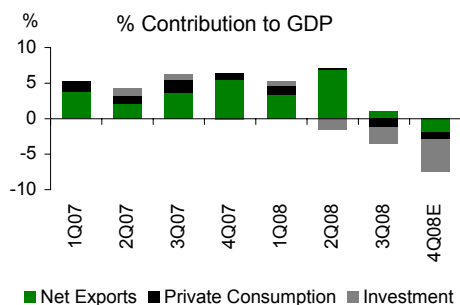


TAIWAN

# Taiwan economics

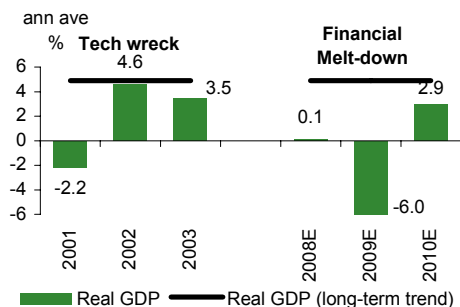
19 February 2009

## Key drags – exports and investment



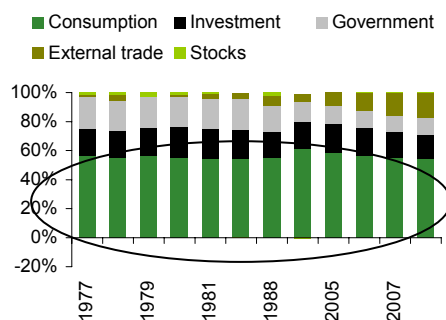
Source: CEIC, Macquarie Research, February 2009

## This downturn will be deeper



Source: CEIC, Macquarie Research, February 2009

## But other options exist



Source: CEIC, Macquarie Research, February 2009

## Analyst

**Donna Kwok**  
852 3922 3597  
donna.kwok@macquarie.com

**Bill Belchere**  
852 3922 4636  
bill.belchere@macquarie.com

## Economy sinks by 50-year record, again

### Taiwan's economy grinds to a halt in 2008

- 4Q08 GDP fell 8.36% YoY, bringing full-year growth to 0.12%. This downturn marks a multi-decade low. Our 2009 GDP forecast has been downgraded to -6% (previous: -2%; consensus: -2%).
- The central bank has responded immediately with a 25bp rate cut, bringing the policy rate down to 1.25%.
- We expect export growth (QoQ) to resume in the second half of 2009. If this fails to materialise, then policy stimulus will have to be significantly reinforced to reinvigorate private sector consumer and investment spending.

### Activity to stagnate until late 2010

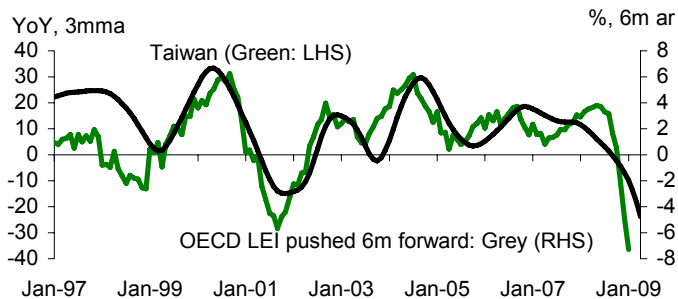
- Key drags:** Exports (~70% of GDP in 2007) and investment (~19% of GDP in 2007) are clearly at the front end of the recession in 2009, the latter shaving gross exports' contribution to headline growth by about 10% (2007: 4.1%).
- The cycle:** On a QoQ basis, we expect growth to trough this quarter, and on a YoY basis, to trough in the third or fourth quarter of this year. Based on Macquarie's projection that the US economy will bottom toward the end of 2009 or 1Q10, we expect growth to move into positive territory in 2010, at 3%.
- Intensity:** We believe this recession will be deeper than the last downturn of 2001 (most severe on record), when exports fell 7.8%, imports by 13% and investments by 20%. This time, the contraction will be about twice that bad.
- Duration:** It will also be 1–2 quarters longer than 2001's, which lasted three quarters (YoY basis).
- Best/worst case:** Under a worst-case scenario, the deterioration in exports would deepen, pushing growth down to -8% in 2009. In a best-case scenario, domestic consumption would pick up, so that growth declines by only 2%.

### Limited policy angle

- Short-term remedy:** The only fiscal measure (and limited depreciation of the NT\$) so far is the distribution of cash vouchers to numb consumers' pain. But we expect further measures, with infrastructure likely to be the focus. Monetary policy would likely be eased further with interest rates cut to 1% (after the 25bp cut to 1.25%) yesterday, and perhaps further reserve requirements cuts.
- Long-term remedy:** The Taiwan government realises the urgent need to rebalance its growth drivers, but this would be a long-term transition. High-tech investment is one path, but there is another, more obvious option – consumer spending, which has averaged ~55% of Taiwan's GDP for the last three decades.
- Fiscal plans can only place a floor on the recession, not reverse it. Taipei plans to continue letting the currency out, and rates will continue coming down. It is questionable whether this would have any effect at all.

Please refer to the important disclosures and analyst certification on inside back cover of this document, or on our website [www.macquarie.com.au/research/disclosures](http://www.macquarie.com.au/research/disclosures).

