)      | 3,080.2           | (6,326.4)         | (1,408.9)      | (5,629.3)         | (20,307.8)        | 9,958.1         | (11,066.6)        | (16,453.5)       | (16,546.8)        |
| Meituan                               | Retailing              | (5,571.1)                             | (17,980.6)                                   | (21.2)         | 56.3        | 816.6           | 2,047.5        | 2,362.5        | (3,134.7)         | (6,463.3)         | (1,234.8)      | (3,170.0)         | (3,954.3)         | 4,045.1         | (1,046.8)         | 4,985.5          | (13,269.1)        |
| JD.com                                | Retailing              | 1,166.2                               | 1,618.0                                      | (47.5)         | 25.7        | 2,520.2         | (1,752.0)      | 1,463.2        | (2,468.2)         | (81.4)            | 1,606.1        | (3,246.7)         | 1,041.0           | 2,246.3         | (412.7)           | 1,972.5          | (2,048.5)         |
| Baidu                                 | Media & Entertainment  | 656.1                                 | (1,992.5)                                    | (7.7)          | 137.1       | 423.4           | 1,235.4        | (542.8)        | (1,051.2)         | (292.6)           | 754.5          | (15.9)            | (782.7)           | 606.4           | 488.8             | (638.6)          | (2,306.5)         |
| Pinduoduo                             | Retailing              | 411.5                                 | (2,838.8)                                    | (19.9)         | 2.8         | 829.1           | 697.4          | 173.3          | (283.4)           | (1,155.6)         | 167.7          | (180.9)           | (1,379.7)         | (108.4)         | (332.7)           | 881.1            | (2,129.6)         |
| Kuaishou Technology                   | Media & Entertainment  | 885.3                                 | 35.5   | 13.6           | 16.7        | 474.5           | 424.3          | (200.9)        | (411.8)           | 125.1             | 443.8          | 895.8             | (424.0)           | 217.9           | (110.9)           | (234.8)          | (1,193.8)         |
| NetEase                               | Media & Entertainment  | (500.3)                               | (2,977.9)                                    | 52.1           | 43.0        | (2,195.7)       | 1,440.7        | 936.5          | (153.4)           | (707.6)           | 84.1           | (950.7)           | 1,340.0           | 1,626.5         | (2,247.4)         | (857.6)          | (1,388.4)         |
| Kanzhun                               | Media & Entertainment  | 7.5                                   | 191.4  | 22.1           | 0.2         | 212.3           | (103.2)        | (34.6)         | (133.4)           | 121.7             | (77.6)         | 296.4             | (79.3)            | (49.1)          | 58.8              | 54.3             | (97.0)            |
| Trip.com Group                        | Consumer Services      | 522.2                                 | (1,092.0)                                    | (43.5)         | 70.2        | 931.2           | (296.8)        | 162.7          | (569.5)           | 11.4              | 256.6          | (533.4)           | (211.1)           | (497.6)         | 316.7             | 961.7            | (1,650.4)         |
| KE Holdings                           | Real Estate            | 375.2                                 | (445.1)                                      | (45.5)         | 45.3        | 442.6           | (84.6)         | 329.3          | (386.0)           | (49.5)            | 123.7          | 3.8               | 157.8             | 0.2             | 342.5             | (220.5)          | (1,104.3)         |
| Full Truck Alliance                   | Transportation         | 177.6                                 | (237.8)                                      | 33.3           | 0.4         | 151.5           | 27.4           | (71.4)         | (101.9)           | 75.5              | 62.8           | (43.3)            | (85.6)            | (39.7)          | 28.2              | 303.3            | (578.2)           |
| JD Health International               | Retailing              | 65.6                                  | (571.9)                                      | (27.5)         | 5.1         | 188.2           | 10.4           | 11.3           | (53.1)            | (56.9)            | (11.9)         | 55.0              | 15.9              | (30.0)          | (221.6)           | (78.0)           | (378.8)           |
| Bilibili                              | Media & Entertainment  | (1,812.0)                             | (7,563.0)                                    | 0.4            | 21.2        | 172.3           | (101.0)        | (91.3)         | (703.8)           | (200.9)           | (908.6)        | (1,521.0)         | (412.2)           | 491.2           | (1,438.0)         | (356.9)          | (2,513.5)         |
| Vipshop Holdings                      | Retailing              | 203.3                                 | (344.8)                                      | (9.8)          | (22.9)      | 72.0            | 230.0          | (174.1)        | 45.4              | (61.9)            | 124.5          | (131.5)           | (146.7)           | 44.1            | (21.5)            | (120.3)          | (172.1)           |
| Lufax Holding                         | Diversified Financials | (33.8)                                | (572.3)                                      | 10.4           | 24.2        | (142.0)         | 114.3          | 10.0           | (262.1)           | 295.1             | (83.6)         | (90.5)            | 12.1              | (95.6)          | (48.2)            | 128.2            | (444.8)           |
| Kingsoft                              | Media & Entertainment  | (340.4)                               | (1,627.9)                                    | 2.9            | 6.7         | 132.9           | 35.2           | (120.4)        | (6.6)             | (209.8)           | (181.3)        | (310.8)           | (138.6)           | (18.2)          | (163.1)           | (200.7)          | (456.0)           |
| Alibaba Health Information Technology | Retailing              | (167.8)                               | (1,215.9)                                    | 4.2            | 9.8         | 84.3            | (24.0)         | (30.8)         | (95.2)            | (58.9)            | (57.2)         | (77.2)            | (247.2)           | (158.5)         | (184.9)           | 62.9             | (443.2)           |
| Tencent Music                         | Media & Entertainment  | (179.1)                               | (1,379.4)                                    | (10.4)         | (24.3)      | 91.1            | (2.9)          | (94.1)         | 24.1              | (91.1)            | (71.5)         | (84.4)            | (112.2)           | 87.7            | (219.5)           | (251.2)          | (620.6)           |
| TAL Education Group                   | Consumer Services      | (23.1)                                | (2,870.5)                                    | 7.2            | 16.7        | 20.7            | 20.3           | 11.3           | (3.4)             | (44.5)            | (51.3)         | (120.5)           | 61.3              | (61.9)          | (329.1)           | (124.3)          | (2,272.9)         |
| Autohome                              | Media & Entertainment  | 297.6                                 | (851.1)                                      | (9.0)          | 13.1        | 98.6            | 209.7          | (12.7)         | (20.1)            | (67.1)            | 85.1           | (281.5)           | (169.3)           | (246.2)         | 121.7             | (20.8)           | (552.6)           |
| Tongcheng Travel                      | Consumer Services      | 99.1                                  | (273.1)                                      | (7.7)          | (17.9)      | 47.2            | 72.2           | 15.0           | (12.9)            | (80.5)            | 83.6           | (222.4)           | (86.7)            | (96.3)          | 92.3              | 52.2             | (111.3)           |
| Zhongan Online P&C Insurance          | Insurance              | (24.8)                                | (297.2)                                      | (17.8)         | 0.5         | (2.4)           | (11.8)         | 9.1            | 0.8               | (2.9)             | (0.2)          | (98.3)            | (12.0)            | (18.1)          | (68.8)            | (61.8)           | (13.4)            |
| China Literature                      | Media & Entertainment  | (30.3)                                | (117.3)                                      | 3.9            | 9.0         | 67.1            | 14.3           | 8.5            | (76.1)            | (35.1)            | (21.9)         | (10.1)            | 19.2              | (17.7)          | (28.8)            | 11.2             | (60.8)            |
| JOYY                                  | Media & Entertainment  | (214.0)                               | (463.1)                                      | (6.3)          | (14.7)      | (189.7)         | 33.2           | 27.3           | (73.3)            | (40.6)            | 50.0           | (35.5)            | (67.7)            | (51.5)          | (26.1)            | 93.4             | (161.8)           |
| IQIYI                                 | Media & Entertainment  | 7.4                                   | (404.2)                                      | (8.1)          | 0.4         | 2.8             | 15.9           | (1.5)          | 5.2               | 3.8               | (11.2)         | (41.0)            | (138.6)           | 14.3            | (40.9)            | (88.1)           | (117.3)           |
| 360 DigiTech                          | Diversified Financials | (103.0)                               | (465.5)                                      | (13.7)         | 0.0         | 30.5            | 26.5           | (13.8)         | (71.7)            | (22.8)            | (38.0)         | (27.0)            | 54.3              | (0.5)           | (27.9)            | 14.4             | (375.8)           |
| Weibo                                 | Media & Entertainment  | (93.6)                                | (491.0)                                      | 5.9            | 2.6         | 22.1            | (10.4)         | (5.5)          | (40.1)            | (125.0)           | 56.8           | (135.9)           | (154.2)           | (37.7)          | (49.5)            | (92.3)           | 72.3              |
| Ping An Healthcare and Technology     | Retailing              | (80.6)                                | (1,462.9)                                    | 2.3            | 5.4         | 14.7            | 9.3            | (2.5)          | (65.1)            | (7.5)             | (37.4)         | (114.2)           | (155.4)           | (201.9)         | (168.7)           | (316.6)          | (423.5)           |
| Ming Yuan Cloud Group Holdings        | Software & Services    | (101.2)                               | (318.2)                                      | 10.4           | 24.3        | 40.7            | (16.5)         | (28.9)         | (77.9)            | (7.0)             | (46.1)         | (77.6)            | (68.3)            | (14.5)          | 72.5              | (28.0)           | (101.1)           |
| <b>Total Flows (US\$m)</b>            |                        | <b>(36,115.9)</b>                     | <b>(176,738.2)</b>                           | <b>(465.3)</b> | <b>15.6</b> | <b>11,461.1</b> | <b>(480.0)</b> | <b>(854.9)</b> | <b>(20,955.9)</b> | <b>(26,873.8)</b> | <b>2,037.4</b> | <b>(22,572.9)</b> | <b>(30,004.6)</b> | <b>22,205.9</b> | <b>(25,652.9)</b> | <b>(8,861.2)</b> | <b>(75,736.8)</b> |

