

Research
Division, CITIC
SECURITIES



Zhe Wang
Chemistry Chief
Analyst
S1010513110001



Jiancong Yuan
Chemistry Analyst
S1010517080005

Key Highlights

We believe the company is well positioned as an oligopoly in the manufacturing of DSD acid and delivering sustainable growth with other intermediates. We forecast Net Profit of RMB1.013 bn/1.066 bn/882 mn for FY2019/20/21. We initiate coverage of Tsaker Chemical with a Buy rating and PE ratio of 4.5 and corresponding price at HK\$5.10 based on comparable company valuation.

■ Tsaker Chemical is a world leading producer of dye and pigment intermediates.

The scope of business of Tsaker Chemical covers dye, pigment and pesticide intermediates. The dye intermediate mainly refers to DSD acid while the pigment intermediates are mainly DATA (intermediates including MDS and DMSS also for export) and DMAS. The global market shares of DSD acid, DMSS and DMAS of the company are 53.0%, 42.7% and 19.8%, respectively, ranking the first or the second globally. In addition, those of mononitrotoluenes and OT, a pesticide intermediate, are leading globally and currently that of mononitrotoluenes stands at 18.8%. The company takes lead in the niche market for green production.

■ The company benefits remarkably from the increase in the prices of DSD acid.

Currently there are three primary producers for DSD acid. Tsaker Chemical is a leading vendor for DSD acid and OBA, whose market shares exceed 60%. Since the first half of 2018, Lion Chemical, the world's second largest provider, has shut down. Consequently, the global supply for DSD acid shrinks significantly and its prices see continued increase. In 2018, the average prices for DSD acid stood at RMB25,000/tonne, and soared to RMB68,300/tonne excluding tax by the end of 2018, an increase of 173%. Tsaker Chemical has an annual capacity of 35,000 tonnes for DSD acid, which favours the company. In consideration of the stringent environmental protection requirements in Jiangsu, we forecast that the supply of DSD acid has very high odds of being in shortage in the foreseeable future and its prices will remain high in a long time.

■ Other dye, pigment and pesticide intermediates continue to grow.

Currently, the global market shares of the main pigment intermediates of DMSS (DATA) and DMAS are 42.7% and 19.8%, respectively. Attributable to the shortage of domestic supply of pigment and increased downstream demand, they are slated for continued growth. Mononitrotoluenes and pesticide intermediates are leading in the global market and with proactive expansion of overseas market and downstream pesticide intermediates channels, they are expected to grow further. In addition, lithium battery materials and environmental protection consulting, the two new business lines recently developed by the company, are expected to secure great success with the rapid development of the industry.

■ The company continuously implements strategies for rapid expansion.

Aside from its primary scope of business, the company is expected to further expand its industry chain and new products. The company complemented its industry chain for DSD acid through acquisition and lease, which is expected to help achieve economies of scale for increased gross profit margin. Meanwhile, the company strives to diversify products in the industry chain such as OT as a pesticide intermediate and NMP as a lithium battery material. Since the company boasts solid technological and market leverage in pigment and other intermediates, we expect the company will continue to expand its product portfolio to create new growing points for revenues and profits.

Tsaker Chemical	01986.HK
Stock Rating	Buy (Hold)
Price	HK\$3.07
Price Target	HK\$5.10
Total Equity	1,039mn
Shares O/S	1,039mn
52-Week Range	HK\$6.09/0.91
1 Month	-2.85%

Performance		
6 Month		
Performance		-40.39%
12 Month		
Performance		-24.56%

■ **Risks:** 1. Fluctuation in global oil prices will put pressure on commodity prices and gross margin of the company; and 2. The global demand for dyes, pigment and agricultural inputs decreases.

■ **Earnings forecasts and valuation assumptions.** We believe the company is well positioned as an oligopoly in the manufacturing of DSD acid and delivering sustainable growth with other intermediates. We forecast Net Profit of RMB1.013 bn/1.066 bn/882 mn for FY2019/20/21. We initiate coverage of Tsaker Chemical with a Buy rating and PE ratio of 4.5x corresponding for HK\$5.3 bn for FY2019 and price at HK\$5.1 based on the median for comparable company valuation.

Item/Fiscal Year Ending	2017	2018	2019E	2020E	2021E
Operating Revenue (RMB mn)	1,256	1,527	2,510	2,763	2,745
% Growth	18%	22%	64%	10%	-1%
Net Income (RMB mn)	124	229	1,013	1,066	882
% Growth	-15%	84%	343%	5%	-17%
EPS (Basic) (RMB)	0.12	0.22	0.97	1.03	0.85
Gross Margin %	0.30	0.35	0.67	0.66	0.56
ROE %	0.11	0.17	0.43	0.31	0.21
NAVPS	1.10	1.27	2.24	3.27	4.12
PE (x)	21.89	11.90	2.69	2.56	3.09
PB (x)	2.39	2.07	1.17	0.80	0.64
EPS (Basic) (HK\$)	0.14	0.26	1.14	1.20	0.99
NAVPS (HK\$)	1.29	1.49	2.63	3.83	4.82

Source: Wind, Research Division, CITIC SECURITIES estimates

Note: The stock price is the closing price as of 25 April, 2019.

Table of Contents

■ The Company is a world leading producer of dye and pigment intermediates	1
■ Due to stringent environmental regulations, the prices of DSD acid soar with bright prospects	4
DSD acid is an essential intermediate for optical brightening agents and is irreplaceable	4
The competitor shut down due to the far-reaching impact of the explosion accident of “321” in Jiangsu	5
The company currently has an annual capacity of 35,000 tonnes with promising future	7
■ Other dye, pigment and pesticide intermediates continue to grow	7
Strong impetus will contribute to a promising pigment intermediate market in the long run	7
Rigid demand drives the growth of mononitrotoluenes and pesticide intermediates market	9
Rapid growth of green vehicles contributes to broad prospects for the market of relevant materials	11
Environmental protection consulting starts to generate revenues	11
■ Continuously implementing strategies for rapid expansion	13
Rapidly complementing industry chain through acquisition and lease	13
The strategies are effective and other products of the industry chain will be diversified continuously	14
Expansion of overseas market proceeds, and will become new growing points	15
■ Risks	16
■ Earnings Forecasts and Valuation Assumptions	16

List of Figures

Figure 1: Industry Chain Snapshot of the Company's Primary Business	1
Figure 2: Revenue and Profit Summary of the Company in Recent Years	3
Figure 3: Gross Margin of the Company's Main Products in Recent Years	3
Figure 4: Major Clients of the Company	3
Figure 5: Ownership Structure of Tsaker Chemical	4
Figure 6: Main Downstream Applications of Optical Brightening Agent	5
Figure 7: General Structure of DSD Acid-Triazine OBA	5
Figure 8: Projections of Global DSD Acid Demand and Growth	5
Figure 9: Global Market Shares of Major DSD Acid Manufacturers	6
Figure 10: Lion Chemical Based in Guanyun, Lianyungang	7
Figure 11: Global DMSS and DMAS Market Capacity	8
Figure 12: Global DMSS Market Shares of Major Players	9
Figure 13: Global DMAS Market Shares of Major Players	9
Figure 14: Production Processes of Mononitrotoluene (PNT, ONT, MNT and OT)	9
Figure 15: Global Demand for ONT and OT	10
Figure 16: Snapshot of Synthesis of Acetochlor	10
Figure 17: Global Green Passenger Vehicle Sales Forecast	11
Figure 18: Monthly Sales of Domestic Green Vehicles	11
Figure 19: Partial Environmental Protection Related Technological Achievements of the Company	12
Figure 20: Rapid Integration of the Company's Industry Chains through Acquisition	13
Figure 21: Possibly Expanded Industry Chain Segmentation of Pigment Intermediates	15
Figure 22: Geography of Operations Worldwide of the Company	15

