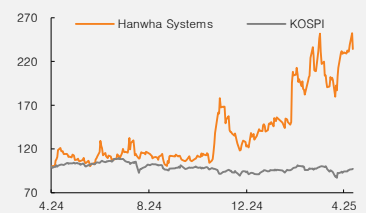


| | |
|-------------------------|--------------------|
| (Downgrade) | Trading Buy |
| Target price | ▲ W44,000 |
| Current price (4/29/25) | W39,300 |
| Upside | 12.0% |

| | |
|----------------------------|----------|
| OP (25F, Wbn) | 250 |
| Consensus OP (25F, Wbn) | 233 |
| EPS growth (25F, %) | -42.7 |
| Market EPS growth (25F, %) | 26.3 |
| P/E (25F, x) | 28.5 |
| Market P/E (25F, x) | 9.3 |
| KOSPI | 2,565.42 |

| | |
|-----------------------|--------|
| Market cap (Wbn) | 7,425 |
| Shares (mn) | 189 |
| Free float (%) | 37.7 |
| Foreign ownership (%) | 6.6 |
| Beta (12M) | 0.71 |
| 52-week low (W) | 16,820 |
| 52-week high (W) | 42,300 |

| (%) | 1M | 6M | 12M |
|----------|------|-------|-------|
| Absolute | 23.0 | 103.4 | 93.1 |
| Relative | 22.6 | 107.6 | 102.3 |



Mirae Asset Securities Co., Ltd.

Dong-ho Jeong
dongho.jeong@miraeasset.com

Hanwha Systems

Strong core business but demanding valuation

1Q25 review: Operating profit beats consensus by 28%

For 1Q25, Hanwha Systems posted revenue of W690.1bn (+27% YoY; 4.4% above the consensus), operating profit of W58.2bn (+28% YoY; 28.3% above the consensus), and an OP margin of 8.4%. The key factors behind the stronger-than-expected results were: 1) higher revenue exposure to overseas markets, aided by the first batch of K2 tank deliveries to Poland and M-SAM II multi-function radar (MFR) systems for the UAE and Saudi Arabia; and 2) reduced losses at Philly Shipyard. No one-off factors were recorded.

The defense unit reported solid results, with revenue of W430.3bn (+13% YoY) and operating profit of W50.3bn (+48% YoY; OP margin of 11.7%). The share of overseas revenue increased to 35%, driven by: 1) a 42% QoQ increase in overseas revenue; and 2) a 57% QoQ decline in domestic revenue (-12% YoY) due to the completion of the fourth phase of the Tactical Information Communication Network (TICN) program. With domestic projects set to resume, we expect the export share to come down to around 20% for the full year. Meanwhile, Philly Shipyard posted lower-than-expected revenue of W116.5bn, but its operating loss narrowed to W1.9bn, helped by prior provisioning.

Defense unit to remain strong; Philly Shipyard uncertainties to linger

We raised our operating profit forecasts by 11.8% for 2025, 17.3% for 2026, and 15.6% for 2027, reflecting expectations for: 1) continued delivery volumes and higher ASP for components used in Poland-bound K2 tanks (assuming a follow-up contract is signed); and 2) growth in revenue/margins once mass production begins for Middle East M-SAM II orders. Meanwhile, we expect Philly Shipyard to narrow its loss to W24.8bn in 2025 and swing to an operating profit of W4.1bn in 2026, as it is working to stabilize its production processes and increase progress on container vessel orders (CVs 1-3) in partnership with Hanwha Ocean. That said, the cost impact of US tariffs will need to be confirmed over the next one to two quarters. Going forward, momentum could arise from: 1) the SHIPS for America Act; 2) increased MRO orders from the US Navy; and 3) potential participation in new shipbuilding projects for the US Navy.