Source: FactSet, Morningstar, EPFR, Morgan Stanley Research; data as of Aug 17, 2022.

## Monthly Mutual Fund Flows Toward Nasdaq Golden Dragon China Index Constituents



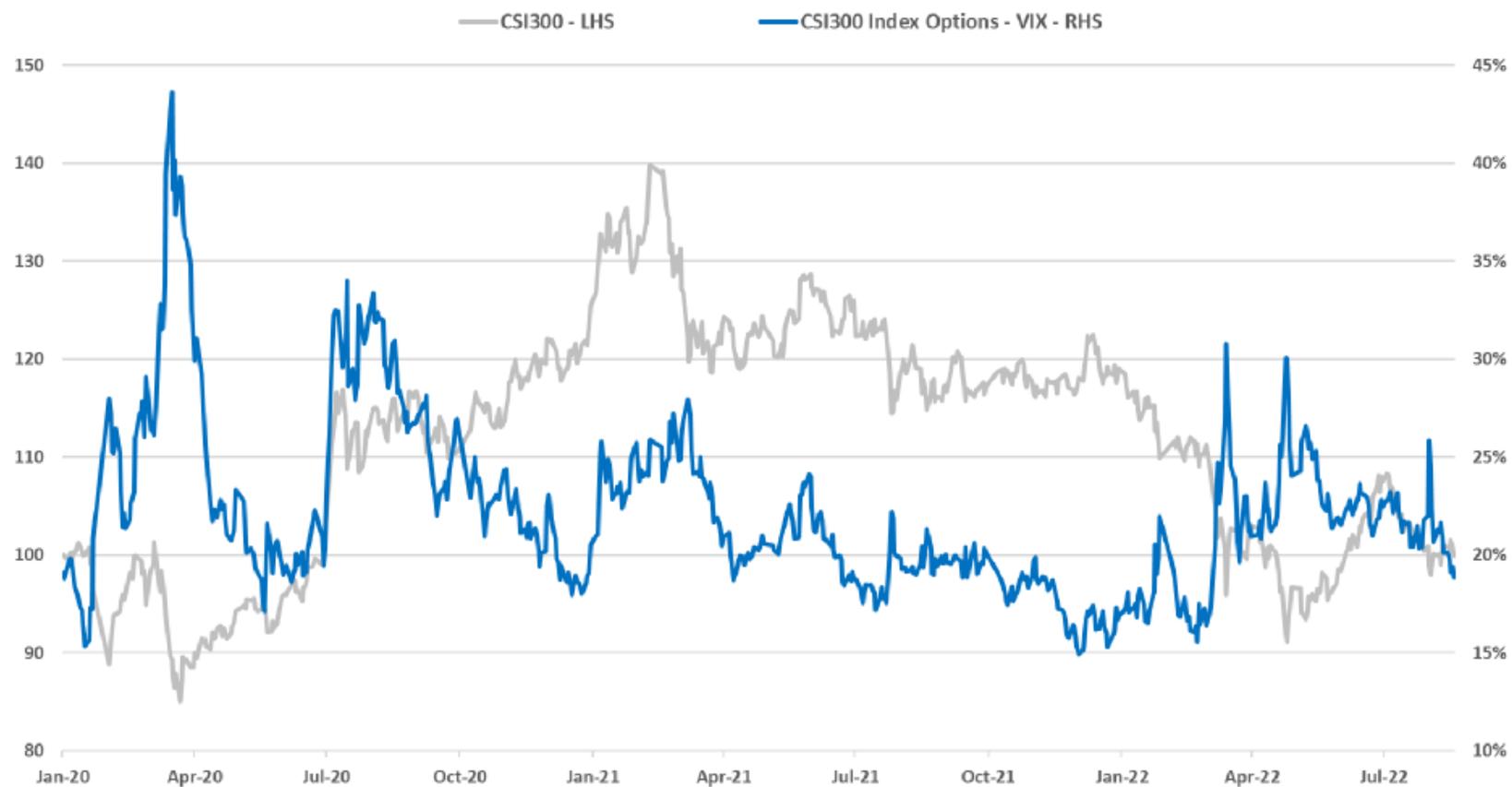
Source: FactSet, Morningstar, EPFR, Morgan Stanley Research; data as of Aug 17, 2022. Notes: fund flows include both HK listed shares and ADRs of each issuer.