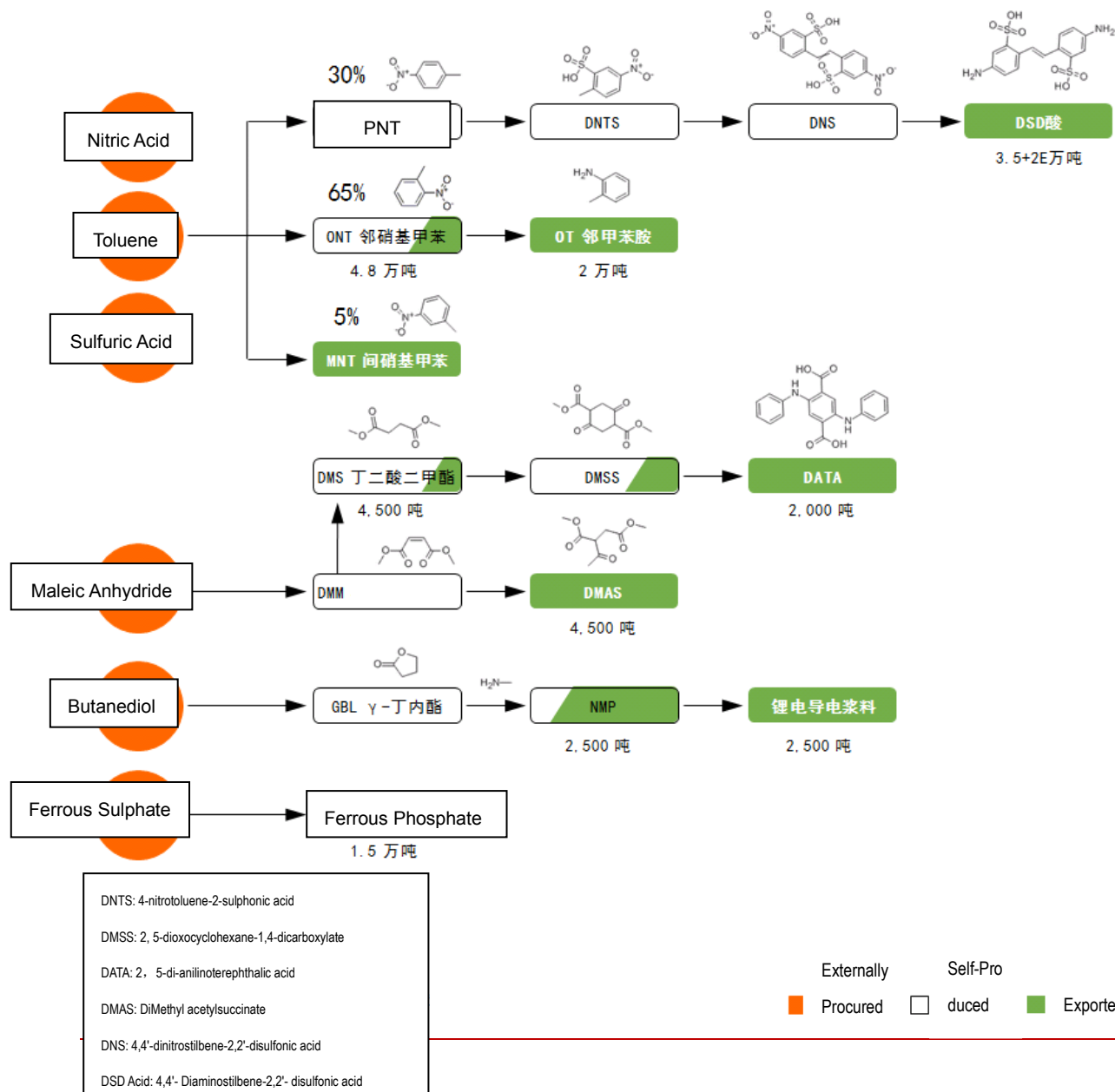
List of Tables

Table 1: Global Amides Sales Revenue	10
Table 2: Operating Revenue Forecast of the Company's Main Business	17
Table 3: Predictions on Partial Profitability Metrics of the Company	18
Table 4: Comparable Company Valuation	18

■ The Company is a world leading producer of dye and pigment intermediates

Tsaker Chemical is a world leading producer of dye and pigment intermediates. The scope of business of Tsaker Chemical covers dye, pigment and pesticide intermediates. The dye intermediate mainly refers to DSD acid while the pigment intermediates are mainly DATA (intermediates including MDS and DMSS also for export) and DMAS. The Company tops the world in DSD acid and DMSS production in terms of capacity and their global market shares are 53.0% and 42.7%, respectively. As an important manufacturer of pigment intermediates including DMAS, its capacity accounts for 19.8% of total capacity globally, ranking 2nd worldwide. Additionally, the production of mononitrotoluenes and OT, a pesticide intermediate, is leading globally and currently the global market share of the Company's mononitrotoluenes reaches 18.8%. The primary production facilities of its intermediates are located in Hebei and Shandong Province, China, whose production processes are environmentally friendly and capacity continues to improve.

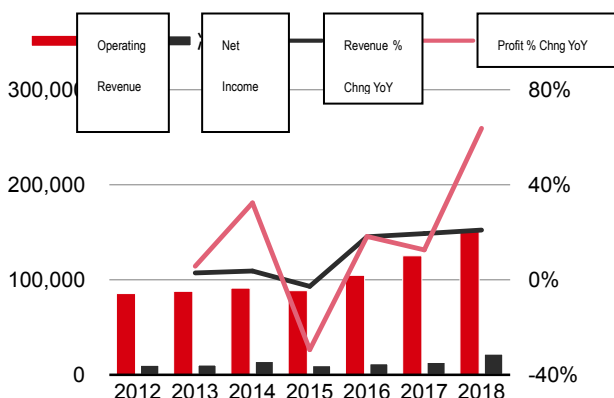
Figure 1: Industry Chain Snapshot of the Company's Primary Business



Source: Company announcements, Research Division, CITIC SECURITIES

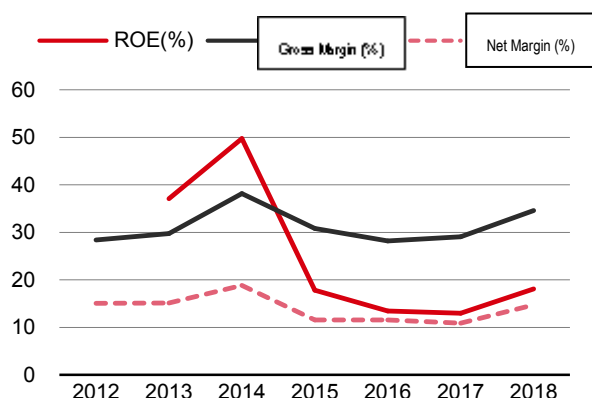
The Company's position as a market leader contributes to economies of scale, strong bargaining power and cost advantages. The Company's position as a market leader contributes to strong bargaining power that helps relieve pressure on costs as oil prices fluctuate. The color of end products is directly attributed to quality consistency and conformity of intermediates, which calls for advanced technologies to ensure consistency in chemical and physical properties of end products from batch to batch. The Company continuously enhances its production processes and technologies by applying years of experience to production so that its production and R&D technologies are state-of-the-art. In 2018, the gross margins of dye and pesticide intermediates were 35.4% (a YoY increase of 7.4 percentage points) and that of pigment intermediates was 33.9% (a YoY increase of 0.2 percentage points), both leading in the industry.

