Clinuvel Pharmaceuticals CUV AU

HEALTH CARE & PHARMACEUTICALS | AUSTRALIA

Dr David Stanton
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Maintained

BUY

NOMURA
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Action

CUV announced that it is to begin investigating the effectiveness of its melanocyte stimulating hormone, afamelanotide, in Non-Segmental Vitiligo, a condition that affects up to 45mn people globally. This is a new medical indication for afamelanotide, and has the potential to markedly increase the addressable medical market for CUV's drug, in our view. BUY maintained.

Catalysts

Recently, CUV announced positive final results of a Phase III clinical trial in another disease. Hence, CUV will likely continue to seek EMEA marketing authorisation for afamelanotide, which is the final regulatory step before the start of EU sales.

Anchor themes

We continue to believe that there is a good chance of CUV getting afamelanotide to market. This points to cashflow from sales, and sooner than for most other biotechnology companies. Finally, this news increases potential medical demand.

Closing price on 25 Aug	A$0.22
Price target	**A$0.80**
	(set on 12 Jul 10)
Upside/downside	263.6%
Difference from consensus	**0.0%**
FY11F net profit (A$mn)	(7.07)
Difference from consensus	**na (loss)**

Source: Nomura

Nomura vs consensus

No consensus data are available.

Expanding addressable market

① Developing treatment for sun-related diseases

CUV aims to show that its lead compound, afamelanotide, has efficacy against several sun-related diseases. Afamelanotide is a synthetic analogue of a natural hormone called alpha-melanocyte-stimulating hormone. This hormone is released when ultraviolet (UV) radiation from the sun penetrates the upper layers of skin and causes damage, stimulating melanin production in the skin.

② Vitiligo – a large unmet medical need

Vitiligo is a chronic disease, with relapses common if treatment stops. We believe that there is no single best treatment for Vitiligo. Hence, should clinical trials be positive, there is potential for afamelanotide to quickly be a viable option for treatment of the disease. MSB plans to use afamelanotide as an adjunct to the current mainstay of treatment, narrow band UVB (NB-UVB – a form of concentrated UV light), as well as testing afamelanotide as a single treatment option.

③ Increases medical necessity to approve afamelanotide

In addition, we believe positive clinical trial results of afamelanotide should increase the perception of the medical necessity of afamelanotide. In turn, we believe this should be noted by regulatory authorities, who have yet to approve afamelanotide.

④ BUY rating and price target unchanged

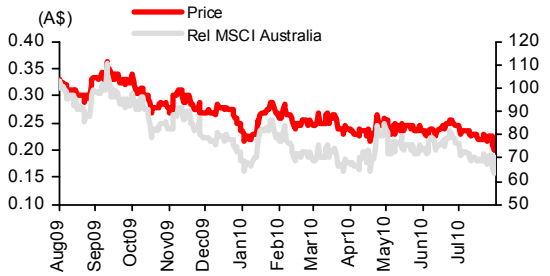
We believe this is a new medical indication for afamelanotide, and has the potential to markedly increase the addressable medical market for CUV's drug. We will reassess our forecasts based on the results of clinical trials, which are due to start in October 2010. Eg, if 10% of US and EU patients were to use afamelanotide from 2014, the risk-weighted NPV for the Vitiligo opportunity alone could be A$1.13/share.

Key financials & valuations

30 Jun (A$mn)	FY09	FY10F	FY11F	FY12F
Revenue	-	-	12.39	24.11
Reported net profit	(15.37)	(14.26)	(7.07)	0.71
Normalised net profit	(15.37)	(14.26)	(7.07)	0.71
Normalised EPS (A$)	(0.051)	(0.047)	(0.023)	0.002
Norm. EPS growth (%)	na	na	na	na
Norm. P/E (x)	na	na	na	94.2
EV/EBITDA (x)	na	na	na	na
Price/book (x)	1.8	2.9	4.2	4.1
Dividend yield (%)	0.0	0.0	0.0	0.0
ROE (%)	(34.6)	(47.6)	(36.7)	4.4
Net debt/equity (%)	net cash	net cash	net cash	net cash
Earnings revisions				
Previous norm. net profit		(14.26)	(7.07)	0.71
Change from previous (%)		-	-	-
Previous norm. EPS (A$)		(0.047)	(0.023)	0.002