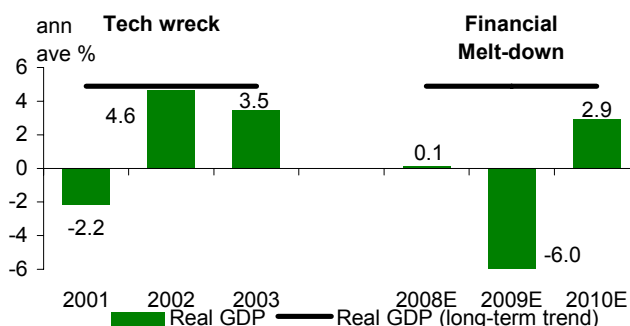
**Fig 1 Taiwan's exports are back to Tech wreck levels**



Source: CEIC, Macquarie Research, February 2009

- Taiwan leads the Asian pack in terms of plummeting export numbers. Exports dropped 44% YoY in January, almost 10ppt more than runner-up Japan.
- The slowdown in imports continued to outstrip that in exports (by another 16.5%), boosting the trade balance and current account surplus. But this silver lining is beginning to lose its sparkle.
- In line with the OECD leading indicator, Taiwan's industrial production index hit a 3-year low (77.4), and export orders fell a record 33% in Dec. Both have further to go, in our view.

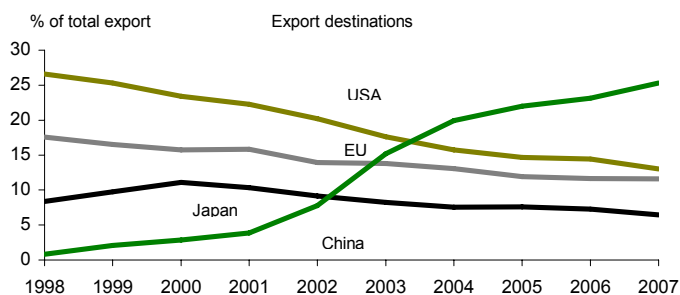
**Fig 2 The cycle – a multi-decade low**



Source: CEIC, Macquarie Research, February 2009

- YoY growth numbers should trough in the third or fourth quarter of this year. Based on Macquarie's projection that the US economy will bottom toward the end of 2009 or 1Q10, we expect growth to move back into positive territory in 2010, growing by 2.9% (same as consensus).
- This recession will be deeper than the last downturn in 2001 (worst in over 5 decades), when exports fell 7.8%, imports by 13% and investments by 20%. This time, the contraction will be about twice that bad. It will also be 1-2 quarters longer than 2001's, which lasted 3 quarters (YoY).

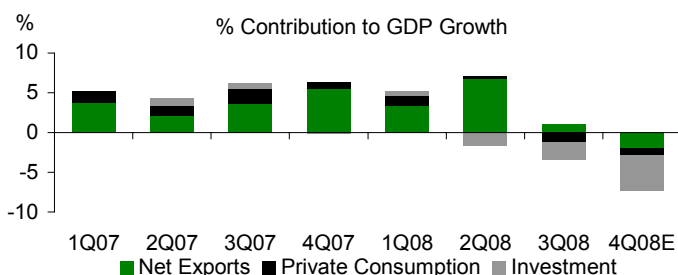
**Fig 3 Two reasons why this downturn is deeper**



Source: CEIC, Macquarie Research, February 2009

- Two reasons why this downturn is likely to be deeper:
  - ⇒ Net exports as a percentage of GDP are more than 3 times higher (over 15%) today than in 2001, while Taiwan's dependence on China as a trade conduit is significantly greater.
  - ⇒ Exports to China accounted for less than 4% of the island's total exports in 2001; this figure is over 25% today. Exports to China are also falling the fastest, by 63% in Jan.

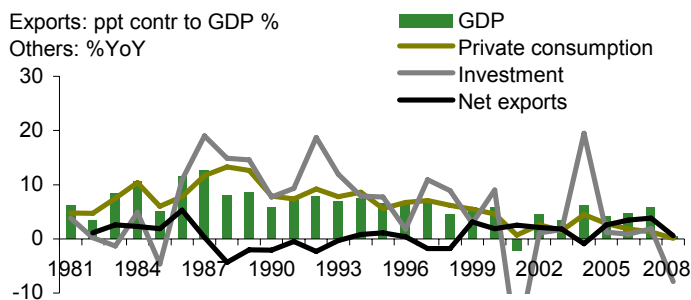
**Fig 4 Exports and investment front-end this dip**



Source: CEIC, Macquarie Research, February 2009

- Besides exports (~70% of GDP in 2007), investment (~19% of GDP in 2007) is also front-ending this recession, and is expected to shave 0.5% off 2009 headline growth.
- The latter's decline can be traced back to exports – machinery and equipment have made up over nine-tenths of all investment since 2003.
- But thanks to imports, net exports will still make a positive contribution to 2009 growth of 3%.

