

## Steel Industry Analysis

### China's Supply-Side Reform Continues to Reduce Capacity, Resulting in Lower Supply Marginal Elasticity vs. 2017. SMM Expects China Crude-Steel Capacity to be 1.08 bn tons in 2018.

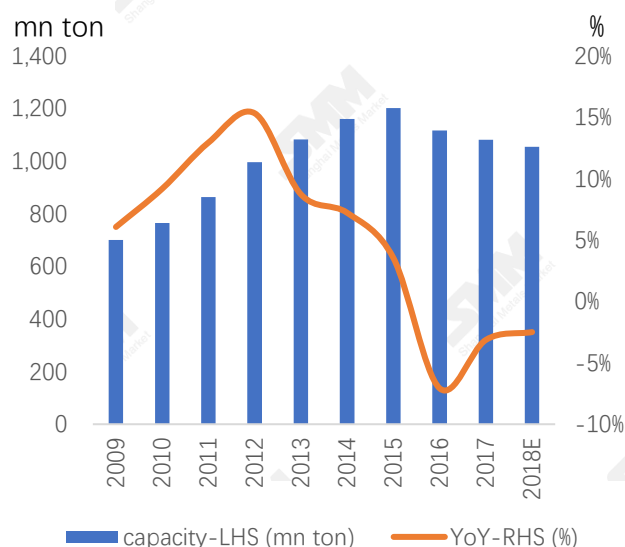
#### Recap of 2015 to 2017:

The supply-side reform initiated by the government in 2016 has reduced China's steel industry capacity by following measures.

- 1) Eliminated 115 million tons of illegal capacity of Ditiao steel (low quality steel produced by medium-frequency induction furnaces);
- 2) Reduced newly approved capacity;
- 3) Limited output through the environmental-protection policies;
- 4) Improved the concentration rate of China's steel industry.

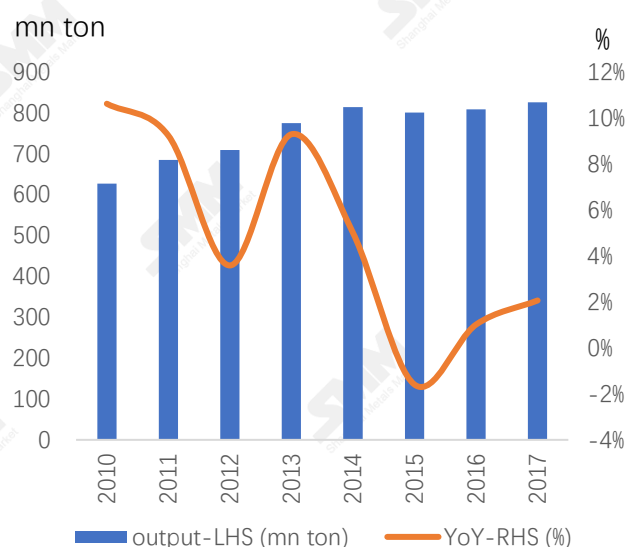
SMM estimates the capacity of crude-steel is 1.09 billion tons in 2017, down 1.62% yoy. We expect capacity to be 1.08 billion tons in 2018, down 1.37% yoy, implying the falling elasticity of supply. SMM estimates the apparent consumption at 825 million tons in 2017, up 2.1% yoy. The elasticity of both supply and demand increases, lifting steel prices.

Chart 1: China's Crude Steel Capacity



Source: NBS, SMM

Chart 2: China's Crude Steel Output



Source: NBS, SMM

1) Eliminated the illegal capacity of Ditiao steel. The planned capacity cut targets by MIIT were 45 and 50 million tons respectively for 2016 and 2017, while the actual capacity cuts were 65 and 50 million tons. 115 million tons of Ditiao steel capacity was cut in two years, though lower than SMM expectations.

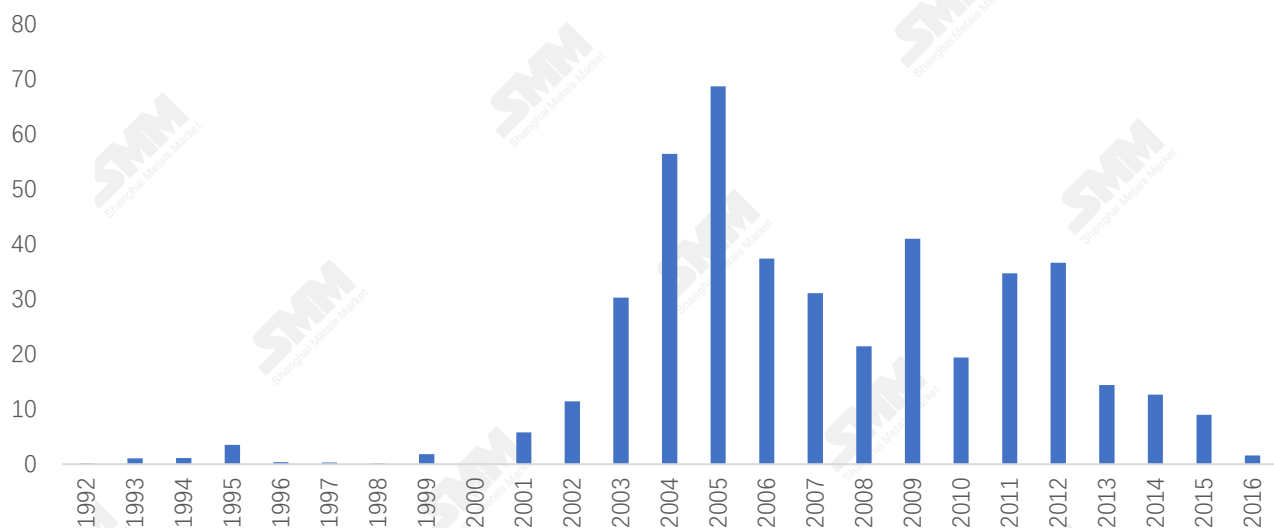
**Table 1: China Steel Capacity (mn ton)**

Year	Pig Iron	Crude Steel	Converter	Electric Furnace	Ditiao Steel
2015	1,011	1,190	1,032	162	180
2016	972	1,112	986	130	138
2017	944	1,094	948	150	0
2018E	926	1,080	922	162	0
2018E Additions	(18)	(14)	(26)	12	0

Source: MIIT, SMM

2) Reduced newly approved capacity. The 2016 capacity addition was 8.93 million tons for Baosteel's Zhanjiang project. In 2017, the capacity addition was 4.25 million tons for Shandong Steel's 1st phase of Rizhao project. In 2018, the new additions will be Shougang's 2nd phase of Jintang Project (phasing out 5.49 and 6.38 million tons of pig-iron and crude-steel capacity, while adding 4.39 and 5.1 million tons respectively, resulting net reductions of 1.1 and 1.28 million tons of pig-iron and crude-steel capacity). MIIT's newly released industry guidelines require the supply-side reform of steel industry to focus on capacity reduction and swap going forward.

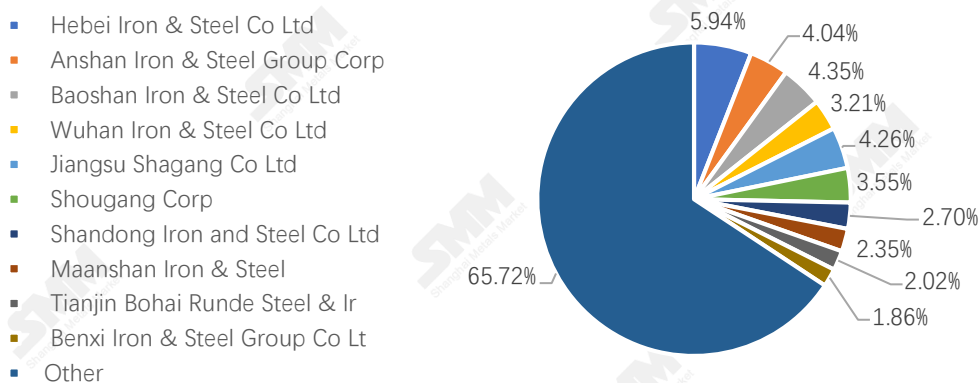
**Chart 3: China Pig Iron Capacity Additions (mn ton)**



Source: NBS, SMM

3) Limited output through the environmental-protection policies. SMM forecasts that the winter restriction policy will be routine in the future. According our channel checks, the actual capacity cuts in 2+26 cities is about 30 million tons, accounting for 2.75% of China's total steel capacity, though far below the targeted 50% capacity limits. However, the winter restriction policy is likely to be routine, suppressing steel supply. The exit of medium-to-small-scaled steel producers will be accelerated and the industry concentration rate will be increased, as additional costs will be spent by non-compliant producers to meet the stricter environmental policy requirements and the coal-to-gas (CTG) transition projects.

