Strategy | ASIA PACIFIC

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O Action

A glance at Asian and global CEO business surveys suggests a strong capex cycle is set to emerge for high-end equipment. A lateral way of engaging this theme is through the metals that are used to build such equipment, ferro-alloys. These include antimony, molybdenum, tungsten and vanadium. Much like rare earth metals, a number of these are produced solely in China and not in Australia.

Anchor themes

Titanium is a good way of playing the demand for passenger aircraft given the backlog of orders. We expect rare earth metals used in batteries, magnets and catalysts to remain well bid until 2013, when sufficient supply is forecast to emerge. Until then, China dominates production. The ongoing problems at Fukushima in Japan following the Tohoku earthquake have created uncertainty over nuclear power. Asia remains beholden to imports for coal, LNG and oil; hence, security of supply is important. In that respect, uranium remains an important commodity.

Ferro-alloys: China's double metal advantage over Australia

Active additives

The markets have overlooked China's dominant position in metals used as additives to iron termed 'ferro-alloys'. The metals used to form alloys with iron included in this group are chromium, manganese, molybdenum, tungsten and vanadium. In truth, antimony isn't a member of the ferro-alloy class, but since it is used as an additive to improve the physical characteristics of base metals, such as lead, it is included in our coverage for consistency.

China produced around 88% of the world's antimony, 85% of global tungsten and was the leading producer of vanadium last year. The reason these metals are important is that they are used to strengthen steel, particularly for machine tool applications, automotive and aircraft production and high-performance industries such as petrochemicals. In essence, they are responsive to corporate capex spending rather than consumer spending or technology spending.

In many ways antimony resembles zinc, being hard and brittle. Its hardening characteristics make it a common addition to lead, and it is used within autos and machinery equipment.

Tungsten is better known as the filament within light bulbs as well as in 'high speed' steels. These are steels that are used to machine or cut into metal parts much quicker than other steels. Tungsten carbide is the most common high-speed cutting steel. More than most other metals, tungsten is considered a barometer of global economic growth.

Vanadium is consumed in the steel industry as ferrovanadium, imparting additional strength and toughness. These steels are then sold to the construction and aerospace industry in applications that require a high strength-to-weight ratio.



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Market calls

We have preferred equities that are related to rare earth metals, titanium and uranium rather than precious metals. We believe that metals benefiting from alloys used to make machinery and plant equipment are also set for resurgence as corporate capex expands. We highlight in Exhibit 11 companies benefiting from such a theme. Large-cap names with significant exposure are Xiamen Tungsten (tungsten), Pangang Group (vanadium) and ChenZhou Mining (antimony).

Strategist

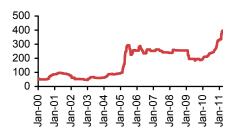
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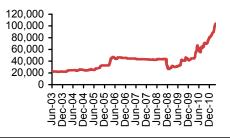
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China Tungsten price (\$/ton)



Source: Bloomberg; Nomura research. Please see Exhibit 4 for details

China Antimony price (CNY/ton)



Source: Bloomberg; Nomura research. Please see Exhibit 2 for details

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Ferro-alloys: China's double metal advantage over Australia

Active additives

"The art of blending metals was gradually developed and it became known that an 'alloy' formed in this way was sometimes stronger, harder and tougher than the metals of which it was composed. Probably the first alloy to be made was a bronze, consisting of copper with about one part in ten of tin. There is evidence that the early workers understood that if contents of tin were used the alloy was harder, while less tin gave a softer alloy, so that for different purposes, bronzes with varying tin contents were deliberately produced.

Although pure metals possess some useful properties, such as high conductivity of heat and electricity, they are not often used in structural or mechanical engineering, because their strength is generally insufficient for the arduous duties which materials are expected to perform in our day. The most important in which the strength of metals can be increased is by alloying. An alloy is an intimate blend of one metal, known as the "parent" or "base" metal, with other metals or with non metals. For example, one type of brass contains two-thirds copper and one-third zinc, while that important alloy, steel is essentially iron containing carbon", Metals in the service of man, Alexander and Street

"Ever since Bessemer invented his converter, the use of ferro-alloys has been an increasingly important adjunct to steel production and quality development. The whole field of ferro-alloys can be divided quantitatively into tonnage ferro-alloys and the so-called noble or micro-alloys where tonnages are much lower and prices higher than with tonnage alloys. Functionally, alloys can be divided into alloys of addition and refining alloys. The latter are usually used to desulphurise, deoxidise or grain refine", Trading in metals, Tarring and Pinney

Late last year, commodity markets were alight on news of further quota restrictions by China on exports of rare earth (RE) metals. As we highlighted in two strategy notes, *Rare earths: China's indigenous precious metal*, China controls more than 90% of global production of REs and has embarked on a series of deals to secure output from other international producers, meaning it accounts for 97% of all REs sold globally. However, the markets have overlooked China's dominant position in metals used as additives to iron are termed 'ferro-alloys'. The metals used to form alloys with iron included in this group are chromium, manganese, molybdenum, tungsten and vanadium.

