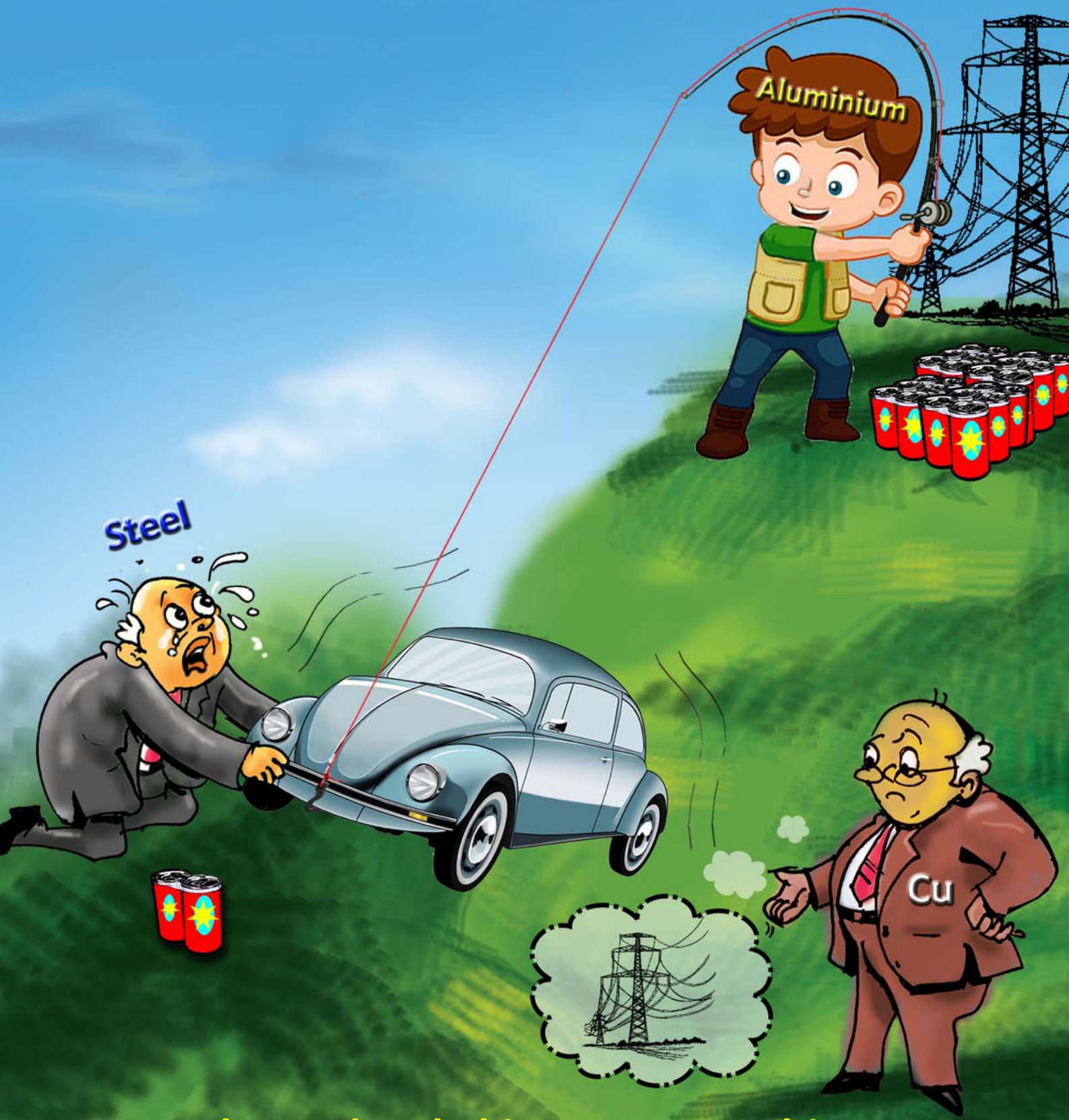
MOTILAL OSWAL

Aluminium



New demand and Chinese costs to drive LME
Indian smelters set for turnaround

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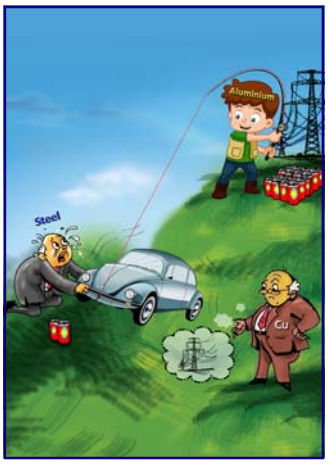
Aluminium: New demand and Chinese costs to drive LME

Indian smelters set for turnaround; Hindalco our top pick

Aluminium



New demand and Chinese costs to drive LME

Indian smelters set for turnaround; Hindalco our top pick

- **Rising price competence driving demand:** Although aluminum has underperformed at LME, its demand growth has been outperforming other base metals and steel. Aluminum being the youngest metal with only 100 years of history is still witnessing improvement in operating efficiencies and reduction in cost of production. Aluminum has been continuously finding new applications due to rising price competence, superior weight to strength ratio, corrosion resistance, formability, dampness etc. Stricter emission norms are now forcing large cars to switch fully to aluminum leading to demand boost. Once the ecosystem of ancillary is developed, aluminum is bound to replace steel in mass produced cars. FRP demand in auto sector is growing at 25% CAGR. We expect the accelerated growth to last for decades.
- **Aluminum set for outperformance at LME:** China now accounts for 44% of metal production, while it produces only 20% of world's bauxite. With its metal consumption far from peak, China's dependence on bauxite imports is likely to grow to 70% over 5-10 years. China is highly vulnerable due to over dependence on Indonesian bauxite. As China started scouting for alternate supplies, the prices of bauxite and alumina have been outperforming LME. Notwithstanding oversupply, we expect aluminum prices to outperform other base metals due to rising cost of production in half of the world and choking of investment in other part of world.
- **Indian smelter set for outperformance:** We believe that India's aluminum sector is now set for a turnaround. Cost of production has peaked. Profitability should increase, aided by sharp depreciation of INR against USD, easing prices of inputs like coal and CPC, likely increase in LME prices and end of the capex cycle, leading to improved cash flows.
- **Hindalco is our top pick; Nalco too upgraded to Buy:** Hindalco is at an inflexion point. Operating cash flows are poised for rapid growth, as the benefits of USD8b investment have begun. Margins of the aluminum business should expand, driven by declining cost of production. Hindalco has near full bauxite and partial coal security through captive mines. Its balance sheet is highly geared, but it has the best cash flow hedge among Indian metal companies. Novelis' free cash flows to improve in FY15 as it exits CapEx cycle. We value Hindalco at INR 165 based on SOTP (42% upside). Re-iterate **Buy**.
- Nalco is long on alumina, with 60-70% of production available for third-party sale. Though metal production has declined due to difficulty in sourcing additional coal, alumina production is rising due to the benefit of captive bauxite and recent capacity expansion. Potential upsides from Utkal-E block, further expansion of alumina refinery, weaker INR v/s USD, and peaking of labor cost as older employees retire are long-term positives. Nalco's SOTP-based target price is revised to INR52 (62% upside). We upgrade Nalco to Buy.
- Although, Sesa-Sterlite has high quality assets, it has got de-rated and is unlikely to get re-rated until capital inefficiencies are addressed. We maintain Buy, as SOTP-based valuations are still attractive.

Aluminum: Youngest and fastest growing metal

Demand for aluminum is growing faster than steel, copper and zinc. Over last fifty years, global demand for aluminium has grown at a CAGR of 4.5% (elasticity of 1.3x with GDP growth) as against a CAGR of 2.6-2.9% (elasticity of 0.7x with GDP growth) for other metals. Aluminum is the youngest metal, with only ~100 years of commercial history. Its cost of production has been continuously declining with technological advancements, and it is finding new applications as its price competence improves.

Aluminum price is now 3.4x steel price v/s 5x 20 years ago, lower than zinc price v/s 1.2x 20 years ago, and 1/4th copper price v/s 3/5th 20 years ago. Rising price competence has helped aluminum eat into demand for steel (construction, transportation, etc), zinc (coating, etc) and copper (electricity transmission, etc). With rising oil prices and growing pollution, there is an urgent need for light weighting vehicles, opening the door for acceleration in demand for aluminum over the next 10-20 years. Europe plans to cut vehicular emission 30% by 2020. USA and many other countries too have set new targets.

It makes tremendous economic sense in light weighting vehicles using aluminum as 100kg (USD160/ton of extra metal cost), which is 10% of smaller car's weight, reduction in weight save 700 liters of petrol or ~USD700 over the life of a vehicle. Demand for aluminum is more resilient than steel despite economic volatility. We believe that aluminum demand will continue to outperform, with a CAGR of 4-5% over the next 5-20 years.

LME aluminum prices set to outperform

Aluminum production has been continuously relocating closer to sources of energy and bauxite to lower cost of production. US, USSR and Japan, which once produced 60% of the world's aluminum, now hardly account for 10%. In the last decade, 102% of the growth in production came from Asia. China accounted for 80% of this growth, while India and the Middle East (ME) accounted for the rest. There was an investment in capacity addition of 5m tons in the ME and ~3m tons in India in the last 5-8 years.

China now accounts for 44% of the world's metal and alumina production, while it produces only 20% of the world's bauxite. China's dependence on bauxite imports, which is nearly 50% now, is likely to grow further to 70% over the next 5-10 years. Since 2/3rd of the world's bauxite is located in just three countries, prices of bauxite are likely to increase. Alumina prices have been continuously outperforming LME. No new investment is expected in the ME and India over the next 5-10 years. The ME is no longer offering cheap gas because over-investment in LNG infrastructure has brought gas closer to energy deficit markets of India, Korea and Japan. Price of USD4-5/mmbtu (more than 5% of coal prices in USD/ton) makes natural gas uneconomical for power generation. India has over-invested in aluminum capacity. Cost of Chinese aluminum are increasing due to CNY appreciation, higher cost of bauxite and rising labor cost.

Under tremendous cost pressure, China is trying to relocate some capacities closer to the coal belt, but this is resulting in greater distance for transport of bauxite and high labor cost due to extreme climatic conditions. Once new capacities become

operational, low energy cost advantage too is likely to be eroded partially. Fears over compression in spot premiums are irrelevant because total aluminum prices (LME + premiums) matter to both producers and users. Notwithstanding oversupply, the young metal is set for outperformance over the next 5-10 years on the back of stronger demand fundamentals, changing dynamics of alumina/bauxite pricing and appreciating CNY.

Indian smelters set for turnaround

India is endowed with large resources of coal (3rd largest in the world), bauxite (5th largest in the world) and labor pool (2nd largest in the world) - the key ingredients in aluminum production, and bauxite and coal mining. This gives India a natural advantage, making it one of the lowest cost producers in the world, with cost of production below USD1,000/ton a decade ago.

The competitiveness of Indian smelters had eroded rapidly in the last five years due to change in the dynamics of coal pricing by Coal India, other input cost pressures and high inflation. However, this did not deter Sesa-Sterlite and Hindalco from investing USD8b and USD6b, respectively, in the last 4-5 years. Falling RoI and huge capex burden led to huge stock underperformance.

We believe that India's aluminum sector is now set for a turnaround. Cost of production has peaked. Profitability should increase, aided by sharp depreciation of INR against USD, easing prices of inputs like coal and CPC, likely increase in LME prices and end of the capex cycle, leading to improved cash flows.

Hindalco: Our top pick

Hindalco is at an inflexion point. Operating cash flows are poised for rapid growth, as the benefits of USD8b investment have begun. Margins of the aluminum business should expand, driven by declining cost of production. Hindalco has near full bauxite and partial coal security through captive mines. Its balance sheet is highly geared, but it has the best cash flow hedge among Indian metal companies. Its debt maturity profile is very comfortable and back-ended. Free cash flows are turning positive, along with rising operating cash flows and tapering capex. The stock trades at historical trough valuations.

Sesa-Sterlite group less leveraged than Hindalco, but capital structure inefficient: Though Sesa-Sterlite is less leveraged at the group level than Hindalco, its capital structure is highly inefficient. Another group restructuring is inevitable once the Government of India divests its stake in Hindustan Zinc. We fear that the management may not choose the most efficient capital structure because that conflicts with its strategy of aggressive inorganic growth. Minority interest in cash-rich subsidiaries is a useful strategic leverage at the time of acquisition. Although, Sesa-Sterlite has high quality assets, it has got de-rated and is unlikely to get re-rated until capital inefficiencies are addressed and minority interest in cash-rich subsidiaries is bought out through M&A. We maintain Buy, as SOTP-based valuations are still attractive.

Nalco's balance sheet best, but it is high up on the cost curve: Nalco has the best balance sheet, with no debt and cash surplus of ~INR50b. Falling labor productivity

due to declining capacity utilization of smelter and 2-3x higher annual labor wages as compared to peers has moved it up on the cost curve, despite the benefit of captive bauxite and proximity to Coal India's mines. Nalco is long on alumina, with 60-70% of production available for third-party sale. Though metal production has declined due to difficulty in sourcing additional coal, alumina production is rising due to the benefit of captive bauxite and recent capacity expansion. Potential upsides from Utkal-E block, further expansion of alumina refinery, weaker INR v/s USD, and peaking of labor cost as older employees retire are long-term positives. In view of the changed business dynamics and recent turn in operating performance, we believe that the stock deserves a higher EV/EBITDA target multiple of 5.5x (earlier 4x). Topping it with the value of CWIP, our SOTP-based target price is revised to INR52. We upgrade the stock to **Buy**.

Valuations: Indian Companies

	Rating	CMP	TP	Upside	MCAP	EPS (INR)			P/E (x)		EV/EBITDA (x)		P/B(x)	
		(INR)	(INR)	(%)	(USD M)	FY13	FY14E	FY15E	FY14E	FY15E	FY14E	FY15E	FY14E	FY15E
Non-Ferrous														
Hindalco	Buy	116	165	42	3,832	17.0	14.0	15.0	8.3	7.7	7.7	6.2	1.0	0.9
Sesa-Sterlite	Buy	178	214	20	8,460	35.9	31.8	34.5	5.6	5.2	5.8	5.0	0.7	0.6
Hindustan Zinc	Buy	134	155	15	9,076	16.4	16.9	16.4	8.0	8.2	4.4	3.7	1.5	1.3
Nalco	Buy	32	52	62	1,332	2.3	3.3	3.3	9.7	9.9	3.5	3.0	0.7	0.6
Steel														
Tata Steel	Sell	294	204	-31	4,564	1.6	31.5	28.7	9.3	10.2	6.2	6.4	1.2	1.2
SAIL	Sell	53	26	-50	3,483	5.7	7.9	3.0	6.7	17.7	7.8	10.3	0.5	0.5
JSW Steel	Sell	729	565	-23	2,821	49.7	60.7	68.6	12.0	10.6	6.5	6.2	1.0	0.9
JSPL	Neutral	253	238	-6	3,779	37.2	27.4	32.3	9.2	7.8	8.6	6.2	1.1	1.0
NMDC	Buy	123	152	23	7,831	16.7	15.1	15.2	8.2	8.1	4.0	4.0	1.6	1.5

Source: MOSL

Aluminum: Youngest and fastest growing metal

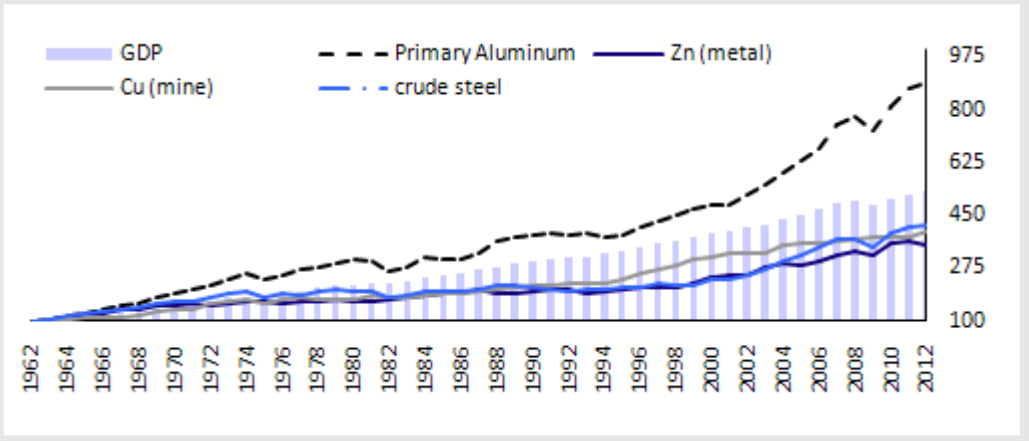
Declining cost of production, newer applications driving demand

- **Demand for aluminum is growing faster than steel, copper and zinc. Over last fifty years, global demand for aluminum has grown at a CAGR of 4.5% (elasticity of 1.3x with GDP growth) as against a CAGR of 2.6-2.9% (elasticity of 0.7x with GDP growth) for other metals. Aluminum is the youngest metal, with only ~100 years of commercial history. Its cost of production has been continuously declining with technological advancements, and it is finding new applications as its price competence improves.**
- **Aluminum price is now 3.4x steel price v/s 5x 20 years ago, lower than zinc price v/s 1.2x 20 years ago, and 1/4th copper price v/s 3/5th 20 years ago. Rising price competence has helped aluminum eat into demand for steel (construction, transportation, etc), zinc (coating, etc) and copper (electricity transmission, etc). With rising oil prices and growing pollution, there is an urgent need for light weighting vehicles, opening the door for acceleration in demand for aluminum over the next 10-20 years. Europe plans to cut vehicular emission 30% by 2020. USA and many other countries too have set new targets.**
- **It makes tremendous economic sense in light weighting vehicles using aluminum as 100kg, (USD160/ton of extra metal cost) which is 10% of smaller car's weight, reduction in weight save 700 liters of petrol or ~USD700 over the life of vehicle. Demand for aluminum is more resilient than steel despite economic volatility. We believe that aluminum demand will continue to outperform, with a CAGR of 4-5% over the next 5-20 years.**

Demand for aluminum fastest growing among metals

Over the last 50 years, demand for aluminum has been growing at the fastest pace among metals. Global primary aluminum production has grown at a CAGR of 4.5% over 1962-2012, while the production of crude steel, copper and zinc has grown at a CAGR of 2.9%, 2.8% and 2.6%, respectively against GDP growth of 3.4%. Aluminum production growth has accelerated to 5.6% in the recent 10 years, ~2x the global GDP CAGR. Elasticity of demand with GDP growth has averaged 1.3x for aluminum v/s 0.7x for steel, copper and zinc in the last 50 years.

Global metals' production and GDP indexed to 100 at 1962

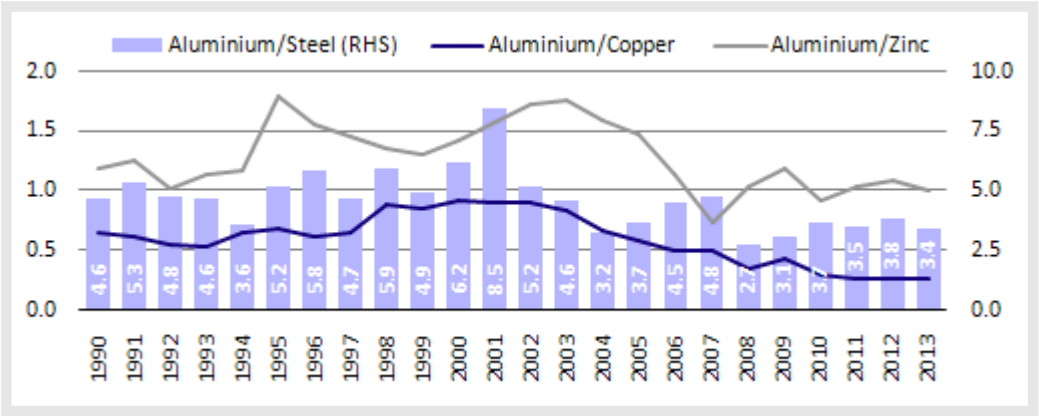


Source: USGS, WB, MOSL

Driver 1: Rising price competence

About 8.2% of the earth's crust is composed of aluminum. Though it is the most abundant metal, it is never found free state in nature. All of the earth's aluminum is combined with other elements to form compounds. It was first produced in 1825 but the first commercial production started in 1854. The price of the metal dropped from USD1.2m/ton in 1852 to USD40,000/ton in 1859, but it remained too expensive to be widely used. Then on 2 April 1889, Charles Martin Hall patented an inexpensive method for the production of aluminum, which brought the metal into wide commercial use. Alcoa was the first company to produce at commercial scale. By 1914, aluminum prices had fallen to USD400/ton, which spurred demand for the light metal. Until 1930, only ~300k tons of aluminum were used. Ever since, global consumption of aluminum has increased 150x and it is still very young. Per capita global average consumption of aluminum is only ~8kg v/s ~200kg for steel.

Aluminum prices with respect to other substitute metals



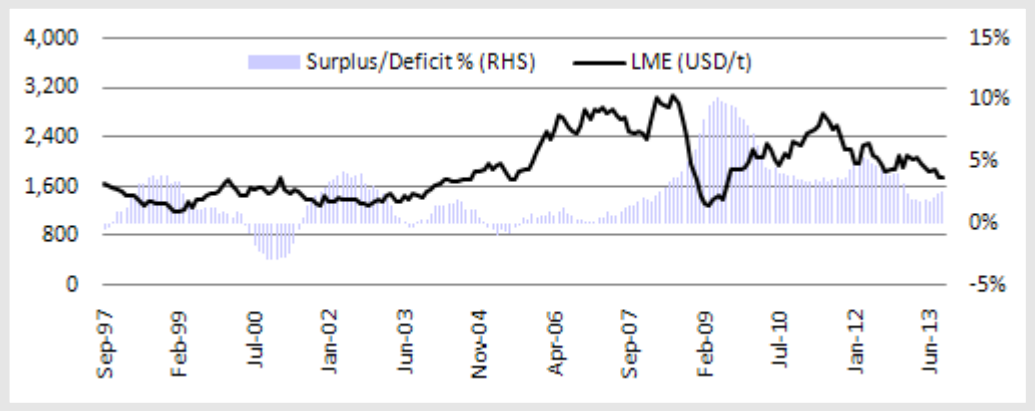
Source: IMF, MOSL

The prices of aluminum have continued to fall with respect to other metals because of technological advancement, which has continuously reduced its cost of production. Aluminum has been competing with steel, copper, zinc, plastics, etc. Aluminum prices used to be ~5x steel prices 20 years ago. Now, aluminum prices are only 3.4x steel prices. Aluminum has found wide use in building/construction due to its superior surface properties, corrosion resistance, formability, and superior weight-to-strength ratio. For same stiffness, aluminum structures are 40-55% lighter than steel, while maintenance costs are much lower. Further, the salvage value of aluminum is much higher than steel because of lower cost of conversion from scrap to metal and lower corrosion loss. Re-cycling cost are much lower than steel for same applications. Aluminum has slowly and gradually been making more roads every year into construction, machinery and auto industries. Weaker prices will drive aluminum demand further.

Aluminum used to trade at 35% discount to copper prices in 1990. The premium that copper commanded was in line with its superior electrical conductivity, thermal conductivity and ductility. Now, aluminum trades at ~74% discount to copper. This has spurred substitution. The trend is likely to continue because the aluminum market is oversupplied, while the copper concentrate market remains tight.

Aluminum has largely been oversupplied

Aluminum prices and supply/demand



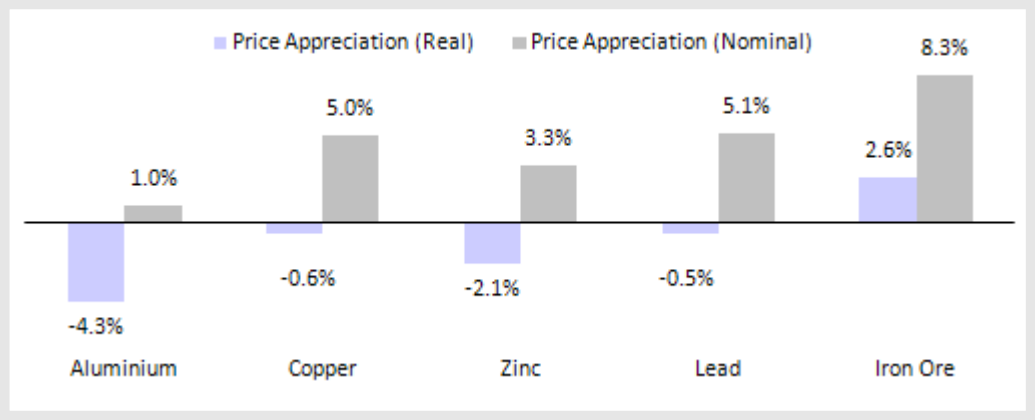
*Surplus/Deficit on 12 months average basis

Source: Bloomberg, MOSL

Aluminum has been substituting zinc as well in coatings. In the last 10-20 years, products like "Galvalume" have substituted zinc galvanized sheets due to superior quality and lower costs. Aluminum used to be 20% more expensive in 1990 and 75% more expensive in 1995. Now, aluminum prices are lower than zinc prices.

Inflation adjusted aluminum prices have fallen most

Commodity price appreciation (CAGR; 30 years)



Source: Company, MOSL

Driver 2: Falling cost of production

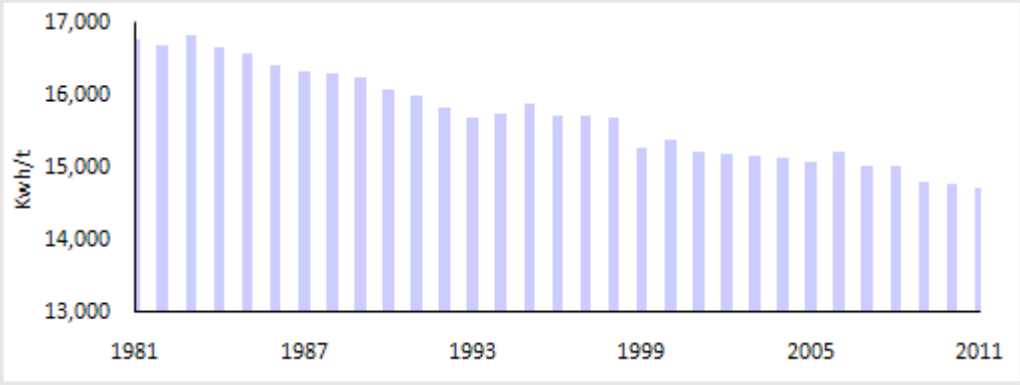
The real operating costs of aluminum smelting have continuously declined due to technological improvements:

- The less energy efficient self baking Soderberg system of electrodes has been replaced by pre-baked electrodes
- Widespread use of point feeding system of raw materials - alumina, cryolite or fluoride
- Improved cell design
- Increased current density, as the industry moved from 50kA cells to 400-500kA cells.