Downgrade to Trading Buy, but raise TP by 33% to W44,000

We raise our target price on Hanwha Systems to W44,000 (from W33,000), reflecting an increase in our operating profit estimate and a 32% rise in the average global peer multiple. However, we downgrade our rating to Trading Buy, as the stock's 12-month forward P/E has risen to 30.9x, close to the 2025-26F P/E implied by our target price (31.9x). While valuation upside is limited for now, we note that the firm's core business remains solid. We plan to adjust our rating in the event of further upward earnings revisions and/or a sector re-rating.

| (Dec.) | 2023 | 2024 | 2025F | 2026F | 2027F |
|--------------------|-------|-------|-------|-------|-------|
| Revenue (Wbn) | 2,452 | 2,804 | 3,805 | 4,367 | 5,147 |
| OP (Wbn) | 123 | 219 | 250 | 367 | 492 |
| OP margin (%) | 5.0 | 7.8 | 6.6 | 8.4 | 9.6 |
| NP (Wbn) | 349 | 454 | 260 | 350 | 479 |
| EPS (W) | 1,849 | 2,405 | 1,378 | 1,851 | 2,538 |
| ROE (%) | 16.9 | 19.6 | 10.4 | 13.2 | 16.0 |
| P/E (x) | 9.4 | 9.4 | 28.5 | 21.2 | 15.5 |
| P/B (x) | 1.5 | 1.7 | 2.9 | 2.6 | 2.3 |
| Dividend yield (%) | 1.6 | 1.5 | 0.9 | 0.9 | 0.9 |

Notes: Under consolidated K-IFRS; NP is attributable to owners of the parent
Source: Company data, Mirae Asset Securities Research estimates

Table 1. 1Q25 review

(Wbn, %, %p)

| | 1Q24 | 4Q24 | 1Q25 | | | Mirae Asset | Diff. | Consensus | Diff. |
|----------------------------|------|------|--------|-------|-------|-------------|-------|-----------|-------|
| | | | Actual | QoQ | YoY | | | | |
| Revenue | 544 | 933 | 690.1 | -26.1 | 26.8 | 748 | -7.8 | 661 | 4.4 |
| OP | 46 | 29 | 58.2 | 99.6 | 27.8 | 34 | 71.2 | 45 | 28.3 |
| NP | 58 | 365 | 37.8 | -89.6 | -35.0 | 45 | -15.2 | 34 | 9.8 |
| OP margin (%) | 8.4 | 8.4 | 8.4 | 0.1 | 0.1 | 4.5 | 3.9 | 6.9 | 1.6 |
| Net margin (%) | 10.7 | 10.7 | 5.5 | -5.2 | -5.2 | 6.0 | -0.5 | 5.2 | 0.3 |
| Revenue by business | | | | | | | | | |
| Defense | 382 | 756 | 430 | -43.1 | 12.7 | | | | |
| ICT | 161 | 175 | 142 | -19.0 | -11.8 | | | | |

Source: Company data, Mirae Asset Securities Research

Table 2. Earnings forecast revisions

(Wbn)

| | Revised | | | Previous | | | Chg. | | |
|--|---------|--------|-------|----------|--------|--------|-------|--------|--------|
| | 2025F | 2026F | 2027F | 2025F | 2026F | 2027F | 2025F | 2026F | 2027F |
| Order backlog | 10,516 | 10,454 | 9,900 | 10,992 | 11,670 | 11,052 | -4.3% | -10.4% | -10.4% |
| Order backlog/revenue (years) | 2.8 | 2.4 | 1.9 | 2.9 | 2.8 | 2.2 | -4.5% | -14.1% | -14.1% |
| New orders | 3,807 | 4,307 | 4,585 | 3,800 | 4,128 | 4,395 | 0.2% | 4.3% | 4.3% |
| New orders/revenue (years) | 1.0 | 1.0 | 0.9 | 1.0 | 1.0 | 0.9 | 0.0% | 0.0% | 0.0% |
| Revenue | 3,804 | 4,366 | 5,146 | 3,797 | 4,185 | 4,933 | 0.2% | 4.3% | 4.3% |
| OP | 250 | 367 | 492 | 224 | 313 | 425 | 11.8% | 17.3% | 15.6% |
| OP margin (%) | 6.6 | 8.4 | 9.6 | 5.9 | 7.5 | 8.6 | 0.7%p | 0.9%p | 0.9%p |
| NP attr. to owners of the parent | 260 | 350 | 479 | 249 | 321 | 424 | 4.5% | 8.9% | 13.0% |
| Net margin attr. to owners of the parent (%) | 6.8 | 8.0 | 9.3 | 6.6 | 7.7 | 8.6 | 0.3%p | 0.3%p | 0.7%p |
| EPS (W) | 1,378 | 1,851 | 2,538 | 1,318 | 1,699 | 2,245 | 4.5% | 8.9% | 13.0% |

