



Rating
Hold

Asia
Hong Kong

Resources
Construction Materials

Company
Xinyi Glass

Reuters 0868.HK	Bloomberg 868 HK	Exchange HSI	Ticker 0868
ADR Ticker XYIGY	ISIN US98418R1005		

Date
7 November 2016

Recommendation
Change

Price at 4 Nov 2016 (HKD)	6.48
Price target - 12mth (HKD)	6.50
52-week range (HKD)	7.53 - 3.69
HANG SENG INDEX	22,643

Sharon Ding Research Analyst (-) - - sharon.ding@db.com	James Kan Research Analyst (+852) 2203 6146 james.kan@db.com
---	--

Downgrading to Hold on peaked earnings momentum

Earnings momentum has peaked due to cost inflation and property cycle

Xinyi Glass's share price has appreciated 42% YTD due to its strong earnings momentum in the previous quarters. We believe the earnings momentum might have peaked due to: (1) potential cost inflation resulting from gas price hike; and (2) limited further glass ASP hikes resulting from a property cycle turn. Although we raise our 2016 earnings forecast by 17.5% to factor in a float glass price spike in 3Q, we believe strong 2016 earnings are already reflected in the current share price and YoY earnings growth will slow from 47% this year to -2% in 2017; thus, we downgrade Xinyi from Buy to Hold.

Strong earnings this year but momentum may have peaked

Xinyi's margin, especially its float glass margin, has improved to a five-year high, thanks to robust property sales and better industry supply discipline this year, besides the city gate natural gas price cut in Nov last year. However, with a rising utilization rate – albeit at a moderate pace, PetroChina's potential natural gas price hike starting from 20 Nov 2016 and tightening measures across the region, we believe its earnings momentum may have peaked.

Xinyi's share price is highly correlated to property activity

Xinyi Glass, with c.70% exposure to construction low-E and float glass, is highly correlated to property activity. According to our property team, 22 cities around China have announced tightening measures to cool the overheated property market since late Sep this year. Although volume in these cities accounts for less than 30% of total sales volume, we believe this might lead to limited glass price hikes going forward. Historically, property sales have also been an important leading indicator for Xinyi's share price, as shown in Figure 3.

Downgrading from Buy to Hold; risks

We lower our target price by 7% after factoring in the shrinking market-cap of its major subsidiary, Xinyi Solar. We derive our target price of HKD6.5 via a combination of DCF methodology (WACC of 8.3%, where we adopt 10.1% as the cost of equity) and market cap of Xinyi Solar. With limited earnings growth momentum and fair valuation, we thus downgrade Xinyi from Buy to Hold. Risks: stronger/weaker property demand, and a higher/lower natural gas price.

Key changes

Rating	Buy to Hold	↓	
Price target	7.00 to 6.50	↓	-7.1%
Sales (FYE)	12,603 to 13,252	↑	5.2%
Op prof margin (FYE)	19.4 to 22.6	↑	16.6%
Net profit (FYE)	2,641.0 to 3,104.4	↑	17.5%

Source: Deutsche Bank

Price/price relative



Performance (%)	1m	3m	12m
Absolute	-9.6	-1.1	56.1
HANG SENG INDEX	-4.4	3.7	-1.8

Source: Deutsche Bank

Forecasts And Ratios

Year End Dec 31	2014A	2015A	2016E	2017E	2018E
Sales (HKDm)	10,861.1	11,460.3	13,252.2	13,675.5	13,773.3
Reported NPAT (HKDm)	1,363.7	2,113.1	3,104.4	3,032.5	3,002.9
DB EPS FD(HKD)	0.29	0.44	0.77	0.75	0.75
% Change	0.0%	0.0%	17.5%	10.0%	7.7%
DB EPS growth (%)	-64.2	51.3	74.8	-2.3	-1.0
PER (x)	17.1	9.5	8.4	8.6	8.7
Yield (net) (%)	3.0	6.3	5.9	5.7	5.7

Source: Deutsche Bank estimates, company data

¹ DB EPS is fully diluted and excludes non-recurring items

² Multiples and yields calculations use average historical prices for past years and spot prices for current and future years, except P/B which uses the year end close



Model updated: 06 November 2016

Running the numbers

Asia
Hong Kong
Construction Materials

Xinyi Glass

Reuters: 0868.HK Bloomberg: 868 HK

Hold

Price (4 Nov 16) HKD 6.48
Target Price HKD 6.50
52 Week range HKD 3.69 - 7.53
Market Cap (m) HKDm 25,412
USDm 3,276

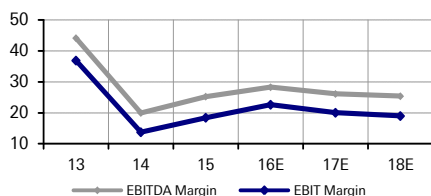
Company Profile

Xinyi Glass Holdings Ltd, through its subsidiaries, produces a variety of processed glass products for automobile, construction and household applications. The Company also tenders for glass curtain wall projects and conducts installation service of glass curtain wall in China.