As a result, specific energy consumption has fallen 15-20% over the last 30 years.

Specific energy consumption has fallen 15-20% over last 30 year

Power consumption



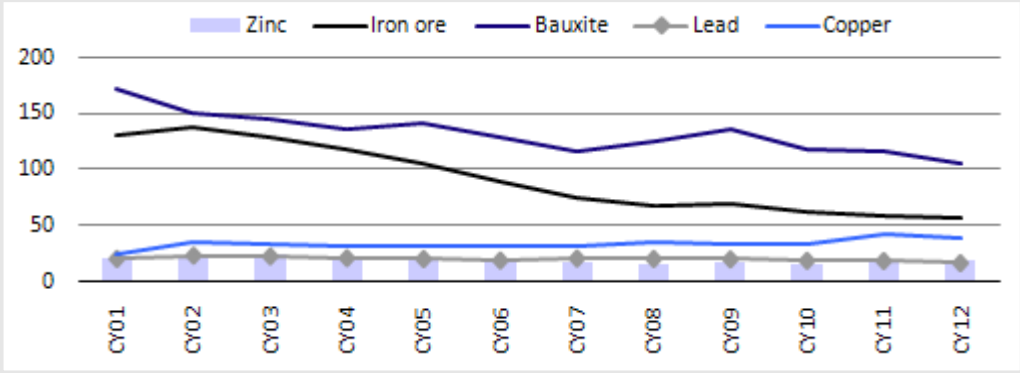
Source: IAI

Real alumina prices have fallen at CAGR of 3.8% although nominal prices increased at CAGR of just 1.6% over last 30 years...

Alumina prices too have remained stable and hovered around USD200/ton between 1980 and 2004. The prices of alumina too shot up in 2005-2006 due to surge in Chinese imports, but have cooled since, as China added large capacities. Alumina prices now hover around USD320/ton. Adjusted for inflation, alumina prices have fallen at a compounded annual rate of 3.8% though nominal prices have increased at a CAGR of 1.6% over the last 30 years largely due to oversupply of bauxite.

Effective years of resources at current rate of mine production

...largely due to oversupply of bauxite



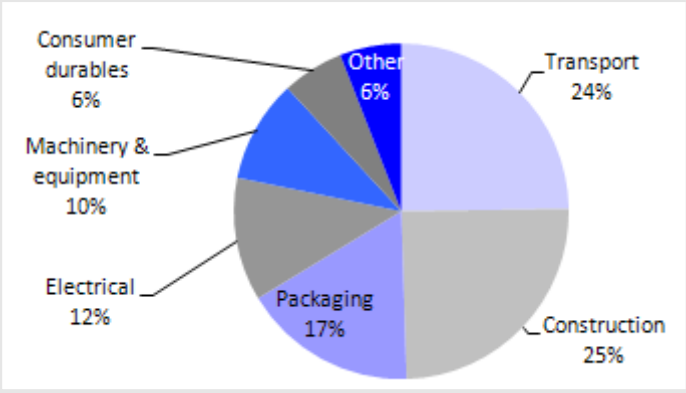
Source: USGS, BGS, MOSL

Driver 3: Newer applications

Aluminum is far less exposed to construction sector

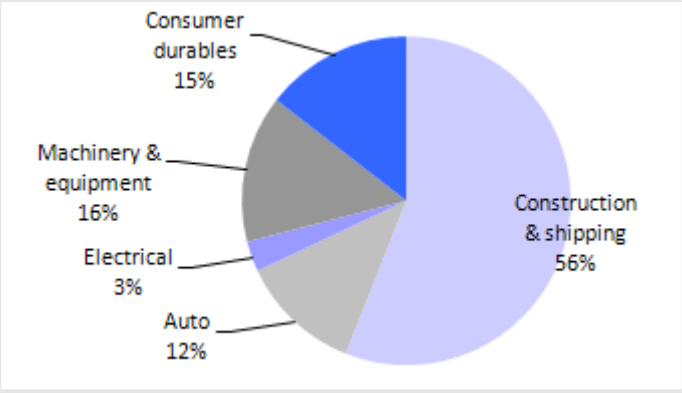
Aluminum is far less exposed to the Construction sector as compared to steel. Construction (51% of steel demand) and Shipping (5% of steel demand), which are facing headwinds due to slowdown of the investment cycle, accounts for 56% of steel demand. For aluminum, Construction accounts for just 25% of demand.

Aluminum consumption by industry



Source: LME

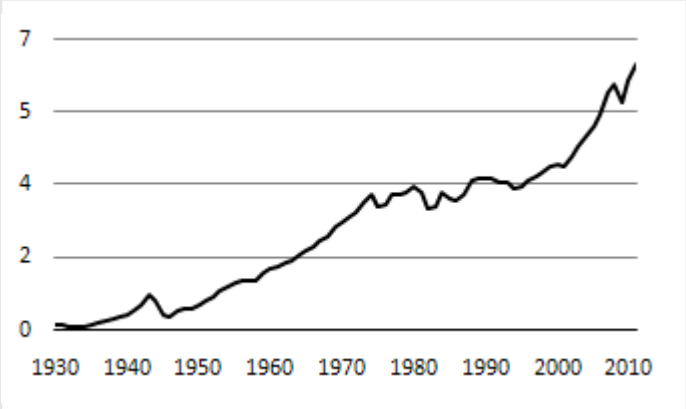
Steel consumption by industry



Source: WSA

This is one of the reasons, why aluminum is far less exposed to the slowdown in fixed asset formation. During 1971-2001, per capita steel consumption fell by 15-20%, while aluminum per capita consumption increased 30-35%.

Aluminum: Per capita global consumption (kg)



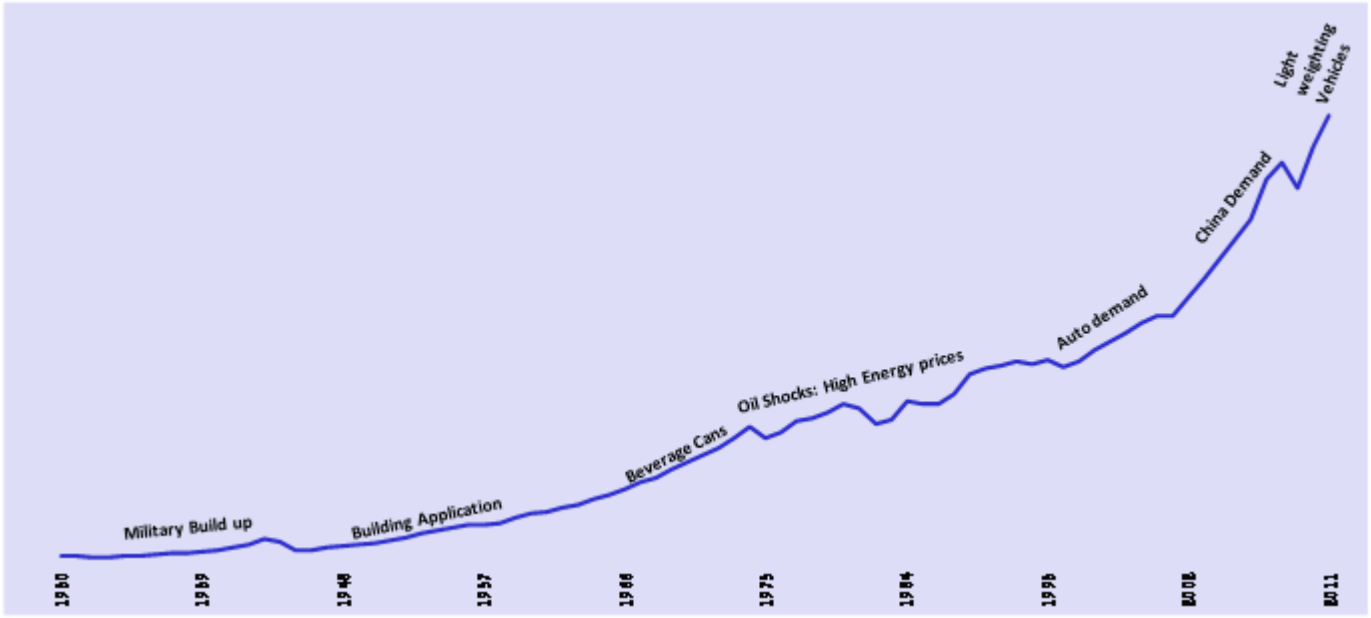
Source: USGS, WB, MOSL

Steel: Per capita global consumption (kg)

Source: WSA, WB, MOSL

Aluminum has been continuously finding new applications. During the world war, aluminum found uses in military applications. Post war, aluminum moved into building/construction. The aluminum beverage can emerged in 1959, when Coors introduced the first all-aluminum seamless two-piece beverage container.

Aluminum: Continues to find new uses



Source: USGS, Rio Tinto

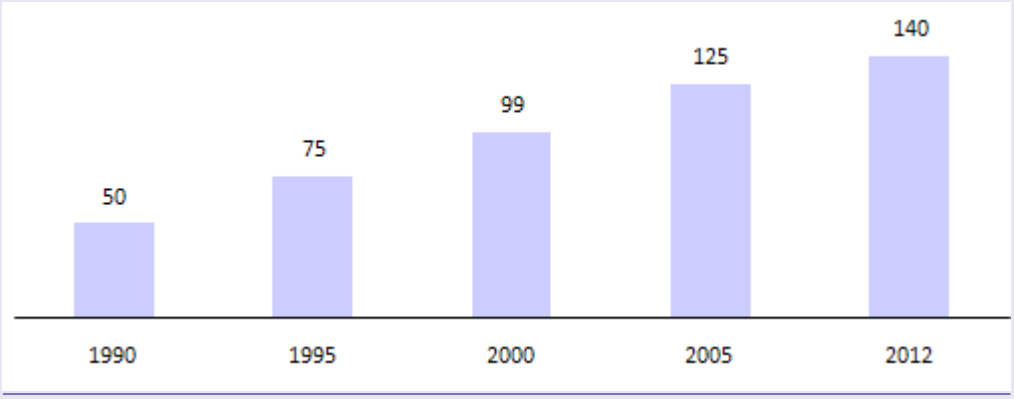
Transport: Strong growth driver

Transportation, which accounts for ~24% of aluminum consumption alone will lead to 2% CAGR growth in global consumption

During the oil crisis in the 1970s, car manufacturers began looking for ways to reduce fuel consumption. The best method was to reduce vehicle weight, and to do so, they began substituting steel with aluminum. Reducing the weight of an average size car by 100kg helps to save 700 liters of fuel during its life. Nowadays, 110-165kg of aluminum is used in the production of an average car, which helps to bring down the dead weight of the fully-loaded vehicle by a third. Though 100kg of aluminum costs ~USD140 more, it helps to save USD700 over the life of the vehicle, assuming fuel prices at USD1/liter. The lower weight reduces design requirements as well.

Growing use of Aluminium in European cars (kg/vehicle)

High energy prices have forcing increased aluminum use in auto



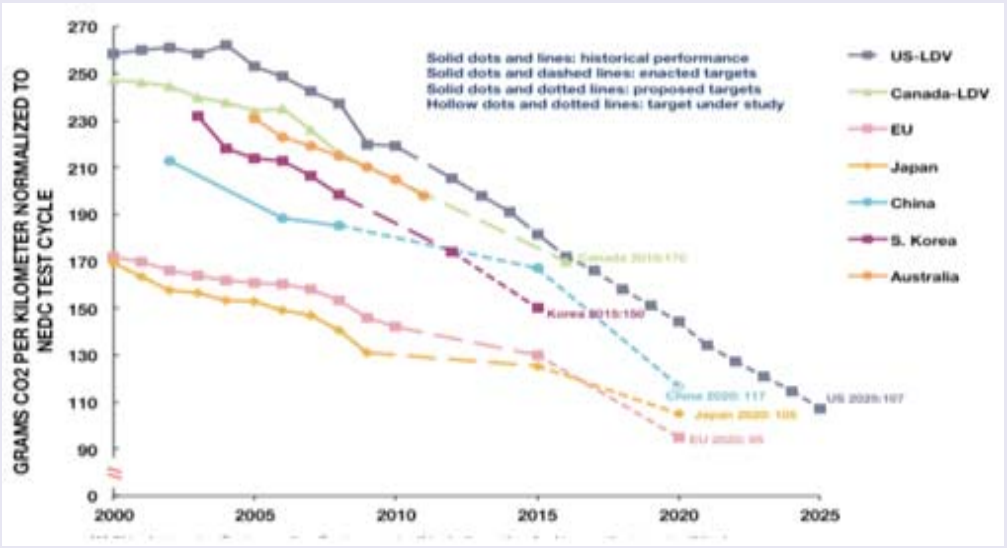
Source: EAA

Aluminum has 1/3rd the density and 1/3rd the tensile strength of steel, which neutralize each other. Yet, aluminum structures can achieve similar stiffness and crash capabilities at 45% of the weight of steel structures because of lower density. A 50% lighter structure would still be 50% thicker than steel, which gives aluminum substantial advantage in moment of inertia, buckling, stiffness, etc.

According to some estimates, in 2012, the number of manufactured vehicles reached 82m. If aluminum components had been used, decreasing their weight by ~20%, it would have helped save ~76b liters of oil, while reducing emissions of carbon dioxide by ~177m tons.

Global emission norms becoming stricter

In order to achieve stricter norms Automobile manufacturers are increasing looking towards light weighting vehicles



Source: ICCT0

Globally, governments are implementing stricter emission norms:

- **USA:** 2016 CAFE standard of 35.5 miles per gallon (mpg)
- **China:** 34mpg by 2015 in passenger cars
- **Europe:** Emission limit of 95g/km by 2020 (30% reduction)

Aluminum first found its way into petrol engines and some components. Then it moved into diesel engines and is now finding its way into hoods and other parts. We expect most road transport vehicles to be fully converted to aluminum over the next 20-25 years, driven by fuel economy, better crash strength, lower vibration and lower emission.

LME aluminum prices set to outperform

Growing demand, steepening global cost curve to support prices

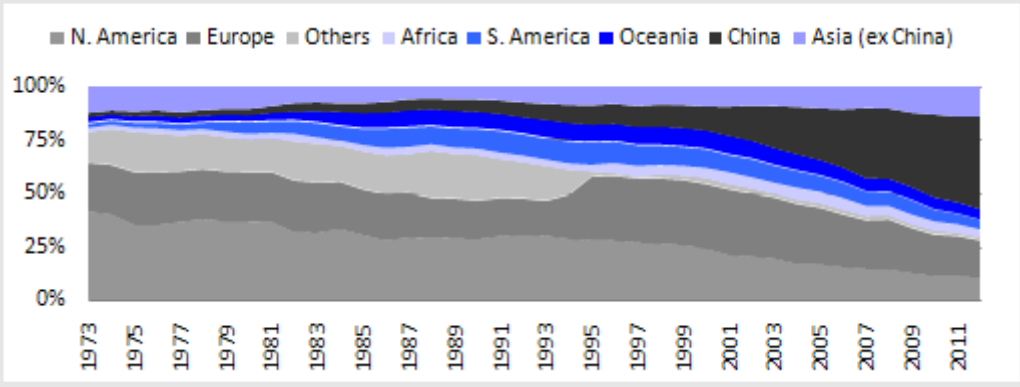
- **Aluminum production has been continuously relocating closer to sources of energy and bauxite to lower cost of production. US, USSR and Japan, which once produced 60% of the world's aluminum, now hardly account for 10%. In the last decade, 102% of the growth in production came from Asia. China accounted for 80% of this growth, while India and the Middle East (ME) accounted for the rest. There was an investment in capacity addition of 5m tons in the ME and ~3m tons in India in the last 5-8 years.**
- **China now accounts for 44% of the world's metal and alumina production, while it produces only 20% of the world's bauxite. China's dependence on bauxite imports, which is nearly 50% now, is likely to grow further to 70% over the next 5-10 years. Since 2/3rd of the world's bauxite is located in just three countries, prices of bauxite are likely to increase. Alumina prices have been continuously outperforming LME. No new investment is expected in the ME and India over the next 5-10 years. The ME is no longer offering cheap gas because over-investment in LNG infrastructure has brought gas closer to energy deficit markets of India, Korea and Japan. Price of USD4-5/mmbtu (more than 5% of coal price in USD/ton) makes natural gas uneconomical for power generation. India has over-invested in aluminium capacity. Prices of Chinese aluminum are increasing due to CNY appreciation, higher cost of bauxite and rising labor cost.**
- **Under tremendous cost pressure, China is trying to relocate some capacities closer to the coal belt, but this is resulting in greater distance for transport of bauxite and higher labor cost due to extreme climate. Fears over compression in spot premiums are irrelevant because total aluminum prices (LME + premiums) matter to both producers and users. Notwithstanding oversupply, the young metal is set for outperformance over the next 5-10 years on the back of stronger demand fundamentals, changing dynamics of alumina/ bauxite pricing and appreciating CNY.**

Smelting relocating closer to low cost energy sources

Today, the global aluminum industry has only a bare resemblance to what it was in the early 1970s. The most important structural changes are: (1) geographical relocation of bauxite, alumina and aluminum production centers, (2) shifts in the degree of concentration and integration, (3) emergence of new consuming regions, development of new end-use markets and threat of substitutes, including recycled metal, (4) historical decline in real prices of the metal and recent upward shift in the industry cost curve, (5) market adjustment mechanisms and, (6) more recently, the rising popularity of commodities as an asset class.

Region-wise share in global aluminum production

Developed countries have lost share in global production



Source: IAI, USGS

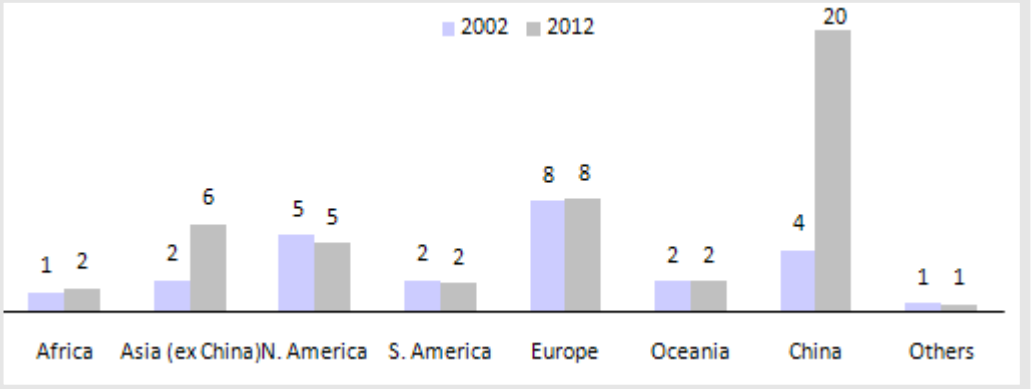
In 1972, bauxite production was dominated by four countries - Australia, Jamaica, Suriname and USSR, which together held 60% share of the global market. Today, of these four countries, only Australia is on the list of top six producers. Even greater geographical shifts have happened in alumina production. In 1972, over 45% of the global alumina production was concentrated in five industrialized countries, poorly endowed with bauxite reserves: United States, Japan, Canada, France and Germany. The other major producers were Australia (13%), USSR (12%), Jamaica (9%) and Suriname (6%). Today, of these countries, only Australia is still a significant producer. Alumina production (ex-China) has shifted from the industrialized or aluminum producing countries to bauxite producing regions.

Aluminum production shifting to Asia

Major geographical shifts have also occurred in aluminum production. The United States, USSR and Japan accounted for ~60% of the global primary production in 1972. Today, their corresponding share barely exceeds 10%. Norway, Germany and France have also been replaced on the list of top aluminum producers. Over the last 10 years, 102% of the production growth came from Asia. China alone contributed to 80% of the growth in aluminum production, with the Middle East (ME) and India accounting for the balance.

China, India and Middle East countries have been driving production growth, while smelters are closing in high cost developed world

Region-wise aluminum production (m tons)

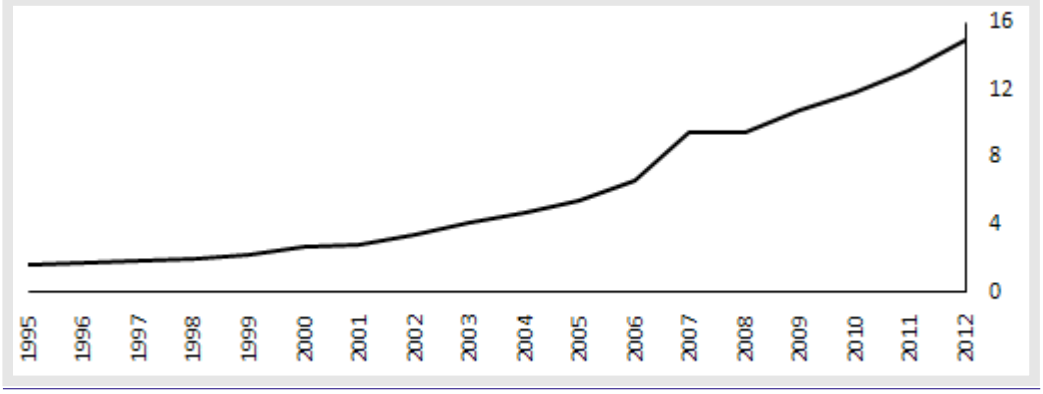


Source: IAI, USGS

China's share in global aluminum production has increased from 6% to 44% in last 2 decades

China has gained share on strong domestic demand: China, which produced less than 6% of the world's primary aluminum (or 1.15m tons) in 1992 and 17% in 2002, produced 44% (or ~20m tons) in 2012. Strong demand and abundant coal supply were the primary drivers of production.

China aluminum: Per capita consumption continues to grow (kg)



Source: USGS, IMF, MOSL

Middle East has attracted investments on low cost energy: The Middle East (ME) has come a long way from nowhere in the last 5-6 years. Apart from Dubal, Alba and few smelters that had aggregate capacity of ~2m tons, there were no other significant capacities in the region. Driven by rise in petro dollar income, these countries attracted investments in smelting capacity. Nearly 5m tons of capacities were planned, attracted by cheap gas (translating into cheap energy). Though some of the planned projects did not take off, smelting capacity in the region has already increased to 4.4m tons. Another 1.34m tons is likely to be commissioned over two years, taking total capacity in the region to 6m tons.

Nearly 5mtpa of capacities were planned attracted by cheap energy in the form of gas

Aluminum smelting capacity in Middle East

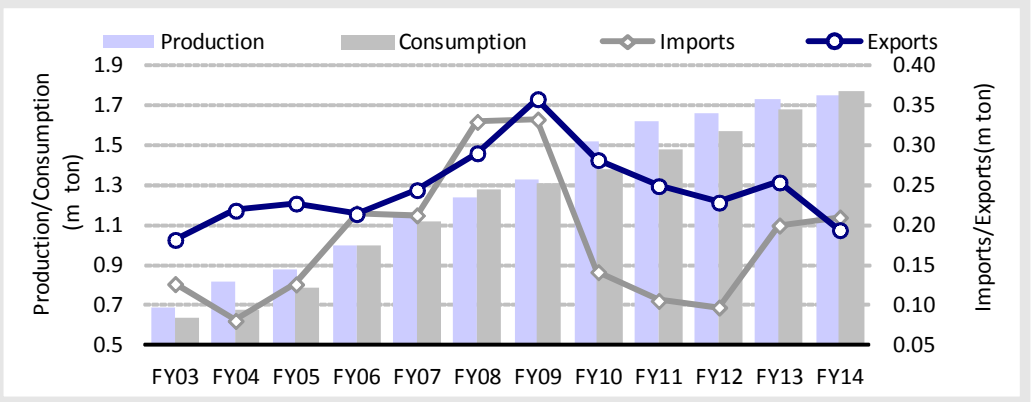
Company	Country	Capacities (ktpa)			Remarks
		Existing	Project	Total	
Ma'aden	Saudi Arabia		740	740	Expected to start in 2013
EMAL	Dubai	700	600	1,300	Expected to start in 2014
Dubal	Dubai	990		990	
ALBA	Bahrain	870		870	
Sohar	Oman	360		360	
Qatalum	Qatar	585		585	
5 smelters	Iran	832		832	
Total		**4,337**	**1,340**	**5,677**	

Source: Company, MOSL

India's production has grown on strong domestic demand and low cost advantage: India produced just 513k tons of aluminum in FY92, which grew slowly over the next 10 years to 638k tons in FY02. However, in the last 10 years, aluminum production has accelerated, driven by robust domestic demand. Strong metal prices and low cost advantage have brought significant investments into India.

Aluminum production grew 3x in 10 years

Indian demand and supply



Source: Company, MOSL

Hindalco, which produced only 261k tons in FY02, has continuously been investing in greenfield projects in India. Hirakud, a low cost smelter, is one such successful project. Hirakud enjoys the advantage of low cost energy due to associated captive coal mine and has been gradually increasing capacity. Hindalco has undertaken three more greenfield projects of 359k tons in India. Mahan and Aditya are in advanced stages of completion. Hindalco's capacity will soon reach 1.33m tons.