## Performance of Most Shorted HK-listed equities vs. Hang Seng Composite Index and HSI Volatility Index



Source: Bloomberg, IHS Markit, Morgan Stanley Research; data as of Aug 12, 2022. Notes: analysis universe covers HK listed equities only.

## CSI300 VIX vs. CSI300 Performance – As of August 19, 2022



Source: Wind, Morgan Stanley Research; notes: implied volatility calculation methodology is replicating VIX methodology

## Morgan Stanley Asia Risk Sentiment Indicator vs. MSCI EM – As of August 19, 2022



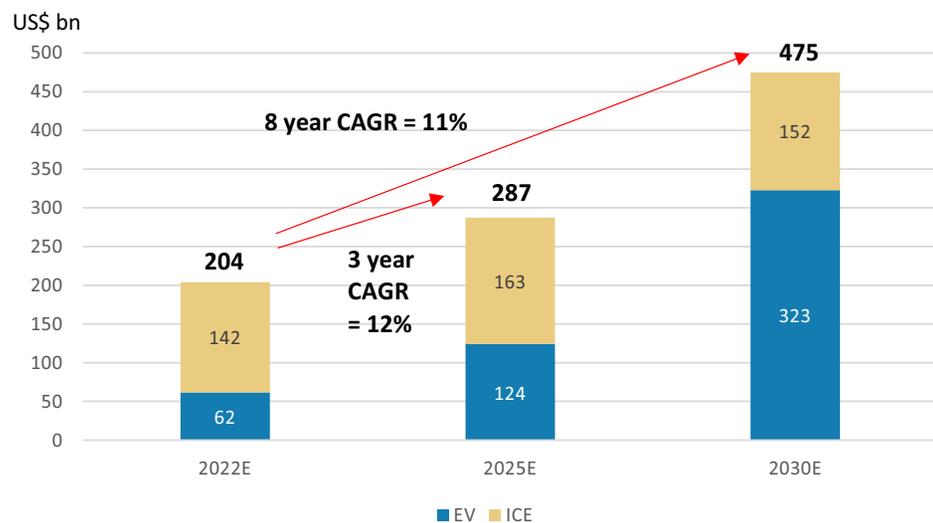
Source: FactSet, Bloomberg, EPFR, MSCI, Morgan Stanley Research. Note: Buy/Sell signals are generated if average weekly readings of the risk sentiment indicator in the last month were below the 15th percentile or above the 85th percentile. The above red/green lines are tracking the forward 6M returns since the signal appeared.

