



Building Materials

Xinvi Glass (868.HK)

## XYG Leads to an Imperial Age in flat glass

Rating:	Overweight
Price (HK\$):	9.70
	2017.12.26

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Market Data	
52W Low/High (HK\$)	5.71-9.73
Total Equity (mn shares)	3,998
Market-Cap (HK\$ mn)	38,781

### Guide:

We believe the future global flat glass industry will probably enter into an “Imperial Age” led by Chinese companies, where XYG will reproduce Fuyao’s path to become a global leader;

### Summary:

- **“Overweight” Rating, raise TP to 11.76HKD.** We believe the future global flat glass industry will probably enter into an “Imperial Age” led by Chinese companies. We raise 2017-19 net profit to 3.91bn, 4.74bn, 5.78bn, EPS0.97, 1.18, 1.44HKD, raise our target price to 11.76HKD.
- **China era in global flat glass market:** We think in a foreseeable future the flat glass will still be based on float process. The localization of equipment, core technology and high production efficiency have given Chinese companies significant comparative advantage in global competition.
- **Globalization is a MUST:** In China, supply-side reform limits new glass capacity and strict environment policies has lifted production cost. The comprehensive production cost in overseas plants is much lower than domestic in the way that fuel, soda ash, and even labor cost price is lower. Therefore, globalization is inevitable and a must. Leading Chinese companies are now fully set up, meanwhile it will change domestic market status in quo.
- **XYG, build an ‘Empire’ of float glass in global market:** Xinyi glass is the pioneer of clean energy with high quality premium, and it’s a leading player in terms of total capacity. We believe that the high automation level in production, the flat management structure and low financing costs from Hong Kong give XYG a large edge in competition over its global peers.
- Globalization means not only quantitative growth, but also the global markets, manufacture, and production advancement, which could bring indigenous talents and global logistics system. Going abroad weakens the domestic homogenization competition, which can bring double rising of valuation and performance, similar to Fuyao’s global growth process.
- **Risks: Overseas plants fails to meet expectations, demand slumps;**

unit ( 0000' HKD )	2015	2016	2017E	2018E	2019E
Revenue	1,146,026	1,284,840	1,448,104	1,617,903	1,904,617
(+/-)%	5.52%	12.11%	12.71%	11.73%	17.72%
Gross Profit	313,269	465,925	528,337	621,323	752,183
Net Profit	211,314	321,343	391,245	473,783	578,346
(+/-)%	54.85%	52.17%	21.65%	21.10%	22.07%
PE	15.81	10.30	8.84	7.31	5.83
PB	2.62	2.52	2.44	2.34	2.25

Please do read the Disclaimer in the last page.

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## 1. Investment Story:

*“When Caesar crossed the Rubicon, an era began.”*

We believe the future global flat glass industry will probably enter into an “Imperial Age” led by Chinese companies (Referring to our report “*管窥玻璃工业，谁主沉浮一百年？*”), where XYG will reproduce the growth track of Fuyao to become the global leader:

Firstly, PRC pollution permits policy will be strictly executed in 2018 and the new emission standard will also be applied from June 1, 2018. We believe this will lead to a supply shortage from 2018 to 2020 in domestic flat glass market (Referring to our earlier report “*格局或重塑，淡季不淡是信号 20171118*”).

Secondly, XYG well-timed globalization process is accelerating, opening the global growth path. Considering float glass as tradable goods, future glass industry research should have a global perspective. **From the global perspective, overseas factories will help XYG gain more international comparative advantages, which will change and even subvert the domestic and global glass industry competition status in quo.**

### 1.1. Undervaluation and Potential Resurrection

XYG has three main sectors: float glass, automobile glass and architectural glass, covering the whole glass sectors except the raw material part. XYG is the leader of each sector: it is China largest float glass producer with high quality positioning, also possessing the largest auto replacement market share and second largest architectural market share where it is just behind CSG domestically. XYG belongs to Shanghai-Hong Kong Stock Connect program, compared with other listed peers, we find XYG is deeply undervalued. Considering high dividend payout ratio and overseas growth opportunities, we believe there is a potential “Davis double play”.

**Figure 1: Undervaluation with comparison (December 19, 2017)**

	XYG	Kibing	CSG	Fuyao
Revenue (2016): CNY billion	11.54	6.96	8.97	16.62
Gross margin (2016) %	36.26	29.34	26.88	43.07
Net income (2016): CNY billion	2.87	0.84	0.80	3.14
Net Margin (2016) %	24.92	11.99	8.96	18.91
PE (2017E)	9.30	14.33	27.57	20.57
Market Value (CNY billion)	31.00	15.10	15.90	69.40

Sources: WIND, GTJA Securities

## 2. Global float glass industry enters into “China Age”

Currently, the global flat glass industry is based on float process. Compared with traditional Colburn and Pittsburgh methods, float process has raised the level of automation and average capacity scale, achieving a significant cost reduction. Since 1950s to present as well as in the foreseeable future, we think the mainstream architectural glass and auto glass will still be based on float process.

**Figure 2: Processes comparison: Float process is the base of modern glass industry**

Age	Events	Location	Process	Properties
1916	Colburn process invented	USA	An electric motor pulls a rod with melt glass on it, drawing glass horizontally over a set of rollers which roughly formed a flat sheet of glass. The glass sheet passes through an annealing oven and gets cut then.	Unstable quality, High cost
1925	Pittsburgh process invented	USA	A pair of horizontal cooler is set up on a firebrick. The melt glass diverted by brick is pulled upward after cooling through the cooler.	Inhomogeneous thickness
1952	<b>Pilkington invented float process</b>	<b>UK</b>	<b>The molten glass is fed into a "tin bath. The glass flows onto the tin surface form a floating ribbon with smooth surfaces. Then sheet can be lifted from the tin onto rollers. Once off the bath, the glass sheet gets cooled gradually.</b>	<b>Significant cost reduction, Longer furnace life, Higher products quality</b>
1981	<b>China Luoyang float process invented</b>	<b>China</b>		

Sources: GTJA Securities

Float process is stable and achieves large-scale industrialized production. Since the birth of “China Luoyang Float Process” in the early 1980s, after 40 years of rapid development, we believe that in this “heavy assets” industry, the fully localization of equipment, technology and high production efficiency have given Chinese companies significant edges in global competition.