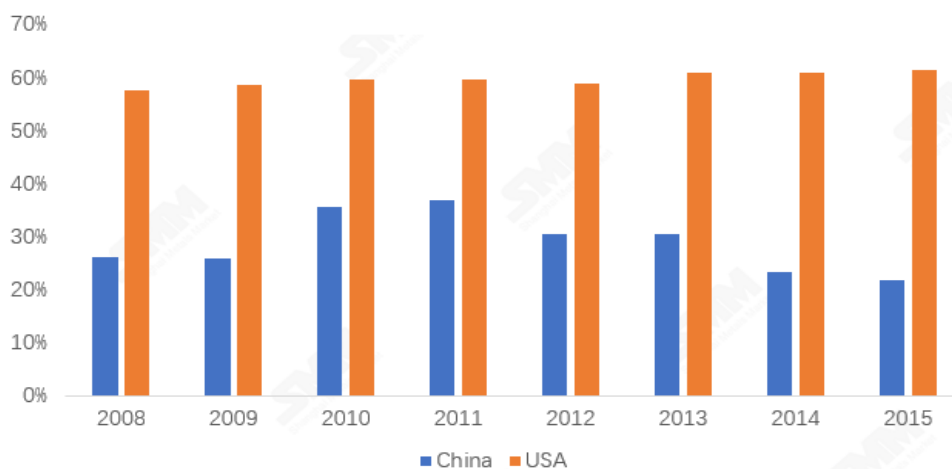
**Chart 4: Concentration Rate of China's Top 10 Steel Producers (2015)**



Source: SMM

4) Improved the concentration rate of China's steel industry. The government requires that the concentration rate of 10-largest steel producers to be 60%-70% by 2025. There should be 3-4 producers with capacity of 80 million tons each, and 6-8 producers with capacity of 40 million tons each.

**Chart 5: Concentrate Rate of Top 5 Steel Producers (China vs. US)**

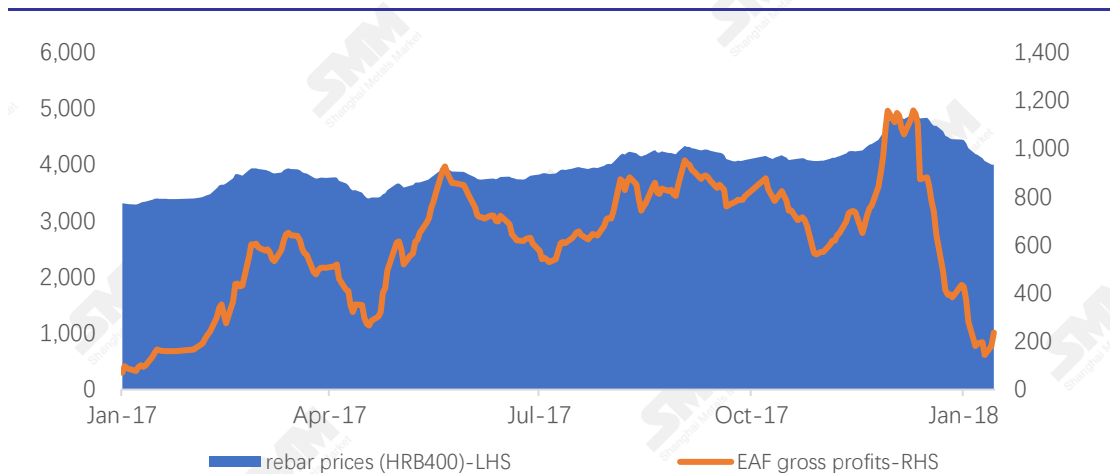


Source: Bloomberg, SMM

### Supply additions:

The supply additions in 2018 will mostly come from resumption of EAF, which are built after the suspension of the intermediate-frequency furnace. According to SMM survey, the net addition of EAF capacity in 2018 is about 12 million tons. The increase of EAF output will not change the downward trend of declining capacity, but the commission of capacity within the short period will add to the supply. Therefore, the profitability of EAF plants and the actual output increase from the commissioned capacity should be closely watched. Based on SMM model and calculations, EAF plants in East China enjoy gross profit of Rmb200-300/ton as of Jan 18, and some plants are break-even.

**Chart 6: EAF Gross Profits (Rmb/ton)**

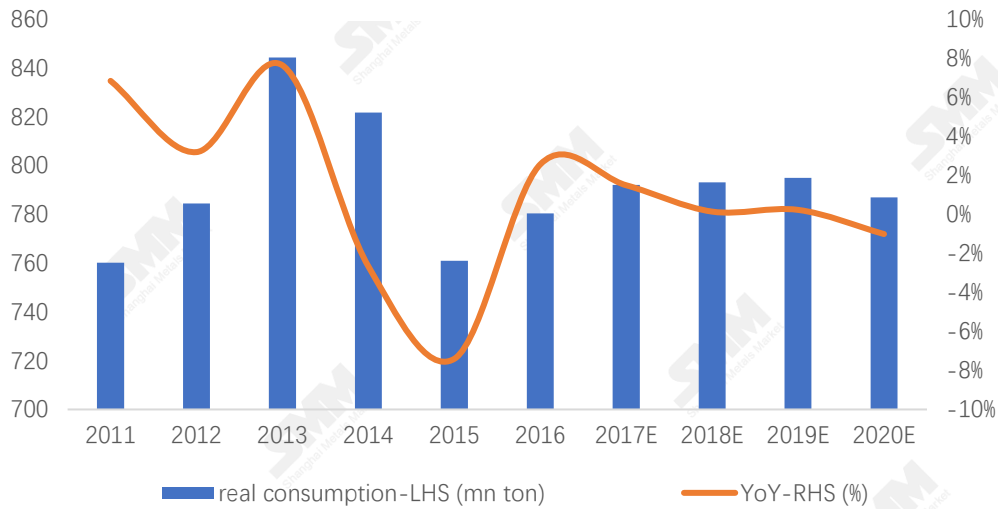


Source: SMM

## FAI in Construction Determines the Marginal Elasticity of Steel Demand, and SMM Forecasts China's Apparent Consumption of Steel is 793 mn tons in 2018

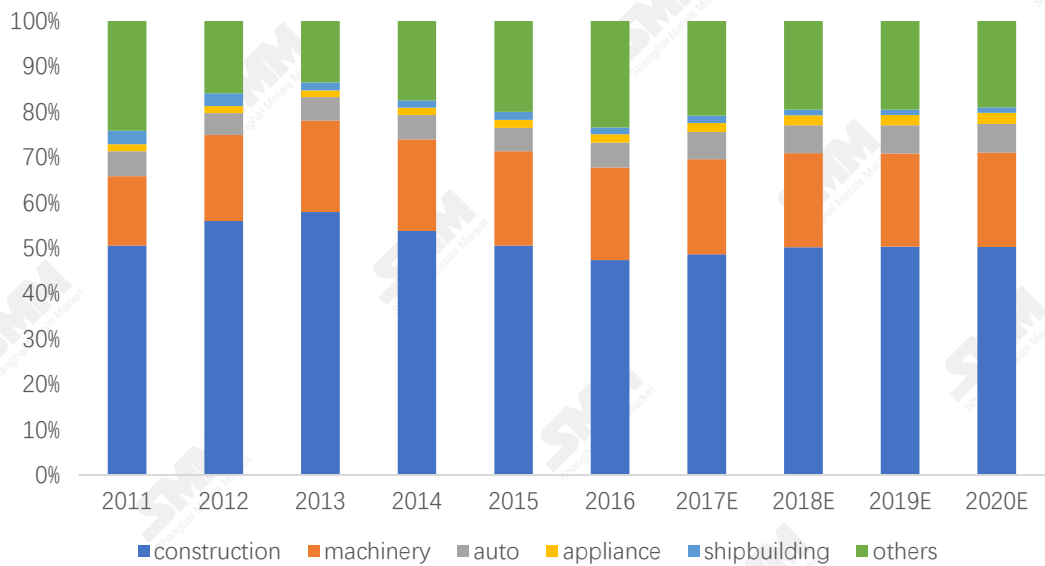
SMM calculates that domestic steel apparent consumption rebounded in 2016 and 2017 to 792 and 793 million tons respectively, up 1.5% and 0.1% yoy. Construction (including housing construction and infrastructure) and machinery are major downstream sectors for China's steel demand, accounting for 48.6% and 20.9% of China's total steel demand in 2017, and determine the marginal elasticity of steel demand. SMM forecasts real estate demand will continue to improve in 2018 due to inventory replenishment and the increase of newly started floor space. However, infrastructure demand will slow down due to the strict approval of capital and PPP projects. SMM estimates the consumption of construction steel will be 398 million tons in 2018, up 3.3% yoy.