Source: Mirae Asset Securities Research

Table 3. Quarterly and annual earnings

(Wbn)

| | | 1Q24 | 2Q24 | 3Q24 | 4Q24 | 1Q25 | 2Q25F | 3Q25F | 4Q25F | 2024 | 2025F | 2026F | 2027F |
|--|-----------------|-------|-------|-------|---------|--------|--------|--------|--------|--------|--------|--------|-------|
| Order backlog | Total | 7,050 | 6,968 | 7,924 | 10,558 | 10,520 | 10,064 | 10,269 | 10,807 | 10,558 | 10,516 | 10,454 | 9,900 |
| | Defense | 6,694 | 6,633 | 7,634 | 8,342 | 8,428 | 8,211 | 8,329 | 8,653 | 8,342 | 8,350 | 8,054 | 7,528 |
| | ICT | 356 | 335 | 289 | 216 | 213 | 196 | 181 | 168 | 216 | 168 | 195 | 202 |
| | Philly Shipyard | | | | | 1,880 | 1,658 | 1,759 | 1,987 | | 1,998 | 2,204 | 2,171 |
| Revenue | Total | 544 | 687 | 639 | 933 | 690 | 928 | 929 | 1,257 | 2,804 | 3,804 | 4,367 | 5,147 |
| | Defense | 382 | 493 | 468 | 756 | 430 | 537 | 538 | 835 | 2,099 | 2,339 | 2,876 | 3,624 |
| | ICT | 161 | 190 | 170 | 174.6 | 142 | 190 | 205 | 223 | 695 | 760 | 832 | 913 |
| | Philly Shipyard | | | | | 117 | 198 | 183 | 198 | | 696 | 649 | 602 |
| Growth (%) | Total | 23.9 | 12.5 | 2.9 | 19.4 | 26.8 | 35.1 | 45.4 | 34.7 | 14.3 | 35.7 | 14.8 | 17.9 |
| | Defense | 30.5 | 10.1 | 1.8 | 22.5 | 12.7 | 8.8 | 14.9 | 10.5 | 15.5 | 11.5 | 23.0 | 26.0 |
| | ICT | 9.2 | 17.1 | 5.1 | 5.9 | -11.8 | 0.0 | 21.0 | 27.9 | 9.3 | 9.4 | 9.5 | 9.7 |
| | Philly Shipyard | | | | | -26.0 | 72.8 | 17.0 | 294.1 | | 44.4 | -6.7 | -7.3 |
| OP | | 46 | 84 | 60 | 29 | 58 | 67 | 72 | 53 | 219.3 | 250 | 367 | 492 |
| YoY (%) | | 124.1 | 118.7 | 32.5 | 59.3 | 27.8 | -20.9 | 19.7 | 82.7 | 78.8 | 14.2 | 46.6 | 33.9 |
| OP margin (%) | | 8.4 | 12.3 | 9.4 | 3.1 | 8.4 | 7.2 | 7.8 | 4.2 | 7.8 | 6.6 | 8.4 | 9.6 |
| NP attr. to owners of the parent | | 58 | 22 | 9 | 365 | 38 | 77 | 83 | 63 | 454 | 260 | 350 | 479 |
| YoY (%) | | -68.8 | -71.2 | -98.5 | 1,624.2 | -35.0 | 250.5 | 782.8 | -82.8 | 30.1 | -42.7 | 34.3 | 37.1 |
| Net margin attr. to owners of the parent (%) | | 10.7 | 3.2 | 1.5 | 39.1 | 5.5 | 8.3 | 8.9 | 5.0 | 16.2 | 6.8 | 8.0 | 9.3 |

Source: Company data, Mirae Asset Securities Research

Table 4. SOTP valuation

(Wbn)