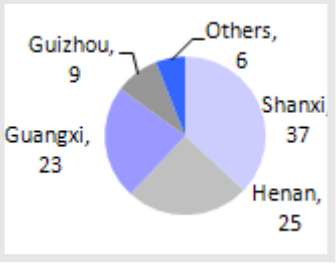
Indian aluminium production

Company	Cap.	Bauxite Captive		Production (000 tons)							Projects			
	(ktpa)	(% captive)	(MW)	FY06..	FY09	FY10	...FY13	FY14	FY15	FY16	(ktpa)	by	Cpp(Mw)	Location
Hindalco	613	75	1,188	429	523	555	532	580	600	613	613	Renukoot & Hirakud		
								54	113	338	359	2013	900	Mahan, MP
											359	2014	900	Aditya,Orissa
											359		900	Jharkhand
Nalco	460	100	1,200	359	366	431	420	323	350	460	460			Angul
Balco	245	29	810	174	357	268	255	255	255	255	245			Korba
											325	2014	1,200	Korba
VAL	500		1,215		86	265	526	536	540	540	536			Jharsuguda
											1,250	Hold		Jharsuguda
Malco	40	100	75	37	23									Mothballed
Total	**1,818**		**4,488**	**999**	**1,355**	**1,520**	**1,734**	**1,748**	**1,858**	**2,206**	**4,506**		**3,900**	
Change (%) YoY					9.8	12.2	4.7	0.8	7.2	26.2				

Source: Company, MOSL

Nalco, which produced 232k tons in FY02, has expanded capacity to 460k tons. However, capacity utilization has fallen to 70% due to shortage of coal and weak LME. Once its own captive coal mine is commissioned, production will ramp up.Balco used to operate an inefficient 100k ton smelter, which was mothballed post the financial crisis of 2008. It commissioned a new and efficient 245k ton smelter in FY06, which is running at over 100% capacity. Further, Balco is in advanced stages of 325k ton expansion. Thus, its total capacity will increase to 570k tons. Vedanta Aluminum (VAL) is a new greenfield project in Odisha. VAL has successfully commissioned a 500k ton smelter at Jharsuguda and a 1m ton alumina refinery at Lanjigarh. VAL had planned smelter expansion to 1.75m tons and refinery expansion to 6m tons. However, the cancellation of bauxite mining lease for Nyamgiri has forced VAL to put the expansion on hold.

Chinese region-wise bauxite production (%)

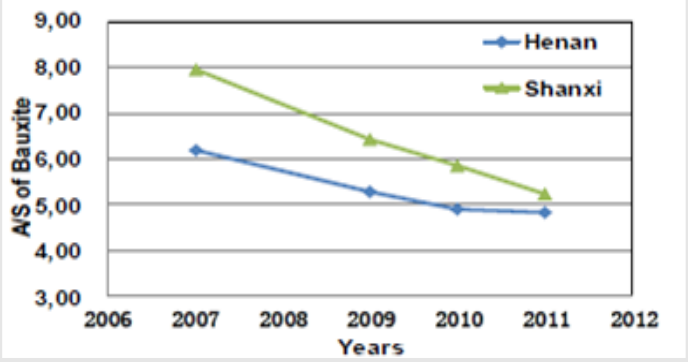


Source: Hydro

Relocated smelting driving bauxite trade and prices

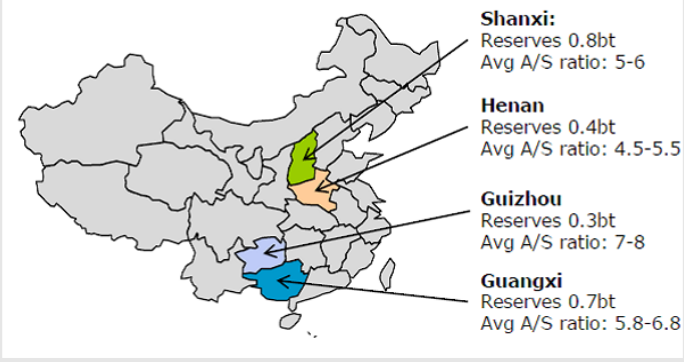
Chinese aluminum production thrived on low cost (subsidized) energy, low labor cost, low project cost and low capital cost. However, China is disadvantaged in terms of bauxite. The bauxite found in China is predominantly Boehmite, which is difficult to digest. It needs to be heated to 240°C, while the more commonly used Gibbsite can easily be digested at 145°C. Hence, the cost of production of alumina from Boehmite is much higher. Further, China produces only 20% of the world's bauxite, while it produces 44% of the world's aluminum. More over China bauxite quality is deteriorating fast. China is dependent on imports of bauxite and alumina. Indonesia has been the biggest supplier of bauxite to China and had ~70% share in total imports. Australia, the world's largest bauxite producer, is the second largest supplier to China.

China bauxite quality decreasing fast



Source: Chalco presentation

Low A/S ratio among largest producing regions in China

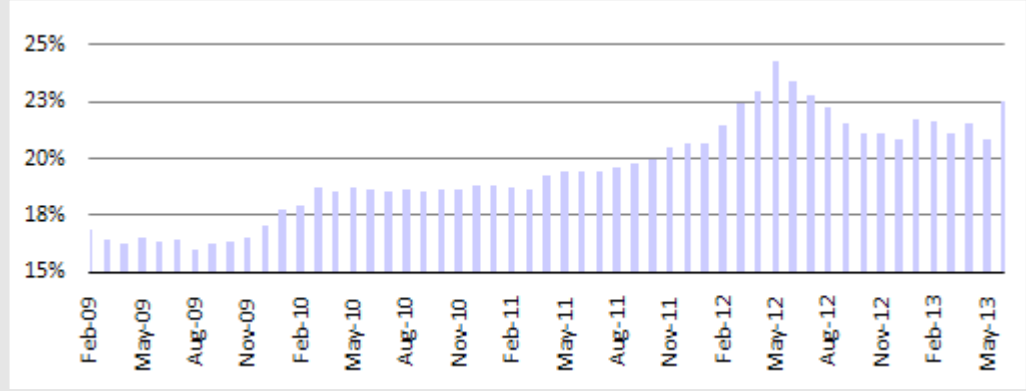


A/S= Aluminum/Sulphur

Source: Hydro

China's dependence of bauxite imports is on rise

Bauxite: China's imports as percentage of world production



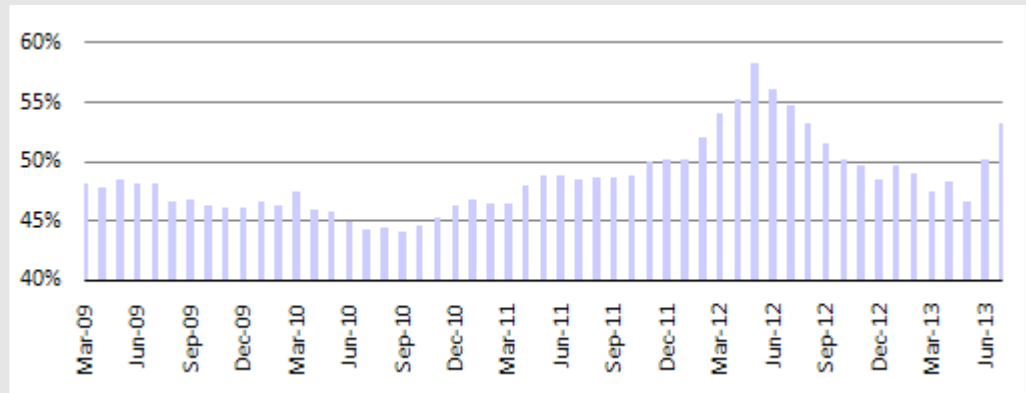
*Percentage on 12 month average basis

Source: Bloomberg, MOSL

Even before China began importing bauxite in big way, alumina imports used to feed the smelters in the country. However, the spike in alumina prices over 2004-2006 led to huge investments in alumina refineries. This eased the pressure on alumina prices, but China's dependence on bauxite imports has increased. Constrained by domestic supply of bauxite, Chinese smelters depend on imports of bauxite and alumina for more than 50% of their metal production.

Domestic bauxite hardly meets 50% of China's requirement

Implied imports of bauxite (including alumina) as percentage of China's total consumption



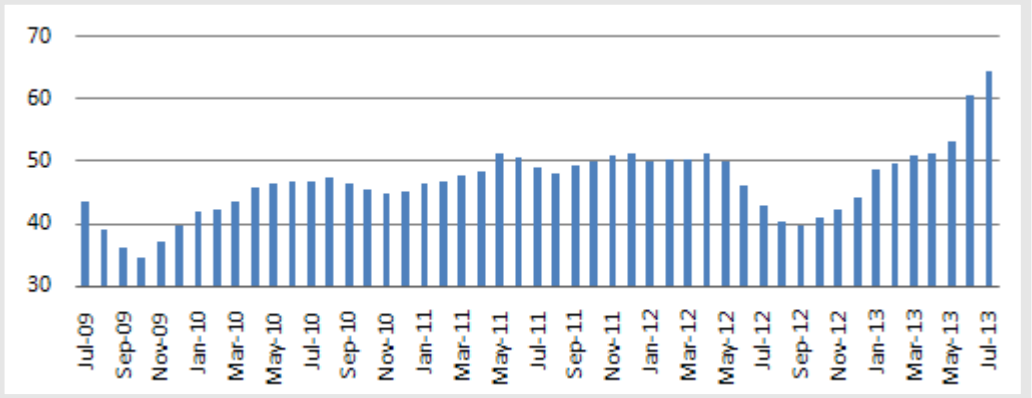
*Percentage on 12 month average basis

Source: Company, MOSL

Chinese smelters have gradually lost their cost advantage. While China is disadvantaged in terms of bauxite, its labor and power costs have increased over the last 4-5 years, taking it to the top of the cost curve. Many of the high cost smelters continue to operate with the help of state subsidy. Some have begun relocating within China from the coastal region to the hinterland and close to coal mines. This will help reduce energy, but the cost of alumina/bauxite/labor will be higher. Further, capital cost, though still low for state-owned enterprises, has started inching up.

The cost of imported bauxite is inching up…

China: Average cost of imported bauxite (USD/ton)



*Cost on 12 month average basis

Source: Bloomberg, MOSL

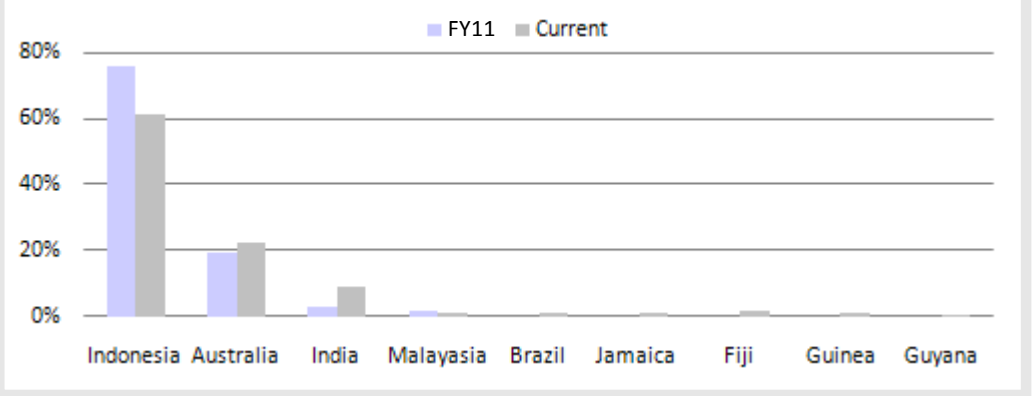
The primary reason for increase in bauxite cost has been declining supplies from Indonesia. Supply of bauxite from Indonesia has shrunk due to government measures to restrict bauxite exports from January 2014. Indonesia has already announced 20% export tax, which it intends to increase progressively.

Bauxite prices are inching up in China although aluminum and sea freight are oversupplied

Source: ABx

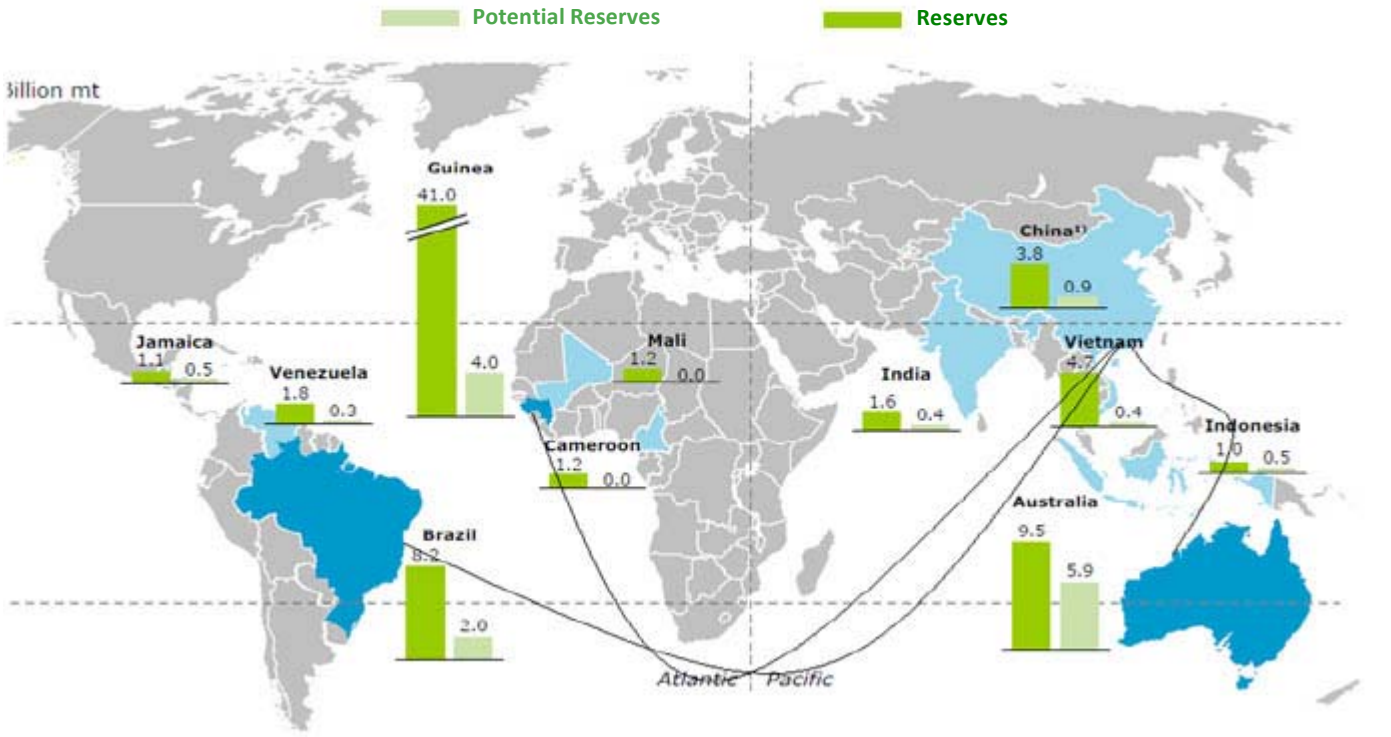
…because supply from low cost Indonesia is shrinking

China: Country-wise share in bauxite imports



Source: Bloomberg, MOSL

Bauxite may need to be transported over longer distances due to large investments in alumina refineries in China

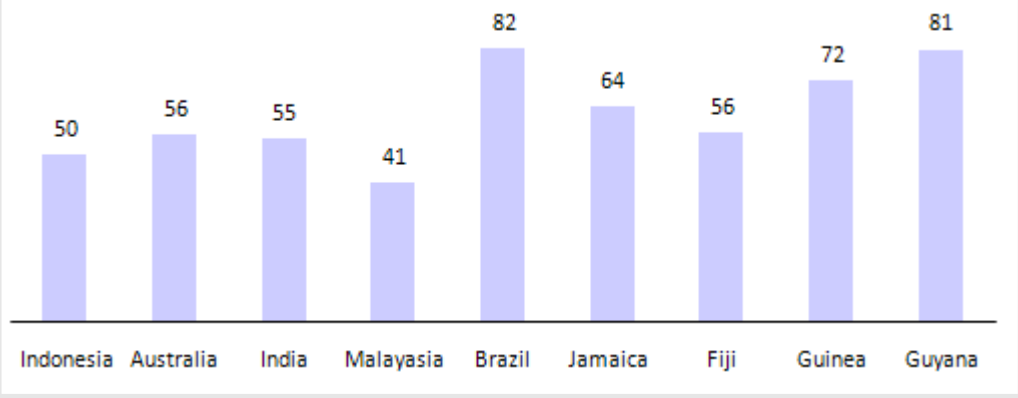


Source: Hydro

Though bauxite (like iron ore) is abundant in the world, 2/3rd of it is located in three countries - Australia, Brazil and Guinea. Since bauxite is a low value resource, freight plays an important role in total landed cost of bauxite. Alternative supplies of bauxite are much more expensive for China.

Landed cost of imported bauxite at Chinese ports (USD/ton)

Western Hemisphere bauxite Cost ~USD25/t more due to high freight cost



Source: Bloomberg, MOSL

Before supplies from nearby countries like Indonesia stagnate or dry up, China has started looking for alternate suppliers. Vietnam holds the world's 4th largest bauxite reserves but not much of it is mined. Mining plans have met with strong criticism from scientists, environmentalists and Vietnam's general population. Forests and agricultural land used by coffee and tea farmers are threatened by the plans and opponents have raised concerns about the toxic waste red mud generated in bauxite

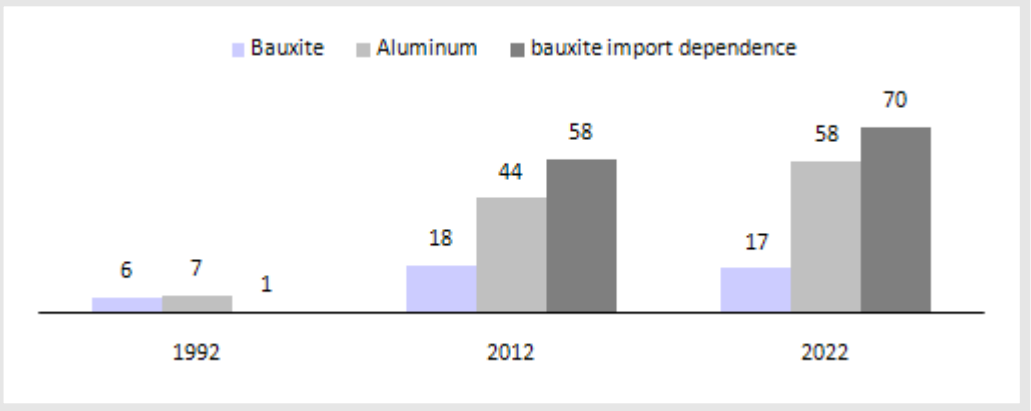
refining. Vietnamese General, Vo Nguyen Giap has strongly criticized the mining plans, saying that a 1980s study led to experts advising against mining due to possibility of severe ecological damage. This leaves China dependent on supplies from Australia, Brazil and Guinea. Miners like Rio Tinto (Rio) and Australian Bauxite (ABx) are gearing up to supply 30m tons and 10m tons, respectively. Rio's ore will be Boehimite, while ABx will be mining Gibbsite.

Underinvestment in bauxite mining, stronger than expected growth in demand from China may change the dynamics of bauxite pricing like that of iron ore in last decade

Though China's per capita consumption of primary aluminum has jumped sharply to 15kg in 2012, it is still long way before it matures. Developed countries like USA consume 20-30kg (including recycled metal). Being a young metal with low exposure to Construction, aluminum less exposed to economic volatility. No country has yet seen peak consumption. China's consumption of aluminum is likely to nearly double over 10 years. This would mean that China will have to import nearly 70% of its bauxite requirements. Underinvestment in bauxite mining and stronger than expected demand from China may change the dynamics of bauxite pricing.

China's share in global production (%) and its bauxite import dependence (%)

China's dependence on bauxite imports will rise



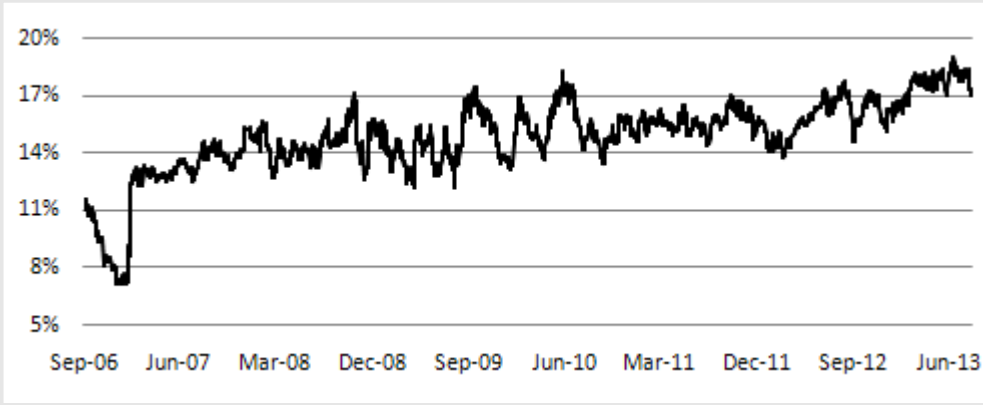
Source: USGS, MOSL

We expect the world's aluminum production to grow at a CAGR of 4.1% over 2012-2022 (v/s 5.6% over 2002-2012). This would mean that world bauxite (adjusted for grade deterioration) production will need to increase by 51% to 397m tons. China's aluminum production and consumption will nearly double. Chinese bauxite production is likely to increase at slower pace due to limited reserves in the country.

We estimate that bauxite production outside China will need to increase by 115m tons to 330m tons over next 10 years (2012-2022). China's bauxite imports will likely increase from 45m tons currently to 113m tons by then. With Indonesia putting restrictions on exports with effect from 2014, there will be tremendous pressure on bauxite production in other parts of the world. China will have to rely on the western hemisphere for supply of bauxite. This will increase the average ton-mile cost of transport, boosting the prices of bauxite. Though alumina production can be ramped up in other parts of the world (ex-China), the overinvestment in Chinese alumina refineries does not allow their ramp up. Bauxite prices need to rise high enough to force shutdown of Chinese alumina refineries. In the mean time, alumina prices are outperforming LME.

Alumina market is tighter than aluminum

Alumina prices as a percentage of aluminum LME prices (%)



Source: Bloomberg, MOSL

Middle East - losing low cost energy advantage

Low cost gas has attracted large investments in aluminum smelting in the last decade in Middle Eastern countries. Nearly 5m tons of new capacity was planned. Smelting capacity in the region has already increased to 4.4m tons. Another 1.34m tons of smelting capacity is expected to be commissioned over the next two years. This will take the total capacity in the region to 6m tons.

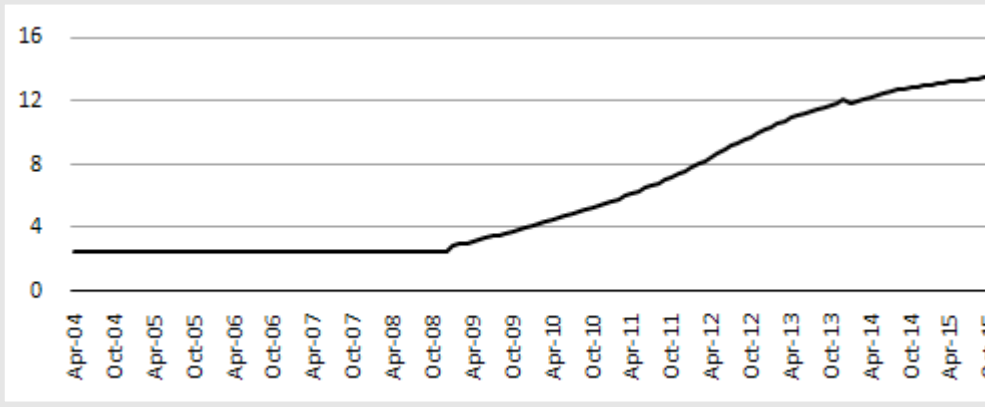
Cheap gas invited large investment in aluminum smelting

Gas used to be flared because high cost of compression and infrastructure was not justified at low prices of energy. ME countries were too happy to offer low cost gas. This attracted large investments in the ME.

With crude oil prices sustaining at higher levels, the pricing dynamics of gas exported in the form of LNG have changed significantly. The export realization of LNG has increased many folds over the last five years.

LNG export prices (USD/mmbtu, fob Qatar)

Gas is becoming more valuable for Middle East countries



Source: MOSL

Though the ME accounts for 38% of the world's proven gas reserves, large parts of the reserves are concentrated in Iraq, Iran and Qatar. However, merely being endowed with large gas reserves does not mean that all the gas can be made available where/ when needed.

- Associated gas depends on crude oil production levels.
- There are quality/cost constraints (example: multi/billion USD projects to treat sour gas).
- Reliance on non-associated gas in complex formations is increasing (high costs).

- Large volumes of gas are needed for injection in oil fields (Iran and the UAE).
- Regional gas infrastructure remains limited compared to other regions of the world.
- Geopolitical and commercial considerations have constrained intra/regional trade.

Qatar is the only significant surplus country in the world that has also set up nearly 75m tons of LNG export capacities.

Cheap gas is not available any longer

The ME countries are no longer offering cheap gas to energy intensive projects. Several projects in the region have been shelved for want of low cost energy and no new projects are being announced.

Gas doesn't have any comparative advantage over coal

Gas does not have any comparative advantage over coal in power generation unless subsidized. If gas is delivered at USD5/mmbtu, the fuel cost in power generation will be USc3.87/kwh as explained in the following exhibit. To get similar fuel cost of power generation, coal prices can be as high as USD100/ton. In other words, till such time as coal price is less than 20x gas price, it is more competitive.

Power generation: comparative advantage for coal

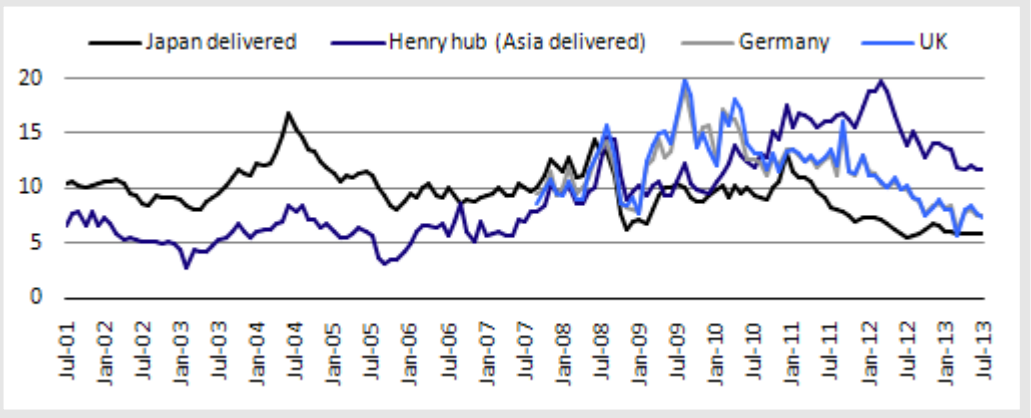
	Units	Gas	Units	Coal
Price	USD/mmbtu	5	USD/ton	100
Calorific value	btu/mmbtu	1,000,000	kcal/kg	6,000
Cost per unit	USc/btu	0.0005	USc/kcal	0.002
Station heat rate	btu/kwh	7,744	Kcal/kwh	2,200
Fuel cost	Usc/kwh	3.87	Usc/kwh	3.67

Source: MOSL

Coal is more competitive as long as it is less than 20x of gas price

We have tried to compare the price of coal (USD/ton) with the price of LNG (USD/mmbtu) delivered in Japan, and the prices of Henry Hub liquefied LNG (theoretical) delivered to the Asian markets, Germany and the UK. In the last 10-12 years, the coal to LNG price ratio has never crossed 20x. This implies that coal has always been more competitive than natural gas in power generation.