**Chart 7: China Steel Real Consumption (2011-2020E)**



Source: SMM

**Chart 8: China Steel Real Consumption Breakdown (By Sector)**



Source: SMM

# Real Estate Demand to Stabilize in 2018 on Rising Land Supply and Inventory Replenishment

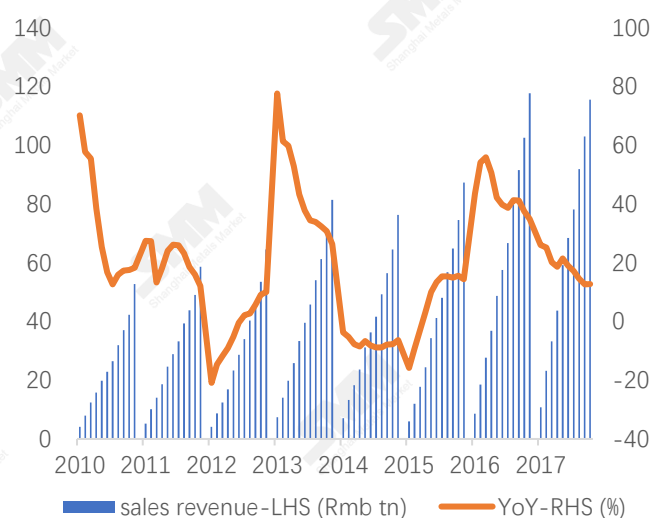
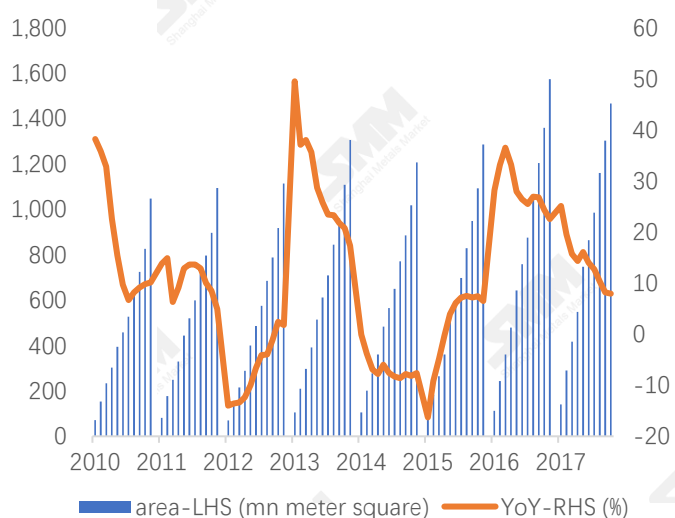
SMM forecasts real estate demand will be stable in 2018 and rise by 0.11% yoy.

The Ministry of Housing and Urban-Rural Development announced the real estate guidelines in October 2016, which started to deleverage both personal mortgages and company debts. Floor space sold of commercial housing and revenue started to accelerate declining at the same time.

The cumulative inventory of commercial housing floor space was 596.06 million square meters by Nov 2017, down 14% yoy, as results of a 2-year destocking. SMM believes that the policy of credit contraction to real estate business remains amid the rising land supply. To collect cash timely after developing the project and selling is an effective way to ensure the cash flow of real estate developers. On the other hand, the cumulative growth rate of newly started gross floor area was 6.9% by Nov 2017. The newly started gross floor area continued to grow while inventory of commercial housing floor space declined, indicating the real demand for housing was not weak. The government increases supplies by developing shantytowns project (5.8 million units are planned for 2018, above the market expectation of 5 million units) and the rental housing market. Speculative demand is also limited by the government regulations.

**Chart 9 : Commercial Housing Sales Area (cumulative)**

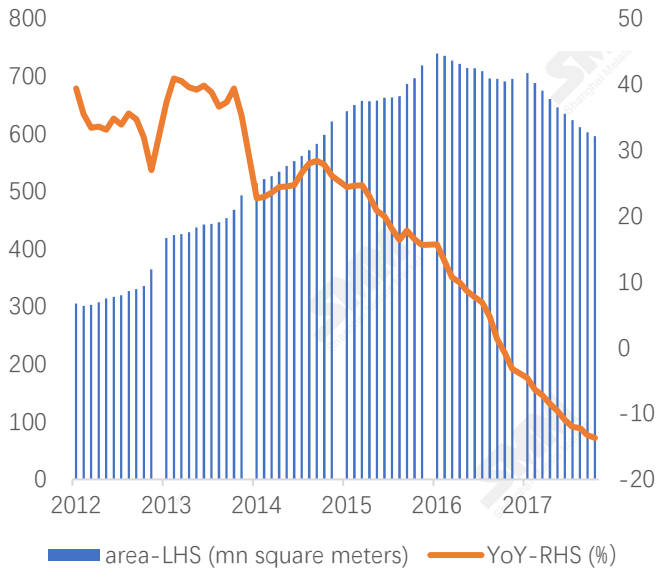
**Chart 10 : Commercial Housing Sales Revenue (cumulative)**