In truth, antimony isn't a member of the ferro-alloy class, but since it is used as an additive to improve the physical characteristics of a base metal, such as lead, it is included in our coverage for consistency. China produces around 88% of the world's antimony, 85% of global tungsten supply last year and is the leading producer of vanadium, accounting for approximately 40% of estimated production in 2010. The reason these metals are important is that they are used to strengthen steel, particularly for machine tool applications, automotive and aircraft production and high-performance industries such as petrochemicals. In essence, they are responsive to corporate capex rather than consumption. They are less influenced by technology spending (consumer electronics), since they tend to reflect purchases of big-ticket items by companies.

In many ways antimony resembles zinc, being hard and brittle. Its hardening characteristics make it a common addition to lead, and it is used within autos and machinery equipment. China is the major supplier of antimony ore (antimony sulphide or stibnite) followed by South Africa and Central and South America. Over 50% of antimony is used in flame retardants with the remainder used for TV picture glass and monitors.

Tungsten is better known as the filament within light bulbs as well as in 'high speed' steels. These are steels that are used to machine or cut into metal parts much quicker than other steels. Tungsten carbide is the most common high-speed cutting steel.

More than most other metals, tungsten is considered a barometer of global economic growth. Its use in drill bits has meant that it is at the forefront of the oil industry, while demand for tungsten in cutting tools means that it is widely used in construction. Equally, tungsten cemented carbide micro-drills are used on circuit boards.

Vanadium is considered as a 'scavenger' agent in removing impurities in steel. It is commonly added with chromium and manganese to make specialist steels particularly for armaments. Its use in the legendary Model T Ford accounted for the car's longevity.

Vanadium is consumed in the steel industry as ferrovanadium, imparting additional strength and toughness. These steels are then sold to the construction and aerospace industry in applications that require a high strength to weight ratio.

The main risk of this theme is actually through substitution. Over the past decade a number of abrasives, cemented carbides and ceramics have overtaken the use of tool steels.

Exhibit 1. Global	Antimony	production	and reserves	(tons of metal))

	Mine p	R eserves ⁵	
	2009	2010 ^e	
Bolivia	3,000	3,000	310,000
China	140,000	120,000	950,000
Russia (recoverable)	3,500	3,000	350,000
South Africa	2,800	3,000	21,000
Tajikistan	2,000	2,000	50,000
Other countries	3,300	4,000	150,000
World total (rounded)	155,000	135,000	1,800,000

Source: USGS, Nomura International (Hong Kong) Limited - Investment Strategy



Source: Bloomberg, Nomura International (Hong Kong) Limited – Investment Strategy

	Mine p	production	Reserves ⁷
	2009	<u>2010°</u>	
United States	W	W	140,000
Austria	900	1,000	10,000
Bolivia	1,000	1,100	53,000
Canada	2,000	300	120,000
China	51,000	52.000	1,900,000
Portugal	900	950	4,200
Russia	2,500	2,500	250,000
Other countries	3,000	3,300	400,000
World total (rounded)	² 61,300	² 61,000	2,900,000

Source: USGS, Nomura International (Hong Kong) Limited - Investment Strategy

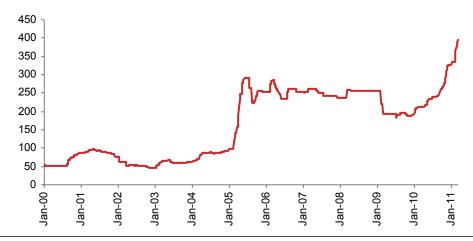
88% of the world's antimony is estimated to have been mined in China in 2010, which also has over 50% of the world's reported reserves. Other major producers include South Africa and Bolivia

Anchor Resources Ltd (AHR AU), Chenzhou Mining Group (002155 CH), Metorex (MTX SJ) are the major listed producers. Japanese Nihon Seiko (5729 JP) manufactures flame-retardant materials using antimony

China mined an estimated 85% of global tungsten supply in 2010.