Coal to LNG price ratio (x)



Source: Bloomberg

Coal has been more competitive

Now, most LNG contracts are being linked to 14-15% of crude oil prices. Even if ME LNG were to compete with North American gas (Henry Hub index) in Asian markets,

the netback realization for ME countries will still be above USD4-5/mmbtu due to proximity to Asian markets. However, this is a theoretical calculation because of insufficient supply chain between Henry Hub and Asian markets. If the supply chain is established, the netback realization for ME gas will be even higher. Hence, we believe that that the ME will no longer offer subsidized gas for new aluminum smelting projects because the focus has now shifted to value maximization.

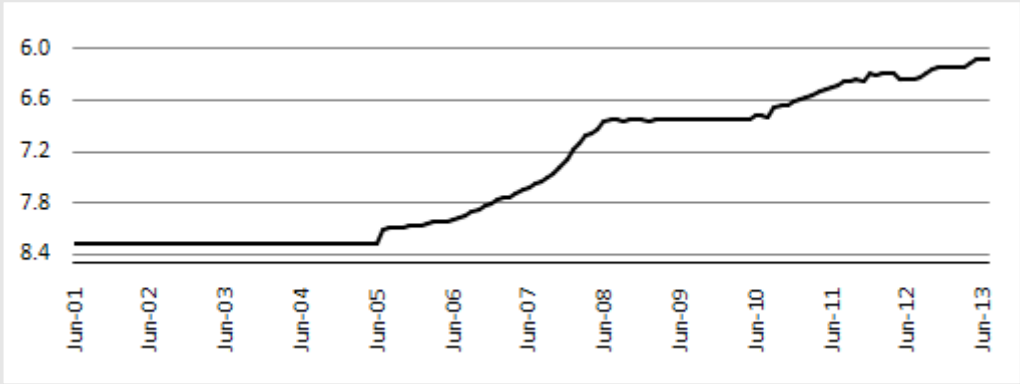
China - costs are moving up

China continues to invest heavily in aluminum smelting on the back of energy cost advantage. Though the cost of power has been increasing in the eastern part of the country due to rapid urbanization, it is lower in the western part, where the coal mines are located. The trend of relocating smelters closer to coal mines has already started. This will help smelters to bring down the overall cost of energy in local currency.

CNY appreciation is adding to operating costs: The continuous upward pressure on the value of the CNY in terms of the USD will keep eroding China's cost advantage.

CNY/USD rates

Chinese Yuan has natural tendency to appreciate…

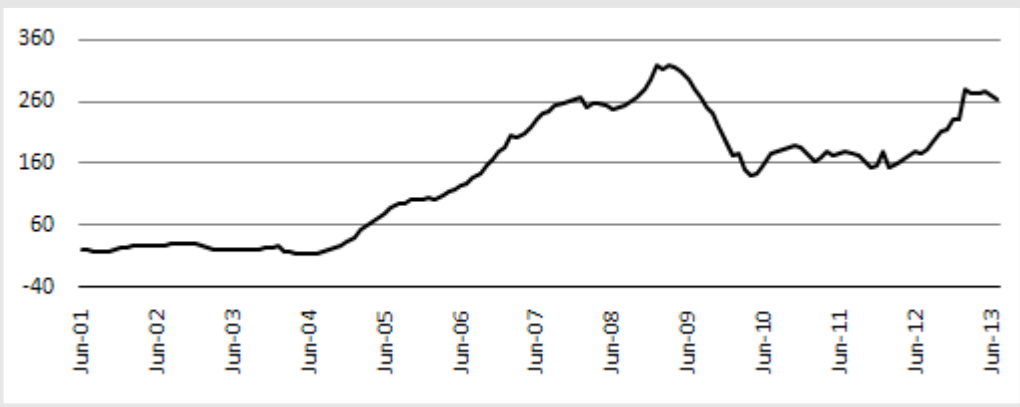


Source: Bloomberg

The Chinese currency has a natural tendency to appreciate because China runs a secular trade surplus with USA. China allows the CNY to appreciate in a narrow band.

China: Trade surplus (USD billion per month)

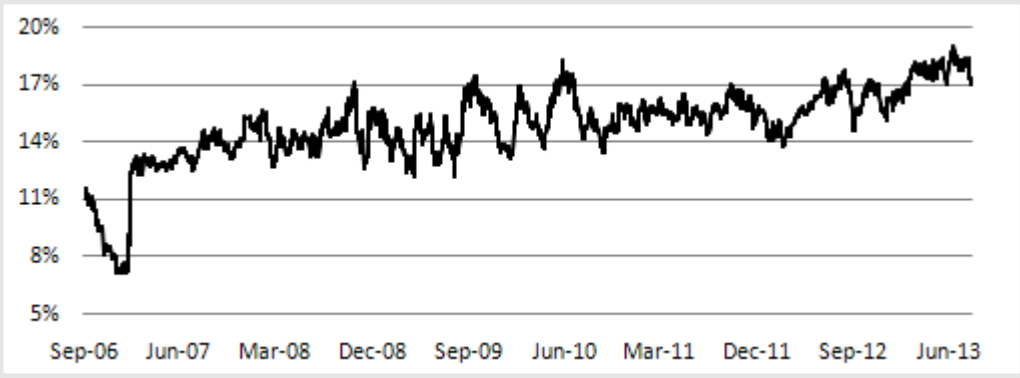
…because China runs trade surplus



Source: Bloomberg

Alumina and bauxite too are getting expensive: With China's dependence on bauxite imports rising from 50% to 70% over the next 5-10 years, bauxite and alumina prices are likely to outperform LME. Rising relative cost of bauxite and/or alumina with respect to LME will keep pushing Chinese smelters (whose share in aluminum production is likely to increase from 44% in 2012 to 58% by 2022) upwards on the cost curve.

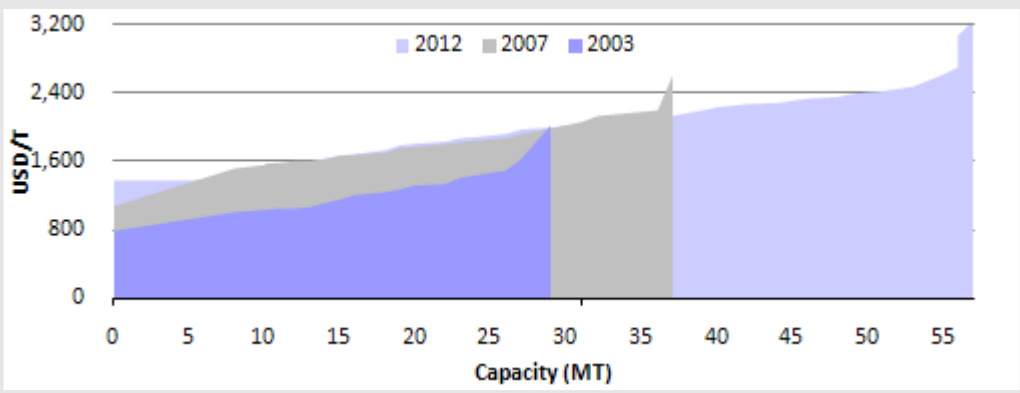
Alumina prices as a percentage of LME aluminum prices



Source: Bloomberg, MOSL

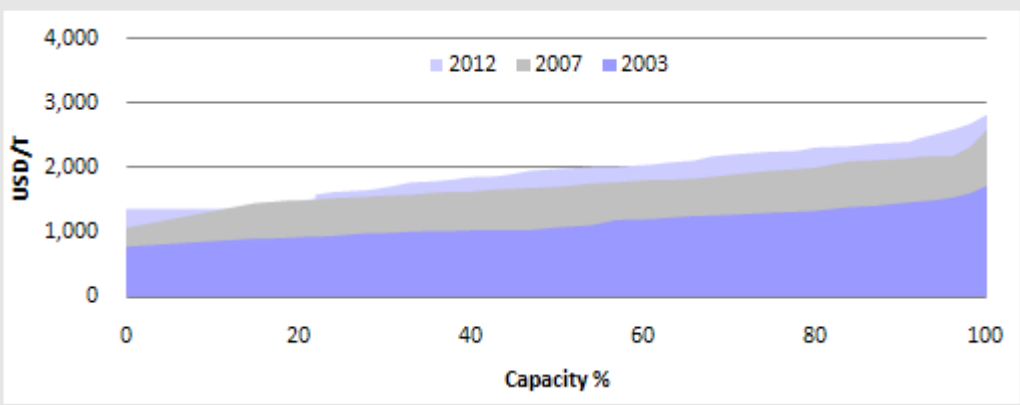
Chinese smelters are already at the high end of global costs, but continue to operate with the help of state subsidies on energy and borrowing costs. Relocation of some of the smelting capacities closer to energy sources will help achieve some cost reduction, but discontinuation of state subsidies and CNY appreciation would mean no advantage to smelters.

Global cost curve



Source: Industry, MOSL

Global cost curves on 100% capacity basis

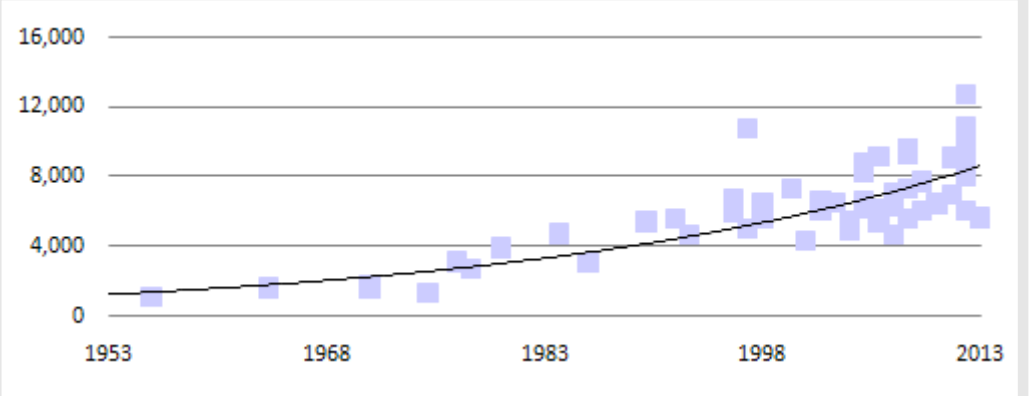


Source: Industry, MOSL

LME aluminum prices to move up

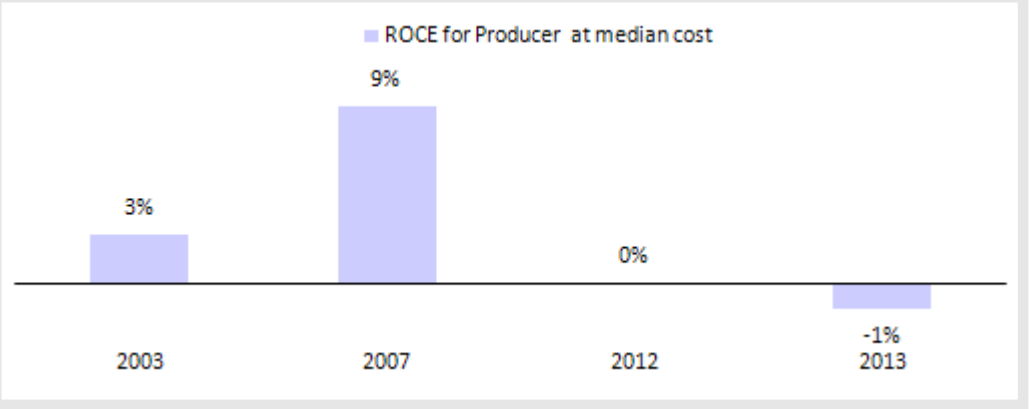
Rising cost of setting up projects in most parts of the world and falling return on capital employed (RoCE) has choked investments in the sector across the world, barring China. Leading aluminum producers - UC, Rusal, and Alcoa - have been mothballing and/or permanently shutting high cost smelters.

Specific capital cost (USD per ton of integrated capacity)



Source: MOSL

Return on capital employed



Source: MOSL

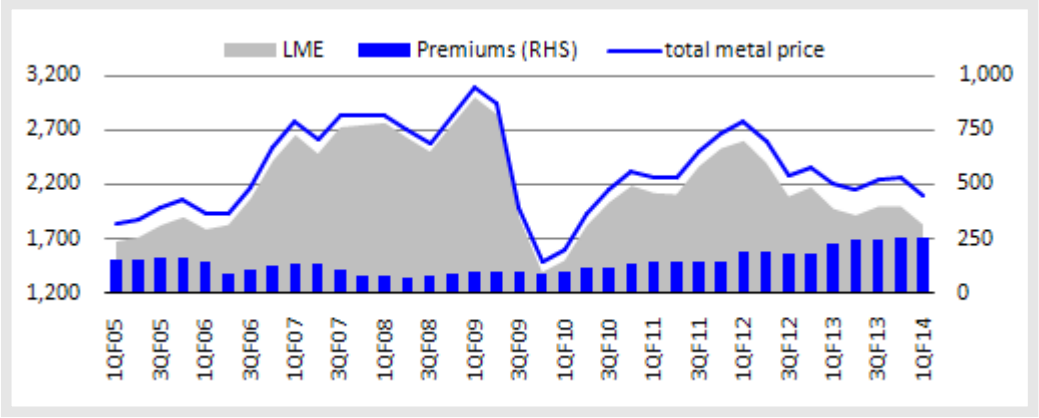
Low returns and shortage of capital has choked investment everywhere but China

Rising share of Chinese smelters will drive cost curves steeper

High LME inventories is on everyone's mind, but producers are not as much concerned

Chinese demand and smelters will drive cost curves steeper: With choking of investments in the world (ex-China), growing demand and rising cost of production for Chinese smelters (driven by CNY appreciation and rising cost of alumina/bauxite) are likely to drive the cost curves steeper. We expect aluminum prices to trend upwards over the next 2-3 years. There appears to be excessive pessimism in the financial markets because of oversupply. However, the producers are not as much concerned because rising spot delivery premiums have cushioned the impact on total aluminum prices.

Quarterly average aluminum prices (USD/ton)



Source: Bloomberg

Unwinding of warehousing queues will put pressure on LME prices - a myth

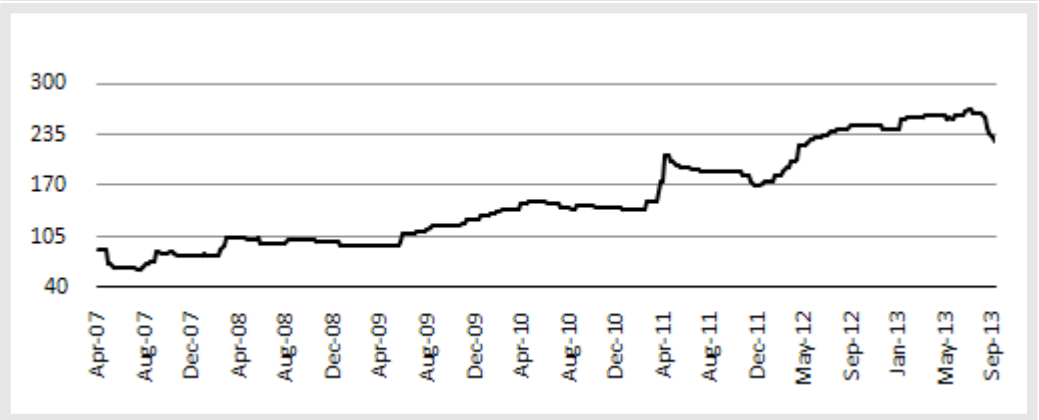
Despite lengthening warehousing queues, no user has suffered production disruption due to shortage of metal

It is believed that unwinding of warehousing queues will bring additional supply to the market, putting pressure on LME aluminum prices. We concede that aluminum, which is currently locked in warehousing queues, will become available to users. However, it needs to be noted that this metal was available to end users immediately after it was produced. It was because of overproduction that the metal landed up in warehouses.

Problem lies elsewhere in hardening of spot deliver premiums which they are not able to hedge

Protests by metal re-rollers like Novelis are not really about non-availability of primary metal. Their problem lies elsewhere in hardening of spot delivery premiums, which they are not able to hedge. Once spot premiums start coming off (they have started now), the complaints will disappear. We are not aware of any re-roller's production getting disrupted due to non-availability of primary metal.

Aluminum: Spot delivery premiums (USD/ton) have started to come off



Source: Bloomberg

Key question - will there be pressure on owners of LME inventories to sell this metal in physical market?

The key question is, "Will there be pressure on owners (or financiers) of LME inventories to sell these in the physical market?" We believe that the funding of LME inventories is driven by pure arbitrage between current and forward markets versus cost of carry. One may argue that hardening interest rates due to tapering of bond buying by the Fed (USA) will increase cost of carry. Yes, higher interest rates drive cost of carry, but what about other components like rents and incentives?

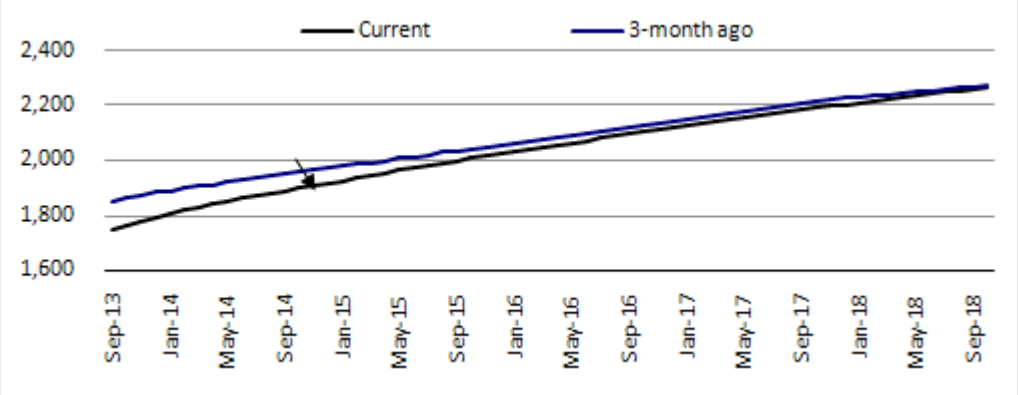
The warehousing rent have more than doubled over last few years - The rents can fall 60-65% due to new investment in East

Warehousing rents have more than doubled over the last few years without corresponding increase in the cost of creating warehousing space (real estate and labor costs have remained subdued in the West). Perhaps, this is what drew investment bankers like Goldman and JP Morgan to owning warehouses. More warehouses are expected to be created in Asia over the next few years due to shifting of the center of gravity of the global metal trade to the East and ownership of LME to a Chinese (Hong Kong). This will bring down warehousing rents; we believe there is 60-65% downside potential in warehousing rents. We are not surprised that the investment bankers now want to exit warehousing, as they can no longer protect their margins due to the recent intervention by the US judiciary.

The warehousing business had become so lucrative that incentives were being offered to draw metal into warehouses. Ever since the new owner of LME indicated that rules would be changed to shorten the queues to 100 days, the incentives (to draw in metal) have been cut. As a result, the spot delivery premiums have started coming off. However, the forward curves are now getting steeper. This only re-affirms our view that LME inventory is unlikely to unwind. Steeper contango and lower rents will cushion hardening of interest cost.

Aluminum forward curves (USD/t)

Steeper Contango and lower rent will cushion hardening of interest cost



Source: Bloomberg

Persistent contango reaffirms that underlying demand fundamentals are strong, while costs are expected to inch up. This fact cannot be ignored or taken lightly, because forward curves of other commodities like iron ore are trading in backwardation, as supply is expected to outstrip demand over the next few years.

Total aluminum price is unlikely to change. As spot delivery premiums cool, we expect LME to inch closer to total aluminum prices

Expect LME prices to move closer to total aluminum prices: Total aluminum prices (LME + premiums) are driven by fundamental demand and supply. As the total inventories are unlikely to unwind because attractive contango will continue to fund the carry cost, we expect no change in the underlying fundamentals of demand and supply. Hence, the total aluminum price is unlikely to change. As spot delivery premiums cool, we expect LME to inch closer to total aluminum prices.

Indian smelters getting competitive again

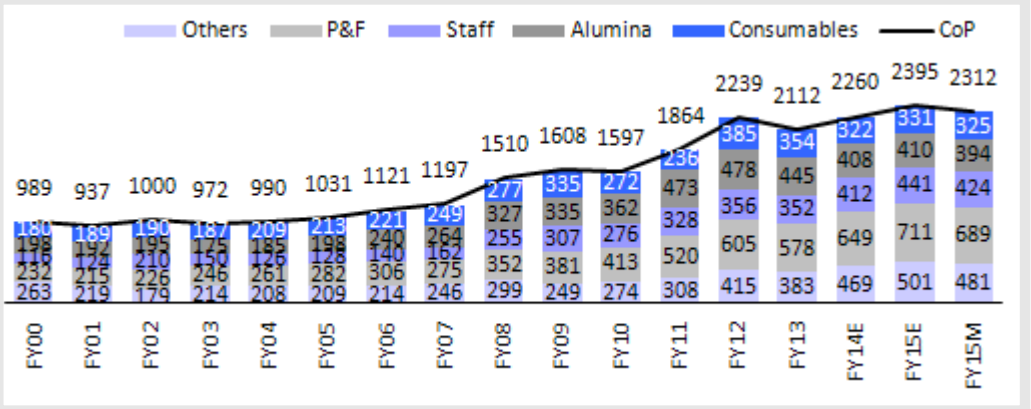
Cost of production has peaked; profitability to improve

- **India is endowed with large resources of coal (3rd largest in the world), bauxite (5th largest in the world) and labor pool (2nd largest in the world) - the key ingredients in aluminum production, and bauxite and coal mining. This gives India a natural advantage, making it one of the lowest cost producers in the world, with cost of production below USD1,000/ton a decade ago.**
- **The competitiveness of Indian smelters had eroded rapidly in the last five years due to change in the dynamics of coal pricing by Coal India, other input cost pressures and high inflation. However, this did not deter Sesa-Sterlite and Hindalco from investing USD8b and USD6b, respectively, in the last 4-5 years. Falling RoI and huge capex burden led to huge stock underperformance.**
- **We believe that India's aluminum sector is now set for a turnaround. Cost of production has peaked. Profitability should increase, aided by sharp depreciation of INR against USD, easing prices of inputs like coal and CPC, likely increase in LME prices and end of the capex cycle, leading to improved cash flows.**

Indian smelters went up the cost curve

Nalco's operating assets are located close to bauxite and coal mines. The alumina refinery is located close to captive bauxite mines at Damanjodi, Odisha. Its smelter along captive power plant is close to MCL (Coal India's mines) in Angul, Odisha. The location advantage, mineral linkages and low labor cost led to low cost of production. However, in the last 5-6 years, Nalco has lost its cost advantage.

Average cost of production for Nalco's product mix (USD/ton)



Although cost of production has increased, but it would be lower in FY15M (MTM USD/INR rate of 62.5) vs FY15E (i.e. estimate of 60)

Source: Company, MOSL

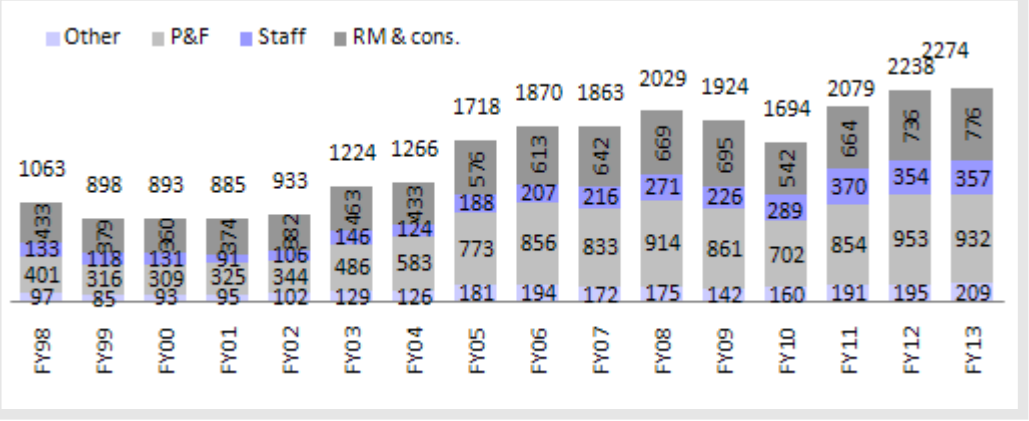
How Nalco has gradually lost its cost advantage in the last 5-6 years:

- Labor productivity has increased only 10%, but labor cost per man year has increased 3x to USD271,000 (v/s USD50,000 in 2000).
- Coal India (MCL) used to supply 100% of Nalco's coal requirement at linkage price, which was unchanged from FY01 to FY08. However, the average cost of coal per ton has increased 3x in the last five years, because Coal India cut linkage supply and raised prices multiple times. Nalco's dependence on merchant purchase of expensive coal increased. Further, the quality of coal has deteriorated with greater incidence of rocks in the supply. This has had a huge impact on the cost of production.

- Nalco also reported a spike in consumption ratios for consumables like caustic soda due to rise in silica in bauxite.
- Cost of other consumables like CPC and caustic soda also increased.

Hindalco too witnessed most of the issues faced by Nalco. However, its cost of production declined during FY08-10 due to rising share of low cost Hirakud smelter in the production mix. The Hirakud smelter has an additional benefit of captive coal mining not available to the Renukoot smelter. The cost of production for both Nalco and Hindalco includes value addition and is, thus, not comparable to LME grade.