In China, supply-side reform limits new glass capacity and strict environment policies has lifted production cost. We think that the domestic industry will roughly stay stable in the next few years. Considering the raising environment, energy and labor cost, globalization becomes the inevitable choice. In the future, the competition of Chinese Float glass companies will not only be determined by domestic condition, but also international comparative advantages. Large-scale automated manufacture process and overseas low-cost production factors will bring opportunities to

those Chinese companies who choose "go global" strategy. We conclude that in the future, excellent Chinese manufacturing leaders such as XYG Glass will achieve global market growth in the same time bring significant changes to domestic market.

### 2.1. Emission permits of pollutants and new emission standards may cause supply shortage, while domestic demand is stable

On the demand side, about 70% of the float glass is used in the property installation market, while 15%~20% is consumed by automobile-related demand and exports account for the remainder. The demand for float glass is affected by the fluctuations of the completed floor space. Currently, the nationwide demand side is stable compared with much tightened supply side due to the strict enforcement of environmental policies. Now severe restriction has been imposed on new capacity. Should the pollutant emission permit system and the newly released environmental protection regulations be implemented throughout the country after June 1st 2018 (The emission standards will be harder to meet, and the many float lines in northern China are unable to be qualified), we conclude that there will be a supply shortage imminent.

**Figure 3:**  
**Related policies of the glass industry on the capacity-reduction and environmental protection (2015~2017)**

Date	Government Departments	Related Policies	Measures
May 31st 2017	The Ministry of Water Resources	“Notice about Strengthening Water Resources Management to Promote Supply-Side Structural Reform”	New projects in industries with serious overcapacity such as steel, cement, electrolytic aluminum, flat glass and shipping, as well as the new, modified and expanded projects of adopting technology and equipment in the “Catalog of High-Water-Consuming Technology and Equipment Phase-out (the first batch)”, in principle, shall not apply for new water permits and the setting of sewage outfalls and other related procedures.
Dec 5th 2016	The State Council	The 13th Five-Year Plan for the Protection of the Ecological Environment (GF [2016] No.65)	The flat glass industry should promote "coal to gas" and "coal to electricity", and ban the burning of low-quality raw materials such as high-sulfur petroleum coke. And all the float glass production lines not using clean energy should implement flue gas desulphurization. All the float glass production lines should implement high-efficiency dust removal and denitrification of flue gas.
May 18th 2016	The General Office of State Council	Guidance on Promoting the Steady Growth, Adjusting Structure, and Increasing Benefit of the Building Materials Industry (GF [2016] No.34)	Before 2020, the production concentration of the top 10 flat glass production should reach about 60%; Before the end of 2020, it is strictly prohibited to record and build new flat glass construction projects to expand production capacity; Before the end of 2017, the capacity replacement under the same actual controller should be suspended. New industrial glass project, furnace capacity exceeding 150 tons / day, should be technically transformed following the existing flat glass production line. The government encourages the flat glass industry to reduce excess capacity by means of joint

restructuring and advocates reasonable production restrictions.

Aug 31st 2015	The Ministry of Industry and Information Technology	Action Programme for the Production and Application of Environmentally Friendly Building Materials	High-sulfur etroleum coke fuel is restricted; Development of new and deep-processed glass products
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Sources: The Ministry of Environmental Protection, GTJA Securities

**Figure 4: Emission standards for atmospheric pollutants of the flat glass industry will be stricter year by year**

	Unit	Current	The New Standard (2018.6)
Nitrogen oxides	mg/m <sup>3</sup>	700	400
Sulfur dioxide	mg/m <sup>3</sup>	400	100
Particulate matter	mg/m <sup>3</sup>	50	20

Sources: The Ministry of Environmental Protection, GTJA Securities

Hebei province is under great environmental pressure due to the coal consumption quota not obtained, the total shutdown float-glass capacity in Shahe area of Hebei has reached 7,850 t/d since November, accounting for about 5.2% of overall capacity nationwide. At present, there are still 10~20 float-glass lines facing shutdown due to the failure to meet policies (plus 12 lines already closed, accounting for 10% of the total operating capacity). The regulatory governance of environmental protection may spread to other "2 + 26" cities in the near future.

**Figure 5: Since November 2017, 12 float-glass production lines may shut down due to environmental protection in Shahe, Hebei.**

Production Line	Companies	Capacity ( t/d )	Discontinued Date
Five lines of safety	Shahe Safety Industry co., Ltd	500	2017.11.15
Six lines of safety		700	2017.11.04
Great Wall four lines	Hebei the Great Wall Glass Co., Ltd.	500	2017.11.06
Great Wall six lines		700	2017.11.15
Ji Heng Park	Hebei Jihengyuan Industrial Group Co., Ltd	600	2017.11.15
Changhong first line	Shahe Changhong Glass Co., Ltd.	500	2017.11.15
Changhong secod line		700	2017.11.15
Dejin third line	Shahe Dejin Glass Co., Ltd.	800	2017.11.07
Dejin fourth line		800	2017.11.15
Xinli second line	Hebei Shahe Xinli Glass Co., Ltd.	650	
Xinli third line		700	About to shut down
Xinli fourth line		700	About to shut down
<b>Total</b>		<b>7850</b>	

Source: China Glass Futures Website, GTJA Securities

We notice that the government also stepped up efforts to investigate and deal with the construction of nonconforming production lines (max production capacity differs from what has been designed and applied according to): flat-glass enterprises are required to complete the application for a sewage disposal permit before December 31, 2017. In addition, the government focuses on solving the remaining problems such as the expansion of capacity without approval and coal-fired wastes, etc. New emission standards will be introduced in the next year, and the indicators will be further tightened (sulfur dioxide emissions targets may cut 50%). We think the approaching deadline has exacerbated environmental pressure on undocumented enterprises and the control over the construction of non-compliant production lines has further reduced supply-side capacity.