Source: Company, Nomura estimates

Share price relative to MSCI Australia



	1m	3m	6m
Absolute (A$)	(10.2)	(15.4)	(17.0)
Absolute (US$)	(11.1)	(7.7)	(17.5)
Relative to Index	(8.3)	(19.4)	(11.5)

Market cap (US$mn)	59.0
Estimated free float (%)	100.0
52-week range (A$)	0.37/0.20
3-mth avg daily turnover (US$mn)	0.031
Stock borrowability	Hard
Major shareholders (%)	
JM FG	6.9

Source: Company, Nomura estimates

Any authors named on this report are research analysts unless otherwise indicated.
See the important disclosures and analyst certifications on pages 8 to 11.

Expanding the addressable market

A whiter shade of pale

CUV announced today to the ASX that it is to begin investigating the effectiveness of its melanocyte stimulating hormone, afamelanotide, in Non-Segmental Vitiligo, a condition that affects up to 45mn people globally. This is a new medical indication for afamelanotide. MSB management plans to use afamelanotide as an adjunct to the current mainstay of treatment, narrow band UVB (NB-UVB), as well as testing afamelanotide as a single treatment option. In this note, we:

- Describe the disease known as Vitiligo;
- Outline current treatment options for Vitiligo – we believe that, given the large number of potential treatments, there is no single best treatment for the disease. Hence, there is potential for afamelanotide to quickly become a valid option for treatment of the disease;
- Delineate why afamelanotide has the potential to be a legitimate treatment option – as well as the potential to increase the response narrow band UVB (NB-UVB) therapy, afamelanotide has the potential to decrease the theoretical risk of skin damage and potential cancer from elevated doses of sunlight; and
- Highlight what it means for CUV.

As well as the potential to increase the response to narrow band UVB (NB-UVB) therapy, afamelanotide has the potential to decrease the theoretical risk of skin damage and potential cancer from elevated doses of sunlight

1. What is Vitiligo?

Vitiligo is a chronic pigmentation disorder in which melanocytes (the cells that make pigment) in the skin are destroyed. As a result, white patches appear on the skin in different parts of the body. Similar patches also appear on both the mucous membranes (tissues that line the inside of the mouth and nose), and the retina (inner layer of the eyeball).

About 0.5 to 1% of the world's population, or as many as 65mn people have Vitiligo

There are two types of Vitiligo – non-segmental (c85% of all cases), which tends to affect both sides of the body; and segmental (c15% of cases) which tends to affect one side of the body.

Cause of Vitiligo

The cause of Vitiligo is not known, but there are a number of different theories. People with Vitiligo inherit a group of three genes that make them susceptible to depigmentation. In addition, Vitiligo seems to be somewhat more common in people with certain autoimmune diseases. The most widely accepted view is that the depigmentation occurs because Vitiligo is an autoimmune disease – a disease in which a person's immune system reacts against the body's own organs or tissues. As such, people's bodies produce proteins called cytokines that alter their pigment-producing cells and cause these cells to be attacked. Another theory is that melanocytes destroy themselves.

Incidence

About 0.5 to 1% of the world's population, or as many as 65mn people have Vitiligo, and 45mn have Non-Segmental Vitiligo. In the US, 1mn to 2mn people have the disorder. Half the people who have Vitiligo develop it before age 20; most develop it before their 40th birthday. The disorder affects both sexes and all races equally; however, it is more noticeable in people with dark skin. Vitiligo may also be hereditary, in that 30% of people with Vitiligo have a family member with the disease.

2. What are the current therapies for Vitiligo?

There are a number of treatments for Vitiligo – the standard treatment is phototherapy.