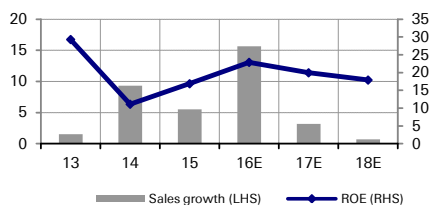
Price Performance



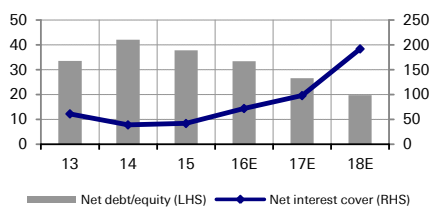
Margin Trends



Growth & Profitability



Solvency



Fiscal year end 31-Dec

Financial Summary

	2013	2014	2015	2016E	2017E	2018E
DB EPS (HKD)	0.81	0.29	0.44	0.77	0.75	0.75
Reported EPS (HKD)	0.81	0.34	0.52	0.77	0.75	0.75
DPS (HKD)	0.67	0.15	0.26	0.38	0.37	0.37
BVPS (HKD)	3.1	3.1	3.2	3.7	4.1	4.5
Weighted average shares (m)	3,832	3,921	3,922	3,922	3,922	3,922
Average market cap (HKDm)	20,118	19,582	16,360	25,412	25,413	25,413
Enterprise value (HKDm)	22,093	22,403	18,638	27,085	25,751	24,126

Valuation Metrics

P/E (DB) (x)	6.5	17.1	9.5	8.4	8.6	8.7
P/E (Reported) (x)	6.5	14.8	8.0	8.4	8.6	8.7
P/BV (x)	2.02	1.20	1.41	1.76	1.59	1.45
FCF Yield (%)	0.1	nm	4.4	5.5	7.9	8.7
Dividend Yield (%)	12.7	3.0	6.3	5.9	5.7	5.7
EV/Sales (x)	2.2	2.1	1.6	2.0	1.9	1.8
EV/EBITDA (x)	5.0	10.3	6.4	7.2	7.2	6.9
EV/EBIT (x)	6.0	15.0	8.8	9.0	9.4	9.2

Income Statement (HKDm)

Sales revenue	9,936	10,861	11,460	13,252	13,675	13,773
Gross profit	3,137	2,733	3,133	4,761	4,490	4,376
EBITDA	4,385	2,170	2,894	3,747	3,572	3,496
Depreciation	720	676	781	748	831	882
Amortisation	0	0	0	0	0	0
EBIT	3,665	1,494	2,113	2,999	2,741	2,614
Net interest income/(expense)	-60	-38	-50	-42	-28	-14
Associates/affiliates	21	138	317	611	773	851
Exceptionals/extraordinaries	0	0	0	0	0	0
Other pre-tax income/(expense)	0	0	0	0	0	0
Profit before tax	3,627	1,593	2,380	3,568	3,486	3,452
Income tax expense	381	229	266	464	453	449
Minorities	0	1	0	0	0	0
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	3,245	1,364	2,113	3,104	3,032	3,003
DB adjustments (including dilution)	0	-188	-337	0	0	0
DB Net profit	3,245	1,175	1,776	3,104	3,032	3,003

Cash Flow (HKDm)

Cash flow from operations	2,712	1,455	2,637	3,108	3,018	3,015
Net Capex	-2,697	-1,598	-1,913	-1,700	-1,000	-800
Free cash flow	15	-143	723	1,408	2,018	2,215
Equity raised/(bought back)	781	-3	1	0	0	0
Dividends paid	-835	-902	-608	-1,490	-1,456	-1,441
Net inc/(dec) in borrowings	837	833	-18	0	0	0
Other investing/financing cash flows	-436	4	369	0	0	0
Net cash flow	362	-211	467	-82	562	774
Change in working capital	-273	-202	375	-133	-73	-18

Balance Sheet (HKDm)

Cash and other liquid assets	1,042	831	1,223	1,217	1,779	2,553
Tangible fixed assets	10,459	11,293	11,971	12,953	13,150	13,095
Goodwill/intangible assets	1,463	1,357	1,281	1,278	1,274	1,271
Associates/investments	2,123	2,362	2,535	3,145	3,918	4,769
Other assets	4,563	5,190	4,412	4,531	4,659	4,677
Total assets	19,651	21,034	21,422	23,124	24,780	26,366
Interest bearing debt	5,140	6,013	6,028	6,028	6,028	6,028
Other liabilities	2,302	2,686	2,668	2,679	2,759	2,783
Total liabilities	7,442	8,699	8,696	8,707	8,787	8,812
Shareholders' equity	12,208	12,333	12,718	14,409	15,986	17,547
Minorities	1	2	7	7	7	7
Total shareholders' equity	12,209	12,335	12,726	14,416	15,993	17,555
Net debt	4,098	5,181	4,806	4,811	4,249	3,475

Key Company Metrics

Sales growth (%)	1.5	9.3	5.5	15.6	3.2	0.7
DB EPS growth (%)	163.6	-64.2	51.3	74.8	-2.3	-1.0
EBITDA Margin (%)	44.1	20.0	25.3	28.3	26.1	25.4
EBIT Margin (%)	36.9	13.8	18.4	22.6	20.0	19.0
Payout ratio (%)	78.7	43.1	48.7	48.0	48.0	48.0
ROE (%)	29.3	11.1	16.9	22.9	20.0	17.9
Capex/sales (%)	28.9	15.8	16.7	12.8	7.3	5.8
Capex/depreciation (x)	4.0	2.5	2.4	2.3	1.2	0.9
Net debt/equity (%)	33.6	42.0	37.8	33.4	26.6	19.8
Net interest cover (x)	61.4	39.2	42.1	72.2	98.1	191.9

Source: Company data, Deutsche Bank estimates

Sharon Ding

sharon.ding@db.com



Downgrading Xinyi to Hold

Tightening measures signal a turn in the property sector

According to our property team, 22 cities around China have announced tightening measures in both land and property markets in order to keep the current property bubble under control. For example, the Shanghai government tightened credit supply in the land market by restricting developers from using financing from banks during purchases. Also, most tier 1 and tier 2 cities, especially those that experienced more than a 15% YTD increase in home prices, have re-launched house purchasing restrictions (HPR), which have been an effective measure to control market growth in the past.

According to DB's property sector analyst, Jason Ching, government policy has always been the most important factor driving the direction and magnitude of growth within the Chinese property market. And the newest tightening measures issued by the government are a clear indication that the current overheated market is already set up for a change in policy direction. Please refer to Jason Ching's report, [Tightening means a tougher market ahead](#), published on 6 Oct 2016, for a more comprehensive explanation of the newly-issued policies.