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Exhibit 4. Tungsten APT Chinese No 1 fob main Chinese ports (\$/ton)



Newcrest Mines (NCM AU – upcoming mine), micro-cap King Island Scheelite (KIS AU), Xiamen Tungsten (600549 CH), China Tungsten and Hightech Materials (000657 CH), China Zhangyuan Tungsten (002378 CH) are major listed producers, and China Molybdenum (3993 HK) is the largest miner, but Tungsten revenues are only about 7%.

Source: Bloomberg, Nomura International (Hong Kong) Limited – Investment Strategy



Exhibit 5. China's Tungsten mines

World tungsten supply will continue to be dominated by Chinese production and exports. The Chinese tungsten concentrate production quota for 2009 was increased by 3% while export licenses were decreased by 2% from the 2008 quota

Source: China Tungsten Online

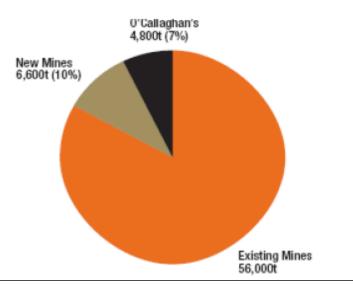
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Newcrest's O'Callaghan deposit will be the largest single mine

Sean Darby

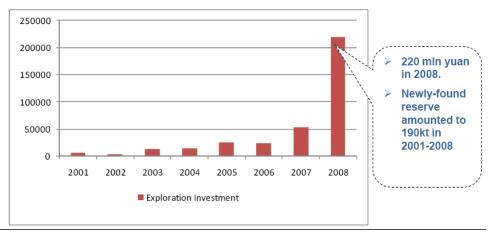
Exhibit 6. Newcrest's O'Callaghan tungsten production vs world

2013 Global Tungten Production forecast²



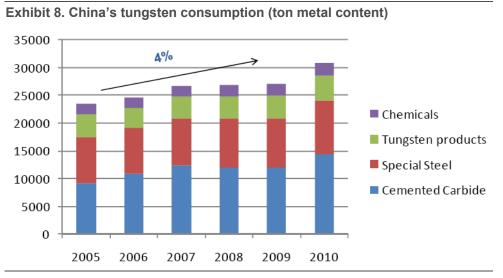
Source: Internal Analysis for O'Callaghan, CRU Analysis, Newcrest Mines; 'Tungsten, reviving the Tungsten industry outside China' for all other data

Exhibit 7. Investment in tungsten resources exploration in China in 2001-2008 ('000 RMB)



China's investment in tungsten mining has risen rapidly

Source: Antaike, Nomura International (Hong Kong) Limited – Investment Strategy



Cemented carbides and ferroalloys make up the majority of tungsten consumption

Source: Antaike, Nomura International (Hong Kong) Limited - Investment Strategy

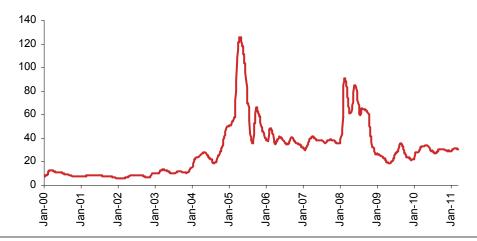
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	Mine p	roduction	Reserves
	2009	2010 ^e	(thousand metric tons
United States	W	W	45
China	21,000	23,000	5,100
Russia	14,500	14,000	5,000
South Africa	17,000	18,000	3,500
Other countries	1,000	1,000	NA
World total (rounded)	53,500	56,000	13,600

Source: USGS, Nomura International (Hong Kong) Limited - Investment Strategy

Exhibit 10. Ferro-vanadium 70-80% V major Europe destinations \$ per kg V



China is the leading producer of vanadium, accounting for over 40% of estimated production in 2010. Atlantic (ATI AU), Pangang (000629 CH), Hebei Iron and Steel Group (000709 CH), China Vanadium (893 HK), Evraz Group (EVR LI), Evraz Highveld Steel (EHS SJ) are major listed producers

Another likely use of vanadium of interest is as vanadium redox batteries (VRB). The extremely large capacities possible from sequentially combining VRBs and their durability make them well suited to use in large power storage applications. The VRB has also been shown to have the least ecological impact of all energy storage technologies, according to the USGS