Exhibit 1. Current treatments for Vitiligo

Medical therapies	Topical steroid therapy
	Psoralen photo-chemotherapy (PUVA)
	UVB phototherapy
	Depigmentation
Surgical therapies	Autologous skin grafts
	Skin grafts using blisters
	Micro-pigmentation (tattooing)
	Autologous melanocyte transplants

Source: PubMed

Medical therapies

A number of medical therapies, most of which are applied topically, can reduce the appearance of white patches with Vitiligo. These are some of the most commonly used ones:

- **Topical steroid therapy** – Corticosteroid creams may be helpful in re-pigmenting white patches, particularly if they are applied in the initial stages of the disease. Potential side effects include skin shrinkage and skin striae (streaks or lines on the skin).
- **Psoralen photo-chemotherapy** – this is also known as psoralen and ultraviolet A therapy, or PUVA therapy. The goal of PUVA therapy is to repigment the white patches. Psoralen is a drug that contains chemicals that react with ultraviolet light to cause darkening of the skin. The treatment involves taking psoralen orally or applying it to the skin. This is followed by timed exposure to sunlight or to ultraviolet A (UVA) light. There are two major potential side effects of topical PUVA therapy: 1) severe sunburn and blistering and 2) too much repigmentation or darkening (hyperpigmentation) of the treated patches or the normal skin surrounding the Vitiligo. Oral psoralen photo-chemotherapy may also increase the risk of skin cancer, although the risk seems minimal at doses used for Vitiligo.
- **UVB phototherapy** – narrow band UVB (NB-UVB) therapy has emerged as the gold standard of repigmentation treatment in individuals affected by Vitiligo. NB-UVB utilises a localised light source to activate melanin in lesions of the skin. This therapy is known to effectively suppress the local immune response and accelerate the maturity of melanocytes in the area around hair follicles, which act as melanocyte reservoirs. This process leads to activation of melanin. MSB plans to use afamelanotide as an adjunct to treatment with NB-UVB, as well as testing afamelanotide as a single treatment option.
- **Depigmentation** – involves fading the rest of the skin on the body to match the areas that are already white. The major side effect of depigmentation therapy is inflammation (redness and swelling) of the skin.

MSB plans to use afamelanotide as an adjunct to treatment with NB-UVB, as well as testing afamelanotide as a single treatment option

Surgical therapies

Surgical therapies are considered only after proper medical therapy is provided:

- **Autologous skin grafts** – This type of skin grafting is sometimes used for patients with small patches of Vitiligo. The doctor removes sections of the normal, pigmented skin (donor sites) and places them on the depigmented areas (recipient sites).
- **Skin grafts using blisters** – In this procedure, the doctor creates blisters on pigmented skin by using heat, suction, or freezing cold. The tops of the blisters are then cut out and transplanted to a depigmented skin area.

- **Micro-pigmentation (tattooing)** – This procedure involves implanting pigment into the skin with a special surgical instrument.
- **Autologous melanocyte transplants** – In this procedure, the doctor takes a sample of normal pigmented skin and places it in a laboratory dish containing a cell-culture solution to grow melanocytes. When the melanocytes in the culture solution have multiplied, the doctor transplants them to depigmented skin patches. This procedure is currently experimental.

3. Nomura viewpoint: Vitiligo – the next step for afamelanotide

Scientific studies have shown that in Non-Segmental Vitiligo there is a reduction in functional activity of melanocytes. It seems logical that doses of alpha-melanocyte stimulating hormone (afamelanotide) should stimulate under-functioning melanocytes and should increase the ability of the melanocytes to function under the action of NB-UVB therapy. In our view, the scientific basis for afamelanotide to have a role in the treatment of Vitiligo seems reasonable.

It seems logical that doses of afamelanotide should stimulate under-functioning melanocytes and should increase the ability of the melanocytes to function under the action of NB-UVB therapy

In a large number of clinical trials afamelanotide has been shown to be safe. As well as the potential to increase the response to NB-UVB therapy, afamelanotide has the potential to decrease the theoretical risk of skin damage and potential cancer from currently elevated doses of UV that are a necessary part of NB-UVB therapy.

In addition, we believe positive clinical trial results of afamelanotide should increase the perception of the medical necessity of afamelanotide. In turn, we believe this should be noted by regulatory authorities, who have yet to approve afamelanotide.