# Greater China Tech Hardware

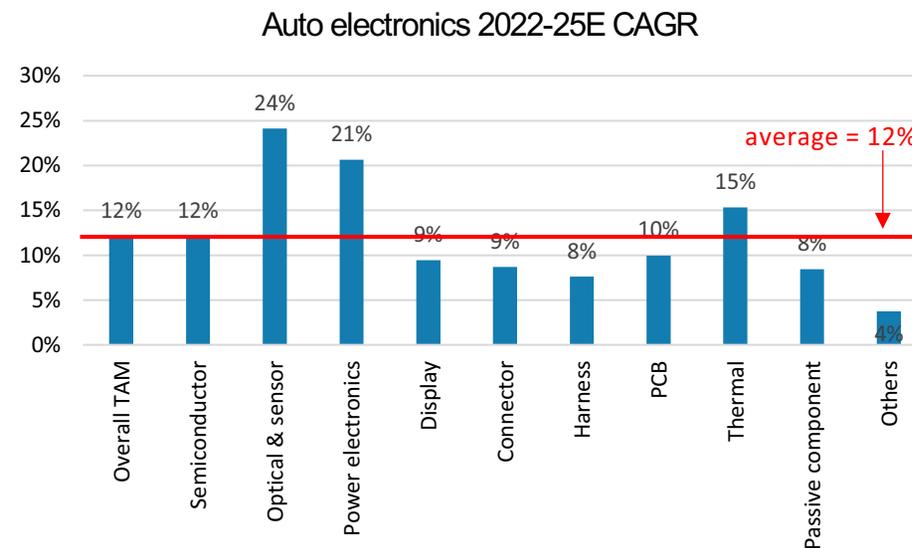
Lily Chou

## Auto Electronics TAM to Reach US\$287bn in 2025e, 12% Three-year CAGR

**Auto electronics market CAGRs  
12% three-year and 11% eight-year**



**Optical and sensor and power electronics  
to grow fastest among all components**



Source: Morgan Stanley Research E = Morgan Stanley Research estimates

## Power Electronics, Connectors and Wire Harnesses Offer Most Favorable Dynamics

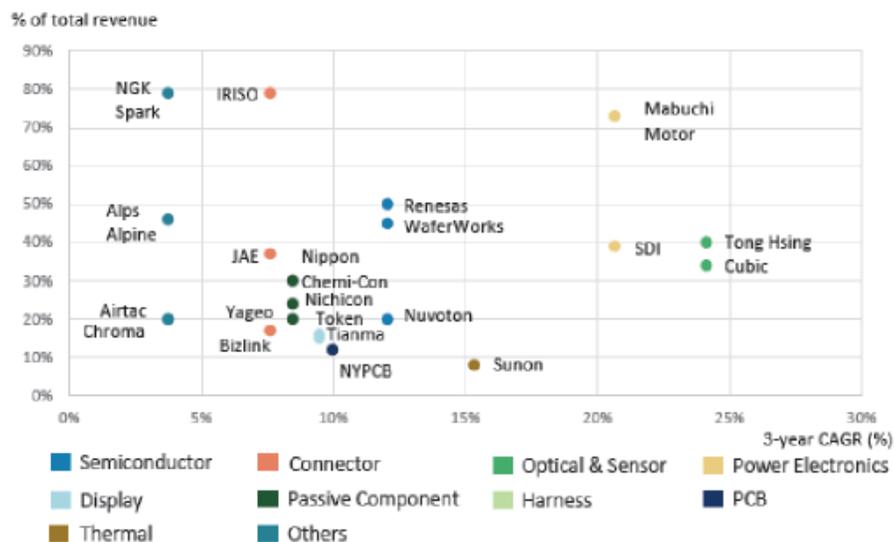
Auto electronics component competitive analysis heat map

|                   | Technology     |                  |                   |                   |                        |                      | Total |
|-------------------|----------------|------------------|-------------------|-------------------|------------------------|----------------------|-------|
|                   | EV beneficiary | ADAS beneficiary | 3-year value CAGR | upgrade potential | Supplier concentration | Less capex intensity |       |
| Semiconductor     | 5              | 5                | 3                 | 3                 | 4                      | 2                    | 22    |
| Power electronics | 5              | 3                | 5                 | 5                 | 3                      | 4                    | 25    |
| Optical & sensor  | 3              | 5                | 5                 | 4                 | 3                      | 4                    | 24    |
| Display           | 2              | 5                | 2                 | 4                 | 2                      | 2                    | 17    |
| Connector         | 5              | 5                | 2                 | 5                 | 4                      | 4                    | 25    |
| Harness           | 5              | 5                | 2                 | 5                 | 4                      | 4                    | 25    |
| PCB               | 5              | 5                | 3                 | 3                 | 3                      | 3                    | 22    |
| Thermal           | 5              | 5                | 4                 | 3                 | 3                      | 4                    | 24    |
| Passive component | 5              | 5                | 2                 | 3                 | 5                      | 4                    | 24    |

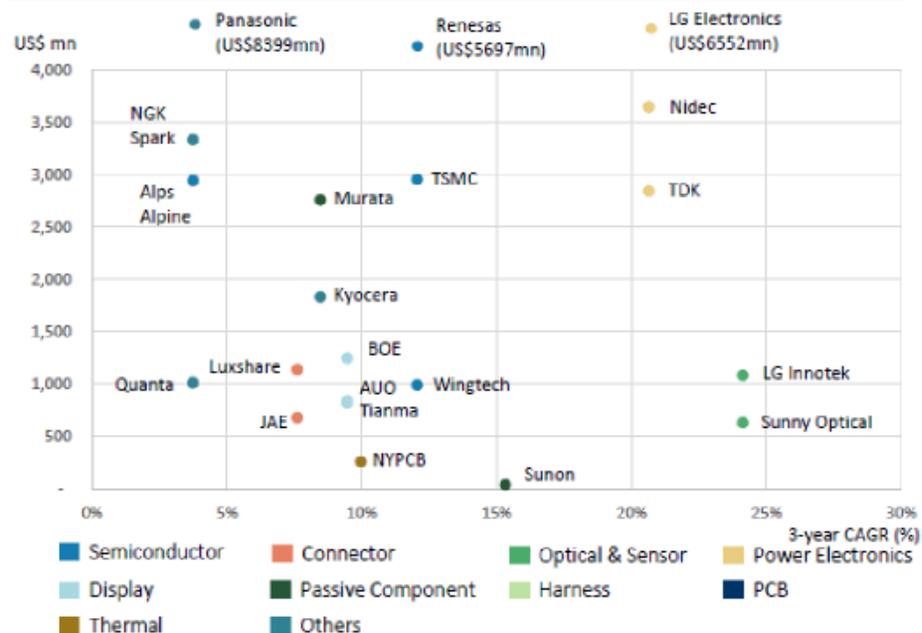
Source: Morgan Stanley Research.

## Major Beneficiaries – Present and Future Winners

**Auto electronics suppliers: Three-year auto electronics value CAGR vs. current auto revenue contribution**



**Auto electronics suppliers: Three-year auto electronics value CAGR vs. current auto revenue scale**



*Important note regarding economic sanctions. This research note references Executive Order 14032 issued on June 3 2021, amending Executive Order 13959, which may prohibit U.S. persons from buying certain securities of entities named in this note. The data set forth in this report is for informational purposes and does not represent Morgan Stanley's view as to whether or not any of the instruments discussed in this note are subject to sanctions. Users of this report are solely responsible for ensuring that their investment activities in relation to any sanctioned entities and/or securities are carried out in compliance with applicable sanctions.*