Source: Bloomberg, Nomura International (Hong Kong) Limited - Investment Strategy

Exhibit 11. Specialty metals miners

				ſ			Du Pont Ana	lysis (2010)			Price P	erforma	ance	
							Builontina	19010 (2010	/			111001			
		Market				Tax	Interest	EBIT	Asset	Financial					
		Cap (\$mn)	P/E	P/B	ROE	Margin	Margin	Margin	Turnover	Leverage	1d	1w	1m	3m	6m
Tungsten															
KING ISLAND SCHE	KIS AU	18	25.6	0.6	-1.9	67.1	88.7	n/a	0.0	1.1	0	-5	-7	34	68
NEWCREST MINING	NCMAU	28395	25.7	2.0	12.0	68.7	73.0	39.7	0.5	1.3	-1	4	2	-6	-4
XIAMEN TUNGSTEN	600549 CH	4984	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-3	4	5	12	53
CHINA MOLYBDENUM	3993 HK	4096	27.9	2.3	8.6	71.8	108.2	28.3	0.3	1.2	0	-1	-8	-3	16
Vanadium															
ATLANTIC LTD	ATIAU	216	n/a	4.1	-205.4	100.0	161.3	n/a	0.0	1.2	1	0	10	35	92
PANGANG GROUP ST	000629 CH	11381	72.4	4.8	6.9	97.3	59.9	4.3	0.7	3.8	-2	2	3	18	60
HEBEI IRON-A	000709 CH	4098	14.2	0.9	3.4	85.3	51.2	2.5	0.9	3.4	2	3	4	8	5
CHINA VANADIUM	893 HK	841	10.1	2.0	20.2	76.1	98.0	46.1	0.5	1.3	-2	7	11	-7	-5
EV RAZ GROUP-GDR	EVRLI	14986	n/a	0.5	-16.7	78.2	405.1	-4.0	0.5	2.9	0	4	0	10	36
EVRAZ HIGHVELD S	EHS SJ	967	n/a	2.8	-19.7	65.7	101.6	-16.1	1.1	1.6	-1	5	-25	-15	-11
Antimony															
ANCHOR RESOURCES	AHRAU	13	n/a	2.4	-13.5	100.0	93.5	n/a	0.0	1.0	2	8	2	4	53
CHENZHOU MININ-A	002155 CH	3004	92.9	10.4	n/a	n/a	n/a	n/a	n/a	n/a	-5	6	15	17	36
METOREX LTD	MTX SJ	772	22.1	1.4	18.6	75.9	88.3	31.1	0.4	2.1	4	18	11	22	57
Antimony Flame-retardant															
NIHON SEIKO	5729 JP	43	6.3	1.2	-3.2	-31.3	95.4	4.4	1.0	2.4	3	-4	-17	6	29

Note: as of 28 March 2011

Source: Bloomberg, Factset, Nomura International (Hong Kong) Limited - Investment Strategy

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Exhibit 12. Specialty steel companies in Korea, Taiwan and Japan