Average cost of production for Hindalco's product mix (USD/ton)

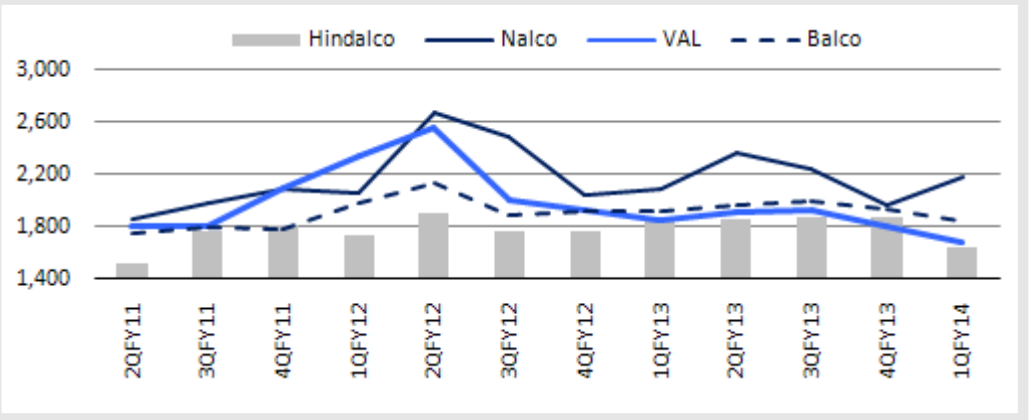


Source: Company, MOSL

Cost of production has started declining

Recent quarterly trends in the cost of production for Indian smelters are encouraging, though Nalco's cost of production still remains volatile due to volatility in coal cost.

Indian smelters: Cost of production of primary metal (USD/ton)



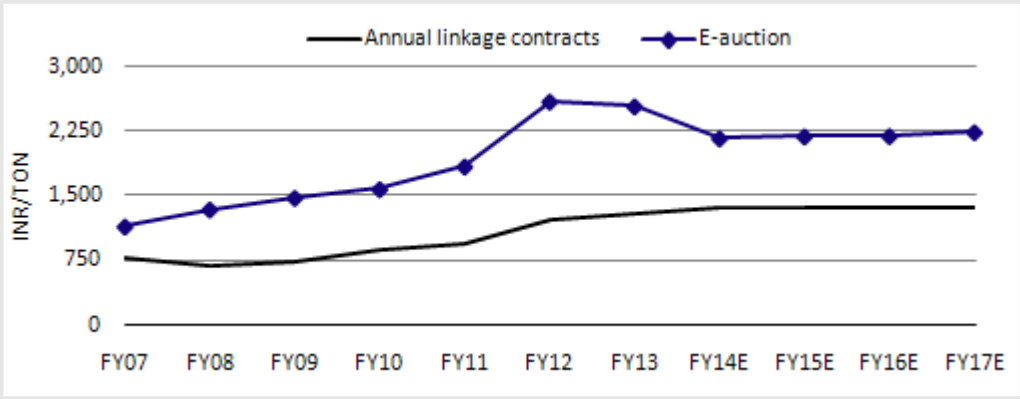
Source: Company, MOSL

Weakening INR v/s USD, easing wage inflation and input costs, and no further hike in coal prices have led to peaking of cost of production of aluminium. The drop in cost of production is likely to be sharper in the coming quarters due to steep INR depreciation from the average rate of INR56/USD in 1QFY14.

■ Power cost declining

Indian utilities and smelters are largely dependent on Coal India (CIL) for the supply of coal to meet fuel requirements for power generation. CIL supplies ~90% of its coal production through annual contracts and offers ~10% of its production through e-auctions due to logistics issues. Coal procured in E-auction gets second priority in allocation of railway rakes and often needs to be transported by road to end users. Generally, end users close to the mines bid in e-auctions.

Coal India: Average realization



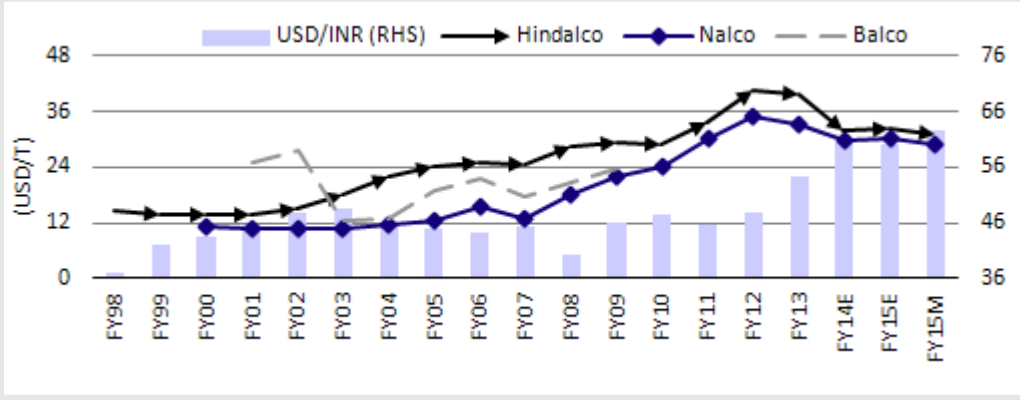
Source: Company, MOSL

Since the E-auction prices have cooled, we expect the average contracted (or linkage) prices too expected to remain flattish

Over the last five years, large investments in the power sector and strong demand drove up prices of merchant power. High coking coal and steam coal prices in international market drove demand for coal from the sponge iron industry. This led to aggressive bidding in e-auctions. Average realization grew 150% to INR2,600/ton during FY12. Deteriorating financial health of power distributors and shrinking sponge iron demand and margins eased the pressure in e-auctions. The average realization in e-auctions was nearly flat in FY13 and is expected to be down 15% in FY14, with only marginal appreciation expected over the next 2-3 years.

Sharp rise in e-auction prices encouraged Coal India to hike prices of contracted quantity to utilities and switch to differential pricing for non-utility sectors like metals. Since e-auction prices have cooled, we expect the average contracted (or linkage) prices to remain flattish.

Coal: Average cost per ton for Indian metal companies



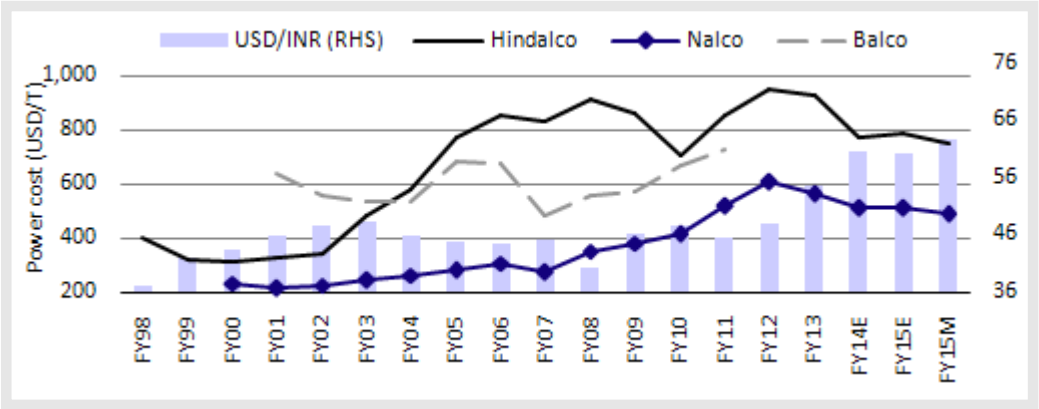
USD per ton cost of coal is on decline

*FY15M (MTM USD/INR rate of 62.5) vs FY15E (i.e. estimate of 60)

Source: Company, MOSL

The increase in average cost of coal for Indian metal companies was sharper because CIL reduced the linkage supply, forcing them to participate more in expensive e-auctions. However, the pressure now is easing. With flattish average cost of coal in INR/ton, steep INR depreciation v/s USD, the cost per ton of coal is likely to decline sharply in terms of USD.

Power & Fuel: Average USD cost per ton of metal is expected to decline sharply



*FY15M (MTM USD/INR rate of 62.5) vs FY15E (i.e. estimate of 60) Source: Company, MOSL

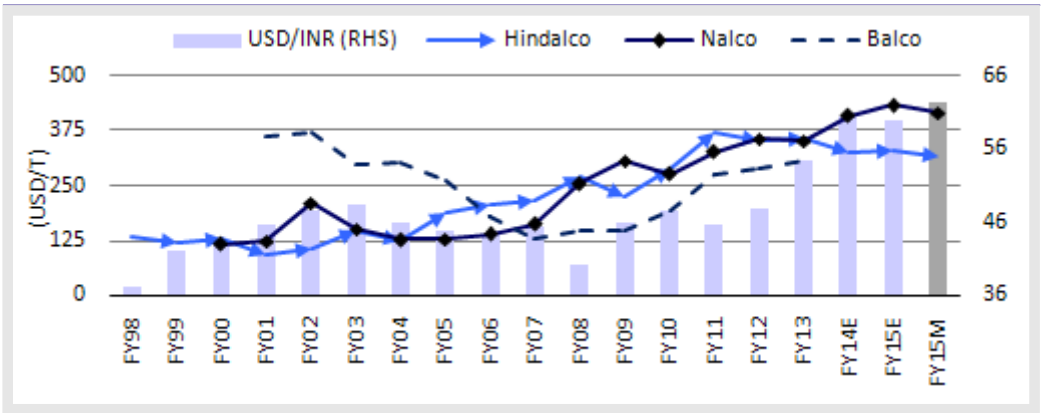
Costs between companies are not comparable due to vast difference in product mix and segmental reporting

■ Labor cost pressure easing

Though Indian smelters witnessed 10-50% labor productivity gains in the last decade, the annual labor cost increased 5-6x. Over the last five years, the productivity gains were little, but wages rose sharply due to large wage hikes by state-owned companies, persistently high inflation, and pressure from strong GDP growth. With GDP growth having slowed down and unemployment rising, we expect wage hikes to be moderate despite expected high inflation. Hindalco is likely to see sharp increase in productivity, as the efficient Mahan and Aditya smelters start ramping up production. The depreciating INR is likely to have greater impact on the per ton cost in terms of USD.

Labor cost: Average cost per ton of aluminum

Lower wage hikes, productivity gains, and currency depreciation reducing costs sharply



*FY15M (MTM USD/INR rate of 62.5) vs FY15E (i.e. estimate of 60) Source: Company, MOSL

■ Other operating costs to moderate

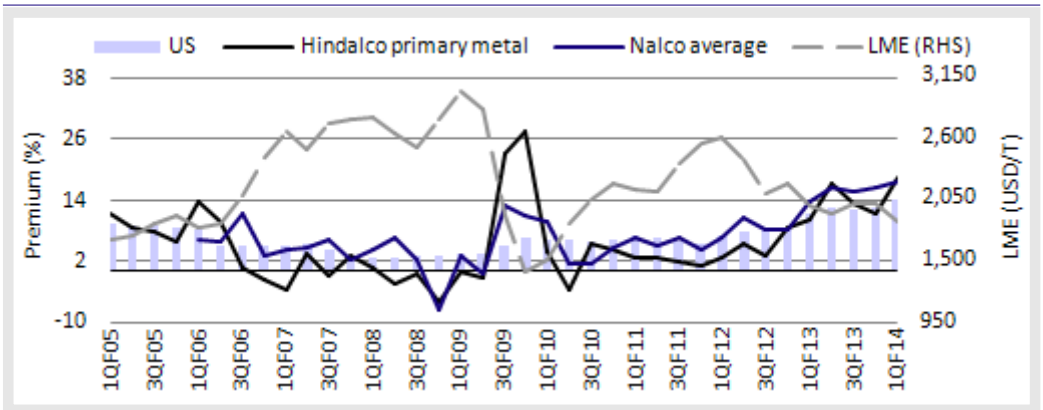
The manufacturing industry significantly outsources repair, maintenance and other activities. Hence, contracting costs play an important part. With slowdown in construction activity, contracting costs too are likely to remain subdued. Adding the benefit of INR depreciation, USD cost would decline further.

Indian aluminum: Pricing power intact unlike steel

In India, aluminum prices follow shadow pricing based on import parity costs, irrespective of local demand. The average sales premium realized by Indian aluminum smelters has very high correlation with the spot delivery premium.

Indian aluminum prices have high correlation to LME and currency

Premiums over LME: Indian smelters compared with US spot premiums

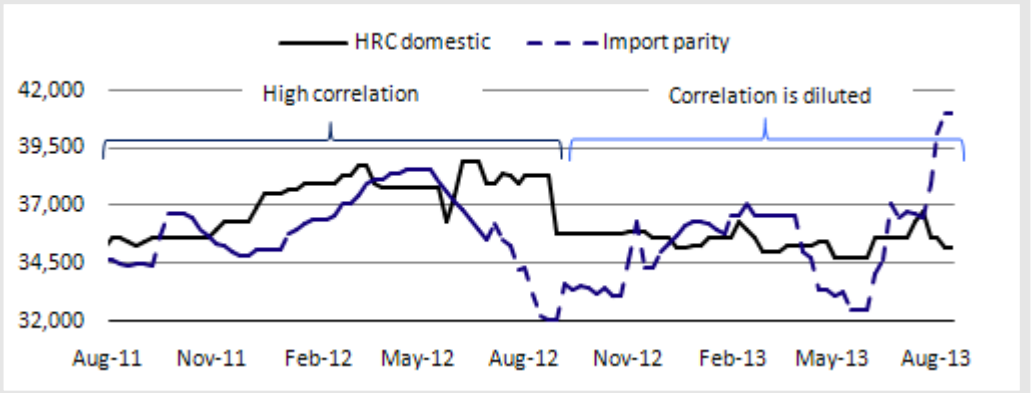


Source: Company, Bloomberg, MOSL

Indian steel prices used to have high correlation with import parity. However, the link has now got diluted due to poor domestic demand and high cost of transportation (as percentage of selling price). Steel prices are now adjusting to export parity instead. However, aluminum prices remains highly correlated to import parity, given that it (1) is a homogenous commodity, (2) has a ready market at LME, and (3) has low cost of transportation (as percentage of selling price).

The correlation with import parity has diluted due to demand weakening

Indian steel prices



Source: Steelmint, MOSLL

Margins bound to expand: The margins of Indian aluminum smelters are bound to expand with upward bias at LME, weakening INR v/s USD, and easing of input cost pressure.

Hindalco: Our top pick

Free cash flows turning positive; valuations at historical trough

- **Hindalco is at an inflexion point. Operating cash flows are poised for rapid growth, as the benefits of USD8b investment have begun. Margins of the aluminum business should expand, driven by declining cost of production.**
- **Hindalco has near full bauxite and partial coal security through captive mines. Its balance sheet is highly geared, but it has the best cash flow hedge among Indian metal companies. Its debt maturity profile is very comfortable and back-ended.**
- **Free cash flows are turning positive, along with rising operating cash flows and tapering capex. The stock trades at historical trough valuations. We prefer Hindalco over Sesa-Sterlite and Nalco.**

Sesa-Sterlite group less leveraged than Hindalco, but capital structure inefficient

Though Sesa-Sterlite is less leveraged at the group level than Hindalco, its capital structure is highly inefficient. Another group restructuring is inevitable once the Government of India divests its stake in Hindustan Zinc. We fear that the management may not choose the most efficient capital structure because that conflicts with its strategy of aggressive inorganic growth. Minority interest in cash-rich subsidiaries is a useful strategic leverage at the time of acquisition. Sesa-Sterlite has got de-rated and is unlikely to get re-rated until capital inefficiencies are addressed and minority interest in cash-rich subsidiaries is bought out through M&A. We maintain Buy, as SOTP-based valuations are still attractive.

Hindalco is leveraged, yet its forex debt has best cash flow hedges

	Hindalco			Sesa-Sterlite					Nalco	Tata Steel			SAIL	JSW Steel		
	India	Over.	Con.	India	Over.	HZL	Cairn	Con.		India	Over.	Con.		India	Over.	Con.
NetDebt /																
EBITDA	5.3	4.0	4.4	**13.4**	-2.6	-4.7	-2.3	1.1	-5.0	2.7	**10.4**	4.6	5.9	3.4	**16.3**	4.2
INRx	6.3		6.3	**14.4**		-4.7	-1.4			2.1		2.1	4.0	2.8		2.8
USDx	0.5	4.1	3.6	7.6	-2.7					7.6	**11.1**	**10.3**	**42.1**	4.9	**16.3**	6.9
Net Debt	211	264	475	924	-47	-304	-284	289	-47	317	407	724	297	278	88	366
INR(b)	205		205	845		-304	-168			227		227	192	159		159
USD(m)	100	4,552	4,652	1,367	-860		-2,000			1,546	7,469	9,015	1,813	2,060	1,518	3,578
EBITDA	44	65	109	69	18	65	122	274	9	118	39	157	50	82	5	87
INR(b)	33		33	59		65	122			107		107	48	57		57
USD(m)	187	1,119	1,306	179	314					204	674	878	43	424	93	517

Over. = Overseas operations; Con. = Consolidated; India=India business Source: Company, MOSL

Nalco's balance sheet best, but it is high up on the cost curve

Nalco has the best balance sheet, with no debt and cash surplus of ~INR50b. Falling labor productivity due to declining capacity utilization of smelter and 2-3x higher annual labor wages as compared to peers has moved it up on the cost curve, despite the benefit of captive bauxite and proximity to Coal India's mines. Nalco is long on alumina, with 60-70% of production available for third-party sale. Though metal production has declined due to difficulty in sourcing additional coal, alumina

production is rising due to the benefit of captive bauxite and recent capacity expansion. Potential upsides from Utkal-E block, further expansion of alumina refinery, weaker INR v/s USD, and peaking of labor cost as older employees retire are long-term positives. In view of the changed business dynamics and recent turn in operating performance, we believe that the stock deserves a higher EV/EBITDA target multiple of 5.5x (earlier 4x). Topping it with the value of CWIP, our SOTP-based target price is revised to INR52. We upgrade the stock to **Buy**.

Valuations: Indian Companies

	Rating	CMP	TP	Upside	MCAP	EPS (INR)			P/E (x)		EV/EBITDA (x)		P/B(x)	
		(INR)	(INR)	(%)	(USD M)	FY13	FY14E	FY15E	FY14E	FY15E	FY14E	FY15E	FY14E	FY15E
Non-Ferrous														
Hindalco	Buy	116	165	42	3,832	17.0	14.0	15.0	8.3	7.7	7.7	6.2	1.0	0.9
Sesa-Sterlite	Buy	178	214	20	8,460	35.9	31.8	34.5	5.6	5.2	5.8	5.0	0.7	0.6
Hindustan Zinc	Buy	134	155	15	9,076	16.4	16.9	16.4	8.0	8.2	4.4	3.7	1.5	1.3
Nalco	Buy	32	52	62	1,332	2.3	3.3	3.3	9.7	9.9	3.5	3.0	0.7	0.6
Steel														
Tata Steel	Sell	294	204	-31	4,564	1.6	31.5	28.7	9.3	10.2	6.2	6.4	1.2	1.2
SAIL	Sell	53	26	-50	3,483	5.7	7.9	3.0	6.7	17.7	7.8	10.3	0.5	0.5
JSW Steel	Sell	729	565	-23	2,821	49.7	60.7	68.6	12.0	10.6	6.5	6.2	1.0	0.9
JSPL	Neutral	253	238	-6	3,779	37.2	27.4	32.3	9.2	7.8	8.6	6.2	1.1	1.0
NMDC	Buy	123	152	23	7,831	16.7	15.1	15.2	8.2	8.1	4.0	4.0	1.6	1.5

Source: MOSL

Companies

BSE Sensex: 19,901 **S&P CNX: 5,890** **24 September 2013**

Hindalco

BSE SENSEX	S&P CNX
19,901	5,890

Bloomberg	HNDL IN
Equity Shares (m)	2,064.8
M.Cap.(INRb)/(USDb)	239.5/3.8
52-Week Range (INR)	137/83
1,6,12 Rel. Perf. (%)	5/26/-7

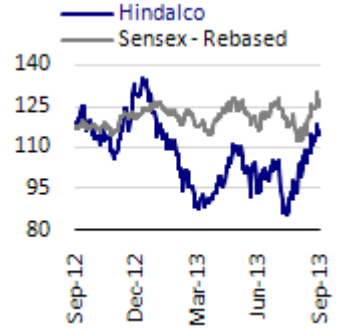
Valuation summary (INR b)

Y/E March	2013	2014E	2015E
Sales	801.9	888.4	994.7
EBITDA	80.6	93.4	114.9
NP	32.5	28.9	31.0
Adj. EPS (INR)	17.0	14.0	15.0
EPS Gr(%)	-4.4	-17.4	7.1
BV/Sh. (INR)	100.7	113.2	126.5
RoE (%)	18.0	13.1	12.5
RoCE (%)	5.8	5.6	6.8
Payout (%)	9.7	11.7	10.9
Valuations			
P/E (x)	6.8	8.3	7.7
P/BV	1.2	1.0	0.9
EV/EBITDA (x)	8.7	7.7	6.2
Div. Yield (%)	1.2	1.2	1.2

Shareholding pattern (%)

As on	Jun-13	Mar-13	Jun-12
Promoter	32.1	32.1	32.1
Dom. Inst	15.6	15.5	15.2
Foreign	37.1	35.2	36.5
Others	15.3	17.3	16.2

Stock performance (1 year)



CMP: INR116 **TP: INR165** **Buy**

At inflexion; operating cash flows to accelerate

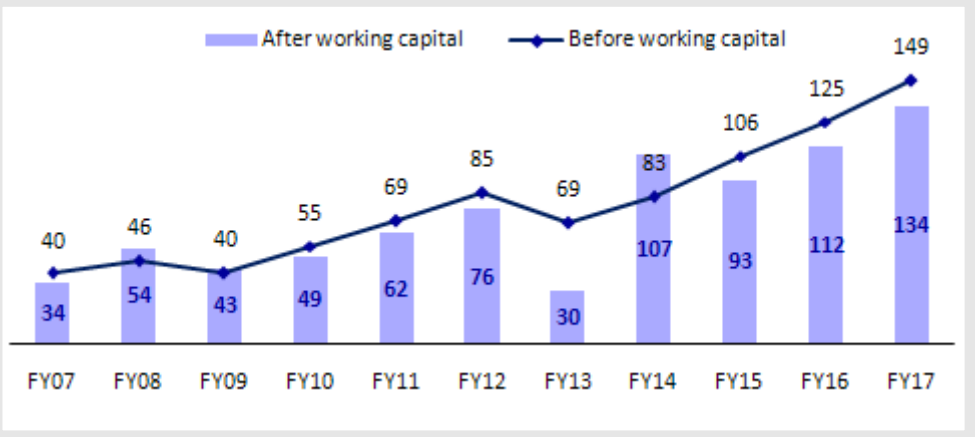
Equity value to rise ahead of EPS growth; Buy

- **Hindalco Industries (HNDL) is at an inflexion point. Benefits of the USD8b investment have started kicking in, with the start of bauxite mining, Utkal alumina refinery, Mahan smelter, and Novelis' rolling facilities in Brazil and Korea. As a result, operating cash flows are poised for rapid growth.**
- **Margins of the aluminum business are likely to expand, driven by declining cost of production, hardening LME prices and depreciating INR. When the coal mines associated with Mahan and Aditya smelters become operational, the average cost of production will decline further. Though the two new smelters will initially remain exposed to coal prices, their other operating costs will be much lower than the Renukoot smelter due to new technology and automation. The outlook for aluminum prices is positive because of China's rising share in global aluminum consumption and production. China's rising dependence on bauxite imports and structural CNY appreciation will result in steepening of the cost curve.**
- **Among Indian metal companies, HNDL has the best cash flow hedge against debt on the balance sheet. Its debt maturity profile is back-ended, providing greater comfort. With increasing operating cash flows and tapering capex, its free cash flows are turning positive. We expect equity value to increase. Valuations are attractive; re-iterate Buy.**

Operating cash flows poised for rapid growth

HNDL has been able to grow its operating cash flows before working capital changes (OCFbWC) steadily over the last five years, despite volatility in metal prices and rising cost of production. There was a slight dip in OCFbWC in FY13, but increase in inventories at Novelis and reduction in payables at Hindalco India by INR38b led to a sharp decline in operating cash flows after working capital changes (OCFaWC). The excess working capital is expected to be released in FY14. OCFaWC should jump in FY14, aided by improved margins the India business and start of cash flows from the Utkal and Mahan projects.

Operating cash flows (INR billion)

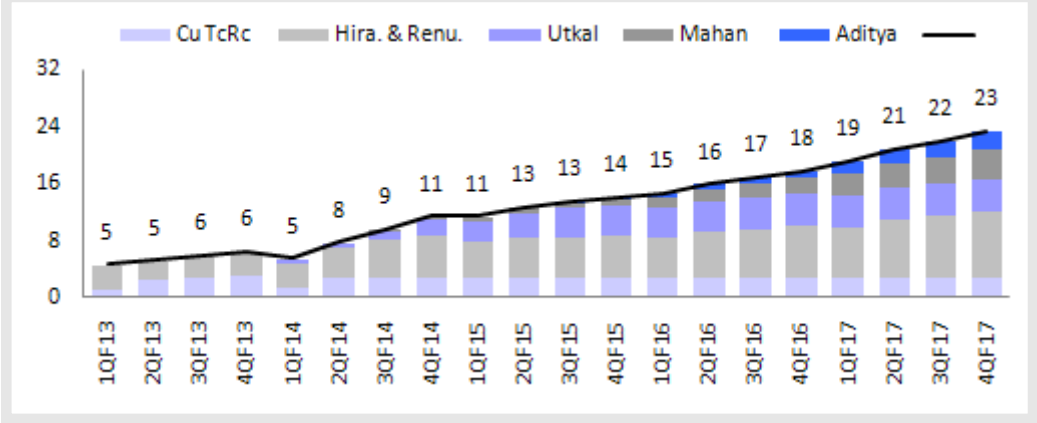


Source: Company, MOSL

India business EBITDA to grow 3x

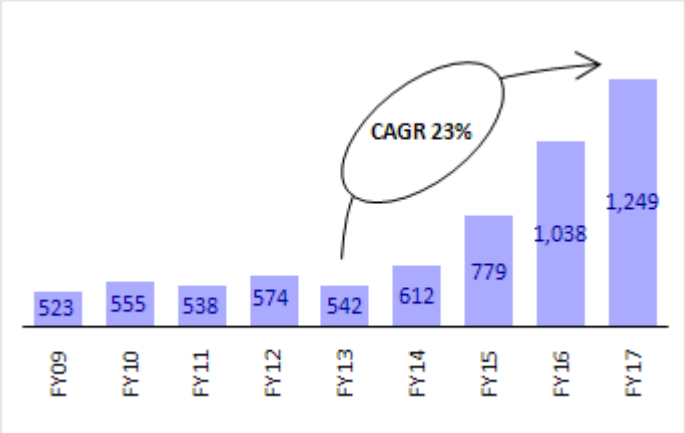
We expect quarterly EBITDA of the India business to increase gradually to 3-4x over the next 2-3 years (even at a conservative LME price estimate of USD2,000/ton), aided by 23% CAGR in both alumina and metal production over FY13-17.