Although sale volume in those 22 cities accounts for 27% of total sales volume only, and the property sector is unlikely to cool off by a large margin in the near-term, the implementation of tightening measures signals a change in market sentiment.

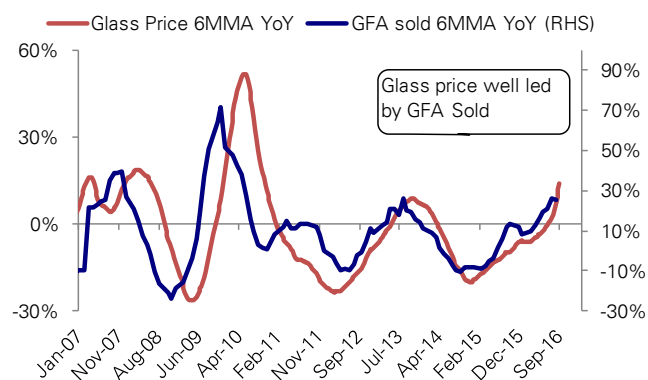
Implications for the glass industry and Xinyi Glass

Historically, property sales have acted as a leading indicator for both glass price and glass apparent consumption (Figure 1 and Figure 2). This is mainly because the construction sector makes up about 75% of glass demand and glass is typically used in the final stages of construction.

In China, property sales are mostly in the way of presale. Property developers normally can get presale approval once they have completed one quarter of the construction, which makes property sales a very good leading indicator for glass demand.

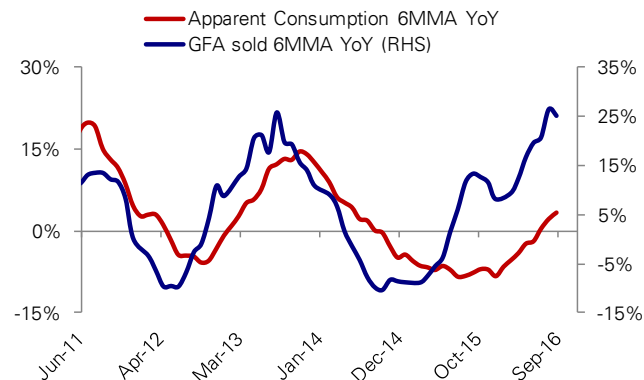


Figure 1: Glass price vs. GFA sold



Source: Deutsche Bank, WIND, Glassinfo

Figure 2: Glass apparent consumption vs. GFA sold

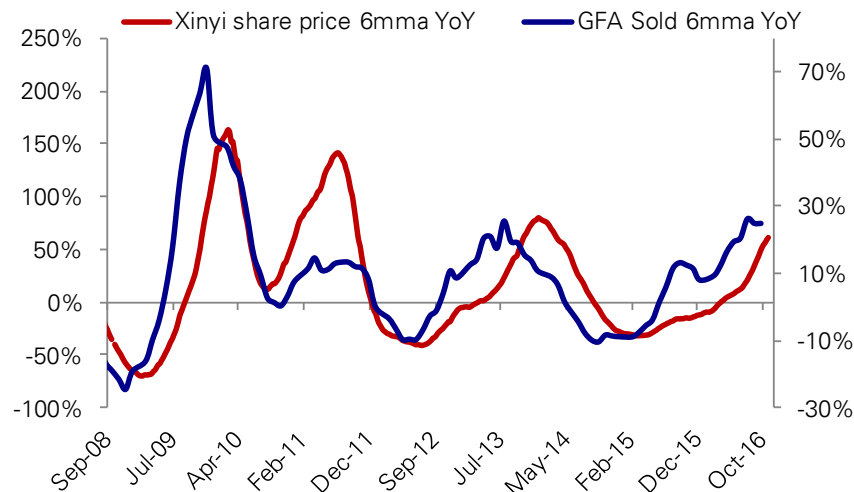


Source: Deutsche Bank, WIND, Glassinfo

Xinyi's share price performance is highly correlated to property sales growth

Xinyi is China's largest float glass producer with roughly c.70% of revenue exposure to construction and float glass. As shown, Xinyi's share price has generally lagged behind the movement in the property sales cycle by 4-6 months.

Figure 3: Xinyi's share price vs. GFA sold



Source: Deutsche Bank, Bloomberg Finance LP

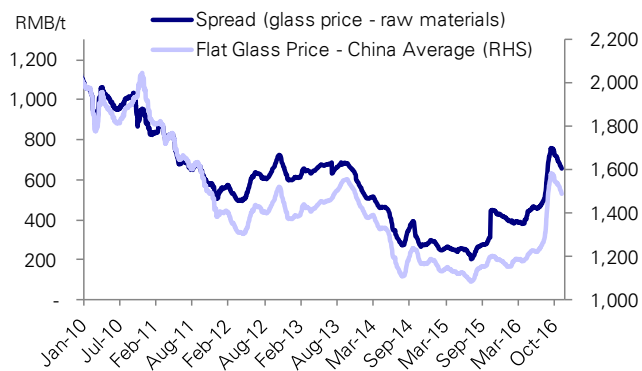
Meanwhile, utilization rate is catching up at a more moderate pace

On the back of a glass price hike and thus decent profitability (Figure 4), the float glass utilization rate is also catching up, but at a more moderate pace, as the glass price hike happened in a very short period and now the demand peak season (Sep and Oct) has already come to an end, i.e. there is less incentive for restarts. Also, the government's tightened environment requirements also lower the restart interest.

As shown in Figure 5, the nationwide float glass utilization rate has risen to 73.6% as of 4 Nov 2016, from a trough level at 68.2% in this April.

