

March 14, 2016

**Tim Murray**

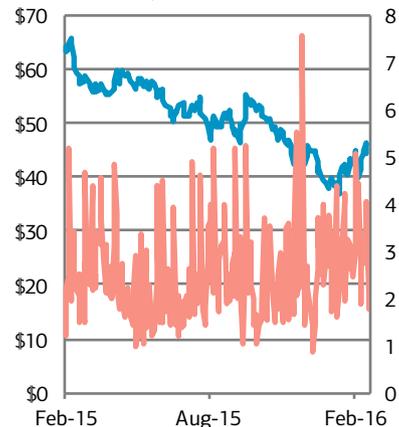
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## Rio Tinto Ltd. (RIO AU)

Price	AUD 44.57
<b>Rating</b>	<b>SELL</b>
<b>Price Target</b>	<b>AUD 29.63</b>
Difference	34%
Market Cap	AUD 72.6 bln
Avg. Volume	AUD 181 mln
Free Float	99.90%

Rio Tinto Ltd (RIO AU) last share price in AUD (blue) and volume (pink, in mln shares)



Source: Bloomberg

## Rio Tinto Ltd. (RIO AU) Not Yet Rock Bottom

- ▶ **Rio's profit will surprise** to the downside in the second half of this year, as iron ore, responsible for 63% of company EBIT, continues to suffer from falling demand, and aluminium and copper, linked to late-cycle construction, decline further.
- ▶ **China property construction** will fall back to 2008, pre-stimulus levels over the next two years. RIO's core commodities of iron ore, aluminium, and copper have all relied on growth in this key sector.
- ▶ **We expect a moratorium** on new industrial capacity, which will induce a roughly 3% decline in steel demand from the manufacturing sector.
- ▶ **Over-supply and sagging demand** will push iron ore prices to below USD 40/ton in the short term and USD 35/ton by the end of 2016. We expect RIO iron ore EBITDA to fall a further 12%.
- ▶ **Copper will be over-supplied** by 1 mln tons, as China copper demand declines by 7% in 2016. Copper prices should fall to the USD 4,100-USD 4,500 range. We expect RIO copper and coal EBITDA to fall 82%.
- ▶ **Aluminum demand** in China will fall 4%, and we expect prices to remain below USD 1,500/ton. We expect RIO aluminium segment EBITDA to fall 44%
- ▶ **DCF Valuation:** Target price of AUD 29.63 downside of 34%

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We see the upturn in commodity prices as a short-term rally.

## Still Further to Fall

**R**IO has high-quality, tier one mining assets. It may be the lowest-cost producer of its key commodities, iron ore, aluminium and copper. But this will not save the company from margin compression as China's commodities demand finds a bottom over the next two years. Markets for iron ore, copper, and aluminium are now all in oversupply and deteriorating.

We see the current upturn in commodity prices, particularly iron ore, as a short-term rally that will be over by April. Monetary stimulus is providing commodities traders and speculators with the ability to bid up commodity prices. We do not see a change in end demand for commodities in key sectors.

Iron ore remains the single most important contributor to RIO profits, and we expect iron ore EBITDA to fall a further USD 1 bln. Aluminium and copper have been performing relatively better in recent years and this is where we expect the greatest falls. Levered more to late-cycle construction, these two commodities have only just begun their decline. We expect copper EBITDA to fall by USD 1.6 bln and aluminium by USD 1.2 billion. (See the chart at the top of the following page.)

**Table 1. RIO Underlying EBITDA by Segment (USD mln)**

	2014	2015	Est 2016	Est 2016 Growth
<b>Iron Ore</b>	14,244	7,872	6,923	-12%
<b>Aluminium</b>	2,930	2,741	1,538	-44%
<b>Copper</b>	2,682	1,968	357	-82%
<b>Diamonds and Minerals</b>	1,045	833	884	6%