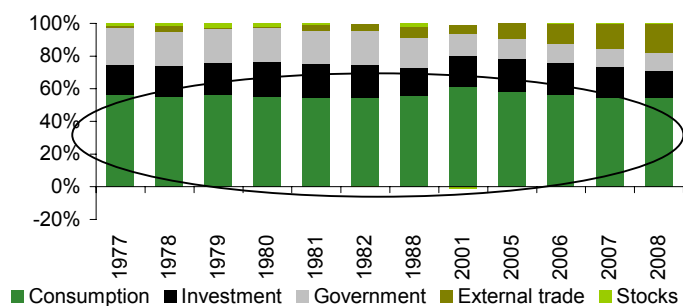
**Fig 5 A future with more balanced drivers is possible**



Source: CEIC, Macquarie Research, February 2009

- A future with more balanced growth drivers is possible and desirable. The late 1980s and 1990s proved Taiwan can achieve positive growth with minimal export growth.
- Private consumption has averaged over 55% of Taiwan's GDP for over 30 years, so Taiwan's capacity to grow from within is greater than suggested at first glance.
- The government realises the urgent need to rebalance its growth drivers, but initiatives bigger than shopping voucher schemes will be needed to kick-start private spending.

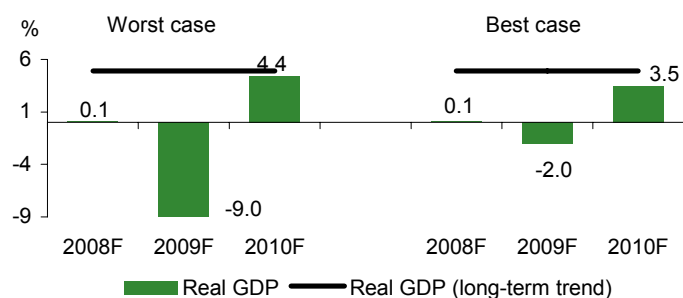
**Fig 6 Private consumption has averaged over 55% of Taiwan's GDP since 1970s**



Source: CEIC, Macquarie Research, February 2009

- The lion's share (NT\$500bn) of the total NT\$583bn in stimulus funds tabled thus far will go to infrastructure, while technological subsidies for high-technology sectors such as DRAM (reportedly worth NT\$70bn) are in the works.
- But how the dormant engine of domestic consumption can be kick-started is another story altogether, given that consumer confidence is at an 8-year low and unemployment is riding a 6-year high.

**Fig 7 Worst- and best-case scenarios**



Source: CEIC, Macquarie Research, February 2009

- **2009 worst-case scenario:** External demand would be the key determinant here. If exports fell ~3% more than our current forecast of 15.3% (holding all else constant), growth could fall 7% in 2009.
- **2009 best-case scenario:** Based on more resilient domestic spending and export demand, assuming that: 1) the government's shopping voucher scheme succeeds in minimising the fall in private spending to 1% YoY (current forecast: -4.2%); and 2) exports fall by 3% less than our current forecast, full-year GDP contraction would be 2%.

- Looking ahead, we expect monetary policy to be eased further as interest rates and perhaps reserve requirements are cut from their respective levels of 1.5% and 5%. Limited depreciation of the NT\$ should also help to numb Taiwan's pain.
- Government spending will be the only other positive contributor to growth through 2009, besides a contribution from net exports. Like in the rest of Asia, fiscal plans can only place a floor on recession, not reverse it.
- We expect export growth (QoQ) to resume in the second half of 2009. If this fails to materialise, then policy stimulus will have to be significantly reinforced to reinvigorate private sector consumer and investment spending.