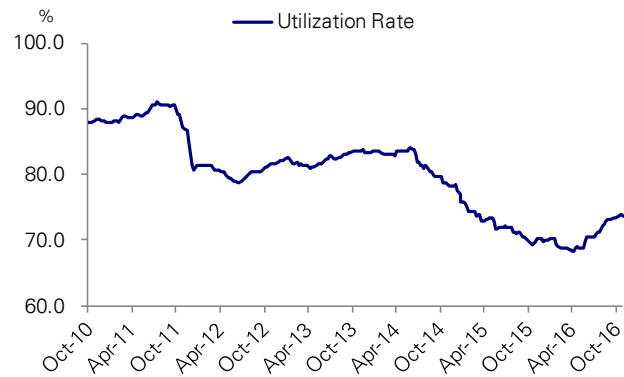


Figure 4: China average float glass price and spread



Source: Deutsche Bank, Glassinfo,

Figure 5: China production line utilization rate



Source: Deutsche Bank, Glassinfo

About 1/3 restarts happened in August while prices were on the rise, but the amount of effective capacity did not increase in September, and only 1000t/d capacity restarted recently in October.

Figure 6: YTD capacity restarts

Territory	Province	Production Line (Chinese)	Production Line (English)	Daily Smelting Capacity (t/d)	Date
East China	Shandong	临沂中玻一线	Linyi Zhongbo Line I	500	2016.01.08
East China	Jiangsu	江苏常熟耀皮二线	Changshu Yaopi Line II	600	2016.3.18
Central China	Henan	洛阳玻璃汝阳一线	Luoyang Ruyang Line I	650	2016.3.28
South China	Guangdong	中山玉峰一线	Zhongshan Yufeng Line I	400	2016.4.13
Central China	Hubei	武汉长利汉南一线	Wuhan Changlihanan Line I	900	2016.4.20
North China	Shanxi	山西利虎交城三线	Lihu Jiaocheng Line III	500	2016.4.22
South China	Guangdong	虎门信义一线	Xinyi Humen Line I	700	2016.5.08
East China	Shandong	山东光耀	Shandong Guangyao	700	2016.5.20
East China	Shandong	山东巨润三线	Shandong Jurun Line III	700	2016.5.25
North China	Hebei	廊坊金彪一线	Jinbiao Line I	600	2016.5.28
North China	Hebei	唐山蓝欣一线	Tangshan Lanxin Line I	400	2016.6.08
Central China	Henan	河南中联一线	Zhonglian Line I	700	2016.7.09
East China	Shandong	山东巨润二线	Shandong Jurun Line II	700	2016.7.22
North China	Tianjin	天津中玻一线	Tianjin China Glass Line I	600	2016.8.01
North China	Hebei	唐山蓝欣二线	Tangshan Lanxin Line II	500	2016.8.01
East China	Anhui	安徽凤阳一线	Anhui Fengyang Line I	600	2016.8.08
North China	Hebei	河北南玻二线	Hebei CSG Line II	900	2016.8.18
Northeast China	Liaoning	本溪迎新二线	Benxi Yingxin Line II	800	2016.8.22
East China	Shandong	淄博金晶六线	Zibo Jinjing Line VI	600	2016.8.28
South China	Guangdong	中山玉峰二线	Zhongshan Yufeng Line II	500	2016.10.12
North China	Hebei	河北迎新行唐一线	Yingxin Hangtang Line I	500	2016.10.18
Total Capacity				13050	

Source: Deutsche Bank, Glassinfo

From a new capacity perspective, YTD additions totaled 4700t/d, which represents 2%+ of total capacity.



Figure 7: YTD new capacities

Territory	Province	Production Line (Chinese)	Production Line (English)	Daily Smelting Capacity (t/d)	Date
Central China	Hubei	武汉长利洪湖一线	Changli Honghu Line I	1200	2016.2.16
Central China	Hunan	醴陵旗滨五线	Liling Qibing Line V	500	2016.3.18
Southwest China	Guizhou	贵州毕节明钧二线	Bijie Mingjun Line II	1000	2016.5.01
North China	Hebei	唐山蓝欣三线	Tangshan Lanxin Line III	1000	2016.5.24
North China	Hebei	沙河德金六线	Shahe Dejin Line VI	1000	2016.9.20
Total Capacity				4700	

Source: Deutsche Bank, Glassinfo

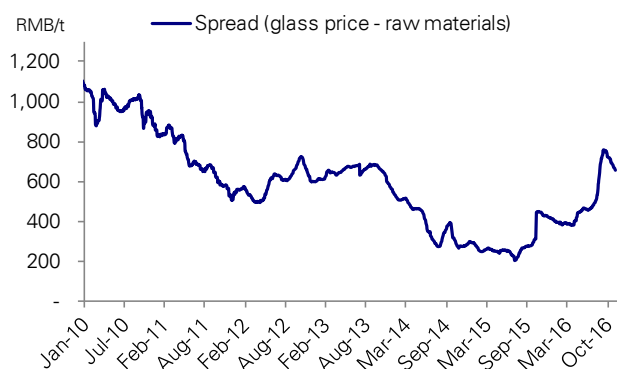
Recent transportation provision and potential natural gas price hike may weaken glass manufacturers' profitability

Our channel checks indicate that float glass manufacturers are losing bargaining power after the recent logistics cost increase because the Department of Transportation launched a new transportation provision that lowered total load permitted per truck. The truck load limit of standard six axis cargo trucks decreased from 55t to 49t, increasing logistic costs by roughly 20-30% in the process.

After the exponential increase in float glass price, manufacturers are competing more intensely between each other to offload more products while prices are attractive and as peak season is coming to an end. As a result, producers are the price takers of the increase in logistic price. Meanwhile, the float glass inventory level has also bottomed out since mid-September, indicating additional pressure on producers.