**Figure 6: The proportion of domestic glass industry using clean energy to produce high-end float-glass capacity is still insufficient.**

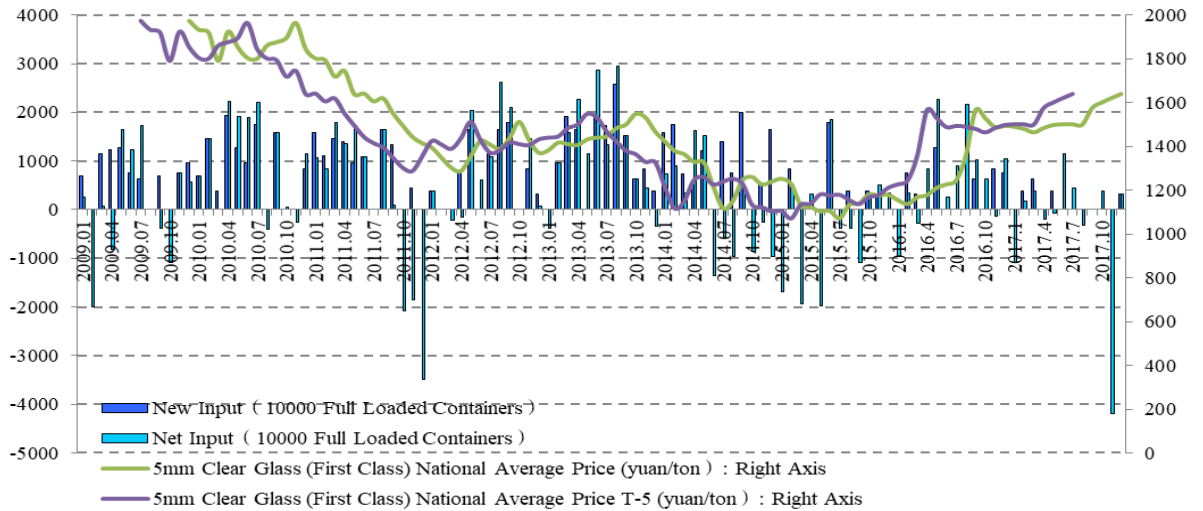
Fuel	Production line aggregated	Annual production capacity	Proportion
Coke oven gas	10	3810	4.14%
Coal tar.	21	8280	9.00%
Coal gas	70	25770	28.02%
Petroleum coke.	54	21168	23.02%
Natural gas.	65	27499	29.90%
Heavy oil.	16	5436	5.91%
Total	236	91963	100.00%

Source: China Glass Futures Website, GTJA Securities

Strict regulations combined with high recovery cost make it difficult to restart for those already shutdown production lines. On one hand, the Government pay great importance to supervision, and after the closure of the production line, it is difficult to get the approval to resume production; On the other hand, the cost of reproducing is heavily increased. It is estimated that the cost of a common glass line is about 50 million yuan to 100 million yuan. The cost of changing the combustion unit is increasing (and it may not meet the fuel supply). In addition, the daily operation cost of environmental devices such as desulphurization and denitration is about 20,000 yuan. Banks are tightening financing loans for overcapacity sectors such as glass, therefore we judge it is difficult to put the shutdown capacity back into production again.

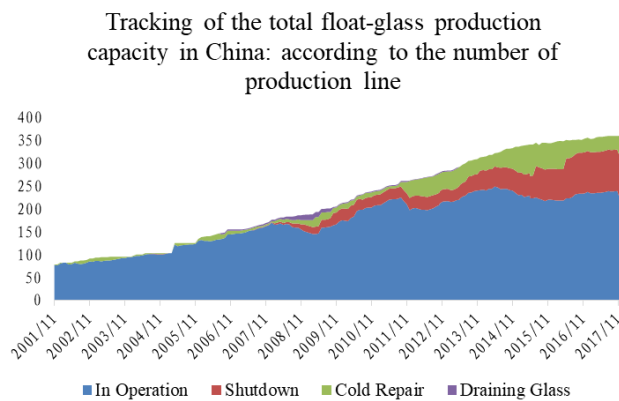
**Figure 7:  
Flat glass prices hit a five-year high, with new capacity falling significantly since 2015**





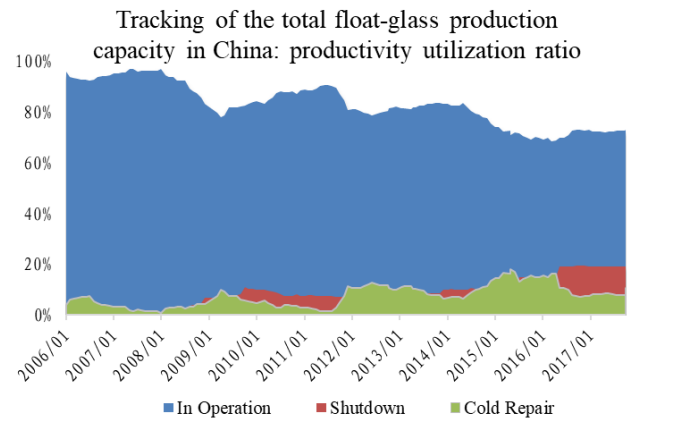
Source: The Glass Information Website, GTJA Securities

**Figure 8: Glass operating capacity maintained stable in recent years (line)**



Source: The Glass Information Website, GTJA Securities

**Figure 9: Capacity utilization has stabilized around 70% to 75% since 2015**



Source: The Glass Information Website, GTJA Securities

## 2.2. Globalization - "overseas processing plants" under international comparative advantage

**The demand scale for flat glass abroad is about twice as large as China's, and its products are aiming at high end demand.** According to The Freedonia Group, global demand for flat glass was about \$72 billion in 2013, and China's demand for flat glass accounts for \$21.8 billion, or 30%. Its forecasts 2018 global aggregated demand will increase to \$102.3 billion, while China's shares rise to \$37.95 billion, or 37%. Accordingly, overseas glass demand is about \$64.35 billion. On the production line aspect, China's curtain wall data shows that in 2013, there were 432 operating lines around the world, of which 243 were in China, more than 50%. The deviation of the amount of demand and the proportion of production lines indicates overseas glass market positions at a higher end and the price is higher.