Source: Company data, Morgan Stanley Research

## Major Auto Electronics Beneficiaries

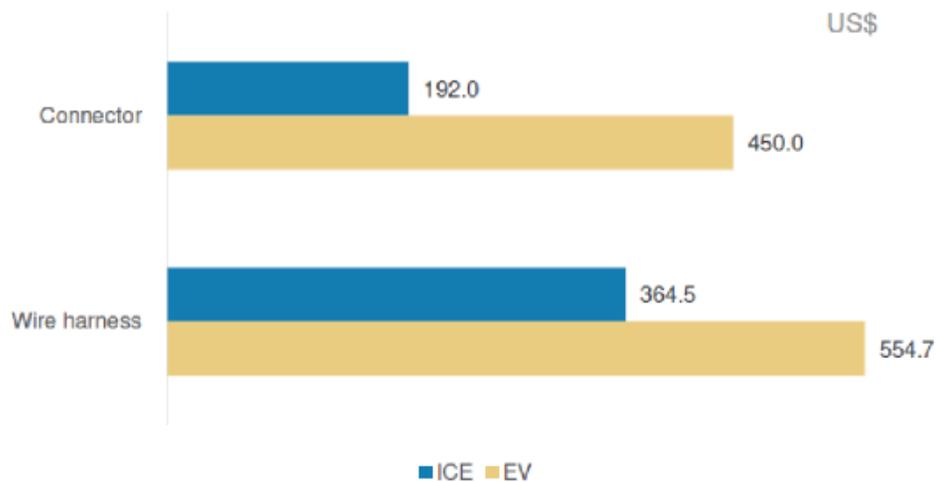
| Company        | Ticker    | Rating | PT (LC)   | Upside to PT | Current Price (LC) | Earnings YoY |       | PE    |       |
|----------------|-----------|--------|-----------|--------------|--------------------|--------------|-------|-------|-------|
|                |           |        |           |              |                    | 2022e        | 2023e | 2022e | 2023e |
| Will Semi      | 603501.SS | OW     | 170.4     | 59%          | 107.5              | -30%         | 13%   | 29.8  | 26.4  |
| Renesas        | 6723.T    | OW     | 2,000.0   | 50%          | 1,333.0            | 143%         | -21%  | 6.1   | 7.2   |
| TSMC           | 2330.TW   | OW     | 780.0     | 49%          | 525.0              | 63%          | 1%    | 14.0  | 13.8  |
| Yageo          | 2327.TW   | OW     | 460.0     | 38%          | 332.5              | 4%           | 10%   | 7.6   | 6.9   |
| Nuvoton        | 4919.TW   | OW     | 168.0     | 37%          | 122.5              | 36%          | -2%   | 12.8  | 13.1  |
| Panasonic      | 6752.T    | OW     | 1,500.0   | 32%          | 1,133.0            | -1%          | 27%   | 10.4  | 8.2   |
| LG Electronics | 066570.KS | OW     | 129,000.0 | 26%          | 102,000.0          | 160%         | 34%   | 6.9   | 5.1   |
| Chroma         | 2360.TW   | OW     | 230.0     | 25%          | 184.0              | 7%           | 5%    | 17.2  | 16.5  |
| Sunny Optical  | 2382.HK   | OW     | 150.0 HKD | 24%          | 120.5 HKD          | -40%         | 30%   | 43.9  | 33.8  |
| SDI            | 2351.TW   | OW     | 150.0     | 21%          | 123.5              | 27%          | 26%   | 20.8  | 16.6  |
| Wafer Works    | 6182.TWO  | OW     | 61.0      | 20%          | 51.0               | 79%          | 16%   | 13.7  | 12.8  |
| Delta          | 2308.TW   | OW     | 312.0     | 14%          | 272.5              | 9%           | 15%   | 24.3  | 21.2  |
| USI            | 601231.SS | OW     | 20.8      | 12%          | 18.6               | 29%          | 0%    | 17.7  | 17.9  |

- **Power electronics:** LG Electronics, Delta Electronics, SDI and Chroma
- **Optical & sensor:** Sunny Optical, Will Semi
- **Semiconductor:** TSMC, Renesas, Wafer Works, Nuvoton and USI
- **Passive components:** Yageo

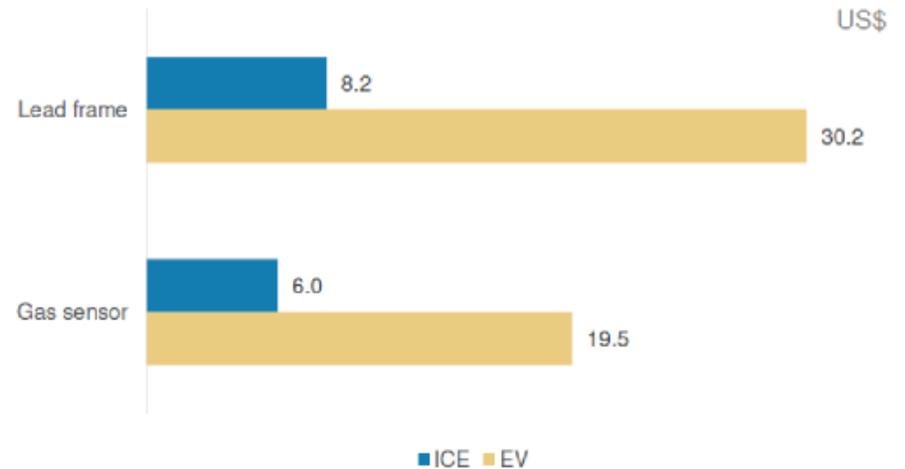
Source: Company Data, Reuters Eikon, Morgan Stanley Research (E) estimates. Share prices as of the close on August 16, 2022...

## The Content Value of Specific Auto Electronics Will Increase by at Least 50% in BEVs

We see meaningful content increases for connectors and wire harnesses in BEVs vs. ICEs (2025)



Lead frame and gas sensor content in BEVs will also rise significantly vs. ICEs (2025)



Source: Company data, Morgan Stanley Research estimates.