| | | Value | Notes |
|-------------------------|-------------------|--|---|
| Operating value | Total | 5,833 | |
| | Defense | 5,173 | |
| | OP | 269 | 2025-26F |
| | NOPLAT | 216 | Tax rate of 20% |
| | Target P/E (x) | 24.0 | 2025-26F global peer avg. (previously 18x) |
| | Discount | | |
| | ICT | 600 | |
| | OP | 55 | 2025~26F |
| | NOPLAT | 44 | Tax rate of 20% |
| | Target P/E (x) | 13.6 | 2025-26F domestic peer avg. (previously 14x) |
| | Discount | | |
| | Philly Shipyard | 60 | |
| | OP | 4.1 | 2026F |
| | NOPLAT | 3 | Tax rate of 20% |
| | Target P/E (x) | 23.0 | 2025-26F P/E global peer avg. (naval ships; previously 16.5x) |
| Discount | 20% | Limited newbuilding track record and lower margins vs. peers | |
| Non-operating value | Total | 2,309 | |
| | Hanwha Ocean | 1,390 | 50% discount to 11.57% stake |
| | Austal Shipyard | 60 | 50% discount to 5.9% stake |
| | Satellites | 486 | Investments from rights offering proceeds |
| | Digital platforms | 374 | Investments from rights offering proceeds |
| Net debt | | (146) | |
| Minority interests | | (74) | |
| Shareholders' equity | | 8,360 | |
| No. of shares (mn) | | 189 | |
| Target price (W) | | 44,000 | W33,000 previously |
| Current price (W) | | 39,300 | |
| Upside potential | | 12.0% | |
| EPS (W) | 2025F | 1,378 | |
| | 2026F | 1,851 | |
| | 2027F | 2,538 | |
| Implied P/E (x) | 2025F | 31.9 | |
| | 2026F | 23.8 | |
| | 2027F | 17.3 | |

Source: Mirae Asset Securities Research

Hanwha Systems (272210 KS)

Income statement (summarized)

| (Wbn) | 2024 | 2025F | 2026F | 2027F |
|-------------------------------------|--------------|--------------|--------------|--------------|
| Revenue | 2,804 | 3,805 | 4,367 | 5,147 |
| Cost of revenue | 2,388 | 3,288 | 3,696 | 4,278 |
| GP | 416 | 517 | 671 | 869 |
| SG&A expenses | 196 | 267 | 304 | 377 |
| OP (adj.) | 219 | 250 | 367 | 492 |
| OP | 219 | 250 | 367 | 492 |
| Non-operating profit | 362 | 12 | -20 | -20 |
| Net financial income | -8 | -12 | 2 | 17 |
| Net income from associates | -13 | -46 | -54 | -37 |
| Pretax profit | 581 | 262 | 347 | 472 |
| Income tax | 104 | -11 | -15 | -20 |
| Profit from continuing operations | 477 | 273 | 362 | 492 |
| Profit from discontinued operations | -32 | 0 | 0 | 0 |
| NP | 445 | 273 | 362 | 492 |
| Attributable to owners | 454 | 260 | 350 | 479 |
| Attributable to minority interests | -9 | 13 | 13 | 13 |
| Total comprehensive income | 411 | 273 | 362 | 492 |
| Attributable to owners | 420 | 277 | 368 | 500 |
| Attributable to minority interests | -9 | -4 | -6 | -8 |
| EBITDA | 333 | 380 | 502 | 629 |
| FCF | -107 | 364 | 140 | 231 |
| EBITDA margin (%) | 11.9 | 10.0 | 11.5 | 12.2 |
| OP margin (%) | 7.8 | 6.6 | 8.4 | 9.6 |
| Net margin (%) | 16.2 | 6.8 | 8.0 | 9.3 |

Balance sheet (summarized)

| (Wbn) | 2024 | 2025F | 2026F | 2027F |
|--------------------------------------|--------------|--------------|--------------|--------------|
| Current assets | 2,286 | 3,184 | 3,933 | 4,823 |
| Cash & equivalents | 200 | 290 | 433 | 594 |
| AR & other receivables | 310 | 504 | 581 | 703 |
| Inventory | 610 | 970 | 1,288 | 1,557 |
| Other current assets | 1,166 | 1,420 | 1,631 | 1,969 |
| Non-current assets | 3,438 | 3,659 | 3,691 | 3,710 |
| Investments in associates | 25 | 25 | 25 | 25 |
| PP&E | 570 | 631 | 674 | 692 |
| Intangible assets | 762 | 733 | 708 | 685 |
| Total assets | 5,724 | 6,843 | 7,623 | 8,533 |
| Current liabilities | 2,677 | 3,683 | 4,112 | 4,509 |
| AP & other payables | 250 | 304 | 357 | 431 |
| Short-term financial liabilities | 109 | 149 | 155 | 165 |
| Other current liabilities | 2,318 | 3,230 | 3,600 | 3,913 |
| Non-current liabilities | 631 | 723 | 778 | 865 |
| Long-term financial liabilities | 364 | 364 | 364 | 364 |
| Other non-current liabilities | 267 | 359 | 414 | 501 |
| Total liabilities | 3,308 | 4,406 | 4,890 | 5,373 |
| Equity attributable to owners | 2,490 | 2,497 | 2,782 | 3,196 |
| Capital stock | 945 | 945 | 945 | 945 |
| Capital surplus | 1,092 | 1,092 | 1,092 | 1,092 |
| Retained earnings | 589 | 784 | 1,068 | 1,482 |
| Minority interests | -74 | -61 | -49 | -36 |
| Shareholders' equity | 2,416 | 2,436 | 2,733 | 3,160 |