**Figure 10: Overseas market is twice as large as domestic market (unit:**



million US dollars )

Area	2013	2018	2023	CAGR(10years)
World demand	72000	102300	139900	6.87%
North America	13000	17050	20750	4.79%
West EU	13800	16450	18900	3.19%
China	21750	37950	60600	10.79%
Japan	6780	7350	7910	1.55%
Asia ex-japan	8970	12650	17390	6.84%
Other areas	7700	10850	14350	6.42%

Source: The Freedonia Group, GTJA Securities

**At present, the comprehensive production cost of China's leading glass enterprises in overseas plants is lower.** XYG overseas plants locate in Canada and Southeast Asia, take Malaysia line for example, natural gas price is 50% cheaper, soda ash and labor cost is also more or less lower, even at Canada, the float glass in Canada rely on imports, we estimate in great lakes region, float glass price is over \$400 per ton, about a quarter of China's industrial gas prices (about 0.6 yuan/cubic meter, while China about 2.5 yuan/cubic meter), the soda ash price is under 1600 yuan/ton (2017 domestic soda ash average price 1950 yuan/ton), nevertheless Canadian labor cost is about 20,000 yuan per month per labor. Assuming that XYG capacity in Canada is 2000 tons per day, given 5.7tons/labor output, we estimate the cost savings in soda ash, natural gas, and labor aspects will be 410 million yuan per year.

**Figure 11: XYG has a large edge in terms of manufacture cost**

	Cost saved per unit	Consumption per ton	Cost saved per ton	Annual capacity (000'tons)	Cost saved per year(million yuan)
Natural gas	1.9yuan/cubic	200	380	7,200	273.6
Soda ash	350yuan/ton	0.8	280		201.6
labor	0.18million yuan/year			350 workers	-63
Total					412.2

Source: GTJA Securities

**Chinese enterprises such as XYG has a strong edge putting up plants overseas:** on one hand, companies from developed countries are fading away in this heavy-asset required industry. We estimate that during year of 2005-2015, the total operating lines has been cut to 34 from 44. So does what happened in EU. On the other hand, southern Asia countries has a economic boom in recent years but they are lack of core technology and equipment, so in today's atmosphere, companies like XYG will be able to stand out rapidly.

**Figure 12: Glass lines from developed countries are fading away ( unit:**

number )

Area	country	2005	2015
NA	US	35	21
	Canada	2	0
EU	UK	4	3
	Finland	1	0
	Belgium	6	2
	Italy	7	5
	Spain	6	5

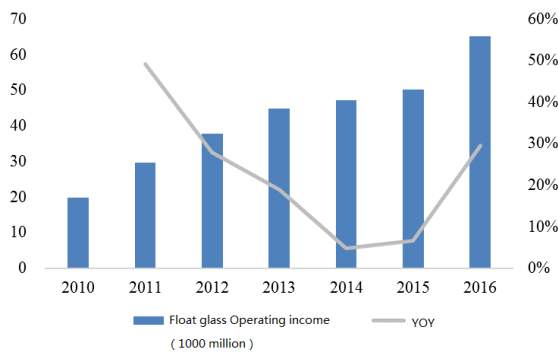
Source: GTJA Securities

**Figure 13: Global giants grow slowly in past ten years ( in Million USD )**



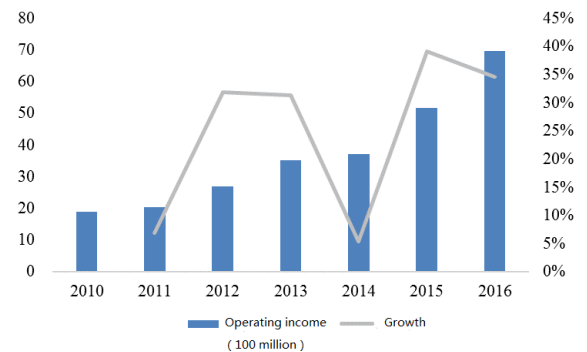
Source: Bloomberg, GTJA Securities

**Figure 14 XYG float glass revenue grows rapidly**



Source: wind, GTJA Securities

**Figure 15 Qibing glass revenue grows fast**



Source: wind, GTJA Securities

**Malaysia base may become XYG’s processing plant overseas:** southeast Asia economic association has a booming market. According to Freedonia Group, the demand for flat glass in this area will grow at 6.84% CAGR in 2013-2023, the rate just slightly lower than Chinese market. Yet, global giants only have few capacity in southeast Asia, furthermore, local companies are lacking of skills and technology to product such product themselves so this give Chinese companies great opportunities to stand out. In Malaysia, there are 5 lines at present (NSG for 2, Qibing for 2, and XYG for 2), and we estimate total capacity is 3800t/d in Malaysia, among which

70% exports to Indonesia, Korea, Vietnam, etc.

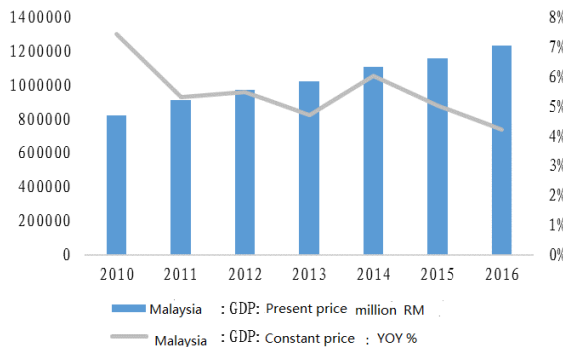
XYG’s factories in Malaysia will not only satisfy local market but also aim at exportation, even in the future we can see some shipping to China mainland market. In midterm of 2018, XYG will be releasing its two lines (2000t/d) in Malaysia, before 2020, there will be more coming. We conclude Malaysia base probably become XYG’s processing plant overseas.