India business: Quarterly EBITDA (INR billion)

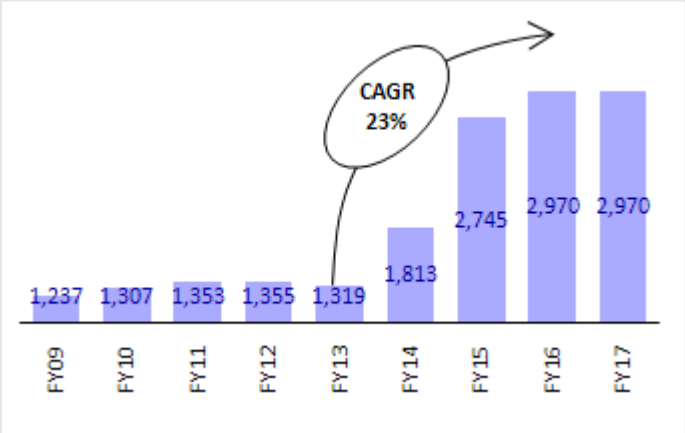


Source: Company, MOSL

India business: Aluminum production (k tons)



India business: Alumina production (k tons)



Source: Company, MOSL

- The Hirakud and Renukoot smelters have overcome operating hiccups in the last two years. Margins should expand, aided by the sharp INR depreciation and cooling of input cost pressure. Nearly 85% of the cost of production is local due to integration of bauxite and coal mining, and domestic sourcing of coal, caustic soda, etc.
- The 1.5m ton Utkal Alumina refinery has started operations. Since the pricing of alumina is USD-linked while costs are INR-denominated, margins and cash flows are likely to increase as production ramps up. Utkal is a highly profitable project and there is potential to grow production further due to latent bauxite capacity.
- The 359k ton Mahan smelter has started production and full ramp-up is likely over the next 12 months. We factor commercial production of 30k tons in FY14, 150k tons in FY15, 280k tons in FY16, and 350k tons in FY17. We expect cost of production to decline from USD1,918/ton in FY15 to USD1,515/ton in FY17; the start of coal mining at its captive block should help reduce power cost from INR3/kwh to INR1.5/kwh. Though the smelter will remain exposed to market prices till the captive

coal mines begin production, other operating costs will be much lower than the Renukoot smelter due to advanced technology and higher labor productivity. We expect EBITDA/ton to increase from USD302 in FY15 to USD653 in FY17.

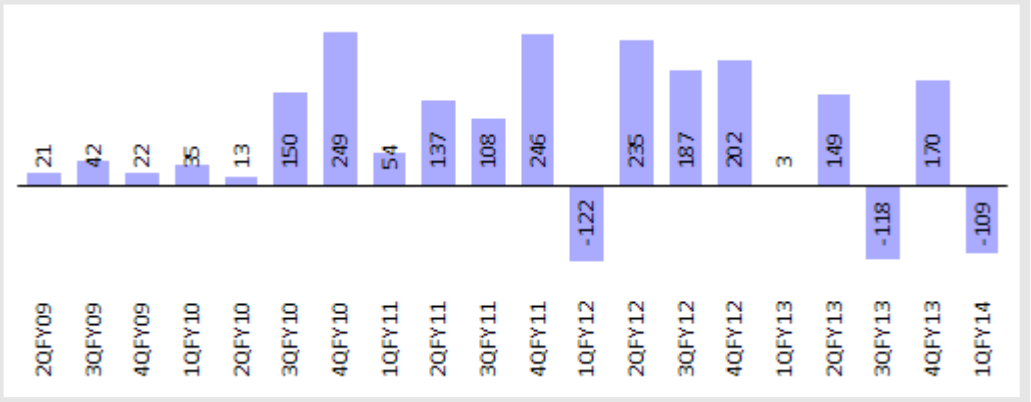
- The 359k ton Aditya smelter is expected to start commercial production in 2HFY15 and is likely to ramp up on similar lines as the Mahan smelter.

Novelis - USD cash flows to rise gradually

Novelis has been able to generate free operating cash flows over the last five years, barring three quarters when working capital increased due to industry-wide trend.

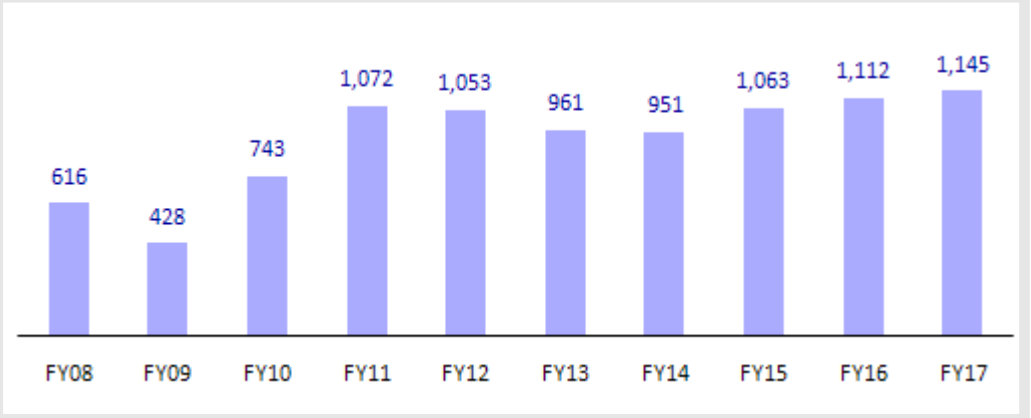
Novelis has solid operating cash flows

Novelis: Operating cash flows after working capital changes (USD million)



USD2b EBITDA target is delayed, but USD1.2b is very likely

Novelis: EBITDA (USD million)



Source: Company, MOSL

We expect Novelis to report gradual improvement in EBITDA over the next 2-3 years, as the benefits from the USD2b capex (spent over FY12-14) start kicking in. Novelis commissioned its 220k ton Brazil FRP expansion in December 2012, 350k ton Korea expansion in July 2013 and 200k ton US auto line in July 2013. It intends to increase recycling from 40% currently to 80% by 2020. It commissioned a 265k ton recycling facility in Korea in October 2012 and is likely to commission a 190k ton facility in Brazil by December 2013 and a 250k ton facility in Germany by July 2014. Though slower can and construction demand has dented its target to expand annual EBITDA to USD2b, we expect Novelis' EBITDA to increase every year, aided by benefits of its USD2b capex and cost cutting measures.

Novelis has highlighted certain headwinds in the last 3-4 quarters that have impacted margins. However, some of these factors are likely to turn favorable soon.

Novelis: Concerns highlighted

	1QFY13	2QFY13	3QFY13	4QFY13	1QFY14
N. America			Reduced Scrap Benefits and ERP Implementation		
				Pricing pressure in can business	
Europe			Pricing pressure in specialities negative currency impact	Pricing pressure in specialities,	
S. America			Pricing pressure on Industrial FRP forward	Moderating Can demand going	
Asia		Pricing pressure and higher regional premiums	High spot premium, SHFE LME arbitrage negative	High spot premium, SHFE LME arbitrage negative	
General	Competition in Foil Segments from unorganized players, Slowdown in Electronics segment		Pricing pressure in N.America, Europe and Asia.		

Weak dollar against local currency is preferred in N.America, Europe and Asia. However costing in Brazilian Real and dollar revenue means strong dollar is preferred in Brazil

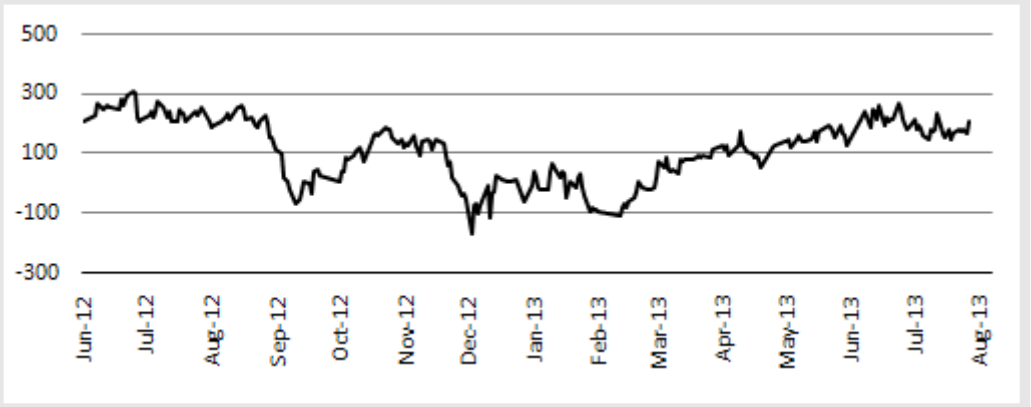
Source: Company, MOSL

Very strongly growing auto demand is switching FRP capacity away from can business

- **US can business to regain pricing power in 12-18 months:** US markets have witnessed slowdown in can demand, leading to decline in capacity utilization and pricing pressure. However, strong growth in demand from the Auto sector, driven by the need for lighter vehicles, is driving the switching of FRP capacity away from cans to auto lines. Novelis, Alcoa, Aleris and other key players are investing in heat treatment lines to meet the ~25% CAGR in demand. Also, demand for cans remains strong in Europe, South America and Asia. We expect the industry to regain pricing power over the next 12-18 months.
- **Foil business exited:** Novelis exited the foil business in Europe in FY13 due to intense competition from the unorganized sector. EBITDA loss has been only marginal.
- **SHFE-LME arbitrage has turned positive:** In 3QFY13, Novelis had highlighted that Chinese FRP was gaining an edge in the Asian markets because sourcing metal in China was relatively cheaper, with the SHFE-LME arbitrage turning negative. The SHFE-LME arbitrage has once again turned positive.

Novelis should regain its competitive advantage in sourcing inputs

SHFE-LME arbitrage (USD/ton)



Note: SHFE - Shanghai Futures Exchange

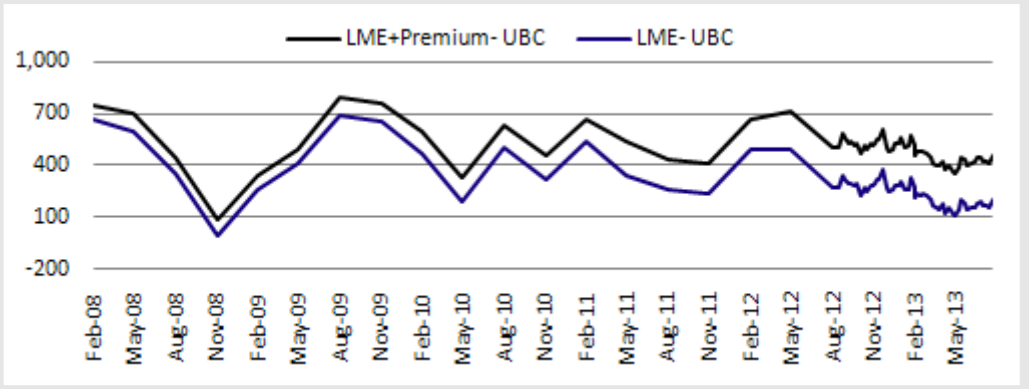
Source: Bloomberg

Novelis margins are hurt because its finished product contracts are linked to LME rather than total aluminum prices

- **Higher spot premiums, lower benefit of scrap recycling two sides of same coin:** Though these two issues appear independent, they are really two sides of the same coin. As evident in the following exhibit, the spread between LME and UBC prices has narrowed over the last five years. However, the spread between total aluminum price (LME + spot delivery premium) and UBC price has remained unchanged. Novelis' margins are hurt because its finished product contracts are linked to LME rather than total aluminum prices. It is able to hedge LME but not the spot delivery premiums.

Spread between UBC scrap and metal prices (USD/ton)

The spreads between total aluminum price and recycled UBC prices is relatively stable



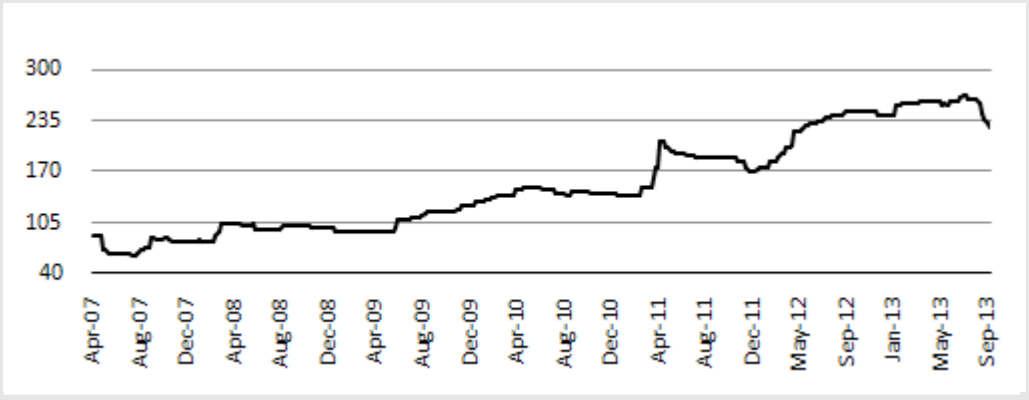
Note: UBC - Used Beverage Can Source: Industry, MOSL

We see no reason why the spreads between UBC and aluminum price should narrow in a structural manner

We see no reason for a structural narrowing of the spread between aluminum and UBC prices. Recycling capacity has never been in shortage; the lead time for setting up recycling projects is less than a year. Hence, the spread should be driven by conversion costs, which are largely stable in developed nations. We expect LME to resolve the warehousing queue problem soon. Once the spot delivery premiums start cooling (already started) or stabilize, Novelis' margins will start recovering.

Aluminum: Spot delivery premium (USD/ton)

Along with falling spot premiums, Novelis will no longer be hurt

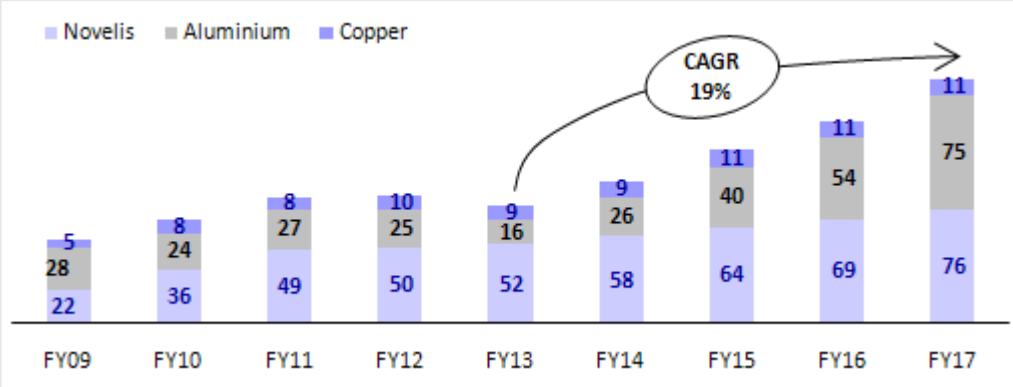


Source: Bloomberg

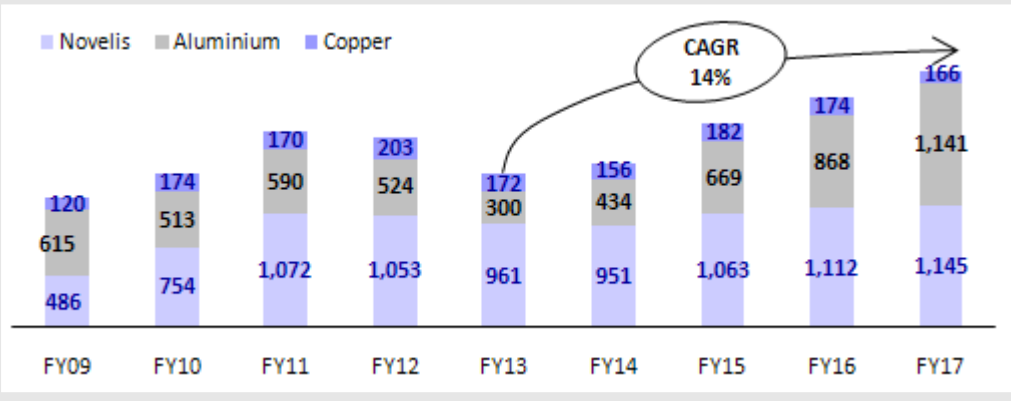
Consolidated EBITDA to grow at a CAGR of 19%

We expect HNDL's consolidated EBITDA to grow at a CAGR of 19% to INR162b by FY17, assuming a conservative LME price of USD2,000/ton. EBITDA of the India aluminum business will increase 3x, while the copper conversion business and Novelis will post steady earnings growth.

Consolidated EBITDA (INR billion) to grow at 18% CAGR



Consolidated EBITDA (USD million)



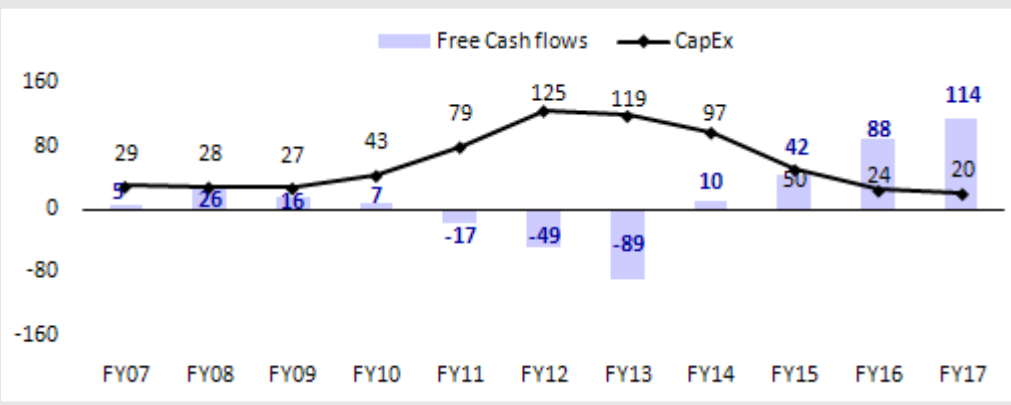
Source: Company, MOSL

Free cash flows are turning positive

HNDL invested heavily in the last three years, driven by (1) the opportunity to secure coal and bauxite resources for the next 25-30 years for its India aluminum business, and (2) opportunities for Novelis in increasing recycling, expanding auto lines in US and China, and expanding FRP capacities in Brazil and Korea. Though staggered capex would have been less risky, it would have meant lost opportunities.

Free cash flows after capex (INR billion)

Free cash flows are turning positive as Hindalco exit investment phase



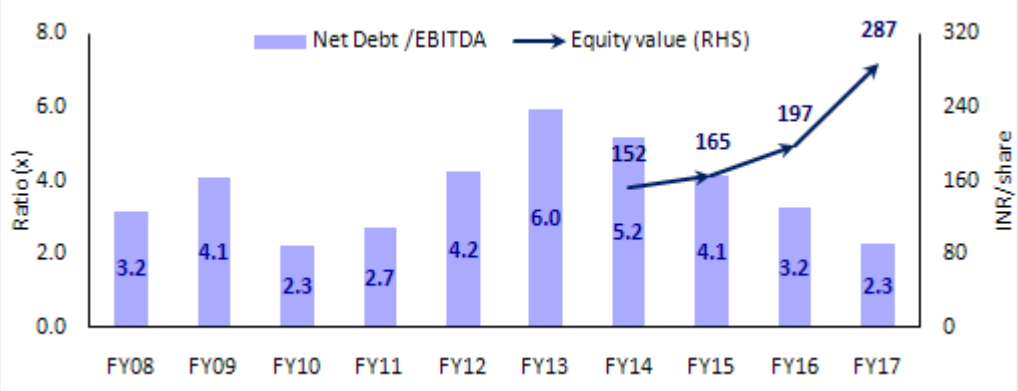
Source: Company, MOSL

Equity value to rise ahead of EPS growth

HNDL's heavy capex and resultant negative free cash flows have been a drag on its equity value. Conservative investors are put off by a rising net debt to EBITDA ratio. With rising EBITDA and a declining net debt to EBITDA ratio, equity value should increase. We value Hindalco at INR 165 based on SOTP (42% upside). Re-iterate **Buy**.

Deleveraging will drive stock price 2 to 3x despite ignoring metal price upside

Net debt to EBITDA ratio (x)



Source: Industry, MOSL

Target price calculations

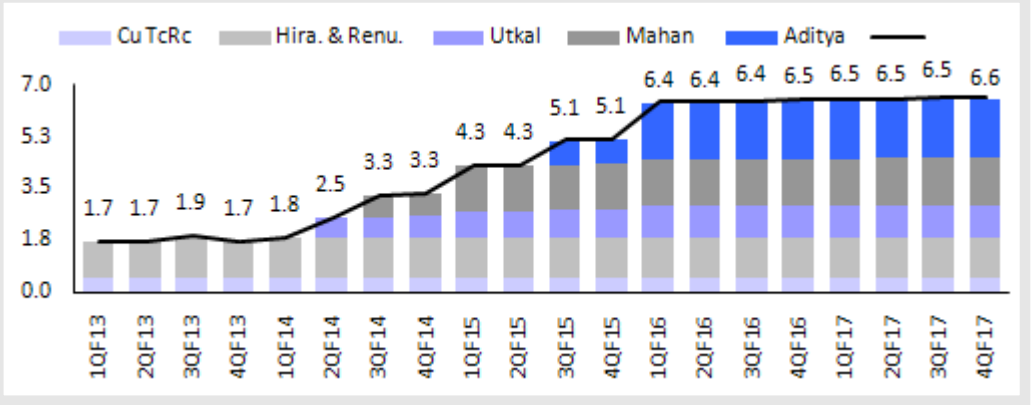
	FY12	FY13	FY14E	FY15E	FY16E	FY17E
EBITDA	**81,897**	**80,584**	**93,444**	**114,879**	**134,150**	**162,085**
EV/EBTIDAx	6.0	6.0	5.5	5.5	5.5	5.5
Target EV	491,384	483,503	513,940	631,836	737,823	891,469
Net Debt	346,851	479,505	483,274	473,131	434,568	366,908
EQ = (EV-net Debt)	144,533	3,998	30,665	158,705	303,256	524,561
A. INR/share(EQ)	75	2	15	77	147	254
CWIP	227,981	338,311	279,417	162,415	74,548	34,326
B. INR/share (CWIP)	119	177	135	79	36	17
C. discount factor (%)			12	12	12	12
D. Investments (quoted)			47,630	47,630	47,630	47,630
E. INR/share (investments)			23	23	23	23
F.discount factor (%)			20	20	20	20
TP (A+B*(1-C%)+E*(1-F%))			**152**	**165**	**197**	**287**

Source: MOSL

EPS growth, though, is likely to be elusive for the first few years. As explained in the following exhibits, the impact of interest and depreciation will erode the growth in EBITDA.