Figure 1: Revenue and Profit Summary of the Company in Recent Years (RMB ten thousand)



Source: annual reports of the Company, Research Division, CITIC SECURITIES

Figure 2: Gross Margin of the Company's Main Products in Recent Years



Source: annual reports of the Company, Research Division, CITIC SECURITIES

Premier clients with high stickiness result in remarkable advantages. As the color of end products is directly attributed to properties and qualities of intermediates, their providers have to pass certification on production and quality before entering into the industry chain and once they are selected, they won't be replaced in an easy way. High technical standards, abundant capital and cost advantages due to economies of scale can hardly be achieved by newcomers. Leveraging its edges thanks to years of well-run business, the Company has built and maintained lasting good business relationships with international chemical giants and its primary clients cover renowned chemical enterprises at home and abroad such as BASF, Indulor, Archroma and Transfar, etc. with whom the business relationships last for almost 10 years. In 2018, the top five clients of the Company contributed 41.9% of its total revenues and these clients have maintained long-term good relationship with the Company.

Figure 3: Major Clients of the Company

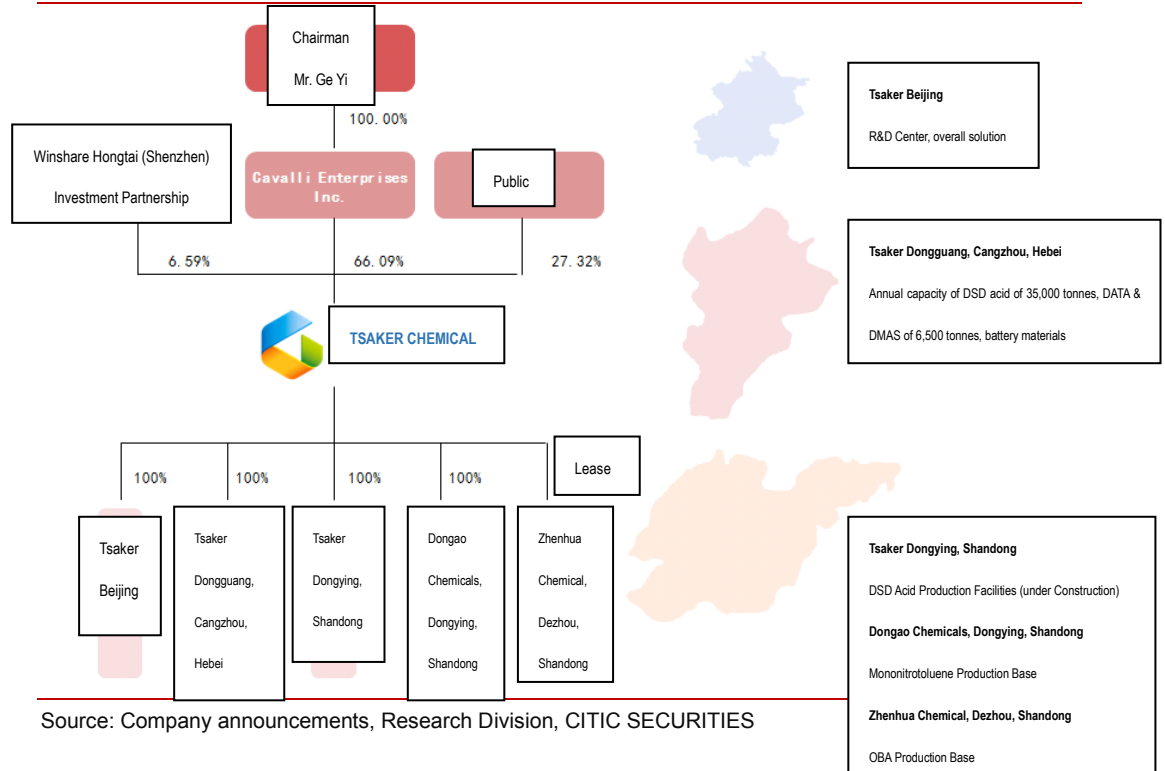


Source: Annual results investor presentations for FY2018 of the Company, Research Division, CITIC SECURITIES

Currently, the ownership of the Company is clear and it's bold and determined to implement strategies. The operation history of the Company can be traced back to the

establishment of Huage Dye in 1997 who was principally engaged in the production and sale of DSD Acid and other chemicals. When the Company went public in 2015, Huage Dye was acquired by Tsaker Dongguang and became important production facilities based in Hebei. In the past few years, the Company has been implementing its strategies internally and externally and expanding its industry chains leveraging its advantages in R&D as well as environmentally friendly production so as to strengthen its competitive advantages in DSD acid and double D pigment.

Figure 4: Ownership Structure of Tsaker Chemical



Source: Company announcements, Research Division, CITIC SECURITIES

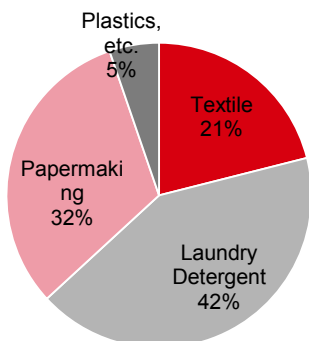
Due to stringent environmental regulations, the prices of DSD acid soar with bright prospects

DSD acid is an essential intermediate for optical brightening agents and is irreplaceable

DSD acid is an essential dye intermediate for OBA with no alternatives. The production of OBAs (Optical Brightening Agent) dates back to 1929 and its mass production started in 1960-70s. Currently, there are over 400 varieties from approximately 3,000 trade names. From the structural perspective, the common properties of OBA molecules are relatively large conjugated system, flatness and in trans form, which better absorbs light in the UV spectrum and emits light in the blue region of the visible spectrum to yield a brighter appearance and increased whiteness. DSD acid, one of the primary products of the Company, is an essential dye intermediate for OBAs with no alternatives; in addition to the production of DSD acid,

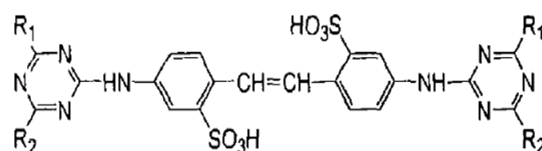
the Company also entered into an operating lease agreement with Xiajin Zhenhua Chemical & Technology Company Limited in Dezhou, Shandong for OBA production and currently its products consist of BA, CXT, VBL, DMS and AMS, etc.

Figure 5: Main Downstream Applications of OBA



Source: *Current Status and Outlook of Global and Domestic OBA Market* (Jiangguo Wang), Research Division, CITIC SECURITIES

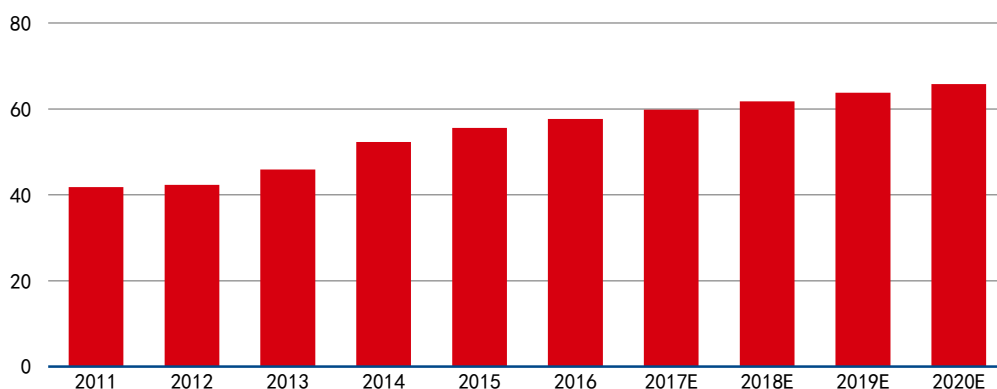
Figure 6: General Structure of DSD Acid-Triazine OBA



Source: *Current Status and Outlook of Global and Domestic OBA Market* (Jiangguo Wang)

The downstream demand is rigid and will continue to rise. DSD acid and OBA are widely used in papermaking, textiles and detergents, etc and their overall downstream demand witnesses steady growth year over year. This is mainly attributed to continuously increased household consumption of laundry detergents, household paper products and textiles for improved quality of life. Global demand for DSD acid is approximately 60,000–70,000 tonnes and CARG over recent years is approximately 3–5%.