Fig 8 Taiwan economic forecast

	2001	2002	2003	2004	2005	2006	2007	2008	2009E	2010E
<b>Activity and prices</b>										
Real GDP	-2.2	4.6	3.5	6.2	4.2	4.8	5.7	0.1	-6.0	2.9
Domestic demand: incl stocks	-4.8	2.6	1.8	7.7	1.7	1.5	2.2	-2.4	-10.8	4.4
Domestic demand: excl stocks	-4.3	2.2	1.4	6.7	2.3	1.3	2.0	-2.4	-7.6	3.6
Private consumption (ann. av. change)	0.7	2.6	1.5	4.5	3.0	1.8	2.3	-0.3	-4.2	0.0
Gross fixed capital formation (ann. av. change)	-19.9	1.1	1.7	19.5	1.2	0.9	1.9	-10.8	-34.7	4.1
Government consumption (ann. av. change)	0.5	2.1	0.6	-0.5	1.1	-0.4	0.9	1.1	15.7	7.1
Exports (ann. av. change)	-7.8	10.6	10.4	14.4	7.6	10.3	8.8	-0.2	-21.3	7.4
Imports (ann. av. change)	-13.0	7.1	8.1	18.9	3.8	5.6	3.8	-4.3	-34.3	7.6
Inventory Investment (cont to GDP growth)	-0.4	0.4	0.4	0.9	-0.6	0.2	0.1	0.0	-2.6	0.0
Net Exports (cont to GDP growth)	2.5	2.1	1.8	-0.9	2.6	3.5	3.8	2.2	2.9	1.6
Private consumption (cont to GDP growth)	0.4	1.6	0.9	2.7	1.8	1.0	1.3	-0.2	-2.3	0.0
Government consumption (cont to GDP growth)	0.1	0.3	0.1	-0.1	0.1	-0.1	0.1	0.1	1.8	1.0
Manufacturing production index (ann avg % chg)	-8.4	7.1	8.7	8.4	3.8	4.7	7.8	-2.0	-12.0	5.0
Unemployment rate (sa, ann avg %)	4.6	5.2	4.6	4.4	4.1	3.9	3.9	4.1	5.0	4.5
Nominal GDP (US\$bn)	292	298	306	331	356	366	385	392	355	363
GDP Deflator (ann avg % chg)	0.5	-0.2	-1.3	-0.9	-0.6	-0.7	0.3	-2.2	0.6	1.8
PPI (ann avg % chg)	-1.3	0.1	2.5	7.0	0.6	5.6	6.5	5.2	-1.4	1.3
CPI (ann avg % chg)	0.0	-0.2	-0.3	1.6	2.3	0.6	1.8	3.5	-1.0	1.6
<b>Fiscal and external balance</b>										
Government balance (% of GDP)	-6.4	-4.2	-2.7	-2.8	-0.6	-0.6	-0.2	0.0	-1.6	-1.2
Merchandise exports (US\$bn)	126	135	151	182	198	224	247	264	210	247
- y/y % chg	-16.9	7.1	11.3	21.1	8.8	12.8	10.1	7.1	-20.4	17.6
(% of GDP)	43.3	45.4	49.3	55.1	55.8	61.1	64.0	67.2	59.1	58.4
Merchandise imports (US\$bn)	106	110	124	165	179	200	216	246	185	220
- y/y % chg	-23.5	4.4	12.8	32.6	8.5	11.5	8.2	13.9	-24.9	18.9
(% of GDP)	36.2	37.1	40.7	49.8	50.3	54.5	56.1	62.7	52.1	60.6
Merchandise trade balance (US\$bn)	21	25	26	17	19	24	30	18	25	27
(% of GDP)	7.0	8.4	8.5	5.2	5.5	6.6	7.9	4.5	7.0	7.4
Current account balance (US\$bn)	19	26	31	20	18	26	33	24	32	34
(% of GDP)	6.5	8.9	10.0	6.0	4.9	7.2	8.6	6.2	8.9	9.4
Net foreign direct investment (US\$bn)	-1	-3	-5	-5	-4	0	-3	-6	-2	-6
(% of GDP)	-0.5	-1.2	-1.7	-1.6	-1.2	0.0	-0.9	-1.6	-0.6	-1.5
Foreign exchange reserves (ex gold, US\$bn)	122	162	207	242	253	266	270	292	275	300
Months import coverage	13.9	17.6	19.9	17.6	17.0	16.0	15.0	14.2	17.8	16.4
<b>Liquidity and market rates</b>										
Narrow money supply M1a (%)	0.8	9.0	20.8	10.0	7.4	2.9	2.8	2.0	1.0	4.0
Narrow money supply M1b (%)	11.9	9.3	19.3	12.4	6.8	4.5	0.0	-3.0	2.0	5.0
Broad money supply M2 (%)	4.4	2.6	5.8	7.4	6.6	5.3	0.9	3.0	2.0	8.0
Loan growth (%)	-1.4	-2.1	6.5	10.2	8.6	3.1	5.3	2.0	-4.0	-2.0
Rediscount rate (% , year-end)	2.1	1.6	1.4	1.8	2.3	2.8	3.4	2.0	1.0	2.5
91-180 day CP rate (% , year-end)	2.9	2.2	1.4	1.4	1.6	1.9	2.2	2.6	2.3	2.0
Exchange rate (US\$/NT\$, year end)	35.0	34.8	34.0	31.9	32.9	32.6	32.4	32.9	32.0	31.0
Exchange rate (US\$/NT\$, ann avg)	33.8	34.6	34.4	33.4	32.2	32.5	32.8	31.5	33.5	32.0

Source: CEIC, Macquarie Research, February 2009

## Important disclosures:

Recommendation definitions	Volatility index definition*	Financial definitions
<p><b>Macquarie - Australia/New Zealand</b>            Outperform – return &gt;5% in excess of benchmark return            Neutral – return within 5% of benchmark return            Underperform – return &gt;5% below benchmark return</p> <p><b>Macquarie – Asia/Europe</b>            Outperform – expected return &gt;+10%            Neutral – expected return from -10% to +10%            Underperform – expected return &lt;-10%</p> <p><b>Macquarie First South – South Africa</b>            Outperform – expected return &gt;+10%            Neutral – expected return from -10% to +10%            Underperform – expected return &lt;-10%</p> <p><b>Macquarie – Canada</b>            Outperform – return &gt;5% in excess of benchmark return            Neutral – return within 5% of benchmark return            Underperform – return &gt;5% below benchmark return</p> <p><b>Macquarie – USA</b>            Outperform (Buy) – return &gt;5% in excess of benchmark return            Neutral (Hold) – return within 5% of benchmark return            Underperform (Sell) – return &gt;5% below benchmark return</p> <p><b>Recommendations</b> – 12 months  <b>Note:</b> Quant recommendations may differ from Fundamental Analyst recommendations</p>	<p>This is calculated from the volatility of historical price movements.</p> <p><b>Very high–highest risk</b> – Stock should be expected to move up or down 60–100% in a year – investors should be aware this stock is highly speculative.</p> <p><b>High</b> – stock should be expected to move up or down at least 40–60% in a year – investors should be aware this stock could be speculative.</p> <p><b>Medium</b> – stock should be expected to move up or down at least 30–40% in a year.</p> <p><b>Low–medium</b> – stock should be expected to move up or down at least 25–30% in a year.</p> <p><b>Low</b> – stock should be expected to move up or down at least 15–25% in a year.            * Applicable to Australian/NZ/Canada stocks only</p>	<p>All "Adjusted" data items have had the following adjustments made:            Added back: goodwill amortisation, provision for catastrophe reserves, IFRS derivatives &amp; hedging, IFRS impairments &amp; IFRS interest expense            Excluded: non recurring items, asset revals, property revals, appraisal value uplift, preference dividends &amp; minority interests</p> <p><b>EPS</b> = adjusted net profit / epowa*  <b>ROA</b> = adjusted ebit / average total assets  <b>ROA Banks/Insurance</b> = adjusted net profit / average total assets  <b>ROE</b> = adjusted net profit / average shareholders funds  <b>Gross cashflow</b> = adjusted net profit + depreciation            *equivalent fully paid ordinary weighted average number of shares</p> <p>All Reported numbers for Australian/NZ listed stocks are modelled under IFRS (International Financial Reporting Standards).</p>