**Figure 16: Global giants only have few capacity in southeast Asia**

Company	Southeast Asia
NSG	Malaysia (2 ), Vietnam (2)
ASG	Thai ( 3 ), Philippines ( 1 ), Indonesia ( 2 )
Saint Gobain	0
Guardian	Thai ( 2 ), India ( 1 )

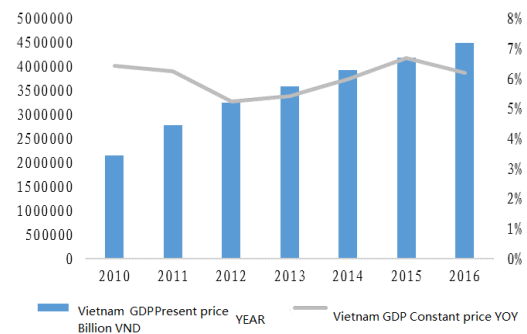
Source: GTJA Securities

**Figure 17 Malaysia GDP grows quickly**



Source: wind, GTJA Securities

**Figure 18 Vietnam grow fast**

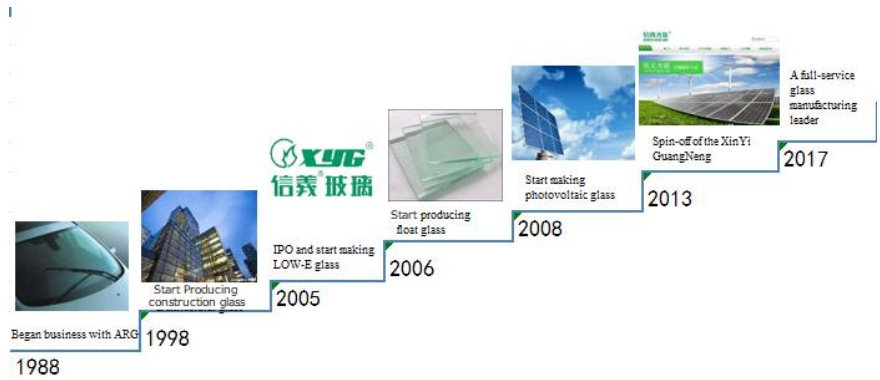


Source: wind, GTJA Securities

### 3. XYG, build an ‘Empire’ of float glass in global market

XYG began its business with automotive replacement glass in 1988, and keeps focusing on the exporting market. In the late 90s, the company entered the segment of architectural glass. It has got involved in the float glass sheets production through deep processing since 2006, which at that time was aimed to be self-sufficient. The float glass is positioned as high-grade product.

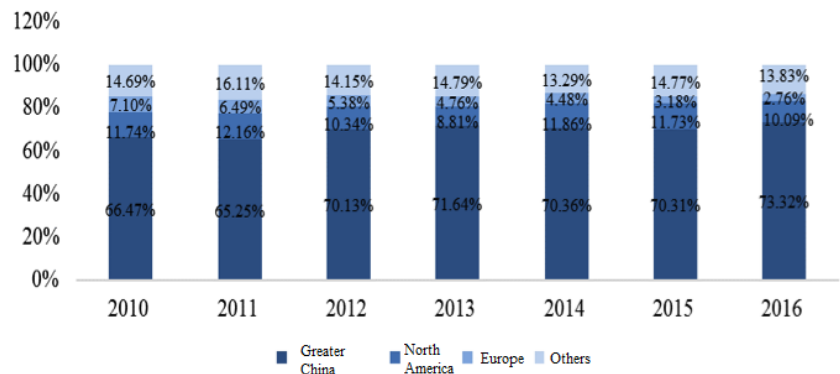
**Figure 19 Step by Step, XYG grows rapidly and becomes an industry leader**



Source: Company announcements, GTJA Securities

By the end of year 2016, XYG’s products have been sold to over 160 countries and regions. Company has won the antidumping case in the USA, with this positive result, XYG started earning recognition of its products from the overseas customers.

**Figure 20 products sold to over 160 countries or regions (Percentage of the total revenue)**



Source: Company announcements, GTJA Securities

### 3.1. Exclusive quality premium, the Pioneer of clean energy

The fuel structure is one of the key determinants of the production cost and quality. There is a concern in using clean energy, such as natural gas, whether the market could accept the high quality as well as high price products.

XYG only use natural gas as its fuel, which is rare among its competitors in the industry and free from pressure for environment protection. Using gas in manufacturing processes also provides more stable quality of the glass and help XYG enjoying a reputation as the industrial quality leader. Our research found that the selling price of XYG’s float products are 5-10 percentage higher than the industry average and the product range covers 2-25mm glass, which is the only manufacturer of super-thick and ultrathin glass in China.

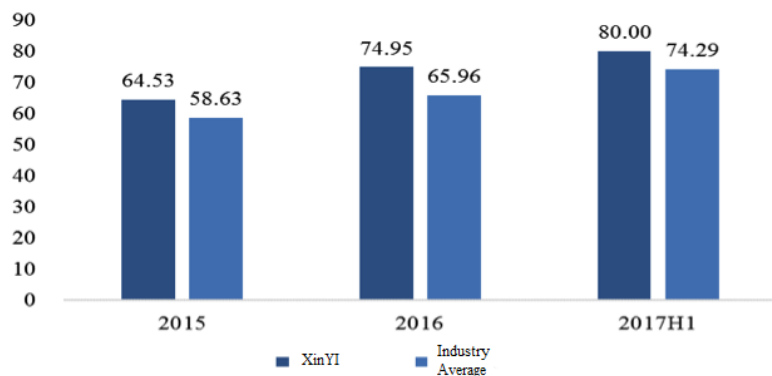
Various colored glass (green, blue, brown, etc.) are available and those products' quality is of world class.