Figure 7: Projections of Global DSD Acid Demand and Growth (in thousand tonnes)



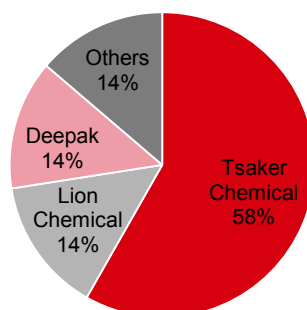
Source: Company announcements, Frost & Sullivan, Research Division, CITIC SECURITIES

The competitor shut down due to the far-reaching impact of the explosion accident of “321” in Jiangsu

The capacity is continuously relocated to mainly India and China. Before 1990s, the production of DSD acid was mainly in Europe and America; with the proliferation of

technologies and industrial relocation, the prime capacity is now relocated mainly to China and India, etc. Currently, Tsaker Chemical accounts for half of the global market share in terms of capacity and sales, ranking 1st in the world; Lianyungang Lion Chemicals Co., Ltd., the 2nd in the world, accounts for 14% of the global market share and one of its shareholders is Zhejiang Hongda Chemicals Co., Ltd. (reponsible for the production of OBA, etc.); Deepak Nitrite Ltd. from India, the 3rd in the world, accounts for 14% of the global market share. As early as 2012, Deepak Nitrite Ltd. filed with the DGAD a petition for initiating anti-dumping investigations on DSD acid originated in China; in early 2019, the Indian authorities terminated the levy of anti-dumping duties on DSD acid originated in China, which provides an impetus to increased DSD capacity in China.

Figure 8: Global Market Shares of Major DSD Acid Manufacturers



Source: Annual results investor presentations for FY2018 of the Company, Frost & Sullivan, Research Division, CITIC SECURITIES

The shutdown of Lion Chemical seriously affects global supply. Currently, there are three prime DSD producers in the world: Tsaker Chemical, the largest supplier of DSD acid and OBA, accounts for over 60% of the global market share; Lion Chemical, the 2nd largest supplier, accounts for 15-20% of the global market share; Deepak from India, the 3rd largest supplier, accounts for 12-15% of the global market share. Since the first half of 2018, Lingang Chemical Industrial Park in Yanwei Port Town, Lianyungang, where Lion Chemical is located, has been under great pressure from the explosion and pending for further information on the rectification. Lion Chemical has been shut down with no further information on its resumption of operations. Consequently, the global supply for DSD acid shrinks significantly and its prices see continued increase. In 2018, the average prices for DSD acid stood at RMB25,000/tonne, and soared to RMB68,300/tonne excluding tax by the end of 2018, an increase of 173%.

Figure 9: Lion Chemical Based in Guanyun, Lianyungang



Source: Baidu Map, Research Division, CITIC SECURITIES

The company currently has an annual capacity of 35,000 tonnes with promising future

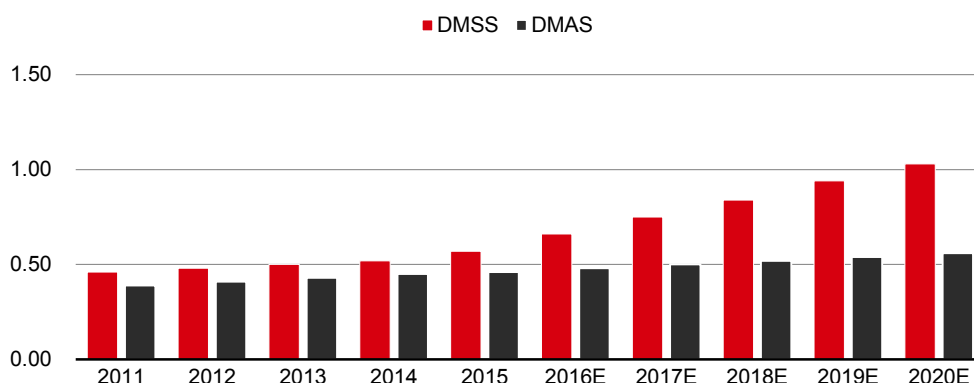
Tsaker Chemical has an annual capacity of 35,000 tonnes for DSD acid, which favours the company. Tsaker Chemical is the largest producer of DSD acid worldwide and boasts an annual capacity of 35,000 tonnes for DSD acid in Cangzhou, Hebei as it went public in 2015. In 2017, the Company completed its upstream and downstream expansion of the DSD acid industry chain through acquisition upstream mononitrotoluenes and lease of OBA production lines. Currently, the Company has an annual capacity of 35,000 tonnes for DSD acid and its production processes are environmentally friendly, hence it benefits remarkably from the recent price increase.

Other dye, pigment and pesticide intermediates continue to grow

Strong impetus will contribute to a promising pigment intermediate market in the long run

The pigment intermediates of the Company include DMSS (DATA) and DMAS, etc. These are necessary oil derivatives synthesized from complex chemical reactions. In consideration of the following major impetus in the market: (1) growing demand in the coatings industry; (2) continuous development in R&D and innovation of high-performance pigment; and (3) policies advocating more environmentally friendly production, we believe the pigment intermediate market is promising in the long run.

Figure 10: Globl DMSS and DMAS Market Capacity (ten thousand tonnes)



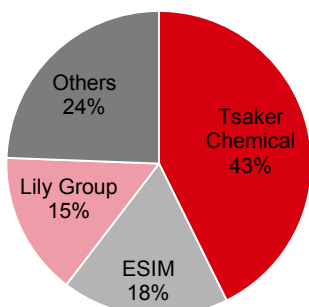
Source: Company announcements, Frost & Sullivan (estimates included), Research Division, CITIC SECURITIES

The consumption of DMSS is closely linked to the downstream industry. In 2012, global economic difficulties stalked DMSS consumption, but the consumption recovered rapidly in 2013. According to the China Association of Automobile Manufacturers statistics, a total of over 24.5 million automobiles were sold in 2015, a record high in history and topping the world for seven consecutive years. In 2015, the demand for automobile coatings in China was approximately 1.7 million tonnes with an average annual growth rate at 15.7%. Based on the analysis of Frost & Sullivan, the DMSS consumption is expected to be steady and for 2019, the consumption is expected to soar from 5,500 tonnes in 2015 to 9,400 tonnes with CARG at 11.9%.

DMAS is mainly used for the production of lemon yellow, an artificial food coloring, and also for drugs in the pharmaceutical industry. The DMAS consumption unfolds a steady rising trend due to steady demand in the food, drugs and cosmetics market. Based on the analysis of Frost & Sullivan, the DMAS production is expected to meet increased downstream demand from 2016 to 2020 with a capacity of 5,600 tonnes.

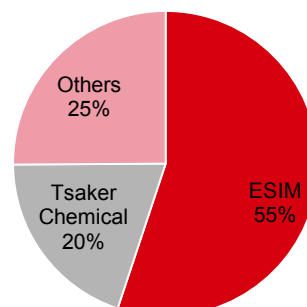
The Company is the world's largest producer of DMSS and the second largest for DMAS. For DMSS, Tsaker Chemical is the world's largest producer and accounts for 42.7% of the global market share, approximately 25 percentage points more than the second largest producer – ESIM; for DMAS, Tsaker Chemical is the world's second largest producer. In 2016, the capacity of Tsaker Chemical accounted for 19.8% of the overall market, ranking the 2nd while its competitor – ESIM topped the world with 55.1% market share. Along with the continuous integration and increase of the industry, Tsaker Chemical, as a leader in the industry, will become one of the players that benefit most from the development.