Cash flow statement (summarized)

| (Wbn) | 2024 | 2025F | 2026F | 2027F |
|--|-------------|-------------|-------------|-------------|
| Operating cash flow | 133 | 618 | 394 | 413 |
| NP | 445 | 273 | 362 | 492 |
| Non-cash income/expenses | -60 | 53 | 117 | 100 |
| Depreciation | 92 | 101 | 109 | 116 |
| Amortization | 22 | 29 | 25 | 22 |
| Other | -174 | -77 | -17 | -38 |
| Chg. in working capital | -218 | 293 | -103 | -216 |
| Chg. in AR & other receivables | -92 | -194 | -77 | -121 |
| Chg. in inventory | -106 | -360 | -319 | -269 |
| Chg. in AP & other payables | 2 | 21 | 33 | 43 |
| Income tax | -32 | 11 | 15 | 20 |
| Cash flow from investing activities | -442 | -166 | -192 | -196 |
| Chg. in PP&E | -240 | -162 | -152 | -133 |
| Chg. in intangible assets | -25 | 0 | 0 | 0 |
| Chg. in financial assets | -140 | -65 | -40 | -63 |
| Other | -37 | 61 | 0 | 0 |
| Cash flow from financing activities | 35 | -25 | -59 | -56 |
| Chg. in financial liabilities | 143 | 40 | 6 | 9 |
| Chg. in equity | -8 | 0 | 0 | 0 |
| Dividends | -52 | -65 | -65 | -65 |
| Other | -48 | 0 | 0 | 0 |
| Chg. in cash | -276 | 90 | 143 | 161 |
| Beginning balance | 476 | 200 | 290 | 433 |
| Ending balance | 200 | 290 | 433 | 594 |

Source: Company data, Mirae Asset Securities Research estimates

Key valuation metrics/ratios

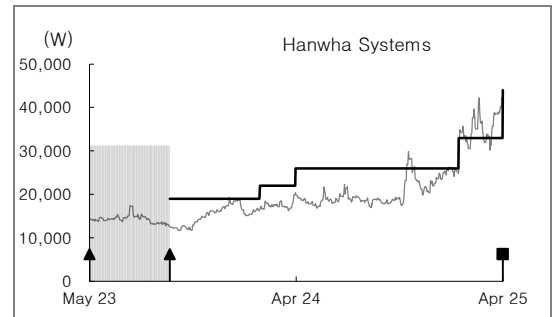
| | 2024 | 2025F | 2026F | 2027F |
|------------------------------|--------|--------|--------|--------|
| P/E (x) | 9.4 | 28.5 | 21.2 | 15.5 |
| P/CF (x) | 11.1 | 22.8 | 15.5 | 12.5 |
| P/B (x) | 1.7 | 2.9 | 2.6 | 2.3 |
| EV/EBITDA (x) | 13.0 | 19.5 | 14.5 | 11.3 |
| EPS (W) | 2,405 | 1,378 | 1,851 | 2,538 |
| CFPS (W) | 2,041 | 1,722 | 2,538 | 3,133 |
| BPS (W) | 13,361 | 13,401 | 14,905 | 17,096 |
| DPS (W) | 350 | 350 | 350 | 350 |
| Dividend payout ratio (%) | 14.7 | 24.0 | 18.1 | 13.3 |
| Dividend yield (%) | 1.5 | 0.9 | 0.9 | 0.9 |
| Revenue growth (%) | 14.3 | 35.7 | 14.8 | 17.9 |
| EBITDA growth (%) | 36.4 | 14.0 | 32.0 | 25.4 |
| OP growth (%) | 78.9 | 14.2 | 46.6 | 33.9 |
| EPS growth (%) | 30.1 | -42.7 | 34.3 | 37.1 |
| AR turnover (x) | 11.0 | 9.4 | 8.1 | 8.0 |
| Inventory turnover (x) | 5.0 | 4.8 | 3.9 | 3.6 |
| AP turnover (x) | 15.1 | 20.0 | 19.3 | 18.7 |
| ROA (%) | 8.7 | 4.3 | 5.0 | 6.1 |
| ROE (%) | 19.6 | 10.4 | 13.2 | 16.0 |
| ROIC (%) | 21.7 | 28.7 | 40.8 | 42.9 |
| Debt-to-equity ratio (%) | 136.9 | 180.8 | 178.9 | 170.1 |
| Current ratio (%) | 85.4 | 86.5 | 95.6 | 107.0 |
| Net debt-to-equity ratio (%) | 6.3 | 2.5 | -3.7 | -9.3 |
| Interest coverage ratio (x) | 9.8 | 11.4 | 15.7 | 20.7 |