4. What does it mean for CUV?

We believe that there is no single treatment for the disease. Hence, should clinical trials be positive, there is potential for afamelanotide to be a viable option for treatment of the disease. We have performed a scenario analysis on the potential opportunity for CUV. We believe that if 10% of US and EU patients were to use afamelanotide from 2014 onwards, the risk-weighted NPV for the Vitiligo opportunity alone for CUV would be A$1.13/share. This is seen below.

We believe that if 10% of US and EU patients were to use afamelanotide from 2014 onwards, the risk-weighted NPV for the Vitiligo opportunity alone for CUV would be A$1.13/share

Exhibit 2. Risk-weighted NPV for CUV's Vitiligo opportunity

Number of US and EU patients with Vitiligo (mn)	3
Assume 10% of patients treated in 2014 (mn)	0.3
Number of implants per person (pa)	4
Hence, number of implants per year (mn)	1.2
Cost of implant (US$) in 2014	1,000
Hence, size of potential market (US$ mn)	1,200
Assumed growth of market pa (%)	2
Assuming NPAT margin of 25%, NPV to 2025 (A$ per share)	5.63
20% risk-weighted NPV (A$ per share)	**1.13**

Source: PubMed, Nomura estimates

We have made a number of assumptions in developing this analysis. These include:

- **Costs to develop this opportunity**: we assume that it will cost CUV A$50mn to progress this opportunity to end of Phase III clinical trials. This is spent progressively from FY11 to FY13. We have not assumed a CUV capital raising, and that CUV will have sufficient cash to complete this opportunity;
- **Cash flow from the opportunity**: we assume that capex equals depreciation for the life of the project, and hence, cashflow is equivalent to NPAT. We assume the project ends in 2025 (in line with the run off in CUV's patents), and has no terminal value;

- **Growth of the market**: we assume that the addressable market expands by 2% per annum;
- **A$/US$ exchange rate**: we assume an A$/US$ exchange rate of 0.7 for the life of the project;
- **Discount rate**: we use our assumed CUV WACC to determine the discount rate for the project. This is 14.3%;
- **Number of shares**: we use the current number of CUV shares to determine NPV per share; and
- **Risk weighting of the opportunity**: On an industry-wide basis, we believe the chances of getting a product to market from the Phase II stage are 20-30%. Hence, we have 20% risk-weighted the potential opportunity.

Valuation methodology

On a DCF analysis, we derive a price target for CUV of A$0.80/share, assuming a WACC of 14.25%. We factor in an initial selling price of €1,500 per afamelanotide implant and assume that this will decline by 2% pa. In line with most pharmaceutical companies, we expect CUV to achieve a steady-state gross profit margin of 70%.

On a DCF analysis, we derive a price target for CUV of A$0.80/share

Risks to our investment view

CUV's principal patent is not due to expire in the US before 2026. The patent relates to methods for inducing melanogenesis in a human subject by administering alpha-MSH analogues at greatly reduced plasma levels, which surprisingly leads to increased melanin density in the subject. By increasing melanin levels in a subject, it is possible to reduce or prevent the occurrence of UV radiation-induced skin damage.

We believe that any delay or failure to progress in clinical trials would present downside risk to our price target. That said, faster-than-expected progression to production of CUV's photoprotective technology could provide an upside boost.