Source: NBS, SMM

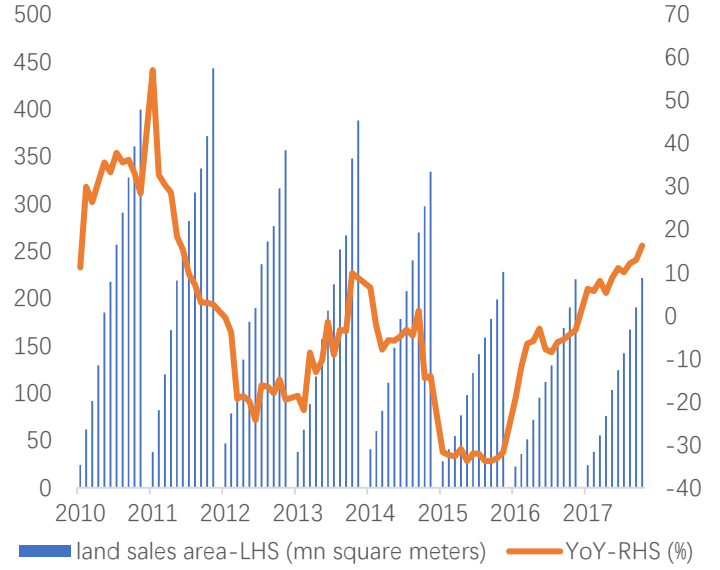
Source: NBS, SMM

**Chart 41: Inventory of Commercial Housing (**



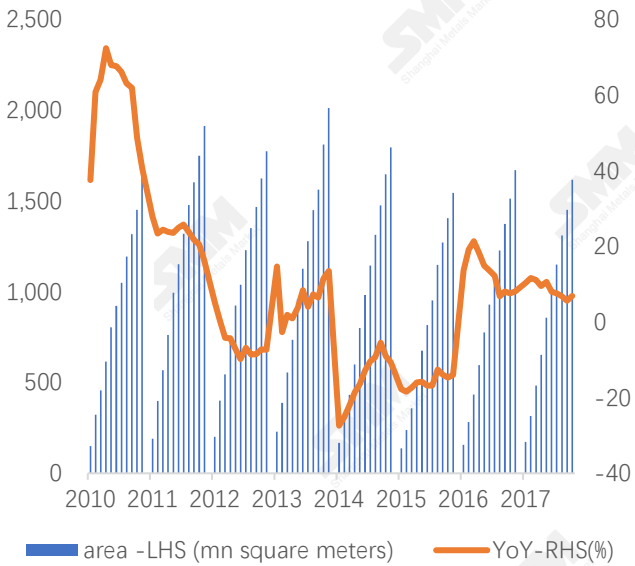
Source: NBS, SMM

**Chart 15: Purchase of Land Area (cumulative)**



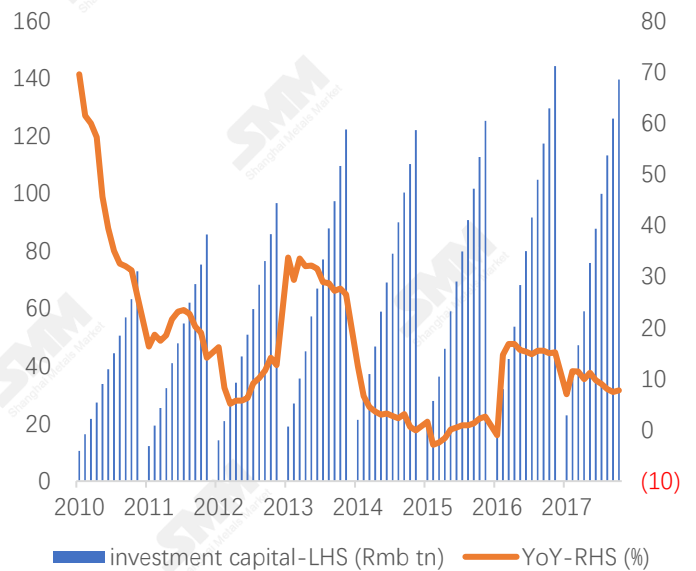
Source: NBS, SMM

**Chart 63 : New Construction Housing Area (cumulative)**



Source: NBS, SMM

**Chart 14: Investments of Real Estate (cumulative)**

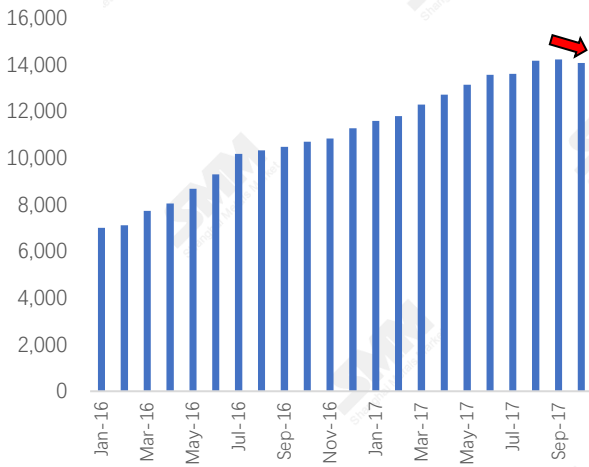


Source: NBS, SMM

# Infrastructure FAI to Stabilize in 2018, and Financing to be more Strict

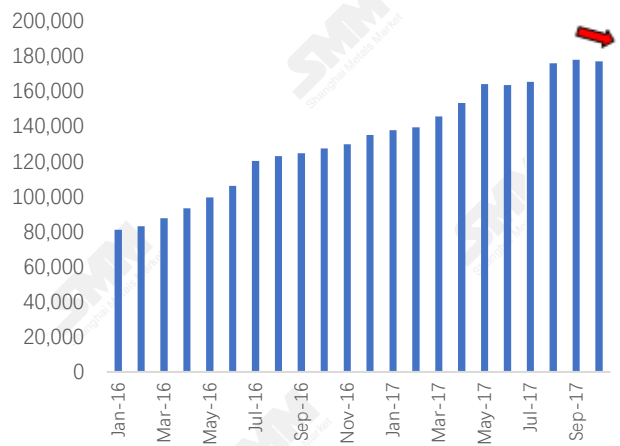
As a counter-cyclical measure of national economic control, infrastructure has been greatly affected by the fiscal policy. The adoption rate of new PPP projects decreased due to the stringent review of non-compliant credits. On the other hand, the upside potential is limited as the proportion of self-financing funds mainly based on local government's debts increased from 44.8% in 2000 to 2016 66.69%, with the absolute value jumping 37.99 times. Therefore, SMM expects FAI growth in infrastructure will slow down in 2018, at a growth rate of 15% yoy, due to the tight capital.

**Chart 75: No. of Audited PPP Projects**



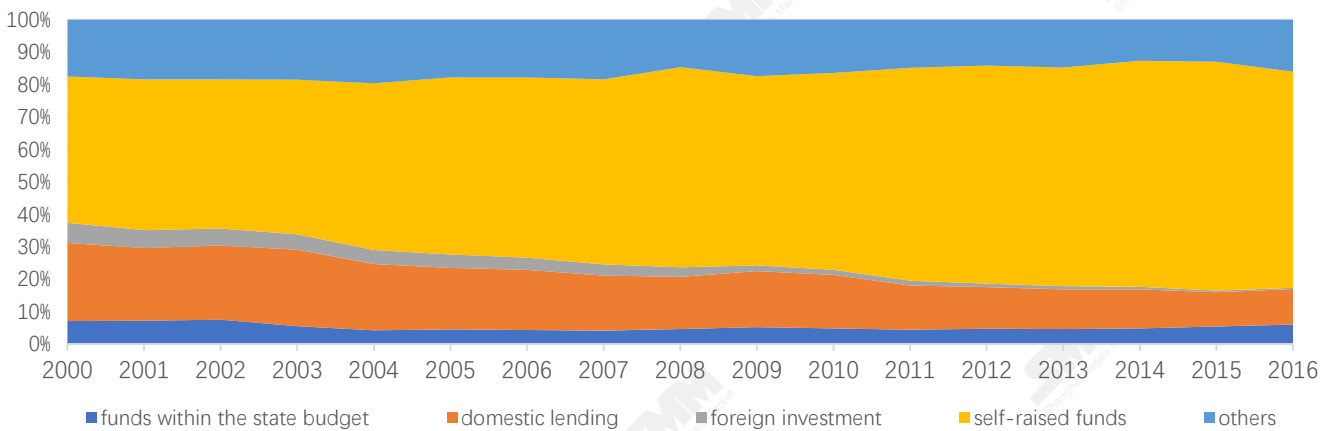
Source: NBS, SMM

**Chart 16: PPP Project Total Investment (Rmb bn)**



Source: NBS, SMM

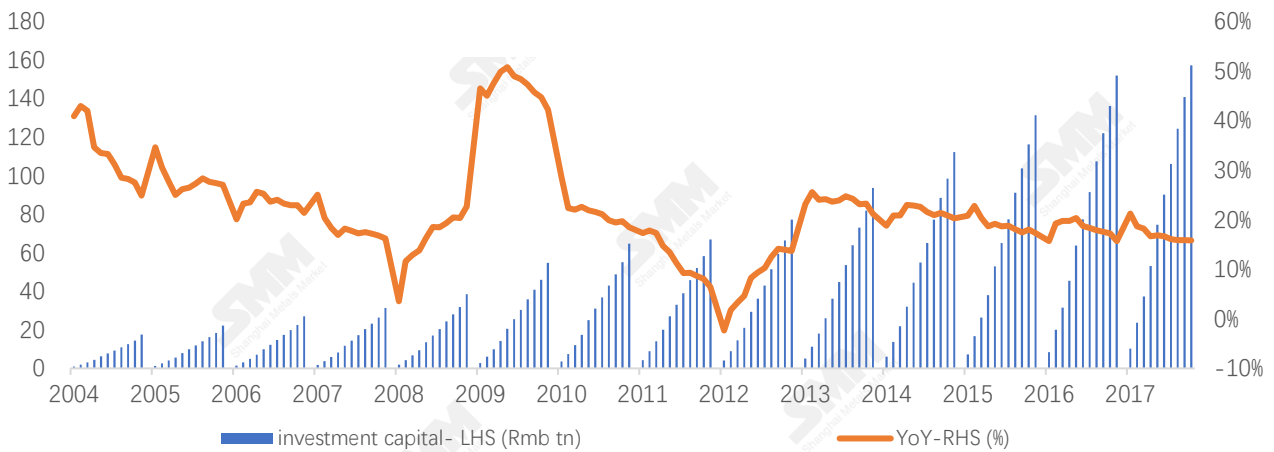
**Chart 17: Capital Source of Infrastructure Projects (2000-2016)**



Source: NBS, SMM



**Chart 18: Investment of Infrastructure Construction (2004-2017, cumulative)**

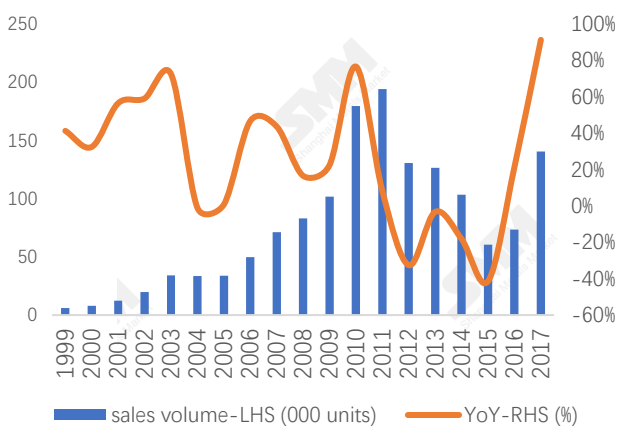


Source: NBS, SMM

## Juglar Cycle Continues, Growth of Machinery Demand Slows Down in 2018

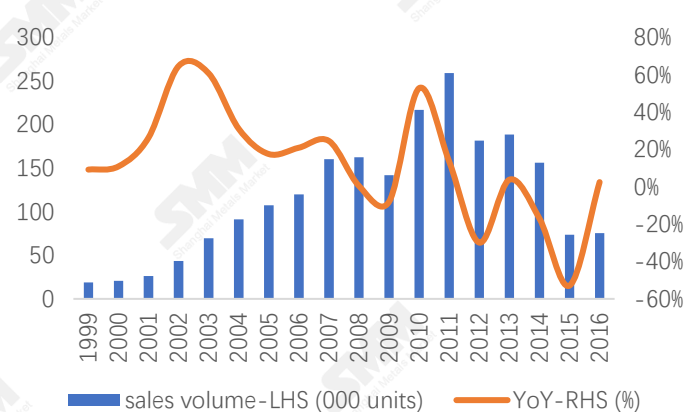
Demand for construction machinery will increase on: 1) The operating rates of real estate and infrastructure increased. Newly started floor space in 2016 and 2017 rose by 8.1% and 6.9% respectively, indicating an improving downstream demand; 2) The needs from equipment replacement. The sales of excavators and loaders in China grew rapidly in 2007-2010 and reached the peak in 2011. Therefore, the machinery replacement needs will peak during 2017-2021 based on our assumption of 8-10 years depreciation period.