## Auto Electronics: Auto Lead Frame Market to Expand at 14% CAGR in 2021-25

|                                     | Interconnection |              | Lead frame | Gas sensor |
|-------------------------------------|-----------------|--------------|------------|------------|
|                                     | Connector       | Wire harness |            |            |
| <b>Market size</b>                  |                 |              |            |            |
| Market value by 2025 (US\$bn)       | 91.9            | 134.6        | 5.2        | 3.5        |
| Market value for automotive segment | 22.4            | 37.9         | 1.3        | 0.9        |
| - % of automotive segment           | 24%             | 28%          | 25%        | 24%        |
| 2021-25e CAGR                       | 8%              | 7%           | 14%        | 13%        |

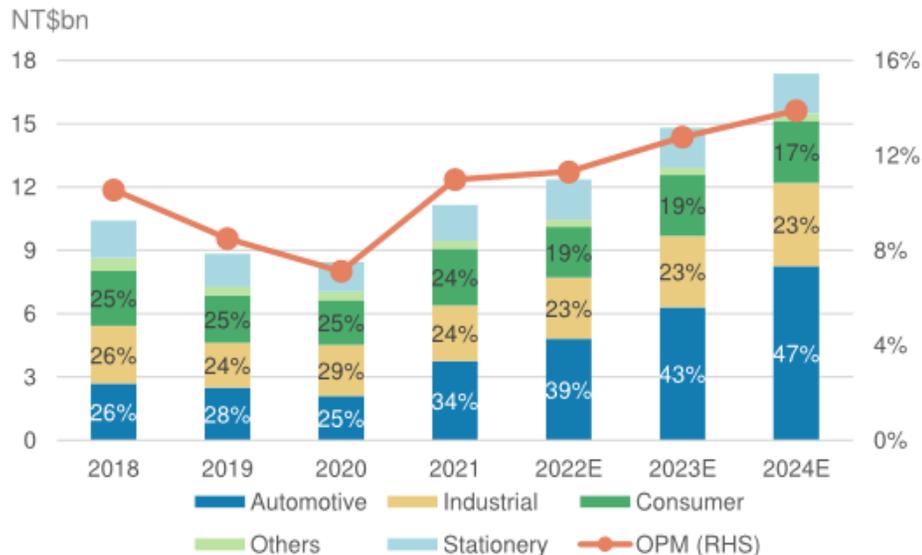


| <b>Competitive landscape</b> |   |   |                         |   |
|------------------------------|---|---|-------------------------|---|
| Supplier concentration       | Extremely fragmented  | Extremely fragmented  | <10 meaningful players  | <20 meaningful players  |
| <b>Major players</b>         |   |   |                         |   |
| - Global                     | TE Connectivity, Amphenol, Molex, Aptiv                                   | TE Connectivity, Amphenol, Molex, Aptiv                                   | Mitsui High-tec, Shinko | BOSCH, Delphi, NGK, Denso, Honeywell (City Technology), Sensirion, Senseair |
| - Greater China              | Luxshare, FIT Hong Teng, Shenzhen Deren, Suzhou Recodeal, Bizlink, Sinbon | Luxshare, FIT Hong Teng, Shenzhen Deren, Suzhou Recodeal, Bizlink, Sinbon | CWTC, SDI, Jih Lin      | Cubic, Hanwei, Plantower  |

Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## SDI (2351.TW): Powered by Auto Electrification Trend; Initiates at OW; PT NT\$150

### Improving product mix and opex control to drive operating margin upgrade



### Undemanding valuation at 17x NTM P/E vs. three-year average of 22x



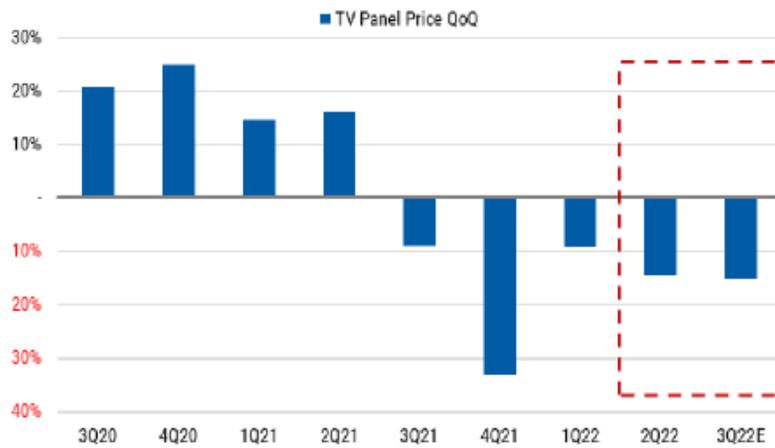
Source: Company data, Morgan Stanley Research. E = Morgan Stanley Research estimates.