Appendix 1

Important disclosures and disclaimers

Two-year rating and TP history

| Company | Date | Rating | TP (₩) |
|-------------------------|----------|-------------|--------|
| Hanwha Systems (272210) | 04/30/25 | Trading Buy | 44,000 |
| | 02/11/25 | Buy | 33,000 |
| | 04/29/24 | Buy | 26,000 |
| | 02/26/24 | Buy | 22,000 |
| | 09/20/23 | Buy | 19,000 |
| | 09/14/22 | No Coverage | |



Stock ratings

| | |
|-------------|--|
| Buy | Expected 12-month performance: +20% or greater |
| Trading Buy | Expected 12-month performance: +10% to +20% |
| Hold | Expected 12-month performance: -10% to +10% |
| Sell | Expected 12-month performance: -10% or worse |

Sector ratings

| | |
|-------------|--|
| Overweight | Expected to outperform the market over 12 months |
| Neutral | Expected to perform in line with the market over 12 months |
| Underweight | Expected to underperform the market over 12 months |

Rating and TP history: Share price (—), TP (—), Not Rated (■), Buy (▲), Trading Buy (■), Hold (●), Sell (◆)

* Our investment rating is a guide to the expected return of the stock over the next 12 months.

* Outside of the official ratings of Mirae Asset Securities Co., Ltd., analysts may call trading opportunities should technical or short-term material developments arise.

* The TP was determined by the research analyst through valuation methods discussed in this report, in part based on estimates of future earnings.

* TP achievement may be impeded by risks related to the subject securities and companies, as well as general market and economic conditions.

Ratings distribution and investment banking services

| | Buy | Trading Buy | Hold | Sell |
|-----------------------------|--------|-------------|--------|-------|
| Ratings distribution | 83.98% | 6.63% | 8.84% | 0.55% |
| Investment banking services | 88.24% | 0% | 11.76% | 0% |

* Based on recommendations in the last 12-months (as of March 31, 2025)

Disclosures

As of the publication date, Mirae Asset Securities Co., Ltd. provides services for Hanwha Systems to ensure the fulfillment of its debt obligations directly or indirectly, including payment guarantees, endorsement of notes, collateralization, and debt assumptions.

Analyst certification

The research analysts who prepared this report (the "Analysts") are registered with the Korea Financial Investment Association and are subject to Korean securities regulations. They are neither registered as research analysts in any other jurisdiction nor subject to the laws or regulations thereof. Each Analyst responsible for the preparation of this report certifies that (i) all views expressed in this report accurately reflect the personal views of the Analyst about any and all of the issuers and securities named in this report and (ii) no part of the compensation of the Analyst was, is, or will be directly or indirectly related to the specific recommendations or views contained in this report. Mirae Asset Securities Co., Ltd. ("Mirae Asset Securities") policy prohibits its Analysts and members of their households from owning securities of any company in the Analyst's area of coverage, and the Analysts do not serve as an officer, director, or advisory board member of the subject companies. Except as otherwise specified herein, the Analysts have not received any compensation or any other benefits from the subject companies in the past 12 months and have not been promised the same in connection with this report. Like all employees of Mirae Asset Securities, the Analysts receive compensation that is determined by overall firm profitability, which includes revenues from, among other business units, the institutional equities, investment banking, proprietary trading, and private client divisions. At the time of publication of this report, the Analysts do not know or have reason to know of any actual, material conflict of interest of the Analyst or Mirae Asset Securities except as otherwise stated herein.