**Chart 89: Sales Volume of Excavator (1999-2017)**



Source: China Engineering Machinery Industry Yearbook, SMM

**Chart 90: Sales Volume of Loader (1999-2016)**

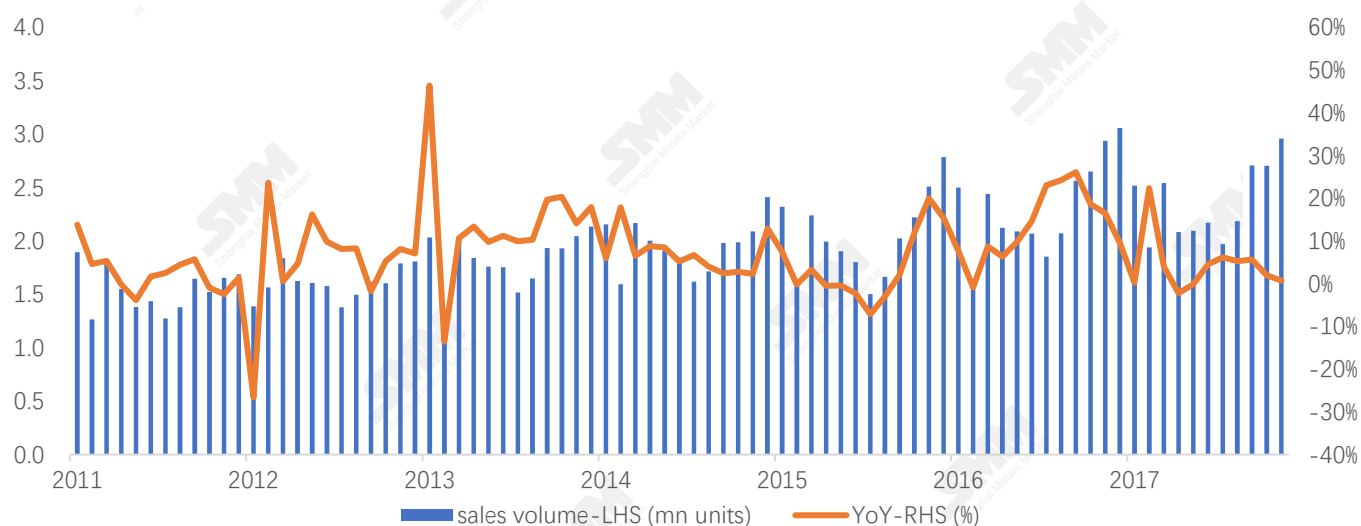


Source: China Engineering Machinery Industry Yearbook, SMM

## Positive Outlook on Auto in the Medium-to-Long-Term as China's Car Ownership/Capita Rises

China cancelled the purchase tax on small-engine passenger vehicles at end-2017, pressuring the car sales in the short-term. A 5% car purchase tax was levied on a displacement of 1.6 liters or less from Oct 2015 to Dec 2016, and was 7.5% in 2017. A 10% statutory tax will be restored from Jan 2018.

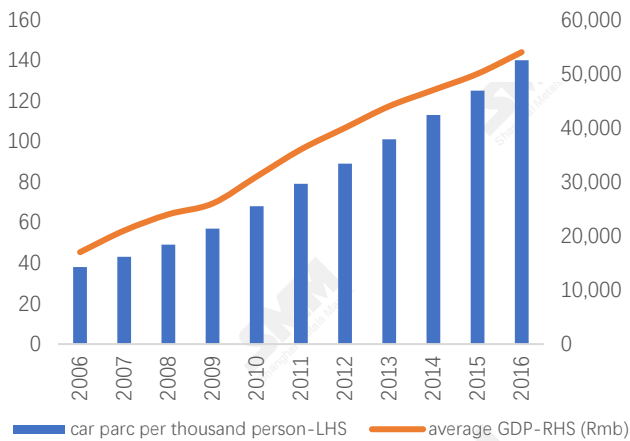
**Chart 21: Sales Volume of Domestic Auto (2011-2017, mn units)**



Source: NBS, SMM

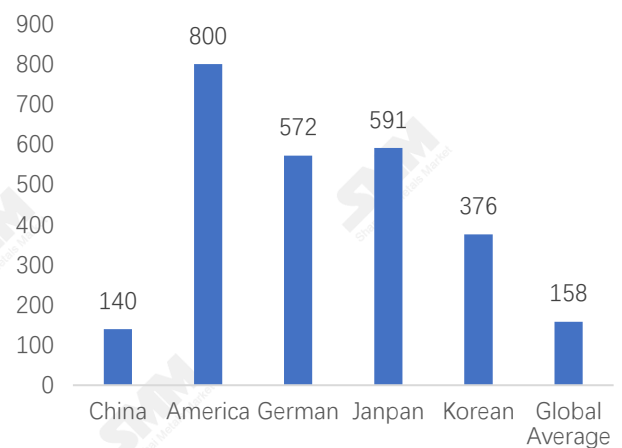
However, the number of vehicles owned by a thousand people in China increased from 68 vehicles/thousand ppl in 2010 to 140 in 2016, representing an increase of 105.88%. During the same period, GDP per capita grew from \$US31,000/capita to \$US54,000/capita, an increase of 74.19%. According to the World Motor Organization data, China's number of vehicles owned by thousand ppl was less than the world average in 2016. SMM believes auto sector will have pressuring sales volume in the short term due to the advanced overdraft sales. However, SMM is positive on the medium-to-long-term auto demand due to rising GDP per capita and car replacement needs.

**Chart 22: GDP & Car Parc**



Source: NBS, SMM

**Chart 103: Car Parc Comparison**



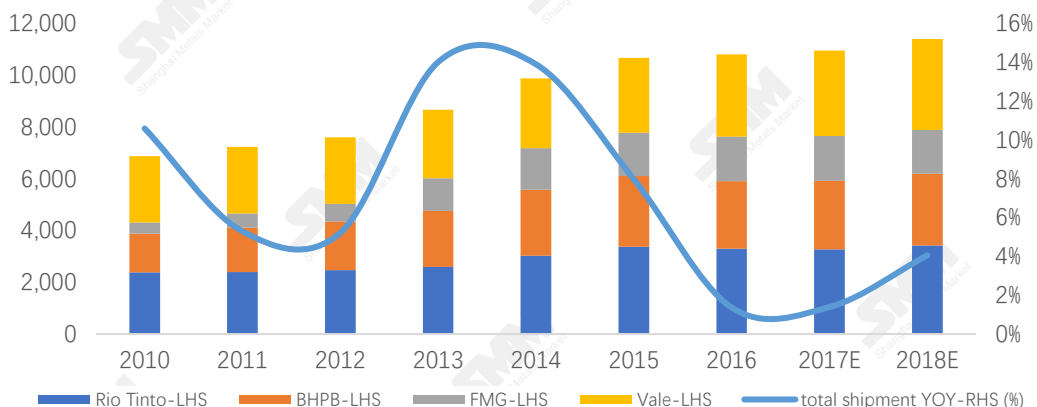
Source: OICA, SMM

## Big Four Continue to Add Iron Ore Output, SMM Expects Prices to Trade at \$65-70/ton in 2018

SMM estimates that the big 4 iron ore miners will continue to add output in 2018, up by about 50 million tons with mainly medium-to-high grades. The average iron ore price in 2018 will fall to \$65-70/ton on rising supply.

In China, blast furnace steel capacity still dominates, while EAF capacity only accounts for 13.71%. China sources about 85% of iron ore requirements through imports, vs. the remaining 15% within the country. Supplies from the big four continue to rise in 2018. Vale's SIID project will add 20-40 million tons this year and Rio Tinto's Silvergrass project will add 10 million tons in 2018. Roy Hill will commission its 55 million tons capacity.