Source: Company Reports, J Capital

## Steel and Iron Ore

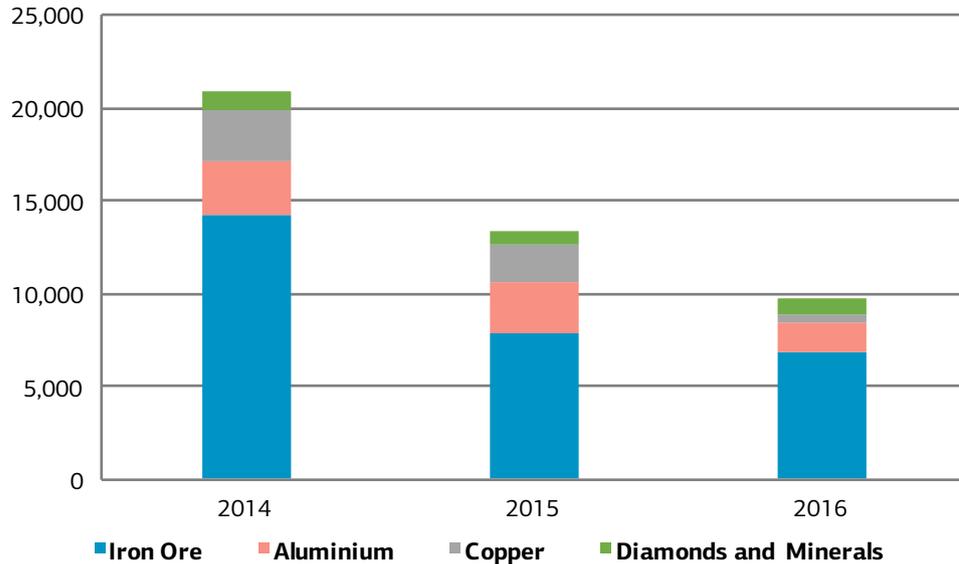
### Iron Ore Below USD 40/ton

We expect steel production in China to fall 8% in 2016, reducing the amount of iron ore required in China by 6% and pushing the iron ore price below USD 40/ton.

The recent rally in steel and iron ore price results from seasonal restocking. Steel trader stocks were 40% below the levels of 2015 after the Chinese New Year. Steel mills had slowed production, and prices of steel started to rise. Steel traders like to restock when prices are rising and need

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**Chart 1. Rio Underlying EBIT by Segment**



Source: Company financials, J Capital Research

inventory ahead of the start of the construction season. However, there has been no upturn in end demand for steel from construction. This is clear from the continued fall in cement prices over the same period and the static inventory at cement producers.

We expect late March construction demand to disappoint and steel prices and iron ore price to fall back below USD 40 in April.

**Steel Production Down 8%**

Our national survey of steel traders has shown an accelerating contraction in steel demand from the property sector. With the excess housing inventory and continued decline in new starts in property we expect this trend to continue. We estimate that total demand for construction steel will fall by 9%, with the greatest decline coming from property construction at 11% and a small decline of 2% in infrastructure demand. Infrastructure project funding is insufficient to maintain growth, and the eastern provinces are saturated with infrastructure.

With its new “supply-side reform” agenda, the central government has signalled a move away from driving growth through capacity expansion in industry. In the near term, this will contract demand for steel in industrial construction. We can expect a moratorium on new capacity installation for three years. We estimate that heavy industry capacity installation has accounted for up to 3% of steel demand in the past decade. Manufacturing steel demand fell by around 4% in 2015 and we expect that trend to contin-

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ue in 2016. Auto steel demand will be one of the few positive areas where we expect growth of around 3%.

Chinese steel export growth fell from 78% in 2014 to 19% in 2015, and exports have contracted for the last three months despite a further 5% decline in steel prices. China has saturated export markets. Southeast Asian countries like Vietnam and Malaysia have been key to that export growth, and their imports have stopped growing. A new 15 MMTPA steel plant has been opened in Vietnam, and that will ensure that Vietnam's imports of steel will now contract. In the developed world, anti-dumping actions in Europe and the U.S. are curtailing Chinese export expansion. We estimate that China steel exports will fall 11% this year.