## Recommendation proportions – For quarter ending 31 December 2008

	AU/NZ	Asia	RSA	USA	CA	EUR
Outperform	38.55%	50.61%	64.52%	53.13%	65.55%	43.00%
Neutral	41.82%	15.92%	25.81%	40.63%	27.73%	48.00%
Underperform	19.64%	33.47%	9.68%	6.25%	6.72%	9.00%

**Analyst Certification:** The views expressed in this research accurately reflect the personal views of the analyst(s) about the subject securities or issuers and no part of the compensation of the analyst(s) was, is, or will be directly or indirectly related to the inclusion of specific recommendations or views in this research. The analyst principally responsible for the preparation of this research receives compensation based on overall revenues of Macquarie Group Ltd ABN 94 122 169 279 (AFSL No. 318062 ) (MGL) and its related entities (the Macquarie Group) and has taken reasonable care to achieve and maintain independence and objectivity in making any recommendations.

**Disclaimers:** Macquarie Securities (Australia) Ltd; Macquarie Capital (Europe) Ltd; Macquarie Capital Markets Canada Ltd; Macquarie Capital Markets North America Ltd; Macquarie Capital (USA) Inc; Macquarie Capital Securities Ltd; Macquarie Capital Securities (Singapore) Pte Ltd; Macquarie Securities (NZ) Ltd; and Macquarie First South Securities (Pty) Limited are not authorised deposit-taking institutions for the purposes of the Banking Act 1959 (Commonwealth of Australia), and their obligations do not represent deposits or other liabilities of Macquarie Bank Limited ABN 46 008 583 542 (MBL) or MGL. MBL does not guarantee or otherwise provide assurance in respect of the obligations of any of the above mentioned entities. MGL provides a guarantee to the Monetary Authority of Singapore in respect of the obligations and liabilities of Macquarie Capital Securities (Singapore) Pte Ltd for up to SGD 35 million. This research has been prepared for the general use of the wholesale clients of the Macquarie Group and must not be copied, either in whole or in part, or distributed to any other person. If you are not the intended recipient you must not use or disclose the information in this research in any way. Nothing in this research shall be construed as a solicitation to buy or sell any security or product, or to engage in or refrain from engaging in any transaction. In preparing this research, we did not take into account the investment objectives, financial situation and particular needs of the reader. Before making an investment decision on the basis of this research, the reader needs to consider, with or without the assistance of an adviser, whether the advice is appropriate in light of their particular investment needs, objectives and financial circumstances. There are risks involved in securities trading. The price of securities can and does fluctuate, and an individual security may even become valueless. International investors are reminded of the additional risks inherent in international investments, such as currency fluctuations and international stock market or economic conditions, which may adversely affect the value of the investment. This research is based on information obtained from sources believed to be reliable but we do not make any representation or warranty that it is accurate, complete or up to date. We accept no obligation to correct or update the information or opinions in it. Opinions expressed are subject to change without notice. No member of the Macquarie Group accepts any liability whatsoever for any direct, indirect, consequential or other loss arising from any use of this research and/or further communication in relation to this research.