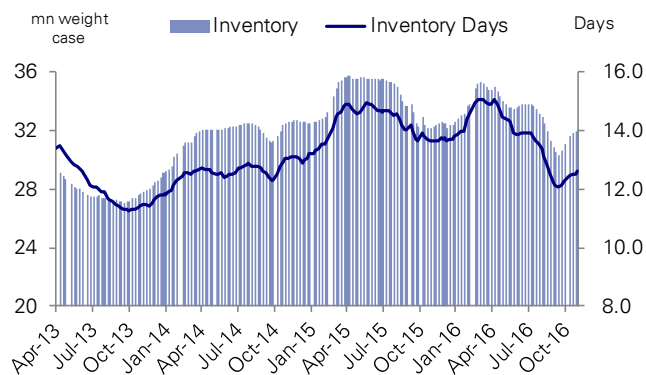
Also, according to Sina.finance, PetroChina is likely to raise the non-residential natural gas price starting Nov 20 (first day that it is allowed, according to the NDRC 2015 gas price adjustment document). PetroChina is empowered by NDRC to raise the float base gas price by up to 20% (or unlimited downside) depending on the supply and demand situation, and it is likely to sustain through the winter peak season (Nov-Mar), which might also weaken Xinyi Glass's profitability in the coming months.

Figure 8: China average float glass spread



Source: Deutsche Bank, Glassinfo, *We use natural gas as raw materials

Figure 9: China float glass inventory



Source: Deutsche Bank, Glassinfo



China flat glass supply and demand

Based on the mild growing utilization rate, we expect 5% output growth in 2016 and 2017, respectively. From a demand perspective, we still forecast low single-digit demand growth for construction in 2017 thanks to the strong sales this year. Overall demand growth is expected to be around 7.8% and 5% in 2016 and 2017, respectively.

Figure 10: China float glass D&S model

(million weight cases)	2010	2011	2012	2013	2014	2015	2016E	2017E
Capacity	731	828	870	945	979	1,026	1,051	1,051
+New capacity							35	30
- Phase out							10	30
YoY (%)	1.1%	13.2%	5.2%	8.5%	3.6%	4.8%	2.4%	0.0%
Production	629	728	705	784	793	739	776	814
YoY (%)	7.4%	15.8%	-3.2%	11.2%	1.1%	-6.8%	5.0%	5.0%
Utilization rate	86.0%	88.0%	81.0%	83.0%	81.0%	72.0%	73.8%	77.5%
Net import (export)	-29	-33	-31	-34	-39	-38	-43	-43
Total glass demand								
Construction	371	422	474	522	556	524	560	586
Automobile	29	29	31	36	38	40	44	46
Solar	17	30	31	39	48	55	62	69
Export	35	37	35	39	44	43	48	48
Others	24	27	30	33	36	35	38	39
Total demand	475	546	601	669	722	697	751	788
YoY%		14.9%	10.1%	11.3%	7.9%	-3.5%	7.8%	5.0%
S/D surplus (deficit)	154	182	104	115	71	42	25	26
S/D surplus (deficit)%	24%	25%	15%	15%	9%	6%	3%	3%
Float glass price (RMB/t)	1,912	1,650	1,400	1,462	1,251	1,148	1,300	1,300
YoY%		-14%	-15%	4%	-14%	-8%	13%	0%

Source: Deutsche Bank estimates, Glassinfo, WIND, Roland Berger, Frost and Sullivan



Fair valued; downgrade Xinyi to Hold

The company has outperformed so far this year, thanks to robust property sales earlier this year and lower city gate natural gas announced late 2015. We also increase our earnings estimate for the rest of this year and for 2017/2018 after factoring in the latest movements in float glass price, particularly the glass price spike in the third quarter. Despite the overall earnings upgrade, we believe that earnings momentum may have peaked, and expect flattish earnings in the coming two years. Our numbers are 10% and 20% lower than consensus estimate in 2017 and 2018, respectively.

Figure 11: Xinyi – forecast changes

	2016E			2017E			2018E		
	New	Old	Change%	New	Old	Change%	New	Old	Change%
Revenue	13,252	12,603	5.2%	13,675	13,043	4.9%	13,773	13,024	5.8%
EBIT	2,999	2,445	22.6%	2,741	2,440	12.3%	2,614	2,388	9.5%
NP	3,104	2,641	17.5%	3,032	2,757	10.0%	3,003	2,789	7.7%

Source: Deutsche Bank estimates

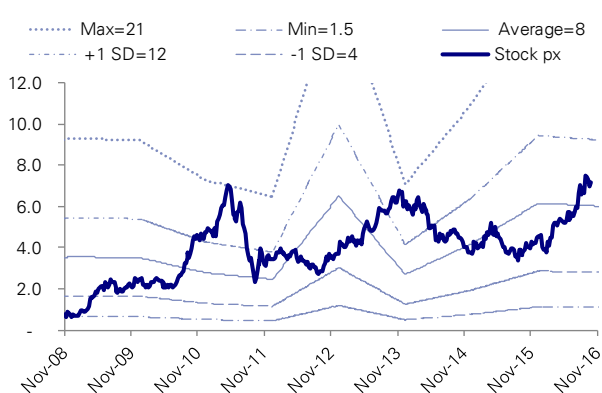
Figure 12: Xinyi – DB estimates vs. consensus estimates

	2016E			2017E			2018E		
	DB estimate	Consensus	Dbe/Cons.	DB estimate	Consensus	Dbe/Cons.	DB estimate	Consensus	Dbe/Cons.
Revenue	13,252	13,048	102%	13,675	14,348	95%	13,773	15,117	91%
EBIT	2,999	2,927	102%	2,741	3,321	83%	2,614	3,550	74%
NP	3,104	2,980	104%	3,032	3,408	89%	3,003	3,774	80%