Figure 11: Global DMSS Market Shares of Major Players



Source: Annual results investor presentations for FY2018 of the Company, Research Division, CITIC SECURITIES

Figure 12: Global DMAS Market Shares of Major Players

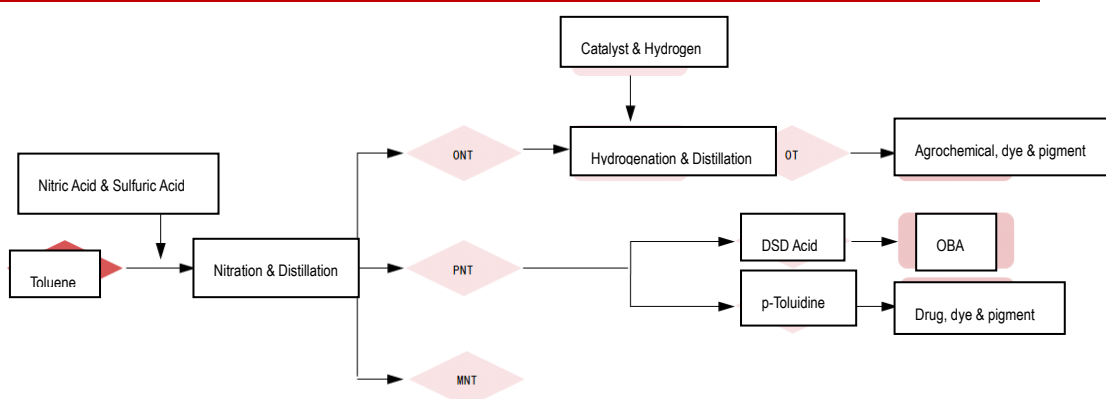


Source: Annual results investor presentations for FY2018 of the Company, Research Division, CITIC SECURITIES

Rigid demand drives the growth of mononitrotoluenes and pesticide intermediates market

Mononitrotoluene is an essential upstream raw material for the main products of the Company. Mononitrotoluene consists of PNT, ONT and MNT. To produce one tonne of mononitrotoluene, PNT, ONT and MNT are mixed at approximately 35%:60%:5%. PNT, a light yellow crystalline solid, is a key raw material for the production of dye and pigment intermediates and is used to produce DSD Acid in the Company. ONT, a light yellow liquid, has wider application than PNT as a raw material for pesticide, drug, dye and pigment intermediates. The production of mononitrotoluene is highly centralized and the top three manufacturers account for 79.6% of global market share.

Figure 13: Production Processes of Mononitrotoluene (PNT, ONT, MNT and OT)

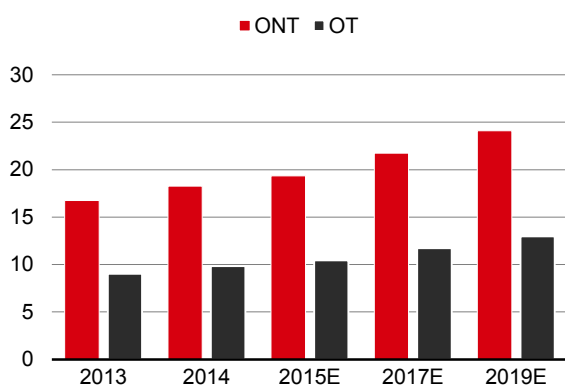


Source: Annual results investor presentations for FY2018 of the Company, Research Division, CITIC SECURITIES

Currently, the company's annual capacity of mononitrotoluene reaches 80,000 tonnes, among top three suppliers worldwide. The Company has been the largest producer of DSD acid for a long time and PNT is an essential raw material for that. As the

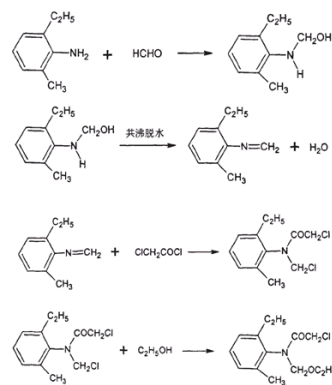
largest procurer of PNT, the Company commenced production of mononitrotoluene in 2015 and its capacity will double upon completion of Phase I and II of Dongao Chemicals. Currently, the company's annual capacity of mononitrotoluene reaches 80,000 tonnes and its external procurement of PNT is reduced by approximately 85%. Consequently, the supply of PNT in the market exceeds demand with excessive PNT sold by their producers at discounted prices so that the production cost of DSD acid of the Company is cut down. Meanwhile, some backward capacity is forced to phase out due to competition while the intergration of the industry accelerates, hence the market share of the Company's mononitrotoluene is significantly increased and its bargaining power is strengthened to cater to its strategies.

Figure 14: Global Demand for ONT and OT (in thousand tonnes)



Source: Annual results investor presentations for FY2018 of the Company, Frost & Sullivan (estimates included), Research Division, CITIC SECURITIES

Figure 15: Snapshot of Synthesis of Acetochlor



Source: Study on the New Process of Acetochlor Preparation Using Methylene Method (Yuting Chen)

The market of OT, a pesticide intermediate, is promising. OT (O-Toluidine) is a major downstream product of ONT mainly used as dye, drug and pesticide intermediate with a wide range of applications. MEA (2-Ethyl-6-methylaniline) is prepared by O-Alkylation of OT with ethylene. MEA is a prime intermediate for amide herbicides and raw material for the synthesis of dye and medicine. Amide herbicides have witnessed rapid growth in recent years. In 2016, its global sales revenue totalled US\$2 bn, a 26% increase over 2012, and it continues on a rising trend.

Table 1: Global Amides Sales Revenue (US\$100mn)

#	Product	Year 2012	Year 2016	% Growth	Producer (Brand)	Year of Application
1	Acetochlor	4.75	4.20	-12%	Monsanto (Harness)	1985
2	Metolachlor	4.40	5.90	34%	Syngenta (Calibra, Produce, Dual)	1975
3	Dimethenamid	1.10	1.65	50%	BASF (Spectrum, Outlook)	1993
4	Metazachlor	1.00	1.65	65%	BASF (Butisan)	1979
5	Pretilachlor	0.90	0.95	6%	Syngenta (Rifit, Solnet, Sofit)	1984
6	Butachlor	0.85	1.35	59%	Monsanto (Machete)	1969
7	Flufenacet	0.85	2.50	194%	Bayer (Axiom, Fosburi, Herold)	1998
8	Alachlor	0.65	<0.30	-54%	Monsanto (Lasso)	1966

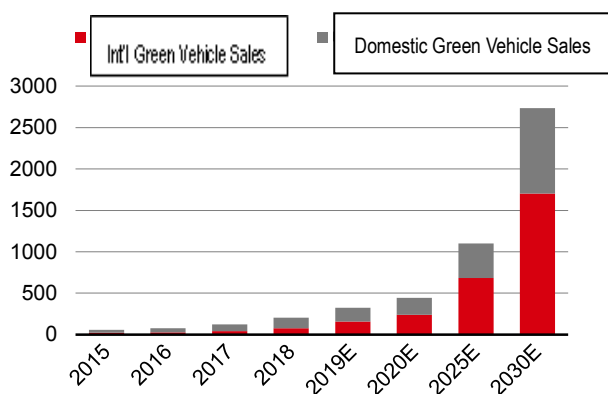
#	Product	Year 2012	Year 2016	% Growth	Producer (Brand)	Year of Application
9	Napropamide	0.40	0.40	0%	UPL (Devrinol)	1969
10	Dimethachlor	0.35	0.35	0%	Syngenta (Terdex)	1976
11	Mefenacet	0.35	<0.30	-14%	Bayer (Hinochloa, Rancho)	1986
12	Pethoxamid	<0.10	<0.30	200%	Tokuyama/FMC (Koban, Successor)	2006
13	Propachlor	<0.10	<0.10	0%	Monsanto (Ramrod)	1965
14	Thenylchlor	<0.10	<0.10	0%	SDS Biotech (Alherb)	1994
Total		15.90	20.05	26%		

Source: *Latest Global Pesticide Developments* (Yibin Zhang), Research Division, CITIC SECURITIES

Rapid growth of green vehicles contributes to broad prospects for the market of relevant materials

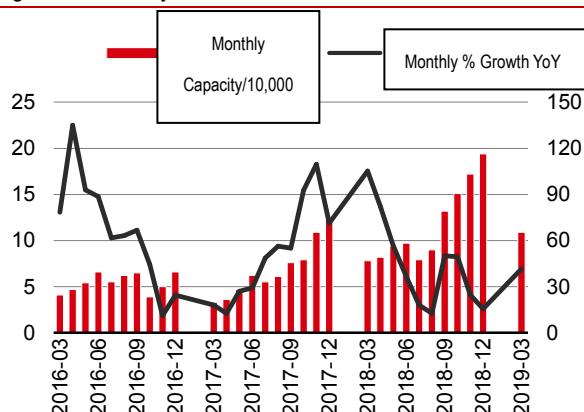
In consideration of serious pollution to our ecosystem caused by fossil fuels used to power traditional cars and efforts to conserve fossil fuels, both China and other countries in the world hasten the development of green vehicles. The capacity and sales of electric vehicles and the share of green vehicles on total automobile sales have soared since 2014. It's anticipated that the penetration of electric vehicles for 2020 will surpass 7.0% and sales of green vehicles will total 2 million, which reflects a surge in demand for batteries.