**Figure 21: Quality leader and full product range compared with XYG's competitors**

	XYG Product	Normal glass
Yield	95%	85% (Industry Average)
Fuel	Natural gas	petroleum coke, heavy oil, coal gas, etc.
Category	All (clear glass, various colored glass, super-thick, ultrathin, etc.)	Clear glass
Downstream	Automobile grade, Architectural grade	Architectural grade
Raw Materials	High grade silica sand, sodium sulfate, etc. (Low level impurities)	(More impurities contained)
Others	Contain few bubbles, high strength, almost free of ripples, not easily cracked	High possibility to have bubbles, ripples, easily cracked

Source: Company announcements, GTJA Securities

**Figure22 XYG product positioning in high-end with higher selling price than industry average (CNY per Weight Case)**



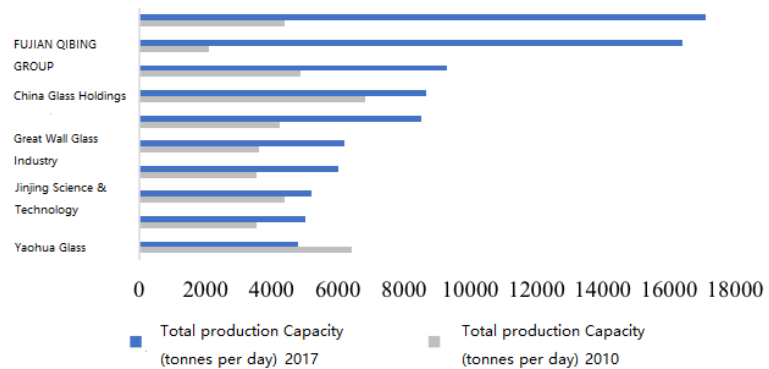
Source: Wind, GTJA Securities

**3.2. World leading advanced economies of scale, first to finish the automation upgrading.**

Company's overall production capacity is leading in the world and the capacity of individual production line has advantage as well. The glass processing industry has the financial characteristics of heavy assets thus could significantly benefit from economies of scales. By the end of November, 2017, XYG's float lines have a capacity of 17100 tonnes per day in melting process, which makes it the biggest float glass manufacturing companies in China and only Nippon Sheet Glass Company, Ltd has a bigger scale than XYG in the world. XYG is planning to expand its production at least 50% from 2017 to 2020, which are all overseas capacity, to become the world No.1 floating glass production company. Compared with overseas leaders like Nippon Sheet Glass and Asahi Glass Co. the average production

scale of XYG's individual line has obvious advantage.

**Figure23 XYG has the highest float glass production capacity in China (By Dec.18<sup>th</sup> 2017)**



Source: China glass info website, GTJA Securities

**Figure 24: XYG's individual production line capacity is clear higher than overseas competitors**

Company	Year capacity (thousand tonnes)	Number of production lines	Individual line daily melting capacity (tonnes)
XYG Glass	5930	20	812
Nippon Sheet Glass	5900	27	599
Asahi Glass	6250	46	372
Saint-Gobain	5260	31	465
Guardian Industries	4740	27	481

Source: China glass info website, GTJA Securities

\* Data of Nippon Sheet Glass, Asahi Glass Co., Saint-Gobain, Guardian Industries's is by the end of June 2015.

**XYG is the first mover to upgrade itself from labor intensive industry to smart manufacturing.** The number of skilled workers, daily production capacity per worker and revenue generated per person shows the level of automation, and we found XYG has a lead over rivals. High automation could effectively reduce the labor costs as well as loss and increase the yield rate.

**Figure 25: Compared with overseas leaders, XYG has a higher level of automation**

Company	Number of employees in float glass production (2016)	Daily production capacity per person (tonnes)	Year revenue generated per person( thousand USD ) ( 2016 )
XYG Glass	3013	5.7	280

Asahi Glass	15412	1.1	180
Saint-Gobain	33000	0.4	180
Nippon Sheet Glass	32689	0.5	190

Source: Bloomberg, GTJA Securities

\* Number of XYG employees is an estimated one. Daily capacities of Nippon Sheet Glass, Asahi Glass Co., Saint-Gobain are 2015 figures.

**Figure 26 Decrease in number of employees and increasing production efficiency year by year**

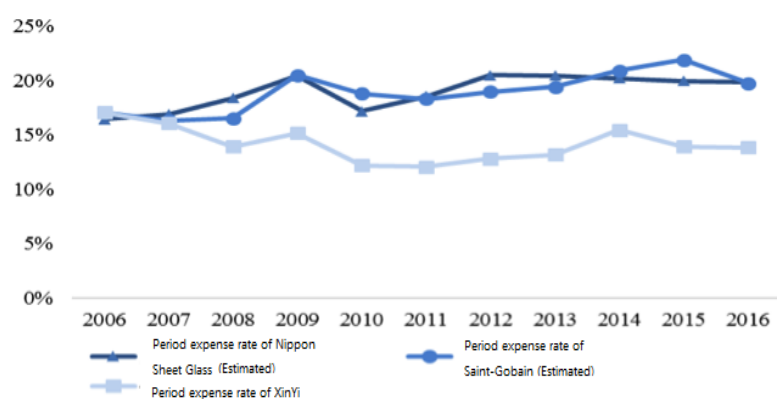
Year	XYG Glass	XYG Float Glass
2014	13833	3321
2015	13783	3268
2016	12745	3013
2017H1	11765	2909

Source: GTJA Securities

### 3.3. Cost control shows the operation capability of international standards

Compared with both domestic and overseas leaders, the period expenses of XYG is significantly lower than industry average. We believe that the high automation level in production, the flat management structure and low financing costs from Hong Kong contributes to the well control of period expenses.