**Other Disclaimers:** In Canada, securities research is prepared, approved and distributed by Macquarie Capital Markets Canada Ltd, a participating organisation of the Toronto Stock Exchange, TSX Venture Exchange & Montréal Exchange. Macquarie Capital Markets North America Ltd., which is a registered broker-dealer and member of FINRA, accepts responsibility for the contents of reports issued by Macquarie Capital Markets Canada Ltd in the United States and to US persons and any person wishing to effect transactions in the securities described in the reports issued by Macquarie Capital Markets Canada Ltd should do so with Macquarie Capital Markets North America Ltd. Securities research is issued and distributed by Macquarie Securities (Australia) Ltd (AFSL No. 238947) in Australia, a participating organisation of the Australian Securities Exchange; Macquarie Securities (NZ) Ltd in New Zealand, a licensed sharebroker and New Zealand Exchange Firm; Macquarie Capital (Europe) Ltd in the United Kingdom, which is authorised and regulated by the Financial Services Authority (No. 193905); Macquarie Capital Securities Ltd in Hong Kong, which is licensed and regulated by the Securities and Futures Commission; Macquarie Capital Securities (Japan) Limited in Japan, a member of the Tokyo Stock Exchange, Inc., Osaka Securities Exchange Co. Ltd, and Jasdq Securities Exchange, Inc. (Financial Instruments Firm, Kanto Financial Bureau (kin-sho) No. 231, a member of Japan securities Dealers Association and Financial Futures Association of Japan); Macquarie First South Securities (Pty) Limited in South Africa, a member of the JSE Limited and in Singapore, Macquarie Capital Securities (Singapore) Pte Ltd (Company Registration Number: 198702912C), a Capital Markets Services licence holder under the Securities and Futures Act to deal in securities and provide custodial services in Singapore. Pursuant to the Financial Advisers (Amendment) Regulations 2005, Macquarie Capital Securities (Singapore) Pte Ltd is exempt from complying with sections 25, 27 and 36 of the Financial Advisers Act. Clients should contact analysts at, and execute transactions through, a Macquarie Group entity in their home jurisdiction unless governing law permits otherwise. Macquarie Capital (USA) Inc., which is a registered broker-dealer and member of FINRA, accepts responsibility for the content of each research report prepared by one of its non-US affiliates when the research report is distributed in the United States by Macquarie Capital (USA) Inc. Macquarie Capital (USA) Inc. affiliate research reports and affiliate employees are not subject to the disclosure requirements of FINRA rules. Any persons receiving this report directly from Macquarie Capital (USA) Inc. and wishing to effect a transaction in any security described herein should do so with Macquarie Capital (USA) Inc. The information contained in this document is confidential. If you are not the intended recipient, you must not disclose or use the information in this document in any way. If you received it in error, please tell us immediately by return e-mail and delete the document. We do not guarantee the integrity of any e-mails or attached files and are not responsible for any changes made to them by any other person. MGL has established and implemented a conflicts policy at group level (which may be revised and updated from time to time) (the "Conflicts Policy") pursuant to regulatory requirements (including the FSA Rules) which sets out how we must seek to identify and manage all material conflicts of interest. Disclosures with respect to the issuers, if any, mentioned in this research are available at [www.macquarie.com/research/disclosures](http://www.macquarie.com/research/disclosures). © Macquarie Group

<b>Auckland</b> Tel: (649) 377 6433	<b>Bangkok</b> Tel: (662) 694 7999	<b>Calgary</b> Tel: (1 403) 218 6650	<b>Hong Kong</b> Tel: (852) 2823 3588	<b>Jakarta</b> Tel: (62 21) 515 1818	<b>Johannesburg</b> Tel: (27 11) 583 2000	<b>Kuala Lumpur</b> Tel: (60 3) 2059 8833
<b>London</b> Tel: (44 20) 3037 4400	<b>Manila</b> Tel: (63 2) 857 0888	<b>Melbourne</b> Tel: (613) 9635 8139	<b>Montreal</b> Tel: (1 514) 925 2850	<b>Mumbai</b> Tel: (91 22) 6653 3000	<b>Perth</b> Tel: (618) 9224 0888	<b>Seoul</b> Tel: (82 2) 3705 8500
<b>Shanghai</b> Tel: (86 21) 6841 3355	<b>Singapore</b> Tel: (65) 6231 1111	<b>Sydney</b> Tel: (612) 8232 9555	<b>Taipei</b> Tel: (886 2) 2734 7500	<b>Tokyo</b> Tel: (81 3) 3512 7900	<b>Toronto</b> Tel: (1 416) 848 3500	<b>New York</b> Tel: (1 212) 231 2500

Available to clients on the world wide web at [www.macquarie.com/research](http://www.macquarie.com/research) and through Thomson Financial, FactSet, Reuters and Bloomberg.

## Asia Research

### Head of Equity Research

Stephen O'Sullivan (852) 3922 3566

### Automobiles/Auto Parts

Kenneth Yap (Indonesia) (6221) 515 7343  
Dan Lucas (Japan) (813) 3512 6050  
Eunsook Kwak (Korea) (822) 3705 8644  
Linda Huang (Taiwan) (8862) 2734 7521

### Banks and Non-Bank Financials

Ismael Pili (Asia, Japan) (813) 3512 5979  
Nick Lord (Asia, China, Hong Kong) (852) 3922 4774  
Sarah Wu (China) (8621) 2412 9035  
Seshadri Sen (India) (9122) 6653 3053  
Ferry Wong (Indonesia) (6221) 515 7335  
Chin Seng Tay (Malaysia, S'pore) (65) 6231 2837  
Nadine Javellana (Philippines) (832) 857 0890  
Matthew Smith (Taiwan) (8862) 2734 7514  
Alastair Macdonald (Thailand) (662) 694 7741

### Chemicals/Textiles

Scott Weaver (Taiwan) (8862) 2734 7512  
Jal Irani (India) (9122) 6653 3040  
Christina Lee (Korea) (822) 3705 8670  
Sunaina Dhanuka (Malaysia) (603) 2059 8993

### Conglomerates

Gary Pinge (Asia) (852) 3922 3557  
Leah Jiang (China) (8621) 2412 9020  
Kenneth Yap (Indonesia) (6221) 515 7343  
Ashwin Sanketh (Singapore) (65) 6231 2830