Figure 16: Global Green Passenger Vehicle Sales Forecast



Source: China Passenger Car Association, Research Division, CITIC SECURITIES estimates

Figure 17: Monthly Sales of Domestic Green Vehicles



Source: National Bureau of Statistics, PRC, Research Division, CITIC SECURITIES

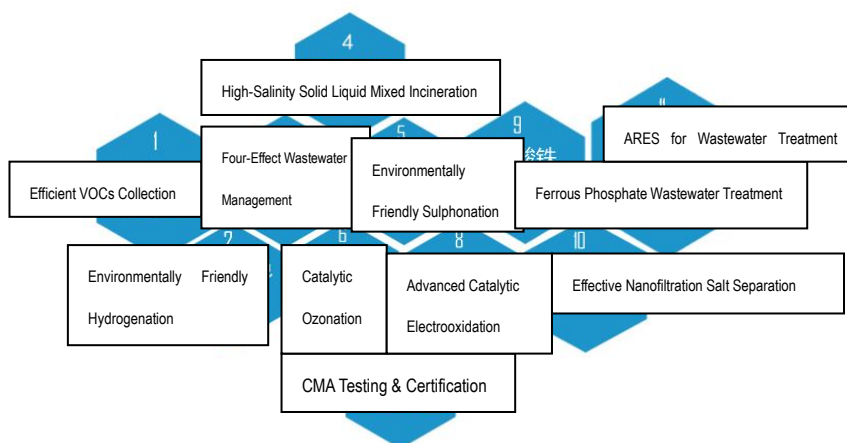
The Company has made moves in the development of lithium battery materials and its main products include: 1) NMP (2,000 tonnes) and conductive paste; 2) ferrous phosphate as positive electrode material (15,000 tonnes); and 3) collaboration with colleges in the R&D of ternary precursor materials. As the green vehicle market continues to prosper, lithium battery materials are expected to generate revenues soon.

Environmental protection consulting starts to generate revenues

The Company sticks to green production and carries out stringent policies on environmental protection. Since its establishment, the Company develops and

upgrades production processes independently to seek continued cost cuts. And the Company now boasts leading production processes in the world. The production facilities in Hebei also act as Hebei Provincial Dye and Pigment Intermediate Engineering & Technology Research Center. By leveraging this, in 2014, the Company completed 20 engineering and technological transformation programmes in technical advancement, energy saving and environmental protection enhancement. In the past two years, the Company has been working on the development of environmentally friendly technologies and upgrades of existing products.

Figure 18: Partial Environmental Protection Related Technological Achievements of the Company



Source: Company official website

In addition to this, the Company established its Environment Protection Business Unit in 2017. The Environment Protection Business Unit is specialized in the development and application of environmentally friendly products and comprised of 103 research engineers, 4 PhD and 23 postgraduate staff. The Environmental Protection BU, formerly the R&D Center of Tsaker Chemical Group Limited, has commenced its R&D in chemical waste management since 2000 and has been committed to technological advancements and process optimization pertaining to environmental protection in the chemical industry for years. Currently, the Environmental Protection BU owns many patents in VOCs management and industrial wastewater management including efficient VOCs collection, high-salinity solid liquid mixed incineration, catalytic ozonation, advanced catalytic electrooxidation and effective nanofiltration salt separation, etc.

The Environmental Protection BU has generated revenues in the past two years. Leveraging its over ten years' experience in process development, the BU provides in-depth comprehensive solutions of "fundamental emission reduction, resource recycling, energy saving and waste management" through process optimization combined with waste management technologies to help clients attain the most satisfactory environmental benefits at lowest costs. Currently, the Environmental Protection BU provides services such as management of waste water, waste gas and solid waste as well as chemical tests

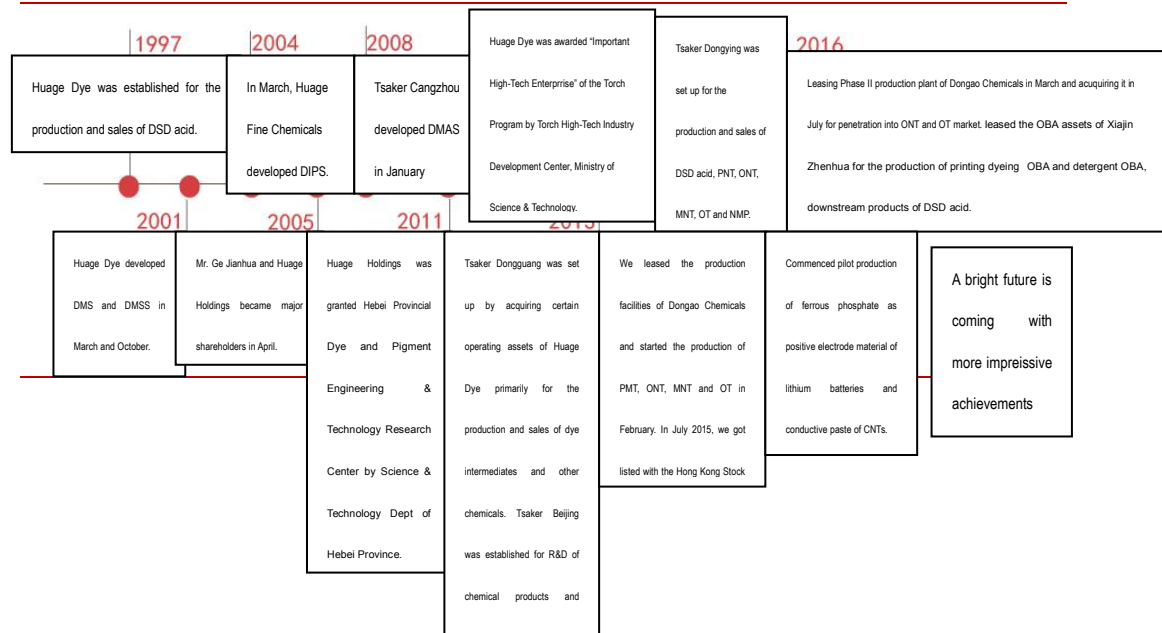
to external clients and it generated revenues of RMB530,000 and 38.32 million in 2017 and 2018, respectively, reflecting rapid growth. The business will continue on a rising trend thanks to the more and more stringent environmental protection regulations in China.

■ Continuously implementing strategies for rapid expansion

Rapidly complementing industry chain through acquisition and lease

Seek new growing points for profits through vertical integration of the industry chain. Industry chain integration is a feasible approach to expand business and reduce costs. The Company rapidly boosts its industry chain downstream and upstream via acquisition and lease so as to ensure abundant supply of upstream raw materials. By making use of its multiple advantages in technologies and channels, the Company is expected to have independent pricing power in the future to ensure smooth business development in the long run.