	Bloomberg	Market	
Company	code	cap (\$mn)	Company description
Korea Seah Besteel Corp	001430 KS	1,556	Seah Besteel Corp. manufactures specified steel products such as H-beam, alloy steel, and carbon
	001400110	1,000	steel. The company also produces train and auto parts.
KISWIRE Ltd	002240 KS	461	KISWIRE Ltd. manufactures secondary steel products, such as wire ropes and wire strands for electric wire and springs. The company markets to the shipbuilding and construction industries, and exports products to overseas markets. KISWIRE also has a financial subsidiary.
Union Steel	003640 KS	206	Union Steel produces cold rolled steel, pre-painted steel sheet, steel pipes, and surface treated steel sheets.
Dongkuk Industries Co Ltd	005160 KS	188	Dongkuk Industries Co., Ltd. manufactures cold rolled low carbon steel, hot-dip galvanized steel, pickled & oiled coil, ceramics, ferrite and refractories. The company also operates international trading and construction services.
BNG Steel Co Ltd	004560 KS	183	BNG Steel Co., Ltd. manufactures cold rolled stainless steel sheets, special steel bars, and seamless steel tubes.
Dongil Industries Co Ltd	004890 KS	160	Dongil Industries Co., Ltd. manufactures steel products. The company's main products include hot rolled steel bars, alloyed steel, and casting.
POSCO Coated & Color Steel Co Ltd	058430 KS	155	Posco Coated & Color Steel Company, Ltd. manufactures second process steel sheets and coils. The company's main products include hot-dip galvanized coils and sheets, hot-dip aluminized steel sheets, and pre-painted steel sheets.
Samjung Packing & Aluminum Co Ltd	009520 KS	143	Samjung Packing & Aluminum Co., Ltd. manufactures steel strips used for packing. The company also produces deoxidizers used in the steel-making process. Under a long-term supply contact, Samjung Packing & Aluminum distributes a significant portion of its output to POSCO.
DCM Corp	024090 KS	107	DCM Corp. manufactures laminating steel sheets. The company also develops and produces high- illumination aluminum reflecting plates and plastic buttons for garments.
Taiwan			
Gloria Material Technology Corp	5009 TT	340	Gloria Material Technology Corp. manufactures and markets specialty steel bars. The company's products include cold work tool steel, hot work tool steel, and carbon tool steel. Gloria is a member of the Evergreen Group.
Japan			
Hitachi Metals Ltd	5486 JP	4,356	Hitachi Metals Ltd. manufactures a wide range of specialty steel and metal products, including industrial machinery, magnetic and electronic materials and parts, and aluminium castings and wheels. The company's products are marketed to a variety of users including the automobile, aerospace, nuclear, and computer industries worldwide. The company is a subsidiary of Hitachi, Ltd.
Daido Steel Co Ltd	5471 JP	2,378	Daido Steel Co., Ltd. manufactures and markets specialty steel products for automobiles, electronics, and construction use. The company also provides engineering services for industrial furnaces and waste disposal facilities, and develops various types of alloy metals.
Aichi Steel Corp	5482 JP	1,160	Aichi Steel Corporation is a manufacturer of specialty steel. The company's products include rolled steel and forged products. Aichi Steel jointly works with Toyota Motors to develop automobile parts. The company also makes magnetic and electronic parts, including plastic magnets.
Sanyo Special Steel Co Ltd	5481 JP	845	Sanyo Special Steel Co., Ltd. is a manufacturer of specialty steel products such as bearings, motor shafts, stainless steel, and processed stainless steel sheets and pipes. The company is a member of Nippon Steel group.
Topy Industries Ltd	7231 JP	608	TOPY INDUSTRIES, LIMITED manufactures steel and steel products using electric arc furnaces. The company's products include steel strips, motor vehicle wheels, and parts for construction machinery. Topy also provides engineering and construction services for structural steel works.
Mitsubishi Steel Manufacturing Co Lto	5632 JP	475	Mitsubishi Steel Mfg. Co., Ltd. produces a variety of steel products. The company manufactures springs, cast and forged steel products, environmental equipment, and special steel products.
Daido Metal Co Ltd	7245 JP	323	Daido Metal Co., Ltd. manufactures bearings used in automobiles, ships, construction machinery, and other industrial items. The company has production facilities in the United States, Indonesia, and Thailand.
Nippon Yakin Kogyo Co Ltd	5480 JP	256	Nippon Yakin Kogyo Co., Ltd. is a stainless steel producer. The company also produces super alloy, alloyed metal for electronic materials, and stainless processed products.
Nippon Metal Industry Co Ltd	5479 JP	196	Nippon Metal Industry Co., Ltd. manufactures stainless steels and other steel products which are marketed to the auto, appliance, machinery, and construction industries through distributors. The company's products include hot-rolled and cold-finished sheet, coils, tubes and pipes.
Nippon Koshuha Steel Co Ltd	5476 JP	187	Nippon Koshuha Steel Co., Ltd. is a manufacturer of specialty steel. The company's products include bearing steel, tool steel, precision metal molds, and related products.
Nippon Kinzoku Co Ltd	5491 JP	115	Nippon Kinzoku Co., Ltd. manufactures stainless steel products including cold rolled stainless steel, processed stainless steel, and steel strip hoops. The company also manufactures precision pipes for VCR decks and other electronics.
Tokyo Kohtetsu Co Ltd	5448 JP	110	Tokyo Kohtetsu Co., Ltd. manufactures and sells steel products. The company's products for the construction market include steel bars, steel wires, and structural steel.
Source: Bloomberg, Nor	nura research		