**Table 2. Steel and Iron Ore Demand Forecast**

MMT	2014	2015	2016	2017	2015 Growth	2016 Growth	2017 Growth
<b>Domestic Steel Consumption</b>	728	694	645	607	-5%	-7%	-6%
<b>Construction Steel (60%)</b>	437	414	377	345	-5%	-9%	-8%
<b>Construction Property (45%)</b>	328	305	270	240	-7%	-11%	-11%
<b>Construction Infrastructure (15%)</b>	109	109	107	105	0%	-2%	-2%
<b>Manufacturing Steel (40%)</b>	291	280	268	262	-4%	-4%	-2%
<b>Exports of steel</b>	94	112	100	100	19%	-11%	0%
<b>Total Production</b>	822	806	745	707	-2%	-8%	-5%
<b>Total Iron Ore Demand</b>	1,192	1,169	1,080	1,025	-2%	-8%	-5%
<b>Domestic Iron Ore Supply</b>	260	210	180	180	-19%	-14%	0%
<b>Import Requirements</b>	932	959	900	845	3%	-6%	-6%

Source: NBS, Mysteel, Wind, J Capital

## Chinese Domestic Iron Ore Production Continues to Contract

Only large Chinese iron ore mines, producing more than 1 MMTPA, remained in production last year and were operating at around 60% capacity utilization. In February this year, that production took another major step down, as capacity utilization of large mines fell from 50% to 40%. We expect only SOE mines are now able to continue operating, and large private

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Shipping rates have fallen, lowering the cost of delivered iron ore.

mines have closed. We do not expect domestic iron ore production to fall below February production levels, as some mines would have shut for the new year and can restart when the weather warms up.

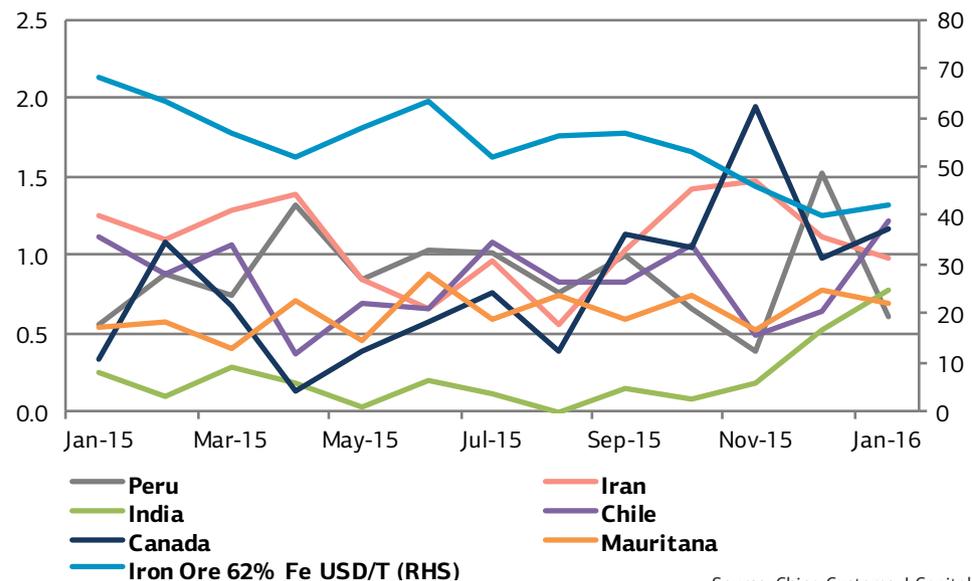
**Shipping Rates Halved**

One year ago, shipping rates from Western Australia to China were USD 8/ton and from Brazil to China USD 14.50/ton. Now these rates have fallen to USD 3/ton and USD 5.50/ton respectively. Iranian shipping costs to China have fallen from USD 8 to USD 4/ton and India from USD 12 to USD 6/ton. Crude oil price falls have accounted for about half of these rate falls and overcapacity the other half. Lower shipping rates have lowered the cash cost of delivered iron ore by at least \$5/ton.

**Not Just Iron Ore Majors Cutting Costs**

China imports around 120 MMT of iron ore from miners outside the majors. We had expected those mines to be uneconomic below USD 50/ton but now estimate that most can produce at USD 40/ton and up to half at lower than this cost, due to falling exchange rates and lower shipping costs as well as aggressive cost cutting at the mines. Mines in India, Chile, Peru, and Canada increased exports to China in the last four months after the price fell below USD 50/ton. These suppliers are the marginal suppliers of iron ore to China and have joined the majors in the race to the bottom for iron ore costs and therefore pricing.