Figure 19: Rapid Integration of the Company's Industry Chains through Acquisition



Source: Company announcements, Research Division, CITIC SECURITIES

The Company acquired Dongao upstream and became the world's third largest producer of mononitrotoluenes. Mononitrotoluene is an essential upstream raw material of the Company. The Company leased the production facilities of Dongao Chemicals in January 2015 and embarked on its production of mononitrotoluene, OT and NMP in February 2015. After it went public, the Company leased the Phase II production plant of Dongao Chemicals in March 2016 and acquired Dongao in July 2016. In September 2014, Dongao Chemicals was wholly acquired by Huage Holdings from a

third party at a consideration of RMB24.6 million and later Tsaker Chemical acquired 100% equity interests of Dongao Chemicals from Huage at a consideration of RMB17.36 million. Upon acquisition, the Company obtained annual capacities of 80,000 tonnes and 6,000 tonnes for mononitrotoluene and NMP, respectively. This move facilitates the Company to: 1) complement raw material supply chain to cut gross margin as a whole; 2) enter OT (intermediates including herbicides) and NMP market for surging revenues.

The Company acquired Xiajin Zhenhua Chemical & Technology Company Limited downstream for independent production of OBA. The Company announced in December 2016 that it leased the OBA assets of Xiajin Zhenhua for the production of printing dyeing OBA and detergent OBA so that the industry chain of DSD acid, one of the prime products of the Company, is expanded downstream into the OBA industry. According to the announcement, the Company mainly leases the production facilities and equipment for OBA production for a term of three years at an annual rent of RMB4.3 million. As part of its industry chain integration strategies, the Company officially announced its expansion downstream into the OBA production and will continue to seek further opportunities downstream.

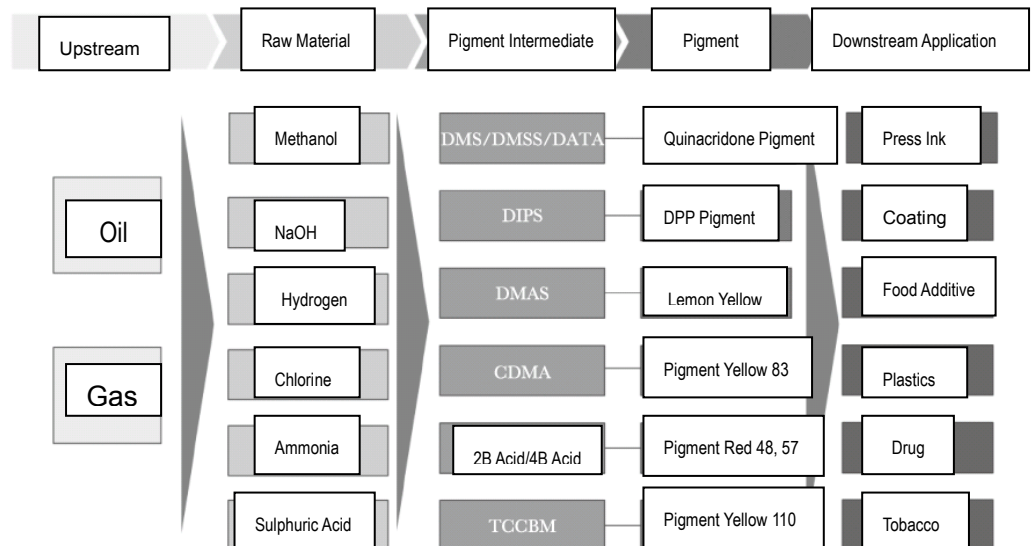
The strategies are effective and other products of the industry chain will be diversified continuously

In addition to DSD acid and double D pigment intermediates, the Company actively extends new production lines. Following the acquisition of Dongao, the Company also extended horizontally the production of mononitrotoluenes into pesticide intermediate industry. The Company's strategy of mass production of the upstream product of mononitrotoluenes gives an impetus to the rapid penetration into the pesticide intermediate market and outstanding performance. In 2016, driven by price increases of herbicides including ONT and OT resulting from pesticide industry integration and rising capacity and prices, the Company saw a YoY increase of 153.4% in pesticide intermediate sector so that the cost increases due to oil price increases was offset and the Company achieved a YoY increase of 18.3% in revenues, hence the sector became the fastest growing business of the year. Furthermore, based on its production of NMP, the Company entered the lithium battery industry chain and has started the production of materials such as paste and ferrous phosphate.

New products are expected to be developed with growth prospects. Currently, the DSD acid and double D pigment intermediates account for substantial global market share and the Company has accumulated solid technologies and market potential for fine chemicals. It's expected that the Company will continue to optimize its existing product portfolio and set up new production lines including previous (planned) products such as CDMA, 2B acids and 4B acids. According to the industry chain as well as the Company's annual results investor presentations and announcements, in addition to dye and pigment

intermediates, we expect that the Company may penetrate segments including: 1) pesticide intermediates (on the basis of OT production) and 2) battery materials.

Figure 20: Possibly Expanded Industry Chain Segmentation of Pigment Intermediates

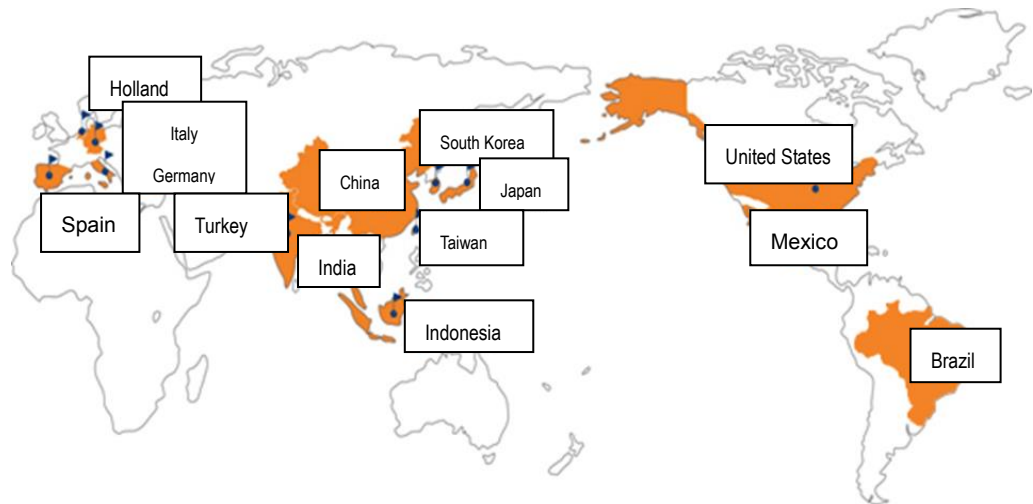


Source: Company announcements, Research Division, CITIC SECURITIES

Expansion of overseas market proceeds, and will become new growing points.

Expand sales channels and endeavour to export. Currently, exports account for over 30% of the Company's total sales with differentiated penetration for different products. For example, the export of mononitrotoluenes used to be insubstantial and in the future, the Company intends to expand its exports by leveraging its long-term good business relationships with international enterprises and further make profits. The Company has sent mononitrotoluenes samples to overseas clients for trial and got positive feedback. Once the oversea market is penetrated, the expanded sales channels will generate considerable profits while evade possible risks in single market due to fluctuation in prices.

Figure 21: Geography of Operations Worldwide of the Company



Source: Annual results investor presentations for FY2018 of the Company, Research Division, CITIC SECURITIES

Risks

1. Fluctuation in global oil prices will put pressure on commodity prices and gross margin of the company; and
2. The global demand for dyes, pigment and agricultural inputs decreases.

Earnings Forecasts and Valuation Assumptions

Assumptions on the Company's operating revenues and gross margins are:

- 1) The capacity of DSD acid is reduced due to stringent environmental regulations compared to previous years yet its prices will show a rising trend in two years;
- 2) The supply of ONT/OT is reduced due to stringent environmental regulations and their demand will rise driven by oversea market expansion and growth of downstream pesticides;
- 3) The pigment intermediates will remain stable growth;
- 4) The lithium battery materials will witness considerable growth along with the development of technologies and mature market in 2020; and
- 5) The environmental protection business will increase with the strengthening of environmental protection in China.