Source: Deutsche Bank estimates, Bloomberg Finance LP

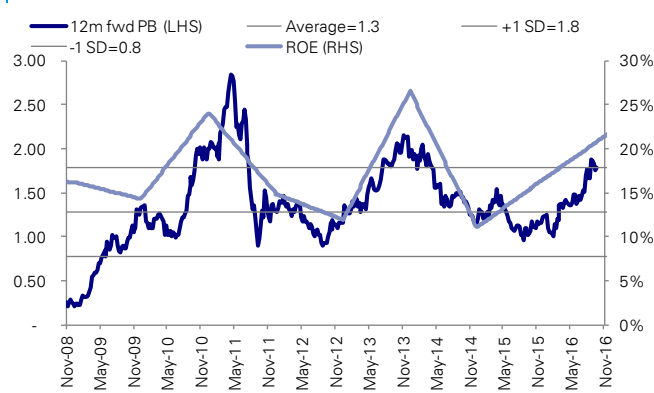
We revise down our TP by HKD0.5 to HKD6.5 by factoring in the shrinking market cap of Xinyi Solar. With 0% share price upside, we rate it a Hold. We derive our target price for Xinyi Glass using a DCF methodology, with a WACC of 8.3%. We adopt 10.1% as the cost of equity for Xinyi, reflecting a risk-free rate of 3.9%, a market premium of 5.6%, and a terminal growth rate of 0% and beta of 1.1. The stock is currently trading at 9x 2017E EPS and 1.6x 2017E BVPS, with a 17% ROAE.

Figure 13: Xinyi Glass 12m forward PE band



Source: Deutsche Bank, Bloomberg Finance LP

Figure 14: Xinyi Glass 12m forward PB band



Source: Deutsche Bank, Bloomberg Finance LP



Risks

Risks include: 1) stronger- or weaker-than-expected demand from the property sector, 2) better- or worse-than-expected capacity discipline in the glass industry, and 3) better- or worse-than-expected cost control.



Appendix 1

Important Disclosures

*Other information available upon request

Disclosure checklist

Company	Ticker	Recent price*	Disclosure
Xinyi Glass	0868.HK	6.48 (HKD) 4 Nov 16	14

*Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors. Other information is sourced from Deutsche Bank, subject companies, and other sources. For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at <http://gm.db.com/ger/disclosure/DisclosureDirectory.eqsr>.

Important Disclosures Required by U.S. Regulators

Disclosures marked with an asterisk may also be required by at least one jurisdiction in addition to the United States. See Important Disclosures Required by Non-US Regulators and Explanatory Notes.

- Deutsche Bank and/or its affiliate(s) has received non-investment banking related compensation from this company within the past year.

For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at <http://gm.db.com/ger/disclosure/Disclosure.eqsr?ricCode=0868.HK>

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s) about the subject issuer and the securities of the issuer. In addition, the undersigned lead analyst(s) has not and will not receive any compensation for providing a specific recommendation or view in this report. Sharon Ding

Historical recommendations and target price: Xinyi Glass (0868.HK)

(as of 11/4/2016)



1.	14/12/2015:	Upgrade to Buy, Target Price Change HKD5.40 Sharon Ding	3.	03/08/2016:	Buy, Target Price Change HKD7.00 Sharon Ding
2.	16/03/2016:	Buy, Target Price Change HKD5.60 Sharon Ding			



Equity rating key

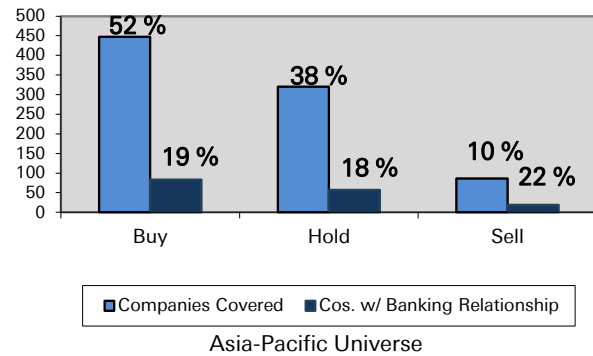
Buy: Based on a current 12-month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus projected dividend yield), we recommend that investors buy the stock.

Sell: Based on a current 12-month view of total share-holder return, we recommend that investors sell the stock

Hold: We take a neutral view on the stock 12-months out and, based on this time horizon, do not recommend either a Buy or Sell.

Newly issued research recommendations and target prices supersede previously published research.

Equity rating dispersion and banking relationships





Additional Information

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank"). Though the information herein is believed to be reliable and has been obtained from public sources believed to be reliable, Deutsche Bank makes no representation as to its accuracy or completeness.

If you use the services of Deutsche Bank in connection with a purchase or sale of a security that is discussed in this report, or is included or discussed in another communication (oral or written) from a Deutsche Bank analyst, Deutsche Bank may act as principal for its own account or as agent for another person.

Deutsche Bank may consider this report in deciding to trade as principal. It may also engage in transactions, for its own account or with customers, in a manner inconsistent with the views taken in this research report. Others within Deutsche Bank, including strategists, sales staff and other analysts, may take views that are inconsistent with those taken in this research report. Deutsche Bank issues a variety of research products, including fundamental analysis, equity-linked analysis, quantitative analysis and trade ideas. Recommendations contained in one type of communication may differ from recommendations contained in others, whether as a result of differing time horizons, methodologies or otherwise. Deutsche Bank and/or its affiliates may also be holding debt or equity securities of the issuers it writes on. Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking, trading and principal trading revenues.