Exhibit 13. Recent strategy reports

Date	Title
25- Mar-2011	The power of compounding http://www.nomura.com/research/GetPub.aspx?pid=426337
21- Mar-2011	HK: A bubble in taxi licences, Tobin Q ratios and QE2 ½ http://www.nomura.com/research/GetPub.aspx?pid=425535
18- Mar-2011	Memo to HR department (II): sell accountants, buy engineers http://www.nomura.com/research/GetPub.aspx?pid=425231
16- Mar-2011	Fat tails, thin tails and the cat's whiskers (II) http://www.nomura.com/research/GetPub.aspx?pid=424745
14- Mar-2011	The Sendai earthquake and its impact on Asian equities http://www.nomura.com/research/GetPub.aspx?pid=424229
11- Mar-2011	Fat tails, thin tails and the cat's whiskers http://www.nomura.com/research/GetPub.aspx?pid=423945
7- Mar-2011	Ship ahoy! (XIX) and the Danish-Korean Triple E class http://www.nomura.com/research/GetPub.aspx?pid=423075
3- Mar-2011	Reverberations http://www.nomura.com/research/GetPub.aspx?pid=422578
23- Feb-2011	Asia: A terms-of-trade shock awaiting http://www.nomura.com/research/GetPub.aspx?pid=420898
22- Feb-2011	Vietnam: a juggling act http://www.nomura.com/research/GetPub.aspx?pid=420672
18-Feb-2011	Shouldn't Hong Kong issue inflation index bonds? http://www.nomura.com/research/GetPub.aspx?pid=420134
15-Feb-2011	China: the silent Big Bang (II) http://www.nomura.com/research/GetPub.aspx?pid=419337
12-Feb-2011	Manners maketh a man, margins maketh a CEO! http://www.nomura.com/research/GetPub.aspx?pid=418871
9-Feb-2011	China: an inflationary surprise (X) http://www.nomura.com/research/GetPub.aspx?spid=7480
1-Feb-2011	The Monte Carlo simulation: why we can only approximate a definitive outcome http://www.nomura.com/research/GetPub.aspx?spid=7457
31-Jan-2011	From China to Korea the machines rule http://www.nomura.com/research/GetPub.aspx?spid=7448
26-Jan-2011	New Zealand: an agriculture-led rebalancing act (II) http://www.nomura.com/research/GetPub.aspx?spid=7425
24-Jan-2011	Ambivalent returns http://www.nomura.com/research/GetPub.aspx?pid=413804
20-Jan-2011	Memo to HR department: Sell humans, buy robots http://www.nomura.com/research/GetPub.aspx?spid=7388
19-Jan-2011	Asia's soft commodity crunch (XXIII) http://www.nomura.com/research/GetPub.aspx?pid=413028
14-Jan-2011	Asia's looming energy crisis http://www.nomura.com/research/GetPub.aspx?pid=412351
11-Jan-2011	The changing shape of Asian leverage http://www.nomura.com/research/GetPub.aspx?spid=7341
4-Jan-2011	Asia's soft commodity crunch (XXII) http://www.nomura.com/research/GetPub.aspx?spid=7306
4-Jan-2011	Australia Strategy - Sunny side up http://www.nomura.com/research/GetPub.aspx?spid=7302
3-Jan-2010	The inflation genie, China's Lewisian turning point and bond market jitters (II) http://www.nomura.com/research/GetPub.aspx?spid=7297
14-Dec-2010	The inflation genie, China's Lewisian turning point and bond market jitters http://www.nomura.com/research/GetPub.aspx?spid=7259
6-Dec-2010	Deflation, inflation and the return of the productive economy http://www.nomura.com/research/GetPub.aspx?spid=7226
20-Nov-2010	Greater China Inflation: a double whammy http://www.nomura.com/research/GetPub.aspx?spid=7183
17-Nov-2010	China: an inflationary surprise (IX) and the Engel coefficient http://www.nomura.com/research/GetPub.aspx?spid=7162
15-Nov-2010	Quarter-end, Quarterbacks and a Hail Mary Pass (II) http://www.nomura.com/research/GetPub.aspx?spid=7151
12-Nov-2010	China: an inflationary surprise (VIII) http://www.nomura.com/research/GetPub.aspx?spid=7144

Source: Nomura International (Hong Kong) Limited – Investment Strategy

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Investible themes and baskets

Nomura's investible themes and baskets are listed on Bloomberg at NMRA<Go> for global ideas and NMCS<Go> for Asian recommendations. We show live tradable prices for these themes.

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STOCKS

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

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- 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%.

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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.

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