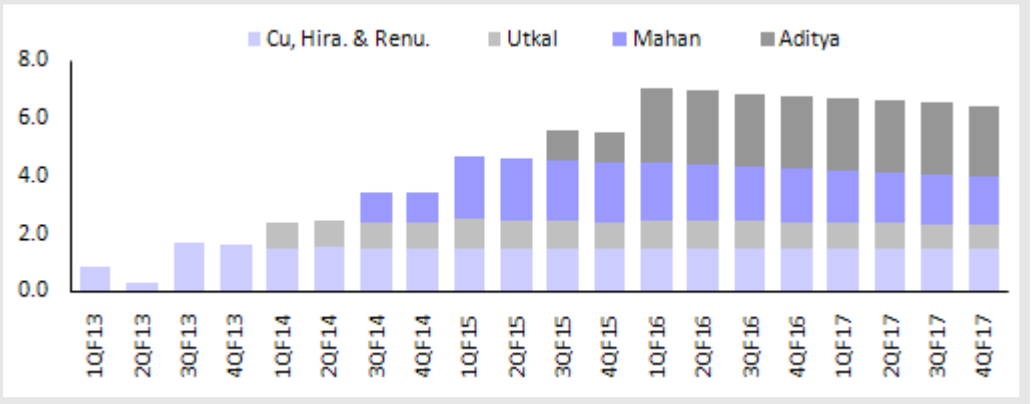
Along with commissioning of Greenfield projects, the depreciation charge will rise

India business: Quarterly depreciation (INR billion)



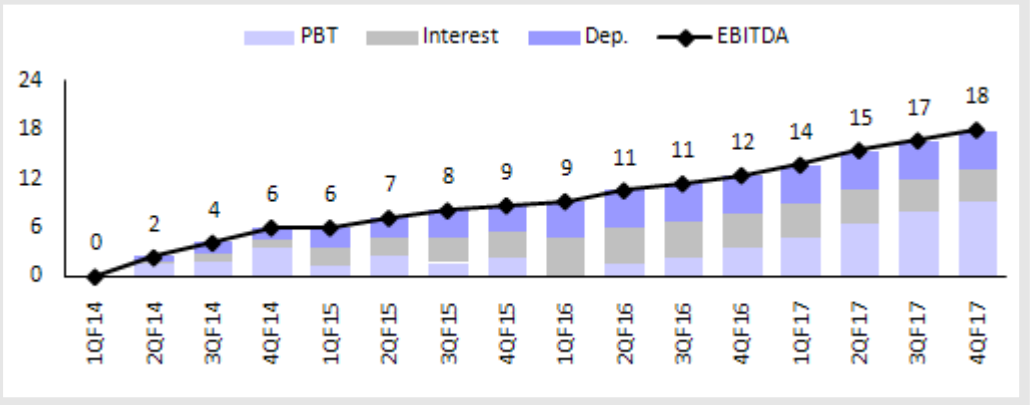
Interest expense will start tapering off from 1QFY16 as debt gets repaid from internal accruals

India business: Quarterly interest expense (INR billion)



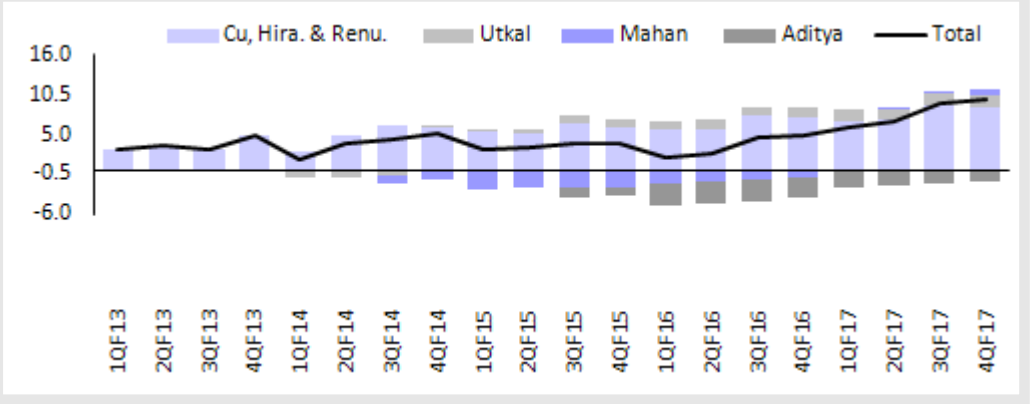
There is large growth in EBITDA but, the PBT will start rising from FY16

India business: Incremental earnings (INR billion) w.r.t. 1QFY14



Quarter PAT will remain range bound due to negative contribution of Mahan and Aditya

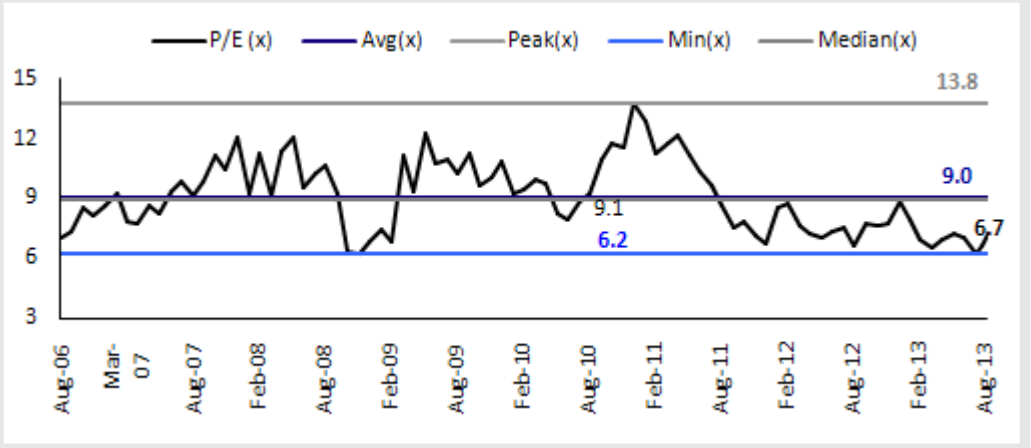
India business: Quarterly PAT (INR billion)



Source: Company, MOSL

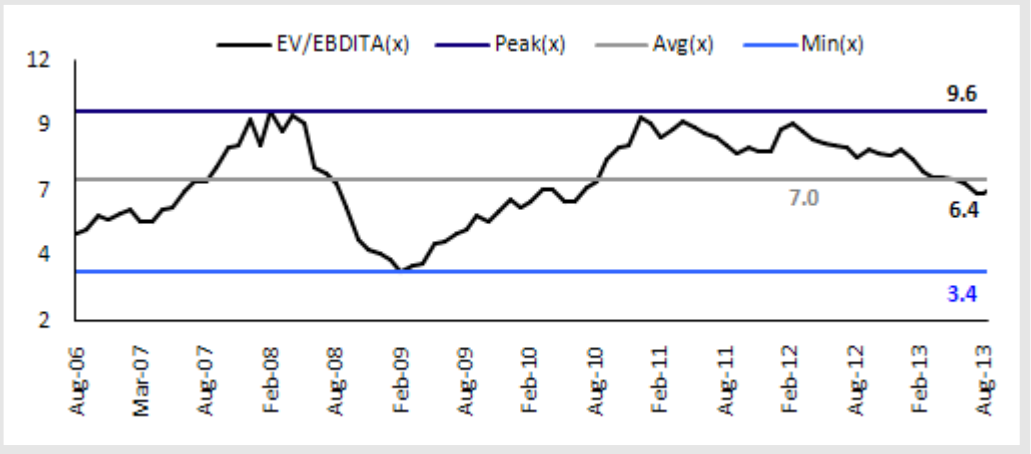
It is important to note that investors are already factoring high interest and depreciation charge as it is evident from sharp PE de-rating

1 year forward P/E (x)



EV/EBITDA is more appropriate measure of valuation as it reflects cash flows better

1 year forward EV/EBITDA (x)



Financials and Valuation

Income Statement (Consolidated) (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Net sales	**808,214**	**801,928**	**888,372**	**994,650**	**1,094,851**
Change (%)	12.1	-0.8	10.8	12.0	10.1
Total Expenses	**726,316**	**721,344**	**794,928**	**879,771**	**960,701**
EBITDA	**81,897**	**80,584**	**93,444**	**114,879**	**134,150**
% of Net Sales	10.1	10.0	10.5	11.5	12.3
Depn. & Amortization	28,699	28,611	36,098	43,849	51,884
EBIT	53,199	51,973	57,345	71,030	82,266
Net Interest	17,579	20,791	30,510	38,524	43,679
Other income	7,831	10,122	11,450	9,560	9,372
PBT before EO	**43,450**	**41,304**	**38,286**	**42,066**	**47,958**
EO income (exp)		-2,216	-941		
PBT after EO	**43,450**	**39,088**	**37,345**	**42,066**	**47,958**
Current tax	8,909	10,430	9,331	8,833	8,818
Deffered tax (net)	-1,046	-1,573	-88	2,124	3,296
Tax	7,862	8,857	9,244	10,957	12,115
Rate (%)	18.1	22.7	24.8	26.0	25.3
Reported PAT	**35,587**	**30,231**	**28,101**	**31,109**	**35,843**
Minority interests	2,113	-196	284	284	284
Share of asso.	496	-158	169	169	169
Adjusted PAT	**33,970**	**32,485**	**28,927**	**30,993**	**35,728**
Change (%)	-2.9	-4.4	-11.0	7.1	15.3

Balance Sheet (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Share Capital	1,915	1,915	2,065	2,065	2,065
Reserves	317,198	351,388	392,081	419,692	452,038
Net Worth	**319,113**	**353,302**	**394,145**	**421,757**	**454,103**
Minority Interest	17,091	17,593	17,877	18,162	18,446
Total Loans	428,406	585,275	592,531	577,531	561,049
Deferred Tax Liability	36,050	34,677	34,589	36,713	40,009
Capital Employed	**800,660**	**990,847**	**1,039,142**	**1,054,162**	**1,073,607**
Gross Block	428,945	447,459	611,052	778,293	901,649
Less: Accum. Deprn.	186,608	186,608	222,706	266,555	318,439
Net Fixed Assets	**242,338**	**260,852**	**388,346**	**511,738**	**583,209**
Goodwill on consolidation	150,097	160,497	160,497	160,497	160,497
Capital WIP	227,981	338,311	279,417	162,415	74,548
Investments	17,483	15,962	16,131	16,300	16,469
Working capital Assets	**354,543**	**397,702**	**402,798**	**425,655**	**475,885**
Inventory	132,460	143,317	145,158	161,995	181,064
Account Receivables	80,172	89,523	89,292	100,169	109,249
Cash and Bank Balance	81,556	105,771	109,256	104,399	126,482
Others (incl. LT)	60,355	59,091	59,091	59,091	59,091
Working capital liability	191,781	182,476	208,047	222,443	237,002
Account Payables	110,522	96,129	121,700	136,096	150,655
Others (incl. LT)	81,259	86,347	86,347	86,347	86,347
Net Working Capital	**162,762**	**215,226**	**194,751**	**203,212**	**238,883**
Appl. of Funds	**800,660**	**990,847**	**1,039,142**	**1,054,162**	**1,073,607**

Source: Company, MOSL

Financials and Valuation

Ratios (Consolidated)

Y/E March	2012	2013	2014E	2015E	2016E
Basic (INR)					
EPS	**17.7**	**17.0**	**14.0**	**15.0**	**17.3**
Cash EPS	33.6	30.7	31.1	36.3	42.5
BV/Share (adj.)	88.3	100.7	113.2	126.5	142.2
DPS	1.5	1.4	1.4	1.4	1.4
Payout (%)	9.9	9.7	11.7	10.9	9.5
Valuation (x)					
P/E			8.3	7.7	6.7
Cash P/E			3.7	3.2	2.7
P/BV			1.0	0.9	0.8
EV/Sales			0.8	0.7	0.6
EV/EBITDA			7.7	6.2	5.0
Dividend Yield (%)			1.2	1.2	1.2
Return Ratios (%)					
RoE	20.3	18.0	13.1	12.5	12.9
RoCE (pre-tax)	7.3	5.8	5.6	6.8	7.7
RoIC (pre-tax)	11.3	10.3	9.8	10.1	10.1
Working Capital Ratios					
Fixed Asset Turnover (x)	1.9	1.8	1.5	1.3	1.2
Asset Turnover (x)	1.0	0.8	0.9	0.9	1.0
Debtor (Days)	36.2	40.7	36.7	36.8	36.4
Inventory (Days)	59.8	65.2	59.6	59.4	60.4
Payable (Days)	49.9	43.8	50.0	49.9	50.2
Leverage Ratio (x)					
Current Ratio	1.8	2.2	1.9	1.9	2.0
Interest Cover Ratio	3.0	2.5	1.9	1.8	1.9
Debt/Equity	2.1	2.5	2.1	1.8	1.5

Cash Flow Statement (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
EBITDA	81,897	80,584	93,444	114,879	134,150
non recurring exp (income)	14,415	1,410	-941		
tax paid	-10,901	-13,478	-9,331	-8,833	-8,818
Change in working Capital	-9,322	-38,740	23,960	-13,318	-13,590
CF from Op. Activity	**76,090**	**29,776**	**107,132**	**92,729**	**111,742**
(Inc)/Dec in FA + CWIP	-125,119	-118,711	-97,444	-50,239	-23,943
(Pur)/Sale of Invest. & yield thereon	-11,846	10,729	11,450	9,560	9,372
Others	-619	-357			
CF from Inv. Activity	**-137,584**	**-108,340**	**-85,993**	**-40,679**	**-14,571**
Equity raised/(repaid)	5,500	128	16,239		
Debt raised/(repaid)	89,511	143,356		-15,000	-28,028
Interest	-28,531	-36,728	-30,510	-38,524	-43,679
Dividend (incl. tax)	-4,110	-3,977	-3,382	-3,382	-3,382
CF from Fin. Activity	**62,371**	**102,779**	**-17,653**	**-56,906**	**-75,089**
(Inc)/Dec in Cash	**876**	**24,215**	**3,486**	**-4,857**	**22,082**
Add: Opening Balance	80,680	81,556	105,771	109,256	104,399
Closing Balance	**81,556**	**105,771**	**109,256**	**104,399**	**126,482**

E: MOSL Estimates

Sesa-Sterlite

BSE SENSEX	S&P CNX
19,901	5,890

Bloomberg	SESA IN
Equity Shares (m)	2,964.8
M.Cap.(INRb)/(USDb)	553.8/8.9
52-Week Range (INR)	205/119
1,6,12 Rel. Perf. (%)	13/15/-4

Valuation summary (INR b)

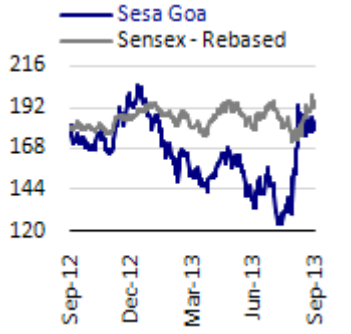
Y/E March	2013	2014E	2015E
Sales	711.9	733.2	830.1
EBITDA*	170.6	181.7	201.0
NP	106.5	94.2	102.2
Adj. EPS (INR)	35.9	31.8	34.5
EPS Gr(%)	15.8	-7.9	-4.0
BV/Sh. (INR)	77.7	85.6	111.7
RoE (%)	14.4	12.4	12.6
RoCE (%)	22.3	12.7	12.6
Payout (%)	11.4	12.9	11.9
Valuations			
P/E (x)	5.1	5.8	5.3
P/BV	0.7	0.7	0.6
EV/EBITDA (x)*	6.1	5.9	5.0
Div. Yield (%)	1.9	1.9	1.9

Note: Sesa-Sterlite merged entity basis; *attrib.

Shareholding pattern (%)

As on	Jun-13	Mar-13	Jun-12
Promoter	55.1	55.1	55.1
Dom. Inst	4.2	4.2	4.3
Foreign	27.5	27.5	26.4
Others	13.2	13.2	14.1

Stock performance (1 year)



CMP: INR184 **TP: INR214** **Buy**

Simpler group structure, but high capital inefficiencies

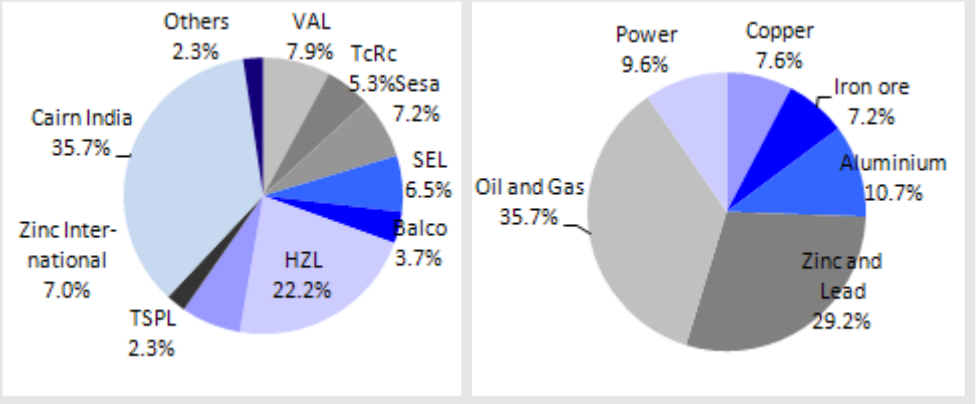
High quality assets at low valuations; maintain Buy

- **The merged Sesa-Sterlite is a highly diversified commodities player, with high quality assets such as Hindustan Zinc (HZ), Cairn India (CAIR), overseas zinc business, and domestic iron ore business. The group structure has become simpler post restructuring, but the capital structure is far more inefficient than before. Nearly 85% of group debt (~INR800b) will now be in the standalone entity, which accounts for just 20% of group EBITDA. On the other hand, ~INR600b (FY15E) of cash would be lying in the balance sheets of CAIR and HZ, which is not fungible.**
- **We believe that operationally, Sesa-Sterlite is an extraordinary entity. However, financial management has been below average. Despite generating superior margins, the stock has been an underperformer. A very likable set of assets have been trading at low valuations because of difference of opinion between minority investors and the promoters on capital allocation.**
- **Assuming LME price of USD2,000/ton for aluminum, USD1,900/ton for zinc, and USD2,100/ton for lead in FY15, our SOTP-based valuation works out to INR214/share. Currently, the INR/USD rate is higher than our assumption of 60 for FY15. While a weaker INR results in ballooning of forex debt, there is greater gain in EBITDA for the oil and zinc-lead-silver businesses. We maintain Buy.**

Simpler group structure but inefficient capital structure

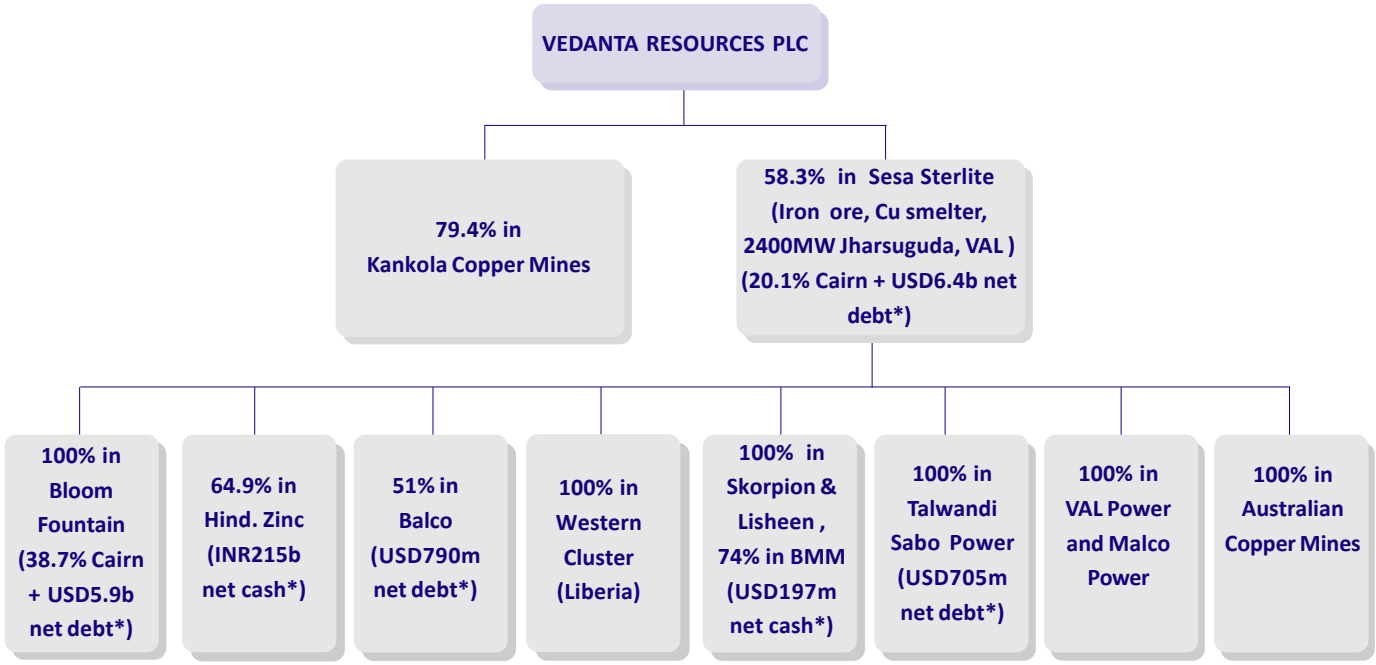
The merged Sesa-Sterlite is a highly diversified commodities player, with high quality assets such as HZ, CAIR, overseas zinc business, and domestic iron ore business. Even the less profitable aluminum and power businesses boast high operational efficiencies, but are exposed to third-party coal and bauxite. The group has demonstrated exemplary execution in zinc-lead-silver and iron ore businesses.

FY15 EBITDA distribution on attributable basis



Source: Company, MOSL

Group structure is now simpler

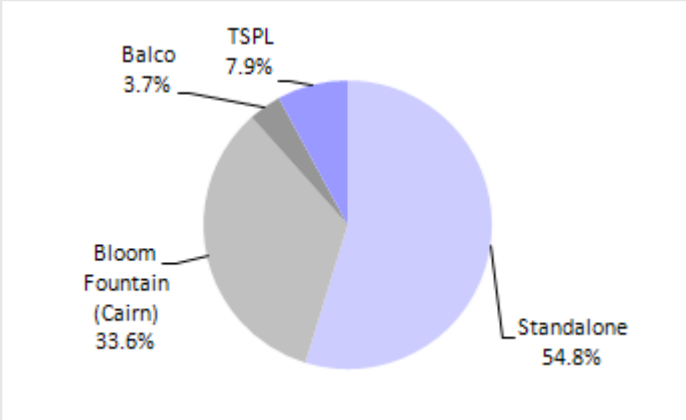


*As of March 2013

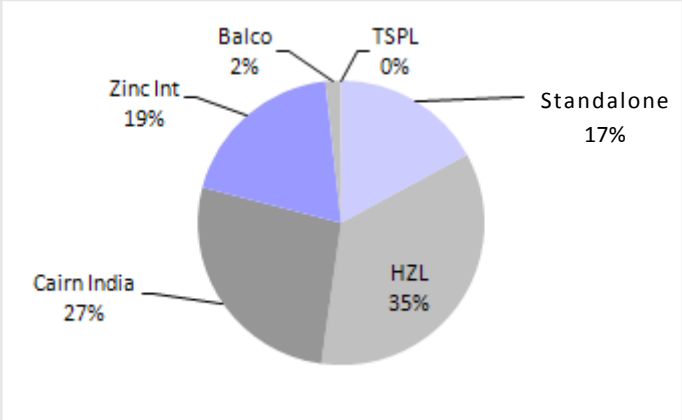
Source: Company, MOSL

In the new restructured Sesa-Sterlite, there has been some simplification of assets, but the capital structure is far more inefficient now than it was before. Nearly 85% of group debt (~INR800b) will now be in the standalone entity (and its investment companies like Bloom Fountain), which accounts for only 20% of the group EBITDA (INR40b-60b). On the other hand, ~INR600b (FY15E) of cash would be lying in the balance sheets of CAIR and HZ, which is not fungible.

Pro forma debt



Pro forma cash and equivalents



Source: Company, MOSL

Will OFS of HZ improve capital efficiencies?

Delisting of HZ and merger with SS is the only option which will bring capital efficiencies, but management may not necessary choose this option

It is widely believed that the Indian government needs to urgently divest in HZ and Balco so that much needed monies can be raised to partially bridge the fiscal deficit and meet divestment targets. If Sesa-Sterlite funds the purchase through forex borrowings, the pressure on INR/USD rate too will ease to some extent. There are certain hiccups in an offer for sale (OFS), one being the limit of 25% of the size for a single investor. Assuming this is eased, even if the government launches an OFS, there could be multiple possible outcomes.

- If Sesa-Sterlite is able to grab the entire issue (29.5% of equity), the promoters' holding will increase to ~94.4%. In this case, Sesa-Sterlite will have to either delist HZ or bring down its holding to 75% to comply with SEBI guidelines for listed companies.
- If Sesa-Sterlite gets only part of the issue, with the rest being grabbed by other institutional investors or HNIs/retail investors, then the promoters' holding will be between 64.9% and 94.4%. Sesa-Sterlite will have to choose from the following: keep HZ listed, or delist and merge with itself.
- We believe delisting HZ and merging it with Sesa-Sterlite is perhaps the best option in terms of capital efficiency - HZ's cash will become fungible and available for servicing CAIR's acquisition debt.
- If Sesa-Sterlite chooses to keep it listed, the capital inefficiencies will remain or increase. Debt will rise to the extent of shares bought in the OFS. This will not resolve any of the debt servicing issues. Sesa-Sterlite could try to secure ICD from HZ or push down Bloom Fountain with USD5.9b of debt into HZ. In either case, HZ's minority shareholders will be disgruntled.

Given the past track record and the management's indication in a conference call, the probability of keeping HZ listed is high. This will lead to de-rating of Sesa-Sterlite because it derives a large part of its valuation from HZ. One may argue that some part of this de-rating is already in the stock price - in the last couple of years, Sesa-Sterlite has attracted lower valuations than its peers.

High quality assets trade at low valuations

Stock has got de-rated because of difference of opinion between minority investors and majority regarding allocation of capital

A very likable set of assets have been trading at low valuations because of difference of opinion between minority investors and the promoters on allocation of capital. Among the conflicts are:

1. The group has adopted a multi-layered structure to leverage control over large number of assets with lesser group cash outflow. Minority investors do not like this and attach a holding company discount.
2. On several occasions, the management has paid control premium while acquiring unrelated businesses. This results in leakage in value for minority shareholders.
3. Cash has been hoarded in certain group companies for prolonged periods yielding low post tax returns, while other group companies have been sitting with large debt and paying interest without corresponding tax offset. This has dragged RoE due to tax value leakage and low returns on cash pile. The surplus cash attracts valuation discount, as investors remain skeptical regarding capital allocation and difference between yield and cost of equity.
4. Equity has been diluted at times when companies were still holding cash piles.
5. Past restructuring had led to leakage of minority shareholder value, because the valuation methodology adopted was at variance with the way minority shareholders had been valuing assets.

High quality diversified assets

	FY13 Production	Asset Positioning	Full capacity	Expansion plans/status
Zinc India	802kt Pb/Zn, 408t Silver	One of the lowest cost producer due to efficient operations and captive mine backing	1.2mtpa Zn/Pb, 500t silver	HZL spending USD1.5b over next 6 years to increase mining capacity by 200ktpa
Zinc International	426kt Pb/Zn	CoP in the lower half of the cost curve. Currently three mines operating namely Black Mountain, Lisheen and Skorpian	400ktpa	Gamsberg mining project is at the initial level of development which could lead to further capacity expansion.
Oil and Gas	205kboepd	Indian largest private sector crude oil producer with CoP in the lowest quartile of global cost curve	240kboepd	
Iron ore (India)	3.1mt	One of the largest private sector miner in India with CoP in the lowest quartile.	17mt	Currently operations are suspended due to regulatory reasons. Karnataka mining is expected to restart in current year but with reduced capacity of 2.9mtpa (Earlier 6mtpa)
Iron ore (Liberia)		Asset under development stage	2mtpa	First shipment ore expected by March, 2014. Evacuation infrastructure is a major bottleneck. SSt plans to utilize road transport for the initial period.
Aluminium	774kt	Conversion cost is low but lack of raw material backing undermines profitability	2.3mtpa	325ktpa Balco expansion to come onstream in 2014. VAL phase II expansion to increase capacity by 1.1mtpa but is currently stalled due to numerous issues. 1mtpa refinery is partially operational due to lack of bauxite.
Copper	353kt	Low conversion cost, efficient operations	800ktpa	Two units of 80MW CPP has recently being commssioned which will aid margins. Refinery expansion to 800ktpa capacity is at initial stage.
Power	10.1b kwh	1.98GW Talwandi Saboo on fixed ROE project, SEL 2.4GW has partial coal linkages therefore profitability is moderate.	8.8GW	1.98GW Talwandi Saboo to be progressively commissioned over FY14-15, 1.2GW Balco expansion awaiting Consent to operate. 2.4GW SEL project is operational but PLF is low due to evacuation issues.