**Chart 24: Total Iron Ore Shipment of Big 4 (2010-2018E)**

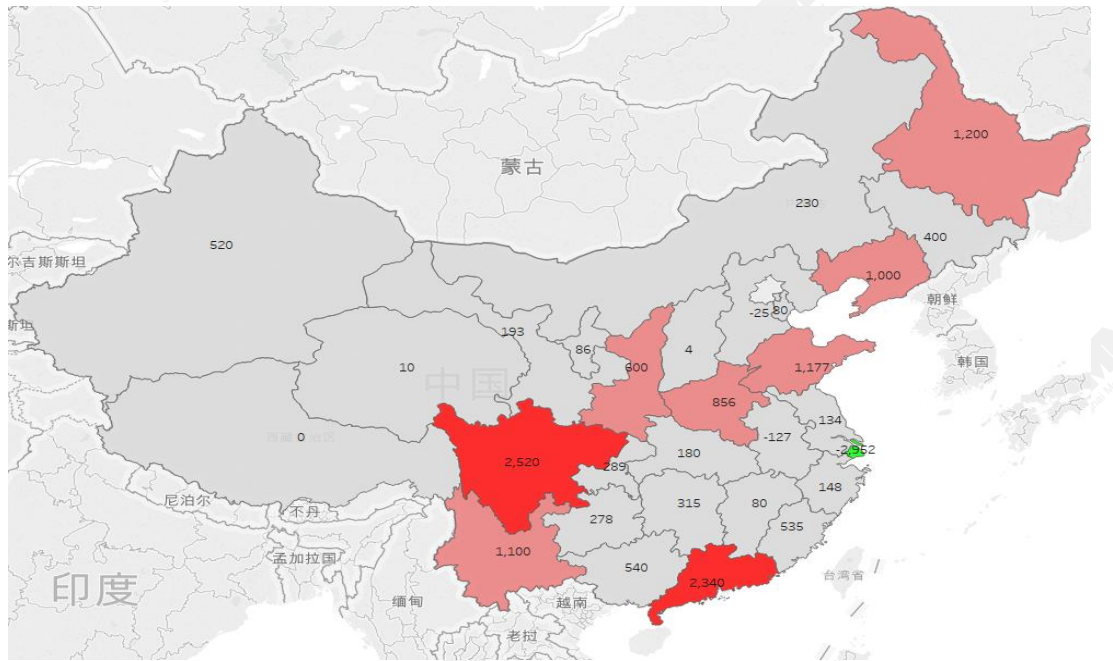


Source: SMM

# Scrap Steel Price Will Increase on EAF Capacity Release

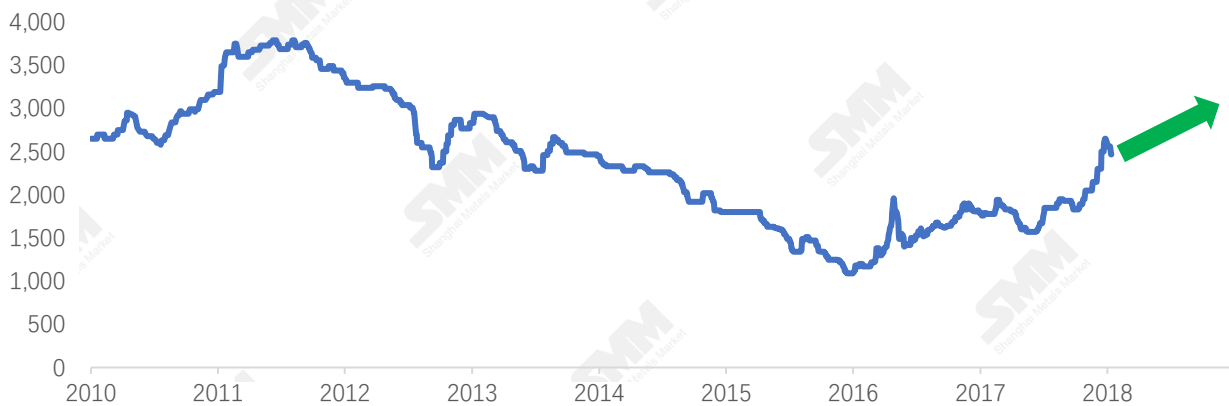
Some previously banned capacity of intermediate-frequency furnace will covert to EAF, and will resume in 1H. According to SMM survey, the newly-added EAF capacity is estimated at 11.8 million tons in 2018, driving up scrap steel prices. SMM believes scrap steel price will be stronger than iron ore but weaker than steel in 2018.

**Chart 25: China's EAF Capacity Additions, by Province (000 tonne)**



Source: SMM

**Chart 26: Scrap Steel Prices (2010-2018E)**



Source: SMM

## SMM Expects Steel Price to Move Downward but GP/ton of Steel to Maintain in 2018. Steelmakers Will Maintain their Profitability.

Overall, SMM expects weak marginal flexibility between supply and demand in 2018. Supply will be cut by 14 million tons yoy, down 22.15% from the reduction in 2017, given the rising output from the new EAF capacity. In the short term, SMM is optimistic about the mismatch of supply and demand due to the winter stocking and resumption of production in spring. The winter restriction will ends on Mar 15, and steel mills will resume production at the beginning of March, resulting a half-month supply shock. SMM forecasts the gross profit/ton of steel at Rmb600-800/ton in 2018, and steel mills are able to maintain their profitability.

**Table 2: China Steel Consumption Breakdown (2013-2020E, mn ton)**

Year	2013	2014	2015	2016	2017E	2018E	2019E	2020E
Construction	489	442	384	370	385	398	400	395
Machinery	170	166	158	159	166	164	163	164
Automobile	43	44	39	43	48	49	49	49
Home Appliance	13	13	13	14	16	17	18	19
Shipbuilding	15	13	14	12	13	10	9	9
Others	114	144	152	183	165	155	155	150
Total Steel Consumption (mn ton)	844	822	761	780	792	793	795	787
Total Steel Consumption YOY (%)	7.6%	-2.7%	-7.4%	2.6%	1.5%	0.1%	0.2%	-1.0%

Source: SMM

## Company Analysis

Company Name	Rating
Baosteel	★★★★
Hesteel	★★★
Angang Steel	★★★

Baosteel, Hesteel and Angang Steel are all integrated steel producers listed in China, with products focusing on high-quality plate. Steel business is the largest contributor to their revenue and profits. However, each of them has its own advantages.

Baosteel, Hesteel and Angang are leading steel producers in China. The flat steel capacity is 42.4, 19.4 and 8.26 million tons for Baosteel, Hesteel and Angang as of end-2017 respectively, including 19.5, 8.95 and 4.2 million tons of CRC capacity.

**Table 3: Capacity Comparisons in 2017 (000 tonne)**

Company Name	Baosteel Group	Hesteel Group	Angang Group
Pig Iron (parentco level)	67,300	33,230	24,000
Crude Steel (parentco)	60,800	39,200	25,200
Rebar	4,900	5,690	0
Wire Rod	4,300	2,200	1,550
Section Steel	0	550	2,700
Medium Plate	5,000	3,400	4,400
HRC	42,400	19,400	8,260
Hot Rolled Strip	1,200	2,400	0
CRC	19,500	8,950	4,200
Galvanizing plate	8,930	3,440	1,900
Tube	2,100	0	460
Silicon Steel	2,400	0	900
Stainless Steel	0	600	0

Source: SMM

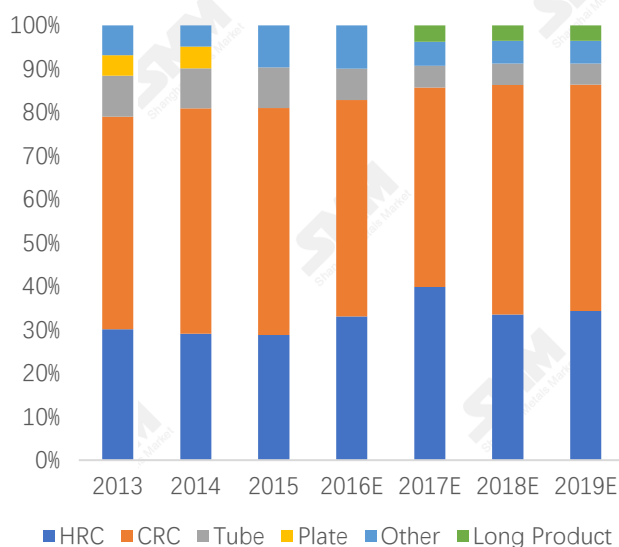
After the Baosteel-Wugang merger in 2016, Baosteel is now the largest flat-steel producer in China. **SMM sees the most upside potential from Baosteel among above three companies.**

1) Further profit-making from Zhanjiang. Baosteel's Zhanjiang project, completed in 2016, is expected to add 8.75 million tons capacity for Baosteel. Its cold-rolled production line was commissioned at end-2017 and will ramp up to full capacity in 2018, adding 25.5 million tons of CRC capacity for Baosteel. Zhanjiang project has geographical advantages, as its location is close to both the South China customers and the port of importing raw materials. It also has cost advantages, with net profit in 1H17 at Rmb308/ton, second only to the Baosteel headquarter base. SMM believes the Zhanjiang project will further lift Baosteel's profits once its CRC capacity fully ramps up.

2) Synergy from the Baowu merger. Synergy was obvious in terms of integrated procurement and sales. In 2017, the first year of the merger, Wisco is expected to serve as an independent production base but follow the adjustment of production lines and systematic management from the headquarter, further driving up its profits.

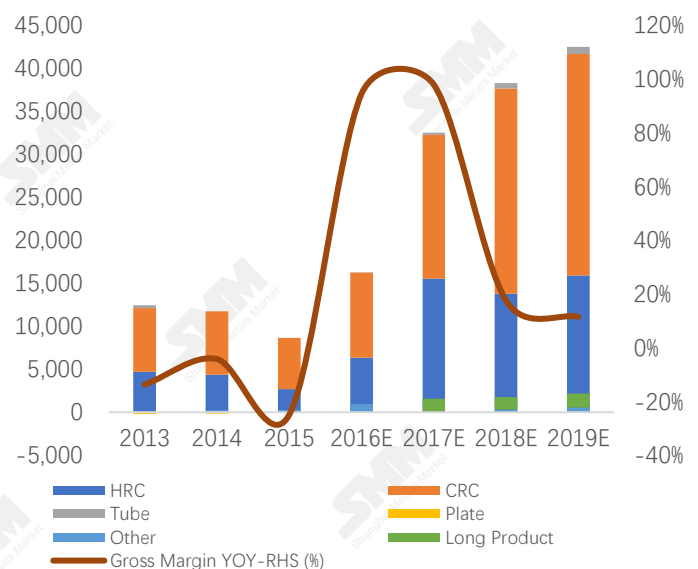
3) Profitability of Baosteel to increase. Auto and processing are two major downstream sectors for Baosteel, accounting for about 40% of its total sales. The strict requirements of steel-products quality and long time needed to get the customer certification are specific for plate products. Once the supply relationship is set, the supplier is not easily replaced. Based on this, Baosteel actively develops direct-supply business model, providing complete supply chain services to increase customers' stickiness and expand its market shares.