Opinions, estimates and projections constitute the current judgment of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank provides liquidity for buyers and sellers of securities issued by the companies it covers. Deutsche Bank research analysts sometimes have shorter-term trade ideas that are consistent or inconsistent with Deutsche Bank's existing longer term ratings. Trade ideas for equities can be found at the SOLAR link at <http://gm.db.com>. A SOLAR idea represents a high conviction belief by an analyst that a stock will outperform or underperform the market and/or sector delineated over a time frame of no less than two weeks. In addition to SOLAR ideas, the analysts named in this report may from time to time discuss with our clients, Deutsche Bank salespersons and Deutsche Bank traders, trading strategies or ideas that reference catalysts or events that may have a near-term or medium-term impact on the market price of the securities discussed in this report, which impact may be directionally counter to the analysts' current 12-month view of total return or investment return as described herein. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a recipient thereof if any opinion, forecast or estimate contained herein changes or subsequently becomes inaccurate. Coverage and the frequency of changes in market conditions and in both general and company specific economic prospects make it difficult to update research at defined intervals. Updates are at the sole discretion of the coverage analyst concerned or of the Research Department Management and as such the majority of reports are published at irregular intervals. This report is provided for informational purposes only and does not take into account the particular investment objectives, financial situations, or needs of individual clients. It is not an offer or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy. Target prices are inherently imprecise and a product of the analyst's judgment. The financial instruments discussed in this report may not be suitable for all investors and investors must make their own informed investment decisions. Prices and availability of financial instruments are subject to change without notice and investment transactions can lead to losses as a result of price fluctuations and other factors. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the investment. Past performance is not necessarily indicative of future results. Unless otherwise indicated, prices are current as of the end of the previous trading session, and are sourced from local exchanges via Reuters, Bloomberg and other vendors. Data is sourced from Deutsche Bank, subject companies, and in some cases, other parties.

The Deutsche Bank Research Department is independent of other business areas divisions of the Bank. Details regarding our organizational arrangements and information barriers we have to prevent and avoid conflicts of interest with respect to our research is available on our website under Disclaimer found on the Legal tab.

Macroeconomic fluctuations often account for most of the risks associated with exposures to instruments that promise to pay fixed or variable interest rates. For an investor who is long fixed rate instruments (thus receiving these cash



flows), increases in interest rates naturally lift the discount factors applied to the expected cash flows and thus cause a loss. The longer the maturity of a certain cash flow and the higher the move in the discount factor, the higher will be the loss. Upside surprises in inflation, fiscal funding needs, and FX depreciation rates are among the most common adverse macroeconomic shocks to receivers. But counterparty exposure, issuer creditworthiness, client segmentation, regulation (including changes in assets holding limits for different types of investors), changes in tax policies, currency convertibility (which may constrain currency conversion, repatriation of profits and/or the liquidation of positions), and settlement issues related to local clearing houses are also important risk factors to be considered. The sensitivity of fixed income instruments to macroeconomic shocks may be mitigated by indexing the contracted cash flows to inflation, to FX depreciation, or to specified interest rates – these are common in emerging markets. It is important to note that the index fixings may – by construction – lag or mis-measure the actual move in the underlying variables they are intended to track. The choice of the proper fixing (or metric) is particularly important in swaps markets, where floating coupon rates (i.e., coupons indexed to a typically short-dated interest rate reference index) are exchanged for fixed coupons. It is also important to acknowledge that funding in a currency that differs from the currency in which coupons are denominated carries FX risk. Naturally, options on swaps (swaptions) also bear the risks typical to options in addition to the risks related to rates movements.

Derivative transactions involve numerous risks including, among others, market, counterparty default and illiquidity risk. The appropriateness or otherwise of these products for use by investors is dependent on the investors' own circumstances including their tax position, their regulatory environment and the nature of their other assets and liabilities, and as such, investors should take expert legal and financial advice before entering into any transaction similar to or inspired by the contents of this publication. The risk of loss in futures trading and options, foreign or domestic, can be substantial. As a result of the high degree of leverage obtainable in futures and options trading, losses may be incurred that are greater than the amount of funds initially deposited. Trading in options involves risk and is not suitable for all investors. Prior to buying or selling an option investors must review the "Characteristics and Risks of Standardized Options", at <http://www.optionsclearing.com/about/publications/character-risks.jsp>. If you are unable to access the website please contact your Deutsche Bank representative for a copy of this important document.

Participants in foreign exchange transactions may incur risks arising from several factors, including the following: (i) exchange rates can be volatile and are subject to large fluctuations; (ii) the value of currencies may be affected by numerous market factors, including world and national economic, political and regulatory events, events in equity and debt markets and changes in interest rates; and (iii) currencies may be subject to devaluation or government imposed exchange controls which could affect the value of the currency. Investors in securities such as ADRs, whose values are affected by the currency of an underlying security, effectively assume currency risk.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. Aside from within this report, important conflict disclosures can also be found at <https://gm.db.com/equities> under the "Disclosures Lookup" and "Legal" tabs. Investors are strongly encouraged to review this information before investing.

United States: Approved and/or distributed by Deutsche Bank Securities Incorporated, a member of FINRA, NFA and SIPC. Analysts located outside of the United States are employed by non-US affiliates that are not subject to FINRA regulations.

Germany: Approved and/or distributed by Deutsche Bank AG, a joint stock corporation with limited liability incorporated in the Federal Republic of Germany with its principal office in Frankfurt am Main. Deutsche Bank AG is authorized under German Banking Law and is subject to supervision by the European Central Bank and by BaFin, Germany's Federal Financial Supervisory Authority.

United Kingdom: Approved and/or distributed by Deutsche Bank AG acting through its London Branch at Winchester House, 1 Great Winchester Street, London EC2N 2DB. Deutsche Bank AG in the United Kingdom is authorised by the Prudential Regulation Authority and is subject to limited regulation by the Prudential Regulation Authority and Financial Conduct Authority. Details about the extent of our authorisation and regulation are available on request.

Hong Kong: Distributed by Deutsche Bank AG, Hong Kong Branch.



India: Prepared by Deutsche Equities India Pvt Ltd, which is registered by the Securities and Exchange Board of India (SEBI) as a stock broker. Research Analyst SEBI Registration Number is INH000001741. DEIPL may have received administrative warnings from the SEBI for breaches of Indian regulations.