### Consumer

Mohan Singh (Asia) (852) 3922 1111  
Jessie Qian (China, Hong Kong) (852) 3922 3568  
Unmesh Sharma (India) (9122) 6653 3042  
Duane Sandberg (Japan) (813) 3512 7867  
Toby Williams (Japan) (813) 3512 7392  
Heather Kang (Korea) (822) 3705 8677  
HongSuk Na (Korea) (822) 3705 8678  
Edward Ong (Malaysia) (603) 2059 8982  
Alex Pomento (Philippines) (632) 857 0899  
Linda Huang (Taiwan) (8862) 2734 7521

### Emerging Leaders

Jake Lynch (Asia) (8621) 2412 9007  
Hiu-Lui Ko (China) (852) 3922 4704  
Minoru Tayama (Japan) (813) 3512 6058  
Robert Burghart (Japan) (813) 3512 7853  
Heather Kang (Korea) (822) 3705 8677  
Scott Weaver (Taiwan) (8862) 2734 7512

### Industrials

Inderjeetsingh Bhatia (India) (9122) 6653 3166  
Christopher Cintavey (Japan) (813) 3512 7432  
Janet Lewis (Japan) (813) 3512 7475  
Michael Na (Korea) (822) 2095 7222  
Sunaina Dhanuka (Malaysia) (603) 2059 8993  
David Gambrill (Thailand) (662) 694 7753

### Insurance

Mark Kellogg (Asia) (852) 3922 3567  
Seshadri Sen (Asia, India) (9122) 6653 3053  
Makarim Salman (Japan) (813) 3512 7421

## Sales

### Regional Heads of Sales

Peter Slater (Boston) (1 617) 598 2502  
Michelle Paisley (China, Hong Kong) (852) 3922 3516  
Ulrike Pollak-Tsutsumi (Frankfurt) (49) 69 7593 8747  
Thomas Renz (Geneva) (41) 22 818 7712  
Ajay Bhatia (India) (9122) 6653 3200  
Stuart Smythe (India) (9122) 6653 3200  
Chris Gray (Indonesia) (6221) 515 7304  
Gino C Rojas (Philippines) (632) 857 0761  
Greg Norton-Kidd (New York) (1 212) 231 2527  
Luke Sullivan (New York) (1 212) 231 2507  
Scot Mackie (New York) (1 212) 231 2848  
Sheila Schroeder (San Francisco) (1 415) 835 1235

### Media

Jessie Qian (China, Hong Kong) (852) 3922 3568  
Shubham Majumder (India) (9122) 6653 3049  
Prem Jearajasingam (Malaysia) (603) 2059 8989  
Alex Pomento (Philippines) (632) 857 0899

### Oil and Gas

David Johnson (Asia, China) (852) 3922 4691  
Scott Weaver (Taiwan) (8862) 2734 7512  
Jal Irani (India) (9122) 6653 3040  
Polina Diyachkina (Japan) (813) 3512 7886  
Christina Lee (Korea) (822) 3705 8670  
Edward Ong (Malaysia) (603) 2059 8982  
Sunaina Dhanuka (Malaysia) (603) 2059 8993  
Ashwin Sanketh (Singapore) (65) 6231 2830

### Pharmaceuticals

Abhishek Singhal (India) (9122) 6653 3052  
Naomi Kumagai (Japan) (813) 3512 7474  
Christina Lee (Korea) (822) 3705 8670

### Property

Matt Nacard (Asia) (852) 3922 4731  
Eva Lee (China, Hong Kong) (852) 3922 3573  
Chris Cheng (China, Hong Kong) (852) 3922 3581  
Unmesh Sharma (India) (9122) 6653 3042  
Chang Han Joo (Japan) (813) 3512 7885  
Hiroshi Okubo (Japan) (813) 3512 7433  
Tuck Yin Soong (Singapore) (65) 6231 2838  
Elaine Cheong (Singapore) (65) 6231 2839  
Corinne Jian (Taiwan) (8862) 2734 7522  
Patti Tomaitrichitr (Thailand) (662) 694 7727

### Resources / Metals and Mining

Andrew Dale (Asia) (852) 3922 3587  
Xiao Li (China) (852) 3922 4626  
YeeMan Chin (China) (852) 3922 3562  
Rakesh Arora (India) (9122) 6653 3054  
Adam Worthington (Indonesia) (6221) 515 7338  
Polina Diyachkina (Japan) (813) 3512 7886  
Christina Lee (Korea) (822) 3705 8670  
Scott Weaver (Taiwan) (8862) 2734 7512

### Technology

Warren Lau (Asia) (852) 3922 3592  
Kishore Belai (India) (9122) 6653 3046  
Damian Thong (Japan) (813) 3512 7877  
David Gibson (Japan) (813) 3512 7880  
George Chang (Japan) (813) 3512 7854  
Yukihiko Goto (Japan) (813) 3512 5984  
Do Hoon Lee (Korea) (822) 3705 8641  
Michael Bang (Korea) (822) 3705 8659  
Patrick Yau (Singapore) (65) 6231 2835  
Chia-Lin Lu (Taiwan) (8862) 2734 7526  
Daniel Chang (Taiwan) (8862) 2734 7516  
James Chiu (Taiwan) (8862) 2734 7517  
Nicholas Teo (Taiwan) (8862) 2734 7523