**Chart 27: Baosteel Revenue Breakdown (Rmb mn)**



Source: SMM

**Chart 118: Baosteel Gross Margin Breakdown**



Source: SMM

**Table 4: Baosteel Market Share (%)**

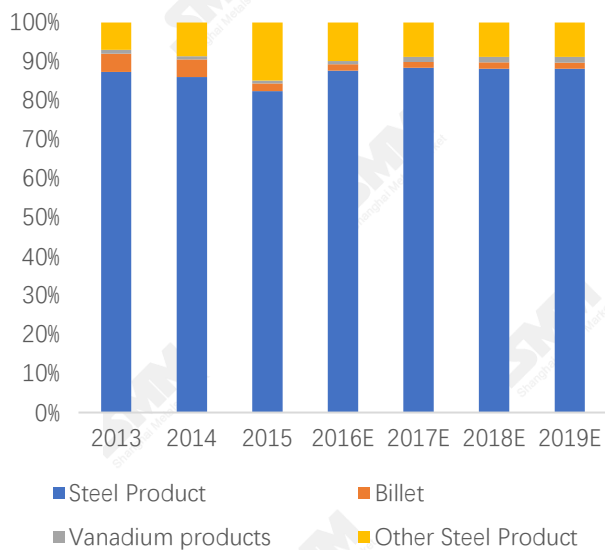
Product Name	2013	2014	2015	2016
CRC Car Plate	50%	50%	50%	50%
Tin Plate	22.4%	21.2%	23.6%	20.2%
Non-Oriented Electrical Steel	13.8%	17%	14.3%	24%
Non-Standard Oil Pipe	27.5%	28%	30%	30%

Source: Company Report, SMM

Angang Steel posted net profit of Rmb2.39 billion in 4Q17, up 63% from 3Q17. Its net profit was Rmb215/ton in 3Q17, up from Rmb79/ton in 2016. But its PE was at 12.68x and PB at 1.04x, the lowest among these three companies.

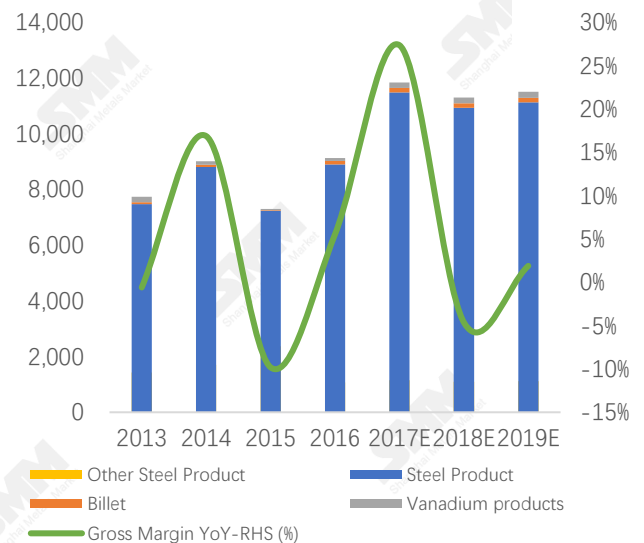
Hesteel has benefited the consolidation of the steel industry in Hebei, the province where it locates. Tangshan Steel and Handan Steel were injected to Hesteel during 2010-15, and more asset injections are expected going forwards.

**Chart 29: Hesteel Revenue Breakdown (Rmb mn)**



Source: SMM

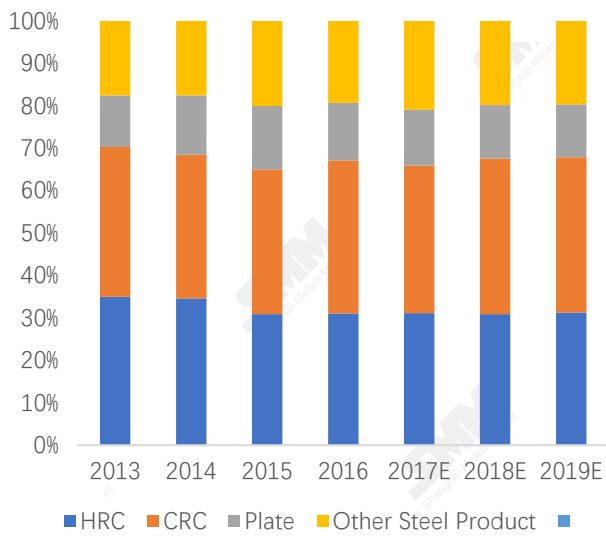
**Chart 30: Hesteel Gross Margin Breakdown**



Source: SMM

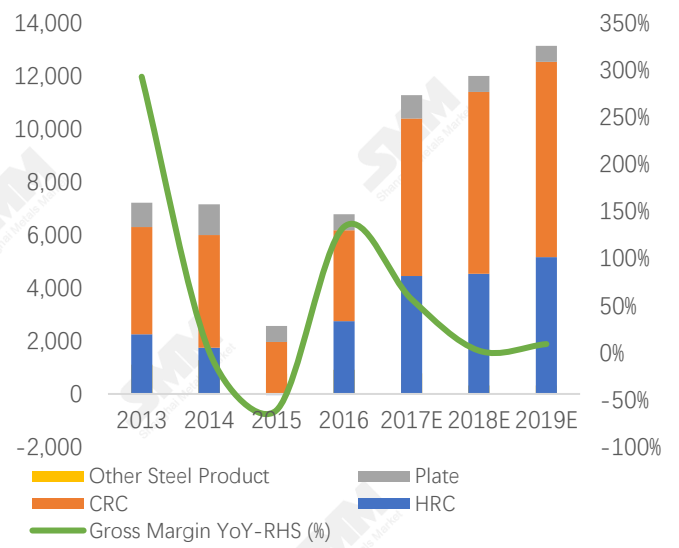


**Chart 31 : Angang Steel Revenue Breakdown (Rmb mn)**



Source: SMM

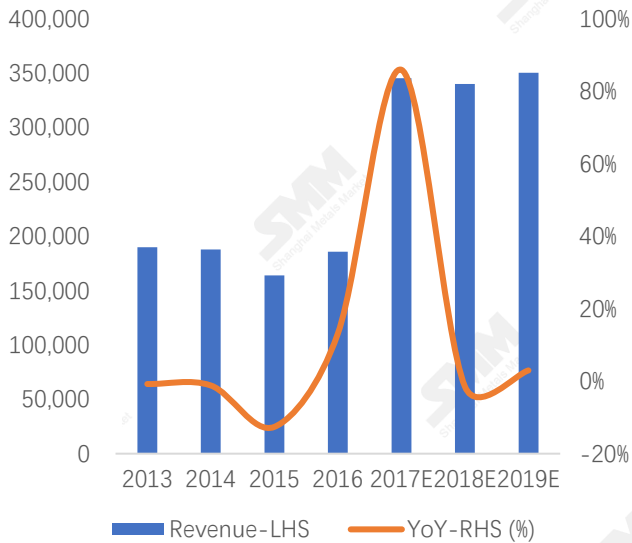
**Chart 312 : Angang Steel Gross Margin Breakdown**



Source: SMM

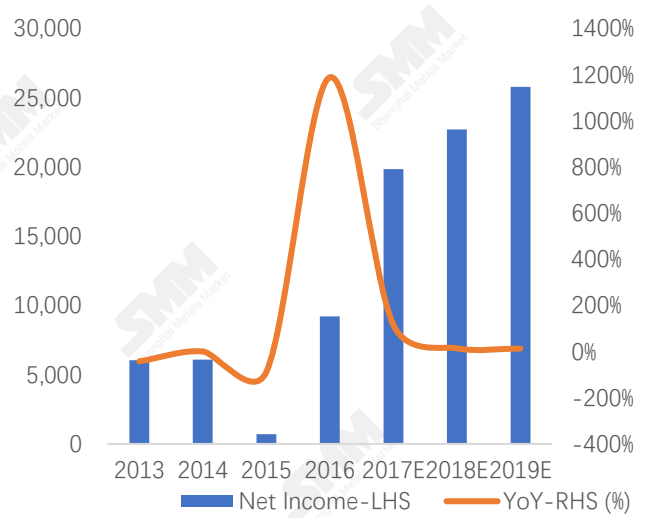
# Financial Data Comparison and Forecast