Japan: Approved and/or distributed by Deutsche Securities Inc.(DSI). Registration number - Registered as a financial instruments dealer by the Head of the Kanto Local Finance Bureau (Kinsho) No. 117. Member of associations: JSDA, Type II Financial Instruments Firms Association and The Financial Futures Association of Japan. Commissions and risks involved in stock transactions - for stock transactions, we charge stock commissions and consumption tax by multiplying the transaction amount by the commission rate agreed with each customer. Stock transactions can lead to losses as a result of share price fluctuations and other factors. Transactions in foreign stocks can lead to additional losses stemming from foreign exchange fluctuations. We may also charge commissions and fees for certain categories of investment advice, products and services. Recommended investment strategies, products and services carry the risk of losses to principal and other losses as a result of changes in market and/or economic trends, and/or fluctuations in market value. Before deciding on the purchase of financial products and/or services, customers should carefully read the relevant disclosures, prospectuses and other documentation. "Moody's", "Standard & Poor's", and "Fitch" mentioned in this report are not registered credit rating agencies in Japan unless Japan or "Nippon" is specifically designated in the name of the entity. Reports on Japanese listed companies not written by analysts of DSI are written by Deutsche Bank Group's analysts with the coverage companies specified by DSI. Some of the foreign securities stated on this report are not disclosed according to the Financial Instruments and Exchange Law of Japan. Target prices set by Deutsche Bank's equity analysts are based on a 12-month forecast period.

Korea: Distributed by Deutsche Securities Korea Co.

South Africa: Deutsche Bank AG Johannesburg is incorporated in the Federal Republic of Germany (Branch Register Number in South Africa: 1998/003298/10).

Singapore: by Deutsche Bank AG, Singapore Branch or Deutsche Securities Asia Limited, Singapore Branch (One Raffles Quay #18-00 South Tower Singapore 048583, +65 6423 8001), which may be contacted in respect of any matters arising from, or in connection with, this report. Where this report is issued or promulgated in Singapore to a person who is not an accredited investor, expert investor or institutional investor (as defined in the applicable Singapore laws and regulations), they accept legal responsibility to such person for its contents.

Taiwan: Information on securities/investments that trade in Taiwan is for your reference only. Readers should independently evaluate investment risks and are solely responsible for their investment decisions. Deutsche Bank research may not be distributed to the Taiwan public media or quoted or used by the Taiwan public media without written consent. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation to trade in such securities/instruments. Deutsche Securities Asia Limited, Taipei Branch may not execute transactions for clients in these securities/instruments.

Qatar: Deutsche Bank AG in the Qatar Financial Centre (registered no. 00032) is regulated by the Qatar Financial Centre Regulatory Authority. Deutsche Bank AG - QFC Branch may only undertake the financial services activities that fall within the scope of its existing QFCRA license. Principal place of business in the QFC: Qatar Financial Centre, Tower, West Bay, Level 5, PO Box 14928, Doha, Qatar. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Business Customers, as defined by the Qatar Financial Centre Regulatory Authority.

Russia: This information, interpretation and opinions submitted herein are not in the context of, and do not constitute, any appraisal or evaluation activity requiring a license in the Russian Federation.

Kingdom of Saudi Arabia: Deutsche Securities Saudi Arabia LLC Company, (registered no. 07073-37) is regulated by the Capital Market Authority. Deutsche Securities Saudi Arabia may only undertake the financial services activities that fall within the scope of its existing CMA license. Principal place of business in Saudi Arabia: King Fahad Road, Al Olaya District, P.O. Box 301809, Faisaliah Tower - 17th Floor, 11372 Riyadh, Saudi Arabia.

United Arab Emirates: Deutsche Bank AG in the Dubai International Financial Centre (registered no. 00045) is regulated



by the Dubai Financial Services Authority. Deutsche Bank AG - DIFC Branch may only undertake the financial services activities that fall within the scope of its existing DFSA license. Principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village, Building 5, PO Box 504902, Dubai, U.A.E. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority.

Australia: Retail clients should obtain a copy of a Product Disclosure Statement (PDS) relating to any financial product referred to in this report and consider the PDS before making any decision about whether to acquire the product. Please refer to Australian specific research disclosures and related information at <https://australia.db.com/australia/content/research-information.html>

Australia and New Zealand: This research is intended only for "wholesale clients" within the meaning of the Australian Corporations Act and New Zealand Financial Advisors Act respectively.

Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published without Deutsche Bank's prior written consent. Copyright © 2016 Deutsche Bank AG



David Folkerts-Landau

Group Chief Economist and Global Head of Research

Raj Hindocha
Global Chief Operating Officer
Research

Michael Spencer
Head of APAC Research
Global Head of Economics

Steve Pollard
Head of Americas Research
Global Head of Equity Research

Anthony Klarman
Global Head of
Debt Research

Paul Reynolds
Head of EMEA
Equity Research

Dave Clark
Head of APAC
Equity Research

Pam Finelli
Global Head of
Equity Derivatives Research

Andreas Neubauer
Head of Research - Germany

Stuart Kirk
Head of Thematic Research

International locations

Deutsche Bank AG

Deutsche Bank Place
Level 16
Corner of Hunter & Phillip Streets
Sydney, NSW 2000
Australia
Tel: (61) 2 8258 1234

Deutsche Bank AG

Große Gallusstraße 10-14
60272 Frankfurt am Main
Germany
Tel: (49) 69 910 00

Deutsche Bank AG

Filiale Hongkong
International Commerce Centre,
1 Austin Road West, Kowloon,
Hong Kong
Tel: (852) 2203 8888

Deutsche Securities Inc.

2-11-1 Nagatacho
Sanno Park Tower
Chiyoda-ku, Tokyo 100-6171
Japan
Tel: (81) 3 5156 6770

Deutsche Bank AG London

1 Great Winchester Street
London EC2N 2EQ
United Kingdom
Tel: (44) 20 7545 8000

Deutsche Bank Securities Inc.

60 Wall Street
New York, NY 10005
United States of America
Tel: (1) 212 250 2500