**Chart 2. China Iron Ore Imports MMT**



Source: China Customs, J Capital

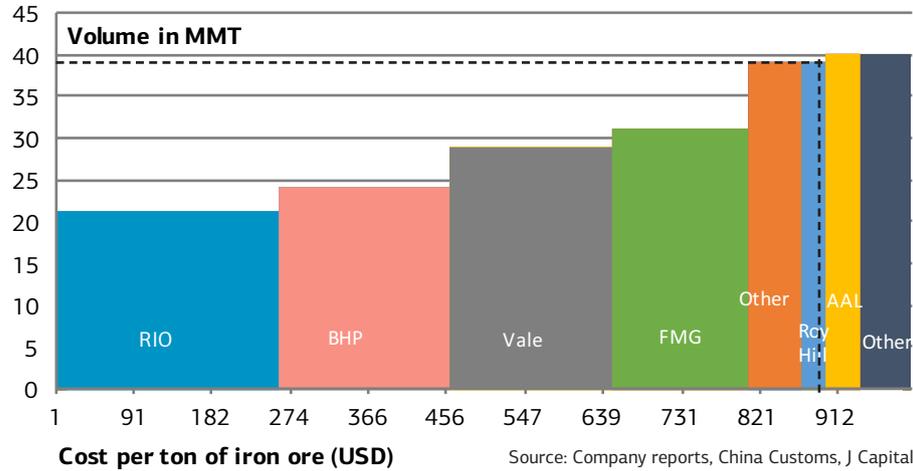
**Iron Ore Cost Curve**

We expect China to import 900 MMT of iron ore this year and given the

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current cost structure of supply we expect this to yield a price of USD 39/ton. Marginal suppliers like Roy Hill will be making their best efforts to reduce costs and we therefore expect that prices could fall to USD 35/ton by the second half of calendar 2016.

**Chart 3. Available to China Seaborne Iron Ore CFR 62% Fe (all in cash costs)**



## Copper

### China's Copper Demand to Fall 7% in 2016

We expect China's copper demand to fall 7% in 2016 and this will lead to global oversupply of 1 mln tons of copper. The global cost curve is being compressed as energy prices fall (20% of the cost of refined copper) and lower copper has imposed cost cutting on producers. We expect copper to trade between USD 4,100 and USD 4,500/ton in 2016.

**Table 3. World Copper Supply and Demand (1,000 Tons)**

	2014	2015	2016
<b>Total World Refined Copper Production - ICSG</b>	22,479	22,669	23,183
<b>China Apparent Consumption - ICSG</b>	10,995	10,937	11,389
<b>China Consumption - J Capital</b>	10,958	10,902	10,138
<b>Increase in China's Strategic Copper Reserves</b>			300
<b>Variance with ICSG</b>	(37)	(35)	(951)
<b>Total World Refined Copper Usage - ICSG</b>	22,893	22,628	23,310
<b>Surplus (Deficit) - ICSG</b>	(414)	41	(127)
<b>Surplus (Deficit) - J Capital</b>	(451)	6	(1,078)

Source: International Copper Study Group (ICSG), J Capital

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**Table 4. China Copper Apparent Demand**

	Refined Copper Output	Net Imports Refined Copper	Changes in Inventory	Apparent Demand
<b>2013</b>	6.85	3.76	-0.08	10.69
<b>2014</b>	6.77	4.05	-0.15	10.96
<b>2015</b>	6.80	4.13	0.03	10.90
<b>2014</b>	-1.3%	7.7%		2.5%
<b>2015</b>	0.5%	1.9%		-0.6%

Source: NBS, SHFE, J Capital

China's copper demand fell 0.6% in 2015 and refined copper output was down 1.3%. Imports surged 7.7% as global prices fell. The decline occurred despite an estimated 20% increase in copper demanded from the power grid companies.