Financial statements

Income statement (A$mn)					
Year-end 30 Jun	**FY08**	**FY09**	**FY10F**	**FY11F**	**FY12F**
Revenue	-	-	-	12.4	24.1
Cost of goods sold	-	-	-	(3.7)	(7.2)
Gross profit	**-**	**-**	**-**	**8.7**	**16.9**
SG&A	(17.9)	(18.3)	(18.0)	(18.3)	(18.4)
Employee share expense					
Operating profit	**(17.9)**	**(18.3)**	**(18.0)**	**(9.7)**	**(1.5)**
EBITDA	**(17.1)**	**(17.4)**	**(17.9)**	**(9.6)**	**(1.4)**
Depreciation	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)
Amortisation	(0.8)	(0.8)	-	-	-
EBIT	**(17.9)**	**(18.3)**	**(18.0)**	**(9.7)**	**(1.5)**
Net interest expense	4.3	2.7	3.8	2.6	2.5
Associates & JCEs					
Other income	-	0.2	-	-	-
Earnings before tax	**(13.6)**	**(15.4)**	**(14.3)**	**(7.1)**	**1.0**
Income tax	-	-	-	-	(0.3)
Net profit after tax	**(13.6)**	**(15.4)**	**(14.3)**	**(7.1)**	**0.7**
Minority interests	-	-	-	-	-
Other items					
Preferred dividends					
Normalised NPAT	**(13.6)**	**(15.4)**	**(14.3)**	**(7.1)**	**0.7**
Extraordinary items	(1.0)	-	-	-	-
Reported NPAT	**(14.7)**	**(15.4)**	**(14.3)**	**(7.1)**	**0.7**
Dividends	-	-	-	-	-
Transfer to reserves	**(14.7)**	**(15.4)**	**(14.3)**	**(7.1)**	**0.7**
Valuation and ratio analysis					
FD normalised P/E (x)	na	na	na	na	94.2
FD normalised P/E at price target (x)	na	na	na	na	342.6
Reported P/E (x)	na	na	na	na	94.2
Dividend yield (%)	-	-	-	-	-
Price/cashflow (x)	na	na	na	na	12.0
Price/book (x)	1.3	1.8	2.9	4.2	4.1
EV/EBITDA (x)	na	na	na	na	na
EV/EBIT (x)	na	na	na	na	na
Gross margin (%)	na	na	na	70.0	70.0
EBITDA margin (%)	na	na	na	(77.4)	(5.9)
EBIT margin (%)	na	na	na	(78.0)	(6.3)
Net margin (%)	na	na	na	(57.0)	2.9
Effective tax rate (%)	na	na	na	na	30.0
Dividend payout (%)	na	na	na	na	-
Capex to sales (%)	na	na	na	1.3	0.7
Capex to depreciation (x)	2.6	0.4	2.0	2.0	2.0
ROE (%)	(25.0)	(34.6)	(47.6)	(36.7)	4.4
ROA (pretax %)	(56.7)	(74.4)	(90.3)	(48.2)	(7.5)
Growth (%)					
Revenue	(100.0)	na	na	na	94.6
EBITDA	61.3	na	na	na	na
EBIT	57.0	na	na	na	na
Normalised EPS	21.9	na	na	na	na
Normalised FDEPS	21.9	na	na	na	na
Per share					
Reported EPS (A$)	(0.048)	(0.051)	(0.047)	(0.023)	0.002
Norm EPS (A$)	(0.045)	(0.051)	(0.047)	(0.023)	0.002
Fully diluted norm EPS (A$)	(0.045)	(0.051)	(0.047)	(0.023)	0.002
Book value per share (A$)	0.171	0.122	0.075	0.052	0.054
DPS (A$)	-	-	-	-	-

Source: Nomura estimates

We forecast the start of sales in FY11

Cashflow (A$mn)					
Year-end 30 Jun	**FY08**	**FY09**	**FY10F**	**FY11F**	**FY12F**
EBITDA	(17.1)	(17.4)	(17.9)	(9.6)	(1.4)
Change in working capital	-	9.9	0.4	0.5	4.8
Other operating cashflow	9.9	(3.4)	3.8	2.6	2.2
Cashflow from operations	**(7.2)**	**(11.0)**	**(13.8)**	**(6.5)**	**5.6**
Capital expenditure	(0.2)	(0.0)	(0.2)	(0.2)	(0.2)
Free cashflow	**(7.4)**	**(11.0)**	**(13.9)**	**(6.7)**	**5.4**
Reduction in investments		-	-	-	-
Net acquisitions	-	-	-	-	-
Reduction in other LT assets		-	-	-	-
Addition in other LT liabilities		0.0	-	-	-
Adjustments	-	(0.0)	-	-	-
Cashflow after investing acts	**(7.4)**	**(11.0)**	**(13.9)**	**(6.7)**	**5.4**
Cash dividends	-	-	-	-	-
Equity issue	0.0	0.1	-	-	-
Debt issue	-	-	-	-	-
Convertible debt issue					
Others	(0.5)	6.6	-	-	-
Cashflow from financial acts	**(0.5)**	**6.7**	**-**	**-**	**-**
Net cashflow	**(7.9)**	**(4.3)**	**(13.9)**	**(6.7)**	**5.4**
Beginning cash	33.8	25.8	21.7	7.8	1.1
Ending cash	25.9	21.4	7.8	1.1	6.5
Ending net debt	(25.8)	(21.7)	(7.8)	(1.1)	(6.5)