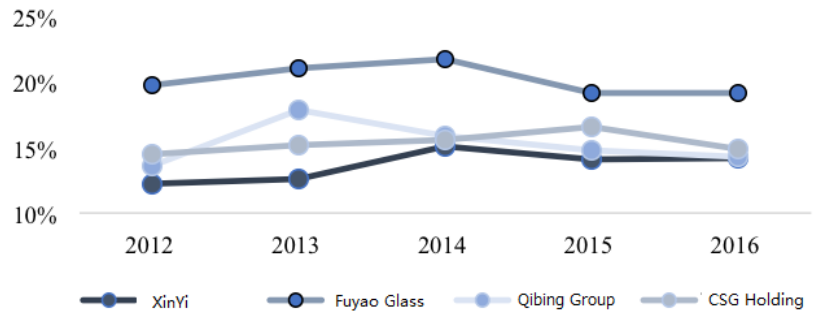
**Figure 13 Period expenses of XYG are significantly lower than those ones of overseas leaders, Saint-Gobain and Nippon Sheet Glass**



Source: Bloomberg, GTJA Securities

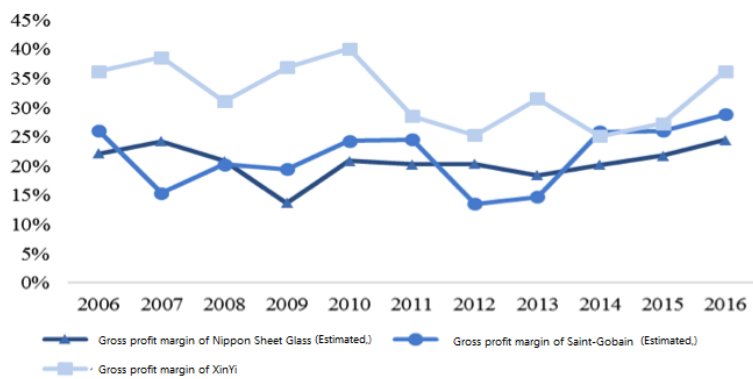
**Figure 14 XYG's period expenses control has a lead over domestic rivals**





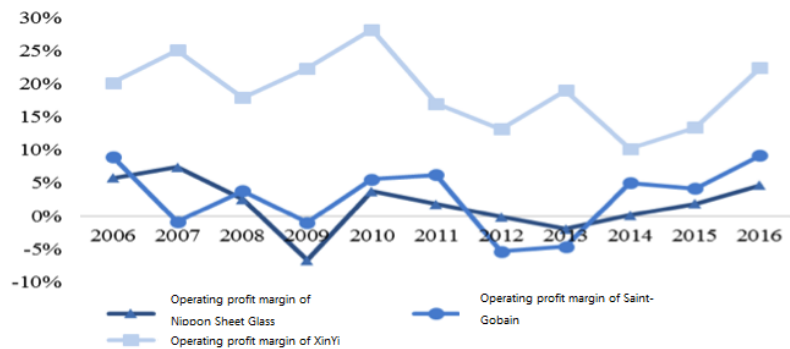
Source: China glass info website, GTJA Securities

**Figure15 XYG’s gross profit margin of glass is ahead of the ones of Saint-Gobain, Nippon Sheet Glass**



Source: Bloomberg, GTJA Securities

**Figure 16 Operating profit margin of XYG is significantly higher than the ones of Saint-Gobain and Nippon Sheet Glass**



Source: Bloomberg, GTJA Securities

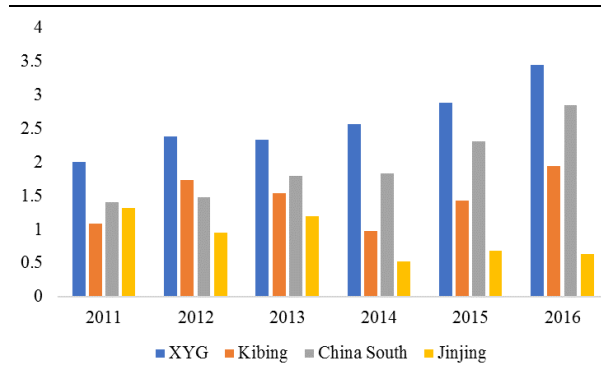
### 3.4. R&D Investment Continues to Lead the Industry

**R&D expenditure of XYG Glass remained stable, leading the industry.** The ratio of R&D expense/revenue kept at around 3%, with the amount far more than other companies. We believe that the steady R&D investment is the key to high quality of XYG's product.

**The whole set of production line was developed by XYG itself, which lowered the construction cost.** Unlike the industry's common EPC mode, XYG's current production line was all self-built, reducing construction cost

and optimizing efficiency. Taking the project of Deyang Sichuan for example, the total investment of the production line including the 1000T/D+800T/D high-quality float glass and deep processing line was ¥ 617,000,000, which was significantly lower than that of other companies.

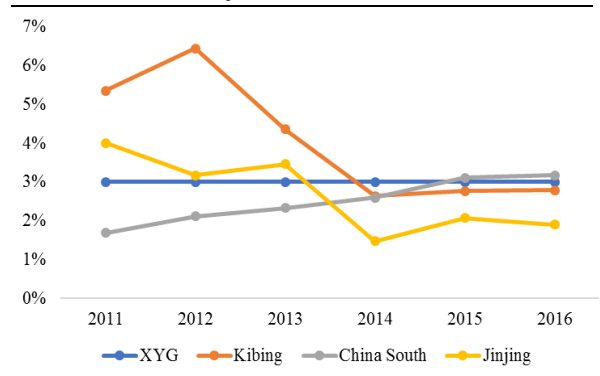
**Figure 17: XYG's R&D investment is more stable than its rivals (¥)**



Sources: wind, GTJA Research

Note: XYG's R&D expenditure is estimated based on that the R&D expense ratio is 3%

**Figure 18: XYG's R&D expenditure remain steady**



Sources: wind, GTJA Research

**Table 16: XYG's construction cost of singleton glass production is lower than other companies**

Project	Amount (RMB mn)	Production date	Lines	Single line melting/day	Annual production capacity ('0000 Ton)	¥/ton
China South's float glass project in Wujiang	846	2011	2	800*2	52.56	1610
Kibing's line 5 in Liling (not including the land)	320	2016	1	600	19.71	1624
Fuyao's wansheng float glass project in Chongqing	680	2011、2012	2	600*2	39.42	1725
XYG's project in Deyang Sichuan	617	2014、2015	2	1000、800	59.00	1046

Suppose:

- The price of raw materials during the construction remains stable and the yield is 90%
- Fuyao's project in Chongqing is automotive level (higher than architectural glass), and it includes some back-end processing; XYG's project in Deyang including LOW-E, deep-processing line of automotive glass, etc., which are not excluded here (we estimate that the investment is about 100-150million yuan)