The key drivers were:

- ▶ Construction demand for copper fell 11-12%, as residential property completions fell 6.9%. Power cable production fell 2.7% as the decline in construction outweighed the 20% increase in demand from the grid. Cable manufacturers in our survey confirmed these trends.
- ▶ Industrial demand for copper, including metal refining and power generation equipment, fell sharply, by 15%. Transformer production was down 0.8%. Transformer manufacturers said that grid demand was up 12% but industrial demand was down 15%. Copper pipe manufacturers supplying power producers said demand had fallen 70% for new thermal power capacity.
- ▶ Air conditioner demand was flat and refrigeration equipment fell 1.9%.

**Table 5. Key Copper Products Output Growth (NBS Data)**

Production	End Use	2014	2015	Est 2016
<b>Power Cable</b>	Grid, Construction	8.9%	-2.7%*	-7.5%
<b>Transformers</b>	Grid, Power Plants, Industrial	0.5%	-0.8%*	-5%
<b>AC Motors</b>	Industry, Consumer Goods	4.4%	-6.1%	-1.5%
<b>Air Conditioners</b>	Consumer Good	11.5%	0.0%	-1.5%
<b>Refrigerators</b>	Consumer Good	-1.0%	-1.9%	-1.5%

Source: NBS, J Capital \*YTD Oct 2015

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**Table 6. Key Copper Products Demand Growth (Survey Data)**

Fabricators	End Use	2015	2016
<b>Cable and Wire</b>	Grid, Construction, Auto, White Goods	-1.90%	-3%
<b>Transformers</b>	Grid, Power Plants, Industrial	-15%	-5%
<b>Copper Pipe</b>	Consumer Goods, Power plants, Construction	-22%	-5%
<b>Copper Sheet and Strip</b>	Electronics	5%	5%

Source: J Capital December 2015 Survey

### Grid Copper Demand to Fall 5%

The grid companies announced that grid investment targets will fall 2.5% in total, however, they will maintain spending on transmission. This means that the more copper-intensive distribution network investment will fall 5.8% and lead to a 5% fall in the consumption of copper by the grid. Last year, we estimate that the 20–25% increase in copper demanded by the grid represented an additional 500,000 tons of copper, which made up for the decline in consumption from construction and industry. There will be no support from the grid for copper demand in 2016. The central government has slapped a new tariff on the grid companies to fund the RMB 100 bln fund it is establishing for the restricting of overcapacity industries. We suspect this is the cause of the slowdown in capex by the grid companies. This is also a potential risk that the grid will fall short of investment targets this year.

The grid could fall short of investment targets this year.

**Table 7. Grid Investment and Copper Demand**

	Total Grid Investment		Distribution (Copper Wire)		Transmission (Aluminum Wire)	
	RMB bln	Investment Share	RMB bln	Investment Share	RMB bln	
<b>2014</b>	412	47.0%	194	53.0%	218	
<b>2015</b>	517	46.0%	238	54.0%	279	
<b>2016</b>	504	44.4%	224	55.6%	280	
<b>Investment Growth Rates</b>						
<b>2014</b>	5.8%		6.0%		5.6%	
<b>2015</b>	25.5%		22.9%		27.9%	
<b>2016</b>	-2.5%		-5.8%		0.3%	
<b>Copper Consumption Tons</b>						
<b>2014</b>	2.18		1.74		0.44	

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<b>2015</b>	2.70	2.14	0.56
<b>2016</b>	2.58	2.02	0.56
<b>Copper Consumption Growth Rate</b>			
<b>2014</b>	6%	6%	6%
<b>2015</b>	24%	23%	28%
<b>2016</b>	-5%	-6%	0%

Source: China Grid, Southern Grid, Inner Mongolia Grid, J Capital

**Table 8. China Copper Demand Model**

Sector	2014	2015	2016	2015	2016
<b>Power Grid</b>	2,872	3,446	3,274	20.0%	-5.0%
<b>Construction</b>	3,781	3,346	2,945	-11.5%	-12.0%
<b>White Goods (inc Air con)</b>	1,566	1,534	1,504	-2.0%	-2.0%
<b>Auto</b>	877	877	903	0.0%	3.0%
<b>Industrial</b>	1,096	932	745	-15.0%	-20.0%
<b>Electronics</b>	767	767	767	0.0%	0.0%
<b>Total</b>	10,958	10,902	10,138	-0.5%	-7.0%