**Chart 33: Baosteel Revenue**



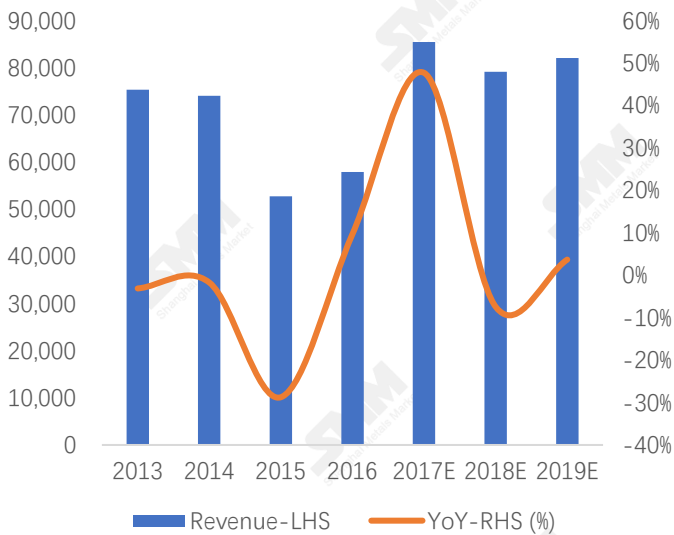
Source: SMM

**Chart 34: Baosteel Net Income**



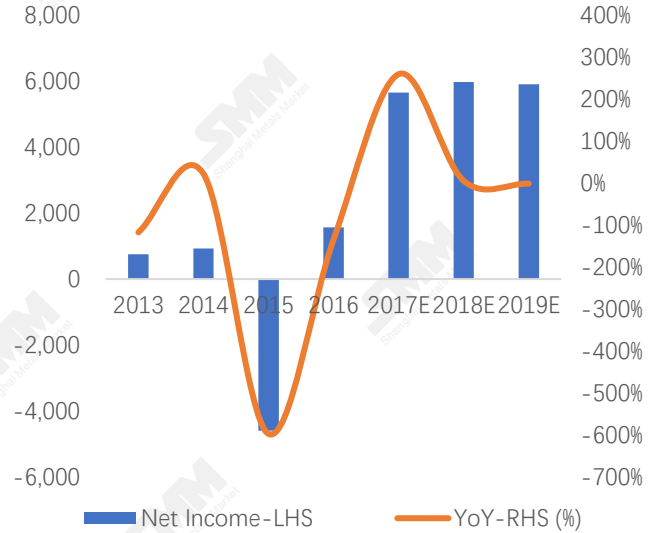
Source: SMM

**Chart 35: Angang Steel Revenue**



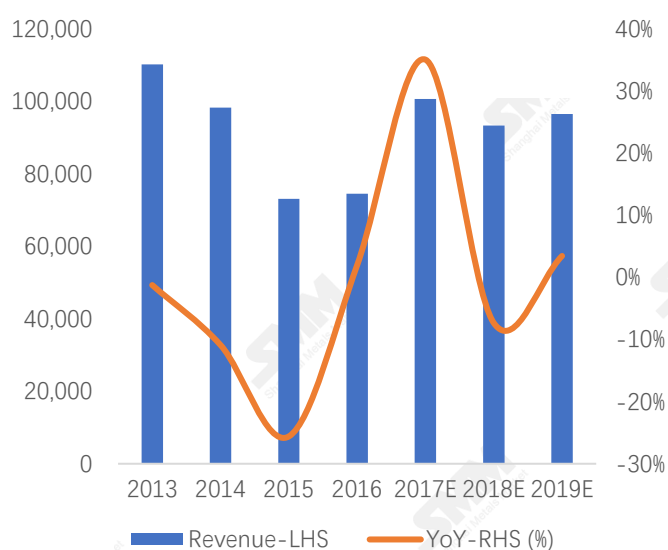
Source: SMM

**Chart 36: Angang Steel Net Income**



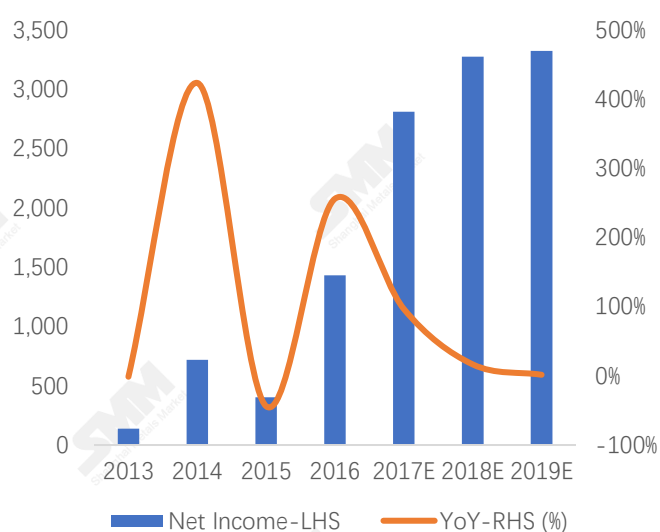
Source: SMM

**Chart 37: Hesteel Revenue**



Source: SMM

**Chart 38: Hesteel Net Income**



Source: SMM

**Table 4: Key Ratio Comparisons**

(Rmb, mn)		Baosteel	Angang Steel	Hesteel
2016	Revenue	185,710	57,882	74,551
	Net Income	9,205	1,571	1,430
	Output (000 tonne)	24,080	19,943	27,860
	Unit Net Income (Rmb/ton)	382	79	51
Q317	Revenue	252,140	60,506	86,906
	Net Income	12,520	3,297	2,330
	Expected Output (000 tonne)	34,216	15,347	19,577
	Unit Net Income (Rmb/ton)	366	215	119
(As of Jan 18, 2018)	PE(TTM)	13.65	12.68	15.30
	PB(LF)	1.30	1.04	0.93

Source: SMM

## Key Assumption

**Table 5: Baosteel Key Ratio**

Sales Volume (000 tonne)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	8,099	8,174	8,840	10,040	20,370	20,661	20,952
CRC	9,445	9,704	9,450	9,730	16,717	16,965	17,160
Plate	1,278	1,169	1,850	2,318	0	0	0
ASP (Rmb/ton)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	3,867	3,525	2,595	2,848	3,827	3,521	3,697
CRC	5,387	5,294	4,408	4,423	5,365	5,321	5,497
Unit Cost (Rmb/ton)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	3,289	2,992	2,292	2,217	3,065	2,758	2,841
CRC	4,603	4,533	3,777	3,404	4,365	4,058	4,141
Earnings	2013	2014	2015	2,016	2017E	2018E	2019E
Net Earnings (Rmb mn)	6,040	6,091	714	9,205	19,840	22,392	25,479
EPS (Rmb)	0.35	0.35	0.06	0.55	0.85	0.96	1.10

Source: SMM

**Table 6: Angang Steel Key Ratio**

Sales Volume (000 tonne)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	7,958	8,540	7,730	7,610	7,143	7,143	7,143
CRC	6,217	6,190	5,950	6,540	7,188	7,188	7,188
Plate	2,488	3,070	3,140	3,250	3,373	3,373	3,373
ASP (Rmb/ton)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	3,301	2,990	2,103	2,357	3,718	3,421	3,592
CRC	4,261	4,037	3,025	3,185	4,140	4,036	4,170
Unit Cost (Rmb/ton)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	3,159	2,804	2,107	2,223	3,073	2,811	2,924
CRC	61,696	62,741	49,205	39,525	85,130	89,387	93,856
Earnings	2013	2014	2015	2,016	2017E	2018E	2019E
Net Earnings (Rmb mn)	755	924	-4,600	1,571	5,655	5,977	5,911
EPS (Rmb)	0.11	0.13	(0.63)	0.22	0.78	0.82	0.81

Source: SMM

**Table 7: Hesteel Key Ratio**

Sales Volume (000 tonne)	2013	2014	2015	2,016	2017E	2018E	2019E
HRC	9,923	10,305	10,128	9,649	9,418	9,418	9,418
CRC	8,497	8,825	8,672	8,263	8,065	8,065	8,065
Vanadium & Titanium Products	14	11	10	12	12	12	12
ASP (Rmb/ton)	2013	2014	2015	2,016	2017E	2018E	2019E
Steel Product	3,477	3,174	2,452	2,596	3,557	3,272	3,393
Vanadium & Titanium Products	75,141	74,700	53,007	48,523	101,898	106,993	112,343
Unit Cost (Rmb/ton)	2013	2014	2015	2,016	2017E	2018E	2019E
Steel Product	3,159	2,804	2,107	2,223	3,073	2,811	2,924
Vanadium & Titanium Products	61,696	62,741	49,205	39,525	85,130	89,387	93,856
Earnings	2013	2014	2015	2,016	2017E	2018E	2019E
Net Earnings (Rmb mn)	137	717	402	1,430	2,810	3,273	3,322
EPS (Rmb)	0.01	0.07	0.05	0.15	0.25	0.30	0.30

Source: SMM

2018.2.1