Source: Nomura estimates

Balance sheet (A$mn)					
As at 30 Jun	**FY08**	**FY09**	**FY10F**	**FY11F**	**FY12F**
Cash & equivalents	25.8	21.7	7.8	1.1	6.5
Marketable securities					
Accounts receivable	0.6	0.2	0.2	0.3	0.5
Inventories	-	-	-	-	-
Other current assets	26.8	18.7	18.7	18.7	18.7
Total current assets	**53.1**	**40.6**	**26.7**	**20.0**	**25.7**
LT investments	-	-	-	-	-
Fixed assets	0.4	0.4	0.4	0.5	0.6
Goodwill	-	-	-	-	-
Other intangible assets	1.4	0.7	0.7	0.7	0.7
Other LT assets	-	-	-	-	-
Total assets	**55.0**	**41.6**	**27.8**	**21.2**	**26.9**
Short-term debt	-	-	-	-	-
Accounts payable	3.0	4.4	4.8	5.3	10.3
Other current liabilities	0.2	0.2	0.2	0.2	0.2
Total current liabilities	**3.1**	**4.5**	**5.0**	**5.5**	**10.5**
Long-term debt	-	-	-	-	-
Convertible debt					
Other LT liabilities	0.0	0.0	0.0	0.0	0.0
Total liabilities	**3.2**	**4.6**	**5.0**	**5.5**	**10.5**
Minority interest	-	-	-	-	-
Preferred stock	-	-	-	-	-
Common stock	113.2	113.2	113.2	113.2	113.2
Retained earnings	(63.2)	(78.3)	(92.6)	(99.7)	(99.0)
Proposed dividends					
Other equity and reserves	1.8	2.2	2.2	2.2	2.2
Total shareholders' equity	**51.8**	**37.1**	**22.8**	**15.7**	**16.4**
Total equity & liabilities	**55.0**	**41.6**	**27.8**	**21.2**	**26.9**
Liquidity (x)					
Current ratio	16.88	8.93	5.36	3.67	2.45
Interest cover	na	na	na	na	na
Leverage					
Net debt/EBITDA (x)	na	na	na	na	na
Net debt/equity (%)	net cash	net cash	net cash	net cash	net cash
Activity (days)					
Days receivable	na	na	na	7.2	5.7
Days inventory	na	na	na	-	-
Days payable	na	na	na	495.6	394.1
Cash cycle	na	na	na	(488.4)	(388.4)

Source: Nomura estimates

We forecast CUV to have A$26.7mn in cash and other marketable securities in FY10

ANALYST CERTIFICATIONS

We, David Stanton and Zara Lyons, hereby certify (1) that the views expressed in this Research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this Research report, (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this Research report and (3) no part of our compensation is tied to any specific investment banking transactions performed by Nomura Securities International, Inc., Nomura International plc or any other Nomura Group company.

ISSUER SPECIFIC REGULATORY DISCLOSURES

Issuer	Ticker	Price (as at last close)	Closing Price Date	Rating	Disclosures
Clinuvel Pharmaceuticals	CUV AU	0.20 AUD	24 Aug 2010	Buy	

Previous Ratings

Issuer	Previous Rating	Date of change
Clinuvel Pharmaceuticals	Not Rated	12 Jul 2010

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A '**Bullish**' stance, indicates that the analyst expects the sector to outperform the Benchmark during the next 12 months.
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Benchmarks are as follows: **United States**: S&P 500; **Europe**: Dow Jones STOXX 600®; **Global Emerging Markets (ex-Asia)**: MSCI Emerging Markets ex-Asia.