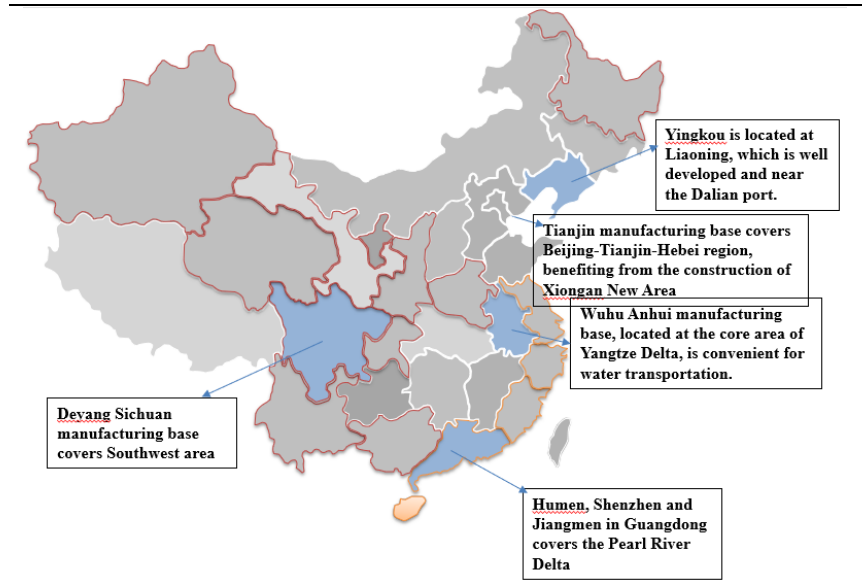
Sources: Company Announcement, GTJA Research

### 3.5. The Manufacturing Bases Cover the Core Economic Belt, Reducing Transportation Cost

XYG currently has six manufacturing bases in Jiangmen, Humen of Guangdong, Deyang Sichuan, Wuhu Anhui, Tianjin and Yingkou Liaoning, radiating the major economic zones in our country. Furthermore, there are self-built wharfs in Wuhu, Jiangmen and Humen, which could transport the raw materials and finished products directly, therefore lowering transport cost (waterage is about 1/3 of the land freight).

Besides, XYG has been building a manufacturing base in the Malacca region of Malaysia. Under the advantage of sea transport, the sales area radiates to ASEAN, South Korea and India, as well as China. Soon the company is about to set up a float manufacturing base in the Great Lakes region of Canada. In addition to satisfying the domestic demand in Canada, the products can also be shipped to the United States relying on the developed waterways.

**Figure 19: XYG’s manufacturing bases cover core area around the country**



Sources: Company Announcement, GTJA Research

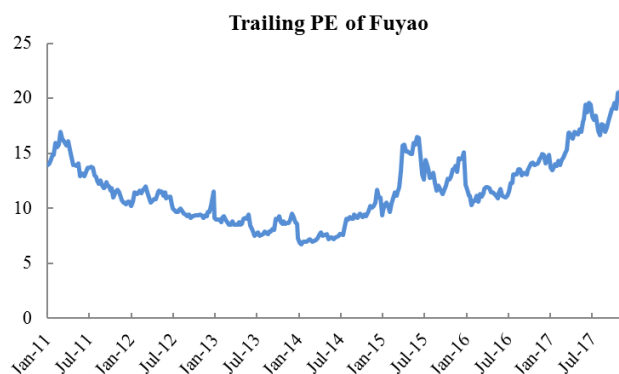
## 4. XYG Has Started Its Globalization, Referring To Fuyao Glass Group

We think that the internationalization means not only quantitative growth, but also the global markets, manufacturing, supply and production advancement, which could bring indigenous talents and global logistics system. In addition, China's advanced manufacturing industry going abroad weakens the domestic homogenization competition, which brings double rising of valuation and performance. That happened during the process of Fuyao’s global growth.

XYG has started its globalization by building plant in Malay and entering into the North American market by establishing factory in Canada. It owns the similar advantages to Fuyao during the global process, that is, first-class products (by self-built production line and core technology), first-class cost (lowest in the industry), and precise layout (close to core markets). XYG has already been ready for global success. The current valuation of XYG is similar to that of Fuyao in 2014. With the future overseas expansion, both the

valuation and performance of XYG are expected to rise.

**Figure 20: Fuyao went abroad in 2014, with valuation rising**



Sources: wind, GTJA Research

**Figure 21: Similar to Fuyao in 2014, XYG's valuation is at the bottom.**



Sources: wind, GTJA Research

**Table 17: The position in the industry and business situation of XYG and Fuyao are similar**

	XYG Glass	Fuyao Glass
GPM (2016)	36.26%	43.07%
Industry average	23.57%	23.57%
Above the industry average	12.5%	19.5%
NPM (2016)	24.92%	18.91%
ROE (2016)	24.81%	17.44%
Market position	Float glass ( domestic market share10% ), ARG automotive glass (global market share 23%) & leader of architectural glass( domestic market share 20% )	Leader of OEM automotive glass ( domestic market share 65%)

Sources: wind, GTJA Research

## 5. Risks

**The process of building plants overseas fails to meet expectations.** Our main logic is based on XYG's overseas construction. If that happens, XYG's performance will be affected.

**Demand for domestic real estate slumps.** XYG's main business is inland. If that happens, the float glass market is bound to be impacted.

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### Rating Definition

		Rating	Definition
<b>1. Benchmark Index</b> HK Hang Seng Index	<b>Company Rating</b>	Overweight	Relative Performance > 15%
		Conservatively Overweight	Relative Performance > 5%~15%
		Neutral	Relative Performance = -5%~5%
		Underweight	Relative Performance < -5%
<b>2. Time Horizon</b> 12 months after the release of this Report	<b>Sector Rating</b>	Overweight	Much Better than Benchmark
		Neutral	Almost Same as Benchmark
		Underweight	Much Weaker than Benchmark

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