## **Greater China Technology Hardware**

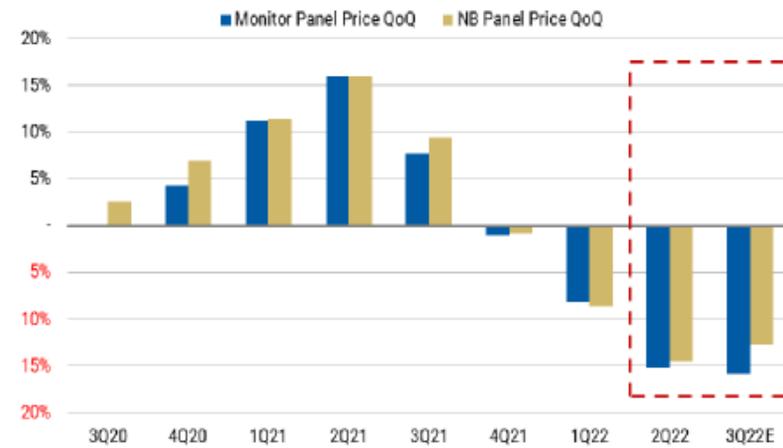
**Derrick Yang**

## Panel Pricing Pressuring Margins

TV Panel Pricing Trend



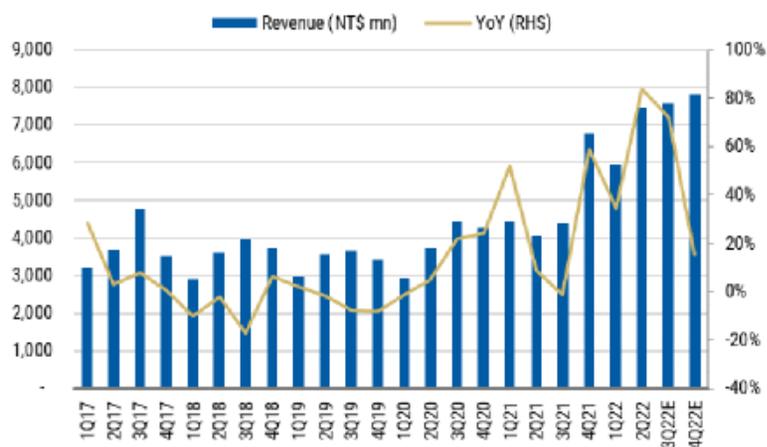
IT Panel Pricing Trend



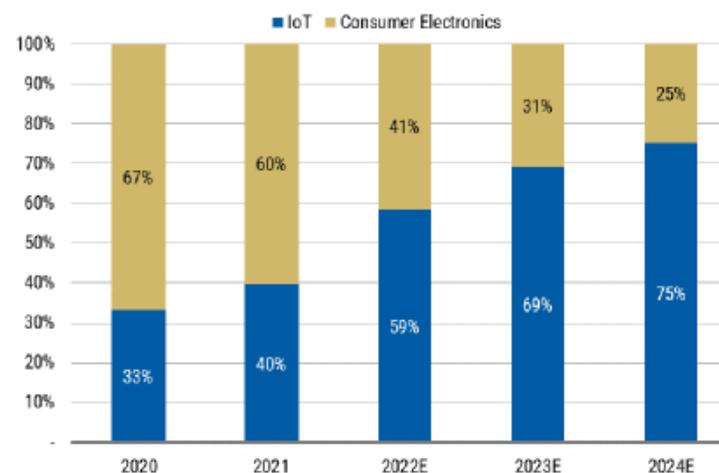
Source: Witsview, Company data, Morgan Stanley Research.

## E Ink – The Power of Going Paperless

Quarterly Revenue Trend



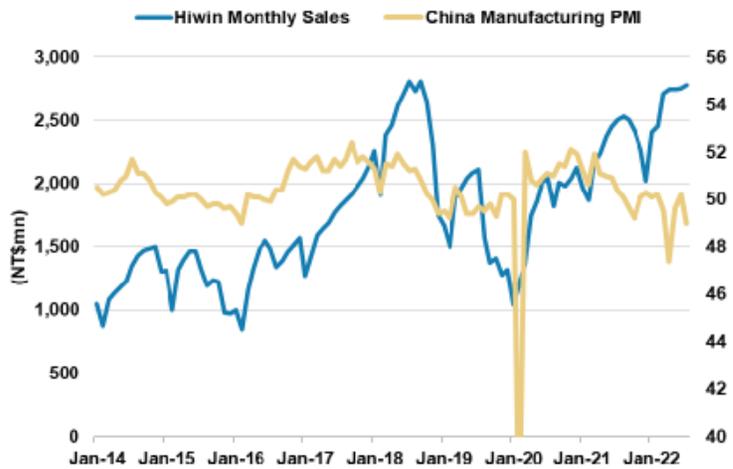
Product Mix Trend



Source: Company data, Morgan Stanley Research.

## Automation

Hiwin Monthly Sales vs. China Manufacturing PMI



AirTAC Monthly Sales vs. China Manufacturing PMI



Source: NBS, Company data, Morgan Stanley Research.

## What else you might be interested in



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(as of July 31, 2022)

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| STOCK RATING CATEGORY    | COVERAGE UNIVERSE |            | INVESTMENT BANKING CLIENTS (IBC) |                |                      | OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC) |                       |
|--------------------------|-------------------|------------|----------------------------------|----------------|----------------------|---|-----------------------|
|                          | COUNT             | % OF TOTAL | COUNT                            | % OF TOTAL IBC | % OF RATING CATEGORY | COUNT   | % OF TOTAL OTHER MISC |
| <b>Overweight/Buy</b>    | <b>1366</b>       | <b>39%</b> | <b>318</b>                       | <b>42%</b>     | <b>23%</b>           | <b>593</b>  | <b>39%</b>            |
| <b>Equal-weight/Hold</b> | <b>1559</b>       | <b>44%</b> | <b>357</b>                       | <b>47%</b>     | <b>23%</b>           | <b>708</b>  | <b>46%</b>            |
| <b>Not-Rated/Hold</b>    | <b>0</b>          | <b>0%</b>  | <b>0</b>                         | <b>0%</b>      | <b>0%</b>            | <b>0</b>  | <b>0%</b>             |
| <b>Underweight/Sell</b>  | <b>613</b>        | <b>17%</b> | <b>91</b>                        | <b>12%</b>     | <b>15%</b>           | <b>226</b>  | <b>15%</b>            |
| <b>TOTAL</b>             | <b>3,538</b>      |            | <b>766</b>                       |                |                      | <b>1527</b>                                       |                       |

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months. Due to rounding off of decimals, the percentages provided in the "% of total" column may not add up to exactly 100 percent.

**Analyst Stock Ratings**

Overweight (O). The stock's total return is expected to exceed the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Equal-weight (E). The stock's total return is expected to be in line with the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Not-Rated (NR). Currently the analyst does not have adequate conviction about the stock's total return relative to the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Underweight (U). The stock's total return is expected to be below the average total return of the analyst's industry (or industry team's) coverage universe, on a risk-adjusted basis, over the next 12-18 months.

Unless otherwise specified, the time frame for price targets included in Morgan Stanley Research is 12 to 18 months.

**Analyst Industry Views**

Attractive (A): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be attractive vs. the relevant broad market benchmark, as indicated below.