Disclaimers

This report was prepared by Mirae Asset Securities, a broker-dealer registered in the Republic of Korea and a member of the Korea Exchange. Information and opinions contained herein have been compiled in good faith and from sources believed to be reliable, but such information has not been independently verified and Mirae Asset Securities makes no guarantee, representation or warranty, express or implied, as to the fairness, accuracy, completeness, or correctness of the information and opinions contained herein or of any translation into English from the Korean language. In case of an English translation of a report prepared in the Korean language, the original Korean language report may have been made available to investors in advance of this report.

The intended recipients of this report are sophisticated institutional investors who have substantial knowledge of the local business environment, its common practices, laws, and accounting principles, and no person whose receipt or use of this report would violate any laws or regulations or subject Mirae Asset Securities or any of its affiliates to registration or licensing requirements in any jurisdiction shall receive or make any use hereof.

This report is for general information purposes only and is not and shall not be construed as an offer or a solicitation of an offer to effect transactions in any securities or other financial instruments. The report does not constitute investment advice to any person, and such person shall not be treated as a client of Mirae Asset Securities by virtue of receiving this report. This report does not take into account the particular investment objectives, financial situations, or needs of individual clients. The report is not to be relied upon in substitution for the exercise of independent judgment. Information and opinions contained herein are as of the date hereof and are subject to change without notice. The price and value of the investments referred to in this report and the income from them may depreciate or appreciate, and investors may incur losses on investments. Past performance is not a guide to future performance. Future returns are not guaranteed, and a loss of original capital may occur. Mirae Asset Securities, its affiliates, and their directors, officers, employees, and agents do not accept any liability for any loss arising out of the use hereof.

Mirae Asset Securities may have issued other reports that are inconsistent with, and reach different conclusions from, the opinions presented in this report. The reports may reflect different assumptions, views, and analytical methods of the analysts who prepared them. Mirae Asset Securities may make investment decisions that are inconsistent with the opinions and views expressed in this research report. Mirae Asset Securities, its affiliates, and their directors, officers, employees, and agents may have long or short positions in any of the subject securities at any time and may make a purchase or sale, or offer to make a purchase or sale, of any such securities or other financial instruments from time to time in the open market or otherwise, in each case either as principals or agents. Mirae Asset Securities and its affiliates may have had, or may be expecting to enter into, business relationships with the subject companies to provide investment banking, market-making, or other financial services as are permitted under applicable laws and regulations.

No part of this document may be copied or reproduced in any manner or form or redistributed or published, in whole or in part, without the prior written consent of Mirae Asset Securities. For further information regarding company-specific information as it pertains to the representations and disclosures in this Appendix 1, please contact compliance@miraeeasset.us.com or +1 (212) 407-1000.

Distribution

United Kingdom: This report is being distributed by Mirae Asset Securities (UK) Ltd. in the United Kingdom only to (i) investment professionals falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005 (the "Order"), and (ii) high net worth companies and other persons to whom it may lawfully be communicated, falling within Article 49(2)(A) to (E) of the Order (all such persons together being referred to as "Relevant Persons"). This report is directed only at Relevant Persons. Any person who is not a Relevant Person should not act or rely on this report or any of its contents.

United States: Mirae Asset Securities is not a registered broker-dealer in the United States and, therefore, is not subject to U.S. rules regarding the preparation of research reports and the independence of research analysts. This report is distributed in the U.S. by Mirae Asset Securities (USA) Inc., a member of FINRA/SIPC, to "major U.S. institutional investors" in reliance on the exemption from registration provided by Rule 15a-6(b)(4) under the U.S. Securities Exchange Act of 1934, as amended. All U.S. persons that receive this document by their acceptance hereof represent and warrant that they are a major U.S. institutional investor and have not received this report under any express or implied understanding that they will direct commission income to Mirae Asset Securities or its affiliates. Any U.S. recipient of this document wishing to effect a transaction in any securities discussed herein should contact and place orders with Mirae Asset Securities (USA) Inc. Mirae Asset Securities (USA) Inc. accepts responsibility for the contents of this report in the U.S., subject to the terms hereof, to the extent that it is delivered to a U.S. person other than a major U.S. institutional investor. Under no circumstances should any recipient of this research report effect any transaction to buy or sell securities or related financial instruments through Mirae Asset Securities. The securities described in this report may not have been registered under the U.S. Securities Act of 1933, as amended, and, in such case, may not be offered or sold in the U.S. or to U.S. persons absent registration or an applicable exemption from the registration requirements.