Explanation of Nomura's equity research rating system for Asian companies under coverage ex Japan published from 30 October 2008 and in Japan from 6 January 2009

STOCKS
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A '**Buy'** recommendation indicates that potential upside is 15% or more.
A '**Neutral'** recommendation indicates that potential upside is less than 15% or downside is less than 5%.
A '**Reduce'** recommendation indicates that potential downside is 5% or more.
A rating of '**RS'** or '**Rating Suspended'** indicates that the rating and target price have been suspended temporarily to comply with applicable regulations and/or firm policies in certain circumstances including when Nomura is acting in an advisory capacity in a merger or strategic transaction involving the subject company.
Stocks labelled as '**Not rated'** or shown as '**No rating'** are not in Nomura's regular research coverage.

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A '**Bearish'** rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a negative absolute recommendation.

Explanation of Nomura's equity research rating system in Japan published prior to 6 January 2009 (and ratings in Europe, Middle East and Africa, US and Latin America published prior to 27 October 2008)

STOCKS
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A rating of '2' or '**Buy'**, indicates that the analyst expects the stock to outperform the Benchmark by 5% or more but less than 15% over the next six months.
A rating of '3' or '**Neutral'**, indicates that the analyst expects the stock to either outperform or underperform the Benchmark by less than 5% over the next six months.
A rating of '4' or '**Reduce'**, indicates that the analyst expects the stock to underperform the Benchmark by 5% or more but less than 15% over the next six months.
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A '**Neutral'** stance, indicates that the analyst expects the sector to perform in line with the Benchmark during the next six months.
A '**Bearish'** stance, indicates that the analyst expects the sector to underperform the Benchmark during the next six months.
Benchmarks are as follows: **Japan**: TOPIX; **United States**: S&P 500, MSCI World Technology Hardware & Equipment; **Europe**, by sector - *Hardware/Semiconductors*: FTSE W Europe IT Hardware; *Telecoms*: FTSE W Europe Business Services; *Business Services*: FTSE W Europe; *Auto & Components*: FTSE W Europe Auto & Parts; *Communications equipment*: FTSE W Europe IT Hardware; **Ecology Focus**: Bloomberg World Energy Alternate Sources; **Global Emerging Markets**: MSCI Emerging Markets ex-Asia.

Explanation of Nomura's equity research rating system for Asian companies under coverage ex Japan published prior to 30 October 2008

STOCKS
Stock recommendations are based on absolute valuation upside (downside), which is defined as (Fair Value - Current Price)/Current Price, subject to limited management discretion. In most cases, the Fair Value will equal the analyst's assessment of the current intrinsic fair value of the stock using an appropriate valuation methodology such as Discounted Cash Flow or Multiple analysis etc. However, if the analyst doesn't think the market will revalue the stock over the specified time horizon due to a lack of events or catalysts, then the fair value may differ from the intrinsic fair value. In most cases, therefore, our recommendation is an assessment of the difference between current market price and our estimate of current intrinsic fair value. Recommendations are set with a 6-12 month horizon unless specified otherwise. Accordingly, within this horizon, price volatility may cause the actual upside or downside based on the prevailing market price to differ from the upside or downside implied by the recommendation.

A '**Strong buy**' recommendation indicates that upside is more than 20%.
A '**Buy**' recommendation indicates that upside is between 10% and 20%.
A '**Neutral**' recommendation indicates that upside or downside is less than 10%.
A '**Reduce**' recommendation indicates that downside is between 10% and 20%.
A '**Sell**' recommendation indicates that downside is more than 20%.

SECTORS
A '**Bullish**' rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a positive absolute recommendation.
A '**Neutral**' rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a neutral absolute recommendation.
A '**Bearish**' rating means most stocks in the sector have (or the weighted average recommendation of the stocks under coverage is) a negative absolute recommendation.

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