Source: NBS, China Grid, Southern Grid, J Capital

### Copper Demand 2016

We expect copper demand to continue to weaken from construction, white goods, and industrial sectors. Despite recent announcements that the central and local governments will take action to reduce excess inventory of housing, we do not expect this to lead to an improvement in new construction and completions. While the central government may dilute its plans for capacity elimination in industries with overcapacity, it will likely impose strict moratoriums on adding new industrial capacity by withholding lending for such additions. We expect industrial demand for copper to decrease further. Auto output is the only area where we see copper demand improving due to accelerated production of hybrids but only by a meagre 3%.

We expect Chinese copper demand to fall by around 750,000 tons. The State Reserve Bureau (SRB) is half way through its planned purchase of 300,000 tons to add to reserves this year and to relieve pressure on Chinese copper producers with excess inventory and capacity. The SRB has directly purchased the excess inventory that the producers had built up. Chinese demand therefore will fall around 450,000 tons this year. With global refined copper production increasing by 650,000 (largely in China) in 2016, and with global demand ex-China remaining unchanged, this leads to overcapacity of 1 mln tons of copper. We expect copper prices to

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fall below USD 4,500/ton in Q2 2016.

## Aluminium

### China Consumption to Fall -4%

Aluminium, like iron ore and copper, is highly levered to Chinese property construction. We expect China's aluminium demand to fall 4% based on a fall in property construction demand of 12%. We expect manufacturing demand to fall as China takes measures to stop new investment in heavy industry. We have a brighter outlook for the autos and packaging sectors, which that we expect to grow 3% and 4% respectively. China will increase installed capacity by 5 MT in 2016 and we expect production to increase by 1.4 MT or 4%. This will exacerbate current excess capacity of around 1 MMT and ensure that prices remain at or below USD 1,500/ton, the marginal cost of production in China.

China's exports grew 17%, to 4 MT, in 2015. With the increase excess oversupply in China, exports could increase by 1 MMT or 30% in 2016.

**Table 9. Aluminium Supply and Demand (MMT)**

	2014	2015	2016	2016 Growth
<b>World Aluminum Production</b>	53.8	57.9	59	2%
<b>China Aluminum Production</b>	27.52	31.7	33	4%
<b>World Aluminum Consumption</b>	53.6	56.8	57.7	2%
<b>China Aluminum Consumption</b>	24	27.2	26.1	-4%
<b>Surplus</b>	0.2	1.1	1.3	

Source: IAI, WBMS, CNIA, J Capital

**Table 10. Chinese Aluminium Demand (MMT)**

Sources of Demand	SOM	2015	2016	2016
<b>Construction</b>	34%	9.2	8.1	-12%
<b>Auto</b>	20%	5.4	5.6	3%
<b>Electricity</b>	12%	3.3	3.3	0%
<b>Packaging</b>	10%	2.7	2.9	5%
<b>Machine Manufacturing</b>	8%	2.2	1.8	-15%
<b>Consumer Goods</b>	8%	2.2	2.1	-2%
<b>Electronics</b>	4%	1.1	1.1	0%
<b>Other</b>	4%	1.1	1.1	5%
<b>Total</b>		27.2	26.1	-4%

Source: CNIA, J Capital

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## Valuation AUD 29.63 Downside of 34% SELL

Using a DCF valuation model with a WACC of 9% and a terminal growth rate of 1% and using our base case scenario for commodities prices we value RIO at AUD 29.63 a downside of 34% from the current price.

**Table 11. Valuation Scenarios**

Scenario	Iron Ore USD/t	Aluminium USD/t	Copper USD/t	Valuation (AUD)
<b>Best</b>	45	1,600	5,000	56.76
<b>Base</b>	39	1,500	4,500	29.63
<b>Worst</b>	32	1,300	4,000	14.75

Source: J Capital

## Risks

The greatest risk to our thesis would be a return to growth in property and infrastructure construction. If the Chinese engineer a snapback in PPI, an improvement in domestic confidence would reduce capital flight and re-energize property markets. Consecutive months of positive growth in new starts and property completions would be a significant risk to our thesis.

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