Hong Kong: This report is distributed in Hong Kong by Mirae Asset Securities (HK) Limited, which is regulated by the Hong Kong Securities and Futures Commission. The contents of this report have not been reviewed by any regulatory authority in Hong Kong. This report is for distribution only to professional investors within the meaning of Part I of Schedule 1 to the Securities and Futures Ordinance of Hong Kong (Cap. 571, Laws of Hong Kong) and any rules made thereunder and may not be redistributed in whole or in part in Hong Kong to any person.

India: This report is being distributed by Mirae Asset Capital Markets (India) Private Limited ("MACM") in India to the customers based in India and is personal information only for those authorised recipient(s). MACM is inter alia a Securities and Exchange Board of India ("SEBI") registered Research Analyst in India and is not registered outside India. MACM and Mirae Asset, Korea are group entities. MACM makes no guarantee, representation or warranty, express or implied, as to the fairness, accuracy, completeness or correctness of the information and opinions contained herein. The user assumes the entire risk of any use made of this information. This report has been provided for assistance only and is not intended to be and must not alone be taken as the basis for an investment decision. Recipient must read the entire Appendix 1 to the report carefully for Important Disclosures & Disclaimers.

All other jurisdictions: Customers in all other countries who wish to effect a transaction in any securities referenced in this report should contact Mirae Asset Securities or its affiliates only if distribution to or use by such customer of this report would not violate applicable laws and regulations and not subject Mirae Asset Securities and its affiliates to any registration or licensing requirement within such jurisdiction.

Mirae Asset Securities International Network

Mirae Asset Securities Co., Ltd. (Seoul)

One-Asia Equity Sales Team
Mirae Asset Center 1 Building
26 Eulji-ro 5-gil, Jung-gu, Seoul 04539
Korea

Tel: 82-2-3774-2124

Mirae Asset Securities (USA) Inc.

810 Seventh Avenue, 37th Floor
New York, NY 10019
USA

Tel: 1-212-407-1000

Mirae Asset Securities (Singapore) Pte. Ltd.

6 Battery Road, #11-01
Singapore 049909
Republic of Singapore

Tel: 65-6671-9845

Mirae Asset Investment Advisory (Beijing) Co., Ltd

2401B, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District
Beijing 100022
China

Tel: 86-10-6567-9699

Ho Chi Minh Representative Office

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3910-7715

Mirae Asset Securities (HK) Ltd.

Units 8501, 8507-8508, 85/F
International Commerce Centre
1 Austin Road West
Kowloon
Hong Kong
Tel: 852-2845-6332

Mirae Asset Wealth Management (Brazil) CCTVM

Rua Funchal, 418, 18th Floor, E-Tower Building
Vila Olimpia
Sao Paulo - SP
04551-060
Brazil
Tel: 55-11-2789-2100

Mirae Asset Securities (Vietnam) LLC

7F, Saigon Royal Building
91 Pasteur St.
District 1, Ben Nghe Ward, Ho Chi Minh City
Vietnam

Tel: 84-8-3911-0633 (ext.110)

Beijing Representative Office

2401A, 24th Floor, East Tower, Twin Towers
B12 Jianguomenwai Avenue, Chaoyang District
Beijing 100022
China

Tel: 86-10-6567-9699 (ext. 3300)

Mirae Asset Capital Markets (India) Pvt Ltd

1st Floor, Tower 4, Equinox Business Park,
LBS Marg, Off BKC, Kurla (West), Mumbai - 400 070
India

Tel: 91-22-62661300 / 48821300

Mirae Asset Securities (UK) Ltd.

41st Floor, Tower 42
25 Old Broad Street,
London EC2N 1HQ
United Kingdom

Tel: 44-20-7982-8000

PT. Mirae Asset Sekuritas Indonesia

District 8, Treasury Tower Building Lt. 50
Sudirman Central Business District
Jl. Jend. Sudirman, Kav. 52-54
Jakarta Selatan 12190
Indonesia
Tel: 62-21-5088-7000

Mirae Asset Securities Mongolia UTsk LLC

#406, Blue Sky Tower, Peace Avenue 17
1 Khoroo, Sukhbaatar District
Ulaanbaatar 14240
Mongolia

Tel: 976-7011-0806

Shanghai Representative Office

38T31, 38F, Shanghai World Financial Center
100 Century Avenue, Pudong New Area
Shanghai 200120
China

Tel: 86-21-5013-6392