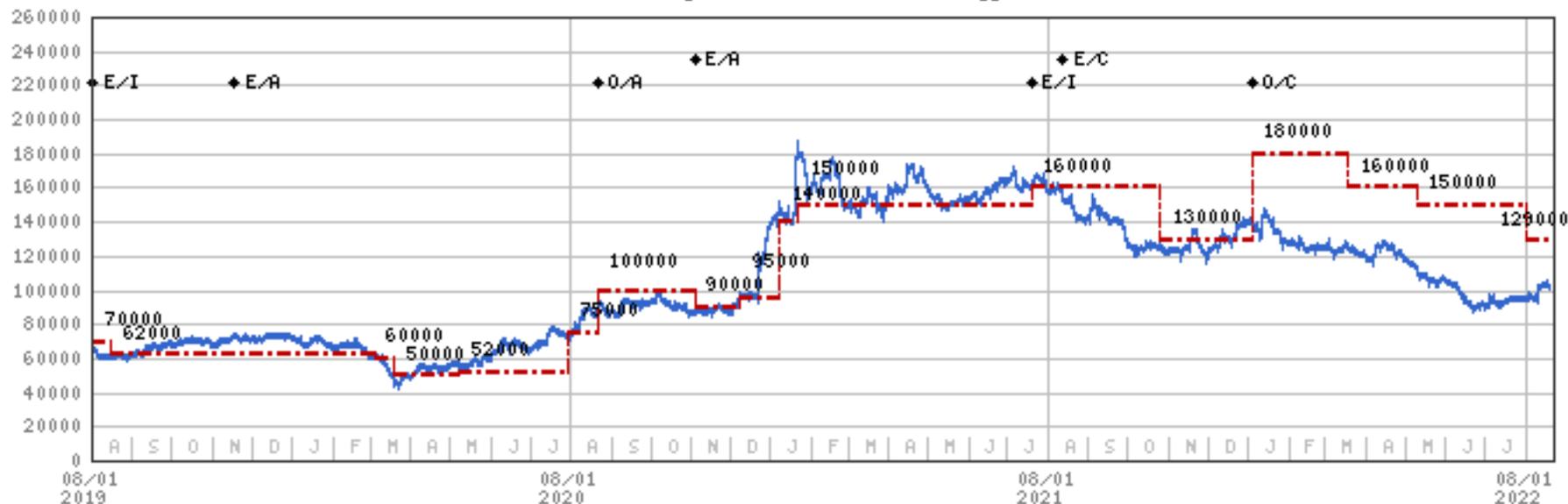
In-Line (I): The analyst expects the performance of his or her industry coverage universe over the next 12-18 months to be in line with the relevant broad market benchmark, as indicated below.

Cautious (C): The analyst views the performance of his or her industry coverage universe over the next 12-18 months with caution vs. the relevant broad market benchmark, as indicated below.

Benchmarks for each region are as follows: North America - S&P 500; Latin America - relevant MSCI country index or MSCI Latin America Index; Europe - MSCI Europe; Japan - TOPIX; Asia - relevant MSCI country index or MSCI sub-regional index or MSCI AC Asia Pacific ex Japan Index.

**Stock Price, Price Target and Rating History (See Rating Definitions)**

LG Electronics (066570.KS) - As of 8/21/22 in KRW  
Industry : S. Korea Technology



Stock Rating History: 8/1/17 : U/I; 11/26/17 : U/C; 1/22/18 : E/C; 7/30/19 : E/I; 11/18/19 : E/A; 8/21/20 : O/A; 11/4/20 : E/A; 7/19/21 : E/I; 8/12/21 : E/C; 1/4/22 : O/C

Price Target History: 7/10/17 : 62000; 9/6/17 : 70000; 10/24/17 : 74000; 1/22/18 : 106000; 7/23/18 : 92000; 9/10/18 : 85000; 12/18/18 : 68000; 4/1/19 : 72000; 7/4/19 : 80000; 7/30/19 : 70000; 8/16/19 : 62000; 3/4/20 : 60000; 3/19/20 : 50000; 5/8/20 : 52000; 7/30/20 : 75000; 8/21/20 : 100000; 11/4/20 : 90000; 12/8/20 : 95000; 1/8/21 : 140000; 1/22/21 : 150000; 7/19/21 : 160000; 10/26/21 : 130000; 1/4/22 : 180000; 3/18/22 : 160000; 5/10/22 : 150000; 8/1/22 : 129000

Source: Morgan Stanley Research      Date Format : MM/DD/YY      Price Target ---      No Price Target Assigned (NA)  
 Stock Price (Not Covered by Current Analyst) —      Stock Price (Covered by Current Analyst) ■  
 Stock and Industry Ratings (abbreviations below) appear as ♦ Stock Rating/Industry View  
 Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)  
 Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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| COMPANY (TICKER)                            | RATING (AS OF) | PRICE* (08/22/2022) |
|---|----------------|---------------------|
| <b>Ryan Kim</b>                             |                |                     |
| Advanced Process Systems Corp (265520.KQ)   | E (03/18/2022) | W18,000             |
| Duk San Neolux Co Ltd (213420.KQ)           | O (04/09/2020) | W30,850             |
| Ecopro BM(247540.KQ)                        | O (08/03/2021) | W113,000            |
| Iijin Materials (020150.KS)                 | O (02/21/2019) | W70,000             |
| L&F Co Ltd (066970.KQ)                      | O (12/17/2020) | W235,400            |
| Posco Chemical Co Ltd. (003670.KS)          | O (08/10/2022) | W160,000            |
| SK IE Technology (361610.KS)                | E (07/28/2022) | W87,800             |
| Solus Advanced Materials Co Ltd (336370.KS) | O (05/11/2021) | W43,300             |
| Wonik IPS Co Ltd (240810.KQ)                | O (09/07/2020) | W28,400             |
| <b>Shawn Kim</b>                            |                |                     |
| LG Display (034220.KS)                      | U (04/27/2022) | W15,850             |
| LG Electronics (066570.KS)                  | O (01/04/2022) | W100,000            |
| LG Innotek (011070.KS)                      | E (07/19/2021) | W333,000            |
| Samsung Electro-Mechanics (009150.KS)       | U (06/01/2022) | W134,500            |
| Samsung Electronics (005935.KS)             | O (11/18/2019) | W54,700             |
| Samsung Electronics (005930.KS)             | O (11/18/2019) | W60,000             |
| Samsung SDI (006400.KS)                     | E (10/26/2021) | W600,000            |
| Samsung SDS (018260.KS)                     | U (01/06/2022) | W130,500            |
| Seoul Semiconductor (046890.KQ)             | U (04/04/2018) | W11,200             |
| SK hynix (000660.KS)                        | E (07/22/2022) | W95,200             |

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\* Historical prices are not split adjusted.