### Telecoms

Tim Smart (Asia, China) (852) 3922 3565  
Bin Liu (China) (852) 3922 3634  
Shubham Majumder (India) (9122) 6653 3049  
Kenneth Yap (Indonesia) (6221) 515 7343  
Nathan Ramler (Japan) (813) 3512 7875  
Prem Jearajasingam (Malaysia) (603) 2059 8989  
Ramakrishna Maruvada (Philippines, Singapore, Thailand) (65) 6231 2842

### Regional Heads of Sales cont'd

Giles Heyring (Singapore, Malaysia) (65) 6231 2888  
Mark Duncan (Korea, Taiwan) (8862) 2734 7510  
Angus Kent (Thailand) (662) 694 7601  
Michael Newman (Tokyo) (813) 3512 7920  
Charles Neilson (UK/Europe) (44) 20 3037 4832  
Rob Fabbro (UK/Europe) (44) 20 3037 4865  
Nick Ainsworth (Generalist) (852) 3922 2010

### Sales Trading

Adam Zaki (Asia) (852) 3922 2002  
Mona Lee (Hong Kong) (852) 3922 2085  
Mike Keen (Europe) (44) 20 3037 4905

### Transport & Infrastructure

Gary Pinge (Asia) (852) 3922 3557  
Anderson Chow (Asia, China) (852) 3922 4773  
Jonathan Windham (Asia, China) (852) 3922 5417  
Wei Sim (China, Hong Kong) (852) 3922 3598  
Janet Lewis (Japan) (813) 3512 7475  
Eunsook Kwak (Korea) (822) 3705 8644  
Heather Kang (Korea) (822) 3705 8677  
Sunaina Dhanuka (Malaysia) (603) 2059 8993

### Utilities

Carol Cao (China, Hong Kong) (852) 3922 4075  
Adam Worthington (Indonesia) (6221) 515 7338  
Kakutoshi Ohori (Japan) (813) 3512 7296  
Prem Jearajasingam (Malaysia) (603) 2059 8989  
Alex Pomento (Philippines) (632) 857 0899

### Commodities

Jim Lennox (4420) 3037 4271  
Adam Rowley (4420) 3037 4272  
Jonathan Butcher (4420) 3037 4276  
Max Layton (4420) 3037 4273  
Bonnie Liu (8621) 2412 9008  
Henry Liu (8621) 2412 9005  
Rakesh Arora (9122) 6653 3054

### Data Services

Andrea Clohessy (Asia) (852) 3922 4076

### Economics

Bill Belchere (Asia) (852) 3922 4636  
Rajeev Malik (ASEAN, India) (65) 6231 2841  
Richard Gibbs (Australia) (612) 8232 3935  
Paul Cavey (China) (852) 3922 3570  
Richard Jerram (Japan) (813) 3512 7855

### Quantitative

Martin Emery (Asia) (852) 3922 3582  
Viking Kwok (Asia) (852) 3922 4735  
George Platt (Australia) (612) 8232 6539  
Raelene de Souza (Australia) (612) 8232 8388  
Tsumugi Akiba (Japan) (813) 3512 7560

### Strategy/Country

Tim Rocks (Asia) (852) 3922 3585  
Daniel McCormack (Asia) (852) 3922 4073  
Desh Peramunetilleke (Asia) (852) 3922 3564  
Mahesh Kedia (Asia) (852) 3922 3576  
Michael Kurtz (China) (8621) 2412 9002  
Seshadri Sen (India) (9122) 6653 3053  
Ferry Wong (Indonesia) (6221) 515 7335  
Chris Hunt (Japan) (813) 3512 7878  
Peter Eadon-Clarke (Japan) (813) 3512 7850  
Prem Jearajasingam (Malaysia) (603) 2059 8989  
Edward Ong (Malaysia) (603) 2059 8982  
Alex Pomento (Philippines) (632) 857 0899  
Tuck Yin Soong (ASEAN, Singapore) (65) 6231 2838  
Daniel Chang (Taiwan) (8862) 2734 7516  
Alastair Macdonald (Thailand) (662) 694 7741

### Find our research at

Macquarie: [www.macquarie.com.au/research](http://www.macquarie.com.au/research)  
Thomson: [www.thomson.com/financial](http://www.thomson.com/financial)  
Reuters: [www.knowledge.reuters.com](http://www.knowledge.reuters.com)  
Bloomberg: MAC GO  
Factset: <http://www.factset.com/home.aspx>  
Email [macresearch@macquarie.com](mailto:macresearch@macquarie.com) for access

### Sales Trading cont'd

Brendan Rake (India) (9122) 6653 3204  
Edward Robinson (London) (44) 20 3037 4902  
Robert Risman (New York) (1 212) 231 2555  
Isaac Huang (Taiwan) (8862) 2734 7582  
Jon Omori (Tokyo) (813) 3512 7838

### Alternative Strategies

Convertibles - Roland Sharman (852) 3922 2095  
Depository Receipts - Robert Ansell (852) 3922 2094  
Derivatives - Wayne Edelist (852) 3922 2134  
Futures - Tim Smith (852) 3922 2113  
Structured Products - Andrew Terlich (852) 3922 2013