Source: Company, MOSL

We believe Sesa-Sterlite is an extraordinary company operationally, but financial management has been below average. Despite generating superior margins, the stock has been an underperformer. Sesa-Sterlite's assets have generated returns very quickly, but the capital generated has often been idle for many years. There are several instances, where assets generate lower returns but superior equity value for

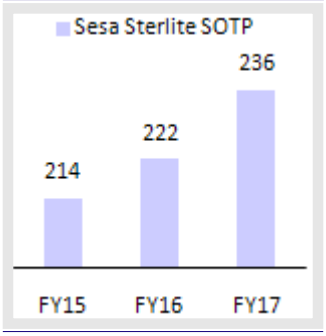
There is an urgent need of fixing large slippage between RoIC and RoE for re-rating of stock - a more efficient capital structure is desired

shareholders because capital does not lie idle. One is better off generating average returns (say, 10.5% for 10 years) than generating high returns for brief periods (say, 15% for five years) and low returns for rest of the time (say, 6% for five years). Basically, there is a large slippage between RoIC and RoE. This issue needs to be fixed urgently for a meaningful stock re-rating.

Maintain Buy

The restructured SS will have EBITDA of INR282b in FY15, but attributed EBITDA will be INR201b after adjusting for minority holding in CAIR, HZ and Balco. Similarly, the attributed net debt will be higher at INR467b (after adjusting for minority interest in cash surplus HZ and CAIR) as compared to the pro forma net debt of INR269b. Assuming LME price of USD2,000/ton for aluminum, USD1,900/ton for zinc, and USD2,100/ton for lead in FY15, our SOTP-based valuation works out to INR214/share. Currently, the INR/USD rate is higher than our assumption of 60 for FY15. While a weaker INR results in ballooning of forex debt, there is greater gain in EBITDA for the oil and zinc-lead-silver businesses. We maintain **Buy**.

Sesa-Sterlite target price



Sum of the parts (SOTP) valuation (INR billion)

	Net Sales	EBITDA (A)	PAT	Net Debt (G)	Net Worth	Valuations Basis (B)	EV C=(AxB)	(D)	CWIP Disc (%) (F)	Equity Value {C-G+D*(1-F)}	Stake (%)	Attrib. Equity	INR/ share
Stand-alone #	366	54	-9	781	310	5.0x EBITDA	270	191	51	-417	100	-417	-141
Hindustan Zinc	143	69	69	-310	281	5.0x EBITDA	344	11		665	64.9	431	146
Balco	63	14	5	56	25	5.0x EBITDA	72	28	51	30	51	15	5
CMT+inter seg.	19	5	-6	24	-598	5.0x EBITDA	24	15	51	7	100	7	2
Zinc International	48	14	10	-71	110	3.5x EBITDA	49			120	100	120	41
TSPL	18	5	1	76	32	DCF	128			53	100	53	18
Cairn India	171	122	99	-286	688	380 =Cairn TP*		88		722	59.0	426	144
Cons. attrib.	**679**	**201**	**101**	**468**	**455**			**279**			**SOTP**	**635**	**214**

Aluminium = USD 2000/ton, Zinc = USD 1900/ton, lead prices = USD2100/ton Silver = USD21/oz, USD/INR =60; FY15 estimates
Source: MOSL# (VAL, copper TcRc, SEL, Sesa, Bloom Fountain); *INR/sh

Our base case SOTP is INR214 per share

Sensitivity of SOTP value to exchange rate

USD/INR	Cairn India	Hind	Sesa Sterlite	
FY15	DCF	Zinc	Pre HZ OFS	Post HZ OFS
55.0	368	141	191	184
56.0	370	143	196	191
57.0	373	146	200	197
58.0	375	149	205	204
59.0	377	152	210	210
60.0	**380**	**155**	**214**	**217**
61.0	382	158	219	223
62.0	384	160	223	230
63.0	387	163	228	236
64.0	389	166	233	243
65.0	391	169	237	249
66.0	394	172	242	255
67.0	396	175	247	262
68.0	399	177	252	269
69.0	401	180	256	275
70.0	403	183	261	282

Assuming HZL OFS price of INR150/share Source: MOSL

Financials and Valuation

Income Statement (Consolidated) (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Net Sales	**683,698**	**711,852**	**733,188**	**830,115**	**908,271**
Change (%)	642.7	4.1	3.0	13.2	9.4
Total Expenses	433,987	461,980	469,472	547,768	610,736
EBITDA	**249,712**	**249,872**	**263,716**	**282,347**	**297,535**
Change (YoY %)	379.6	0.1	5.5	7.1	5.4
As % of Net Sales	36.5	35.1	36.0	34.0	32.8
Depn. & Amortization	44,751	53,008	62,517	65,362	79,065
EBIT	**204,961**	**196,864**	**201,199**	**216,984**	**218,470**
Net Interest	38,166	46,620	63,509	72,669	75,724
Other income	31,380	39,511	44,827	49,836	57,109
Dividend from subs.	6,583	8,504	8,504	8,504	8,504
Dividend to minority	3,557	4,595	4,595	4,595	4,595
PBT	**198,175**	**189,756**	**182,518**	**194,151**	**199,855**
Current tax	46,213	29,427	15,001	21,813	31,519
Deffered tax	-10,037	-20,537	339	2,063	7,744
Tax	36,177	8,890	15,340	23,876	39,262
Rate (%)	18.3	4.7	8.4	12.3	19.6
PAT	**161,998**	**180,866**	**167,178**	**170,275**	**160,592**
PAT (after EO)	**161,998**	**182,753**	**167,178**	**170,275**	**160,592**
Minority interests	59,803	74,407	73,016	68,063	59,620
Attrib. PAT (after MI & asso)	102,195	106,458	94,161	102,212	100,972

Balance Sheet (Consolidated) (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Share Capital	29,648	29,648	29,648	29,648	29,648
Reserves	700,762	717,245	740,643	818,190	840,232
Net Worth	**730,410**	**746,893**	**770,292**	**847,839**	**869,880**
Minority Interest	320,470	337,335	392,767	445,279	489,148
Total Loans	657,713	812,479	946,229	974,599	1,047,460
Deferred Tax Liability	29,866	29,376	29,715	31,778	39,522
Capital Employed	**1,738,460**	**1,926,083**	**2,139,003**	**2,299,495**	**2,446,010**
Gross Block	621,455	667,181	770,005	935,750	1,017,036
Less: Accum. Deprn.	159,344	196,787	239,610	287,600	345,715
Net Fixed Assets	**462,110**	**470,394**	**530,394**	**648,149**	**671,321**
Goodwill	617,849	516,545	516,545	516,545	516,545
Capital WIP	299,885	410,493	422,622	337,701	327,837
Investments	158,024	282,639	350,932	397,491	449,202
Associates	3,292	3,292	3,292	3,292	3,292
Liquid invest.(of above)	162,284	268,199	331,727	391,181	457,866
Curr. Assets	**357,653**	**413,179**	**485,542**	**573,289**	**653,614**
Inventory	68,321	66,428	69,152	79,075	87,697
Account Receivables	41,805	49,404	45,103	50,819	55,086
Cash and Bank Balance	162,096	168,325	242,264	314,372	381,809
Loans and advances	85,431	129,023	129,023	129,023	129,023
Curr. Liability & Prov.	**157,061**	**167,167**	**167,032**	**173,681**	**172,510**
Account Payables	73,586	65,015	63,688	71,642	76,115
Provisions & Others	83,476	102,152	103,344	102,039	96,395
Net Curr. Assets	**200,592**	**246,012**	**318,510**	**399,608**	**481,104**
Appl. of Funds	**1,738,460**	**1,926,083**	**2,139,003**	**2,299,494**	**2,446,010**

E: MOSL Estimates; FY10&11 (SESA); FY12-14 are post merger

Financials and Valuation

Ratios (Consolidated)

Y/E March	2012	2013	2014E	2015E	2016E
Basic (INR)					
EPS	**34.5**	**35.9**	**31.8**	**34.5**	**34.1**
Cash EPS	49.6	53.8	52.8	56.5	60.7
BV/Share (ex-goodwill)	38.0	77.7	85.6	111.7	119.2
BV/Share (incl.-goodwill)	246.4	251.9	259.8	286.0	293.4
DPS	3.5	3.5	3.5	3.5	4.5
Payout (%)	11.9	11.4	12.9	11.9	15.5
Valuation (x)					
P/E	5.3	5.1	5.8	5.3	5.4
Cash P/E	3.7	3.4	3.5	3.3	3.0
P/BV (incl.-goodwill)	0.7	0.7	0.7	0.6	0.6
EV/Sales	1.4	1.5	1.5	1.2	1.1
EV/EBITDA	5.3	6.1	5.9	5.0	4.6
Dividend Yield (%)	1.9	1.9	1.9	1.9	2.4
Return Ratios (%)					
RoE	16.4	14.4	12.4	12.6	11.8
RoCE (pre-tax)	25.2	22.3	12.7	12.6	12.0
RoIC (pre-tax)	35.6	35.7	18.0	18.7	18.1
Working Capital Ratios					
Fixed Asset Turnover (x)	1.1	1.1	1.0	0.9	0.9
Receivable (Days)	22	25	22	22	22
Inventory (Days)	36	34	34	35	35
Trade payable (Days)	62	51	50	48	45
Leverage Ratio (x)					
Net Debt/EBITDA	1.3	1.5	1.4	1.0	0.7
Net Debt/Equity	0.5	0.6	0.6	0.5	0.5

Cash Flow Statement (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
EBITDA	249,712	249,872	263,716	282,347	297,535
Non cash exp. (income)	2,950	0			
(Inc)/Dec in Wkg. Cap.	-28,126	-39,192	1,442	-8,991	-14,059
Tax paid	-36,177	-29,427	-15,001	-21,813	-31,519
CF from Op. Activity	**188,359**	**181,253**	**250,158**	**251,542**	**251,958**
(Inc)/Dec in FA + CWIP	-82,644	-156,334	-114,953	-80,824	-71,423
(Pur)/Sale of Investments	-13,689	-124,615	-68,293	-46,559	-51,711
Interest & Dividend Income	21,966	27,658	31,379	34,885	39,976
Investment in subsidiaries	-588,906				
CF from Inv. Activity	**-663,274**	**-253,291**	**-151,867**	**-92,498**	**-83,157**
Equity raised/(repaid)					
Debt raised/(repaid)	530,432	154,766	133,750	28,370	72,861
Dividend (incl. tax)	-12,141	-12,141	-12,141	-12,141	-15,610
Interest paid	-38,166	-46,620	-63,509	-72,669	-75,724
Other financing activities	59,918	-17,739	-82,451	-30,497	-82,889
CF from Fin. Activity	**540,043**	**78,267**	**-24,351**	**-86,937**	**-101,363**
(Inc)/Dec in Cash	65,128	6,229	73,940	72,108	67,437
Add: Opening Balance	96,968	162,096	168,325	242,264	314,372
Closing Balance	**162,096**	**168,325**	**242,264**	**314,372**	**381,809**

E: MOSL Estimates; FY11 (SESA); FY12-14 are post merger

Nalco

BSE SENSEX	S&P CNX
19,901	5,890

Bloomberg	NACL IN
Equity Shares (m)	2,577.2
M.Cap.(INRb)/(USDb)	83.2/1.3
52-Week Range (INR)	55/24
1,6,12 Rel. Perf. (%)	4/-12/-45

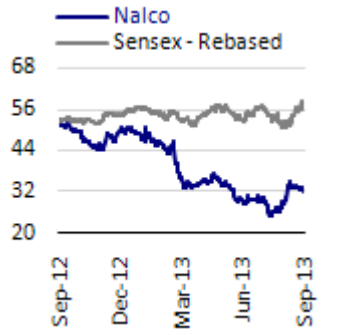
Valuation summary (INR b)

Y/E March	2013	2014E	2015E
Sales	69.2	68.4	78.7
EBITDA	9.1	11.8	11.6
NP	5.9	8.5	8.4
Adj. EPS (INR)	2.3	3.3	3.3
EPS Gr(%)	-31.5	44.2	-1.9
BV/Sh. (INR)	46.3	48.2	49.9
RoE (%)	5.0	7.0	6.6
RoCE (%)	7.2	9.4	9.1
Payout (%)	63.6	44.1	45.0
Valuations			
P/E (x)	14.0	9.7	9.9
P/BV	0.7	0.7	0.6
EV/EBITDA (x)	3.7	3.5	3.0
Div. Yield (%)	3.9	3.9	3.9

Shareholding pattern (%)

As on	Jun-13	Mar-13	Jun-12
Promoter	81.1	81.1	87.2
Dom. Inst	10.3	10.4	5.2
Foreign	4.2	4.2	4.0
Others	4.5	4.4	3.6

Stock performance (1 year)



CMP: INR32 **TP: INR52** **Buy**

Rising cost of production concerning, but multiple long-term positives

Margin outlook improving; upgrading to Buy

- **Despite strategic advantages of location and captive bauxite mines, National Aluminium's (NACL) cost of production has continuously risen. Though its raw material cost is among the lowest, its labor cost at ~INR1.5m per man year is 2-3x other state-owned companies or peers. Its smelting capacity utilization has dropped to ~70% due to short-supply of coal linkages and delay in commencement of its captive Utkal-E coal block, increasing its fixed costs.**
- **A weaker INR could mean significant reduction in NACL's USD cost of production. Its alumina production is ramping up and the price outlook remains bullish due to steepening global cost curve. The resultant margin expansion and expected volume growth of 10% will drive up earnings. We estimate EPS at INR3.3 for FY15 (43% higher than FY13), assuming LME price at USD2,000/ton, exchange rate at INR60/USD and smelting capacity utilization at ~70%.**
- **NACL has a strong balance sheet, with cash surplus of INR42b-50b post capex. Potential upsides from the Utkal-E block, further expansion of the alumina refinery, weakening INR, and peaking of labor cost as older employees retire over the next 3-5 years are long-term positives. We upgrade our stock rating to Buy, with a revised target price of INR52.**

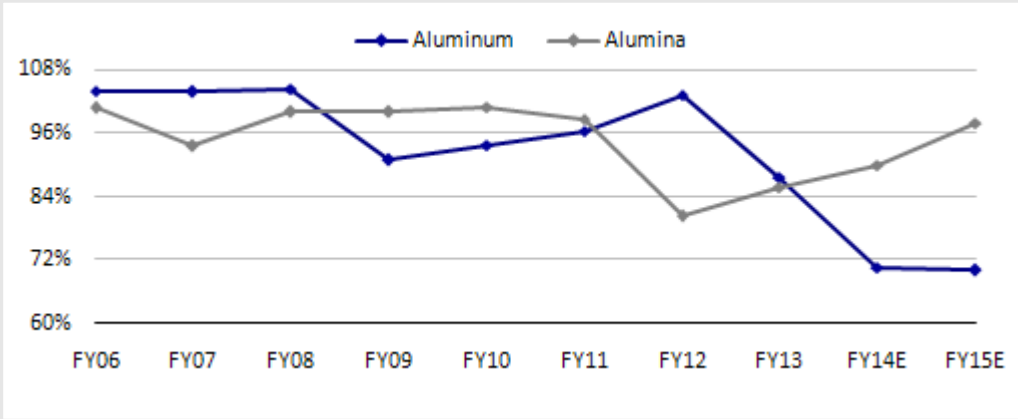
Aluminum - CoP rising, but INR depreciation to compensate

NACL's smelter and alumina refinery are ideally located. Its alumina refinery is located at Damanjodi, close to its captive Pottangi bauxite mines at Panchpatmalli in Odisha. The smelter and its captive power plants are located in the Talcher coal belt in Odisha. Despite strategic advantages of location and captive bauxite mines, NACL's cost of production (CoP) has continuously risen. Though its raw material cost is low, its labor cost at ~INR1.5m per man year is 2-3x other state-owned companies or peers.

NACL has recently expanded its metal capacity from 345k tons to 460k tons, and alumina refinery from 1.6m tons to 2.3m tons. The alumina refinery is gradually ramping up to full capacity. However, its smelting capacity utilization has dropped to ~70% due to short-supply of coal linkages and delay in commencement of its captive Utkal-E coal block, increasing its fixed costs. Also, Coal India has raised prices multiple times in the last five years. Though its INR CoP has been rising, depreciation of the INR v/s the USD will result in its USD CoP being significantly lower.

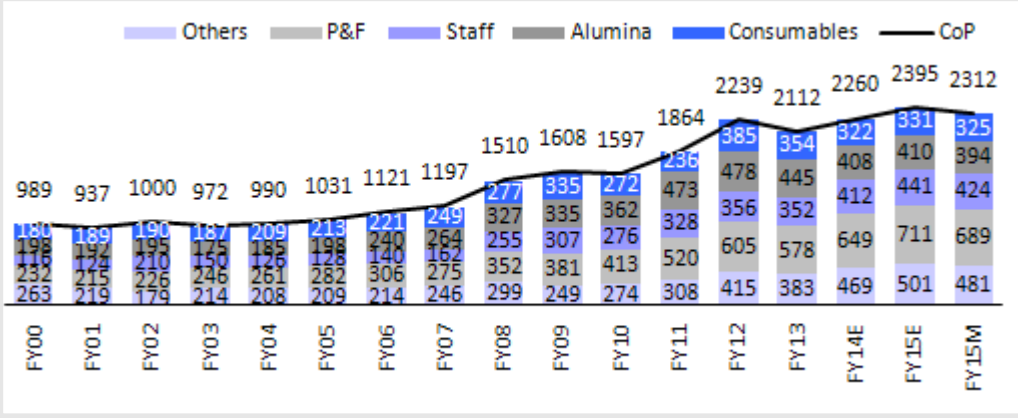
Capacity utilization of smelter has fallen, but alumina is ramping up

Capacity utilization



Although cost of production has increased, but it would be much lower in FY15M (MTM USD/INR rate of 62.5) vs FY15E (i.e. estimate of 60)

Cost of production (USD/ton)



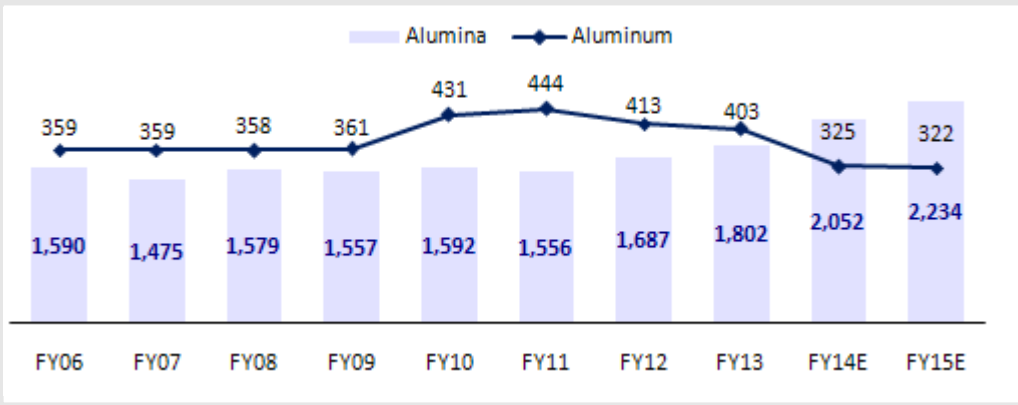
Source: Company, MOSL

Alumina - expect 10% volume growth; margins to expand

Nalco is likely to benefit from weaker USD/INR rate, stronger prices and ramping up of alumina production

A weaker INR could mean significant reduction in NACL's USD cost of production. Its alumina production is ramping up and the price outlook remains bullish due to steepening global cost curve. The resultant margin expansion and expected volume growth of 10% will drive up earnings. We estimate EPS at INR3.3 for FY15 (43% higher than FY13), assuming LME price at USD2,000/ton, exchange rate at INR60/USD and smelting capacity utilization at ~70%.

Production (k tons)



Source: Company, MOSL

Upgrading to Buy

A positive outlook for both alumina volumes & margin expansion and potential upsides from coal block calls for re-rating

NACL has a strong balance sheet, with cash surplus of INR42b-50b post capex. Potential upsides from the Utkal-E block, further expansion of the alumina refinery, weakening INR, and peaking of labor cost as older employees retire over the next 3-5 years are long-term positives. The stock trades at an attractive EV/EBITDA of 3x. In view of the changed business dynamics, we believe that NACL deserves an EV/EBITDA multiple of 5.5x. Topping this with the value of CWIP, our SOTP-based target price stands revised to INR52. We upgrade the stock to **Buy**.

Target price calculation (INR m)

	FY13	FY14E	FY15E	FY16E	FY17E
EBITDA	9,069	11,780	11,640	13,198	14,632
EV/EBITDA (x)	5.5	5.5	5.5	5.5	5.5
Target EV	49,878	64,789	64,020	72,592	80,475
add: CWIP	10,019	22,519	22,519	22,519	22,519
add: cash surplus	49,944	41,990	47,998	53,872	62,187
Equity Value	109,841	129,299	134,537	148,983	165,181
Target Price	**43**	**50**	**52**	**58**	**64**

Source: Company, MOSL

Financials and Valuation

Income Statement (Consolidated) (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Net Sales	**66,116**	**69,165**	**68,377**	**78,677**	**81,596**
Change (%)	11.0	4.6	-1.1	15.1	3.7
Total Expenses	54,667	60,096	56,597	67,037	68,397
EBITDA	**11,449**	**9,069**	**11,780**	**11,640**	**13,198**
% of Net Sales	17.3	13.1	17.2	14.8	16.2
Depn. & Amortization	4,666	5,054	5,016	4,953	4,893
EBIT	6,784	4,014	6,764	6,687	8,306
Net Interest	9	75	0	0	0
Other income	5,422	5,111	5,532	5,642	5,755
PBT before EO	**12,197**	**9,050**	**12,295**	**12,329**	**14,061**
EO income	-219	0	0	0	0
PBT after EO	**11,978**	**9,050**	**12,295**	**12,329**	**14,061**
Tax	3,483	3,122	3,747	3,945	4,499
Rate (%)	29.1	34.5	30.5	32.0	32.0
Reported PAT	**8,495**	**5,928**	**8,548**	**8,384**	**9,561**
Adjusted PAT	**8,650**	**5,928**	**8,548**	**8,384**	**9,561**
Change (%)	-19.2	-31.5	44.2	-1.9	14.0

Balance Sheet (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Share Capital	12,886	12,886	12,886	12,886	12,886
Reserves	104,265	106,438	111,217	115,832	121,624
Net Worth	**117,151**	**119,325**	**124,104**	**128,718**	**134,510**
Deferred Tax Liability	8,491	9,031	9,031	9,031	9,031
Capital Employed	**125,642**	**128,356**	**133,135**	**137,750**	**143,542**
Gross Block	136,586	141,750	146,750	151,750	156,750
Less: Accum. Deprn.	70,463	75,461	80,477	85,430	90,323
Net Fixed Assets	**66,124**	**66,289**	**66,273**	**66,320**	**66,427**
Capital WIP	6,844	10,019	22,519	22,519	22,519
Investments	7,543	14,901	14,901	14,901	14,901
Curr. Assets	**74,697**	**72,061**	**62,298**	**69,535**	**76,400**
Inventories	12,127	13,806	11,848	12,933	13,637
Account Receivables	1,381	1,430	1,580	1,724	2,012
Cash and Bank Balance	41,684	35,044	27,090	33,097	38,971
Others	19,506	21,781	21,781	21,781	21,781
Curr. Liability & Prov.	**26,733**	**34,914**	**32,856**	**35,525**	**36,705**
Account Payables	26,733	31,201	29,143	31,812	32,992
Provisions & Others	0	3,713	3,713	3,713	3,713
Net Curr. Assets	**47,964**	**37,147**	**29,442**	**34,010**	**39,695**
Appl. of Funds	**128,475**	**128,356**	**133,135**	**137,750**	**143,542**

E: MOSL Estimates

Financials and Valuation

Ratios (Consolidated)

Y/E March	2012	2013	2014E	2015E	2016E
Basic (INR)					
EPS	**3.4**	**2.3**	**3.3**	**3.3**	**3.7**
Cash EPS	5.1	4.3	5.3	5.2	5.6
BV/Share	45.5	46.3	48.2	49.9	52.2
DPS	1.4	1.3	1.3	1.3	1.3
Payout (%)	48.9	63.6	44.1	45.0	39.4
Valuation (x)					
P/E	9.6	14.0	9.7	9.9	8.7
Cash P/E	6.3	7.6	6.1	6.2	5.8
P/BV	0.7	0.7	0.7	0.6	0.6
EV/Sales	0.5	0.5	0.6	0.4	0.4
EV/EBITDA	3.0	3.7	3.5	3.0	2.2
Dividend Yield (%)	4.3	3.9	3.9	3.9	3.9
Return Ratios (%)					
RoE	7.6	5.0	7.0	6.6	7.3
RoCE (pre-tax)	10.0	7.2	9.4	9.1	10.0
RoIC (pre-tax)	11.1	5.7	9.9	9.8	12.4
Working Capital Ratios					
Fixed Asset Turnover (x)	0.5	0.5	0.5	0.5	0.5
Asset Turnover (x)	0.5	0.5	0.5	0.6	0.6
Debtor (Days)	8	8	8	8	9
Inventory (Days)	67	73	63	60	61
Working Capital Turnover (Days)	9	3	3	1	1
Leverage Ratio (x)					
Current Ratio	2.8	2.1	1.9	2.0	2.1

Cash Flow Statement (INR Million)

Y/E March	2012	2013	2014E	2015E	2016E
Pre-tax profit	11,978	9,050	12,295	12,329	14,061
Depreciation	4,666	5,054	5,016	4,953	4,893
(Inc)/Dec in Wkg. Cap.	-11,191	2,740	-249	1,440	189
Tax paid	-1,926	-2,582	-3,747	-3,945	-4,499
Other operating activities	3,969	-1,436	0	0	0
CF from Op. Activity	**7,495**	**12,826**	**13,315**	**14,776**	**14,643**
(Inc)/Dec in FA + CWIP	-5,234	-8,338	-17,500	-5,000	-5,000
(Pur)/Sale of Investments	5,774	-7,358	0	0	0
CF from Inv. Activity	**540**	**-15,696**	**-17,500**	**-5,000**	**-5,000**
Debt raised/(repaid)	-149	0	0	0	0
Dividend (incl. tax)	-4,156	-3,769	-3,769	-3,769	-3,769
Other financing activities					
CF from Fin. Activity	**-4,304**	**-3,769**	**-3,769**	**-3,769**	**-3,769**
(Inc)/Dec in Cash	**3,731**	**-6,640**	**-7,954**	**6,007**	**5,874**
Add: opening Balance	37,952	41,684	35,044	27,090	33,097
Closing Balance	**41,684**	**35,044**	**27,090**	**33,097**	**38,971**

E: MOSL Estimates

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