Table 2: Operating Revenue Forecast of the Company's Main Business (RMB ten thousand)

Date	2016	2017	2018	2019E	2020E	2021E	2022E
1.Dye Intermediate - DSD							
Capacity/Ten Thousand Tonnes	35,000	35,000	35,000	35,000	35,000	55,000	55,000
The South production plant in Dongguang, Hebei Province	35,000	35,000	35,000	35,000	35,000	35,000	35,000
E Dongying, Shandong						20,000	20,000
Sales/ Ten Thousand Tonnes	33,018	36,763	35,000	19,200	21,600	24,000	25,000
Gross Margin	25.90%	30.10%	46.43%	79.45%	78.48%	71.75%	71.75%
Revenues	48,411	66,001	98,000	186,903	200,708	169,912	176,991
Cost	35,873	46,134	52,500	38,400	43,200	48,000	50,000
2. Pesticide Intermediate - ONT/OT							
Capacity/Ten Thousand Tonnes	45,000	65,000	65,000	65,000	65,000	65,000	65,000
ONT	45,000	45,000	45,000	45,000	45,000	45,000	45,000
OT		20,000	20,000	20,000	20,000	20,000	20,000
Sales/ Ten Thousand Tonnes	37,851	32,414	22,000	25,000	30,000	45,000	50,000
Gross Margin	26.10%	24.20%	24.20%	24.20%	26.00%	28.00%	28.00%
Revenues	36,148	34,988	23,747	26,985	33,170	51,137	56,818
Cost	26,713	26,521	18,000	20,455	24,546	36,818	40,909
3. Pigment Intermediate							
Capacity/Ten Thousand Tonnes	4,500	8,000	11,000	11,000	11,000	11,000	11,000
3.1. DMS Intermediate	2,000	4,500	4,500	4,500	4,500	4,500	4,500
3.1. DATA Product	1,000	2,000	2,000	2,000	2,000	2,000	2,000
3.2. DMAS	1,500	1,500	4,500	4,500	4,500	4,500	4,500
Sales/ Ten Thousand Tonnes		8,102	8,227	8,200	8,200	8,200	8,200
Gross Margin		33.70%	33.90%	33.90%	33.90%	33.90%	33.90%
Revenues		23,617	26,248	27,060	28,700	28,700	28,700
Cost		15,658	17,350	17,293	17,293	17,293	17,293
4. Lithium Battery Material							
4.1. Ferrous Phosphate							
Capacity/Ten Thousand Tonnes		15,000	15,000	15,000	15,000	15,000	15,000
Sales/ Ten Thousand Tonnes		100	100	100	500	3,000	5,000
Gross Margin		18.20%	18.20%	18.20%	19.00%	25.00%	25.00%
Revenues		220	220	220	1,111	7,198	11,997
Cost		180	180	180	900	5,399	8,998
4.2. NPM and Paste							
Capacity/Ten Thousand Tonnes		2,000	2,000	2,000	2,000	2,000	2,000
Sales/ Ten Thousand		1,000	1,000	1,200	1,400	1,600	1,600

Date	2016	2017	2018	2019E	2020E	2021E	2022E
Tonnes							
Gross Margin		18.20%	18.20%	18.20%	19.00%	25.00%	25.00%
Revenues		2,200	2,200	2,640	3,110	3,839	3,839
Cost		1,800	1,800	2,160	2,519	2,879	2,879
5. Environmental Protection Consulting							
Revenues		4,000	5,000	6,000	8,400	12,600	18,900
% Growth			20%	20%	40%	50%	50%
Cost			4,160	4,992	6,720	9,450	14,175
Gross Margin			16.80%	16.80%	20.00%	25.00%	25.00%

Source: Financial reports, financial results investor presentations, Research Division, CITIC SECURITIES estimates

Based on the above key assumptions, we forecast the profitability of the Company as follows:

Table 3: Predictions on Partial Profitability Metrics of the Company

Item/Fiscal Year Ending	2017	2018	2019E	2020E	2021E
Operating Revenue (mn bookkeeping base currency)	1,256	1,527	2,510	2,763	2,745
% Growth YoY	18%	22%	64%	10%	-1%
Net Income (mn bookkeeping base currency)	124	229	1,013	1,066	882
% Growth YoY	-15%	84%	343%	5%	-17%
EPS(basic) (yuan in bookkeeping base currency)	0.12	0.22	0.97	1.03	0.85
Gross Margin	0.30	0.35	0.67	0.66	0.56
ROE	0.11	0.17	0.43	0.31	0.21
NAVPS (yuan in bookkeeping base currency)	1.10	1.27	2.24	3.27	4.12
PE (x)	21.89	11.90	2.69	2.56	3.09
PB (x)	2.39	2.07	1.17	0.80	0.64

Source: Wind, Research Division, CITIC SECURITIES estimates

Notes: 1. The stock price is the closing price as of 25 April, 2019. 2. As of 25 April, 2019, HK\$1 = RMB0.86.

According to comparable company valuation, the valuation for China A-shares is as high as 15-50x while an average of 4-8x for HK listed companies. We initiate coverage of Tsaker Chemical with a Buy rating and PE ratio of 4.5x corresponding for HK\$5.3 bn for FY2019 and price at HK\$5.10 based on the median for comparable company valuation.

Table 4: Comparable Company Valuation

Company	Closing Price	Market Cap. (RMB 100mn)	EPS (RMB)			PE (x)		PBLF	EBITDA
			2018E	2019E	TTM	2018E	2019E		
Lily Group	25.00	56	0.00	1.20	29.7	-	20.8	3.96	18.30
Zhejiang Longsheng	23.60	768	0.77	0.83	18.7	30.6	28.3	3.84	15.52
Runtu Co.,	17.94	206	0.40	0.48	15.4	45.0	37.7	2.58	13.49

LTd.									
Fufeng Group	4.24	108	0.99	1.06	-	4.3	4.0	3.49	5.77
China XLX Fertiliser	2.99	35	0.39	0.47	-	7.6	6.4	3.15	5.10
Dongyue Group	6.69	141	0.95	1.00	-	7.1	6.7	2.89	2.86

Source: Wind consensus estimates, Research Division, CITIC SECURITIES

Note: The stock price is the closing price as of 25 April, 2019.

Income Statement (RMB mn)

Metrics	2017	2018	2019E	2020E	2021E
Operating Revenue	1,256	1,527	2,510	2,763	2,745
CoGS	(884)	(992)	(835)	(952)	(1,198)
Gross Margin	29.60%	35.07%	66.74%	65.56%	56.35%
Sales Tax and Additional Expense	0	0	0	0	0
Selling Expense	(43)	(48)	(86)	(92)	(91)
Selling Expense Ratio	3.40%	3.17%	3.44%	3.34%	3.32%
G&A Expense	(122)	(132)	(226)	(253)	(246)
G&A Expense Ratio	9.70%	8.66%	9.03%	9.15%	8.96%
Financial Expense	(21)	(40)	(28)	(21)	(20)
Financial Expense Ratio	1.71%	2.64%	1.12%	0.76%	0.71%
ROI	0	0	0	0	0
Operating Income	181	309	1,329	1,440	1,185
Operating Income Ratio	14.41%	20.23%	52.97%	52.10%	43.17%
Non-Operating Revenue	(12)	6	7	0	4
Non-Operating Expense	0	0	0	0	0
Total Profit	169	315	1,336	1,440	1,189
Taxes	(45)	(86)	(323)	(375)	(307)
Tax Rate (%)	-26.54	-27.34	-24.16	-26.01	-25.84
Minority Interests	(0)	(0)	(0)	(0)	(0)
Net Income to Shareholders	124	229	1,013	1,066	882
Net Margin (%)	9.91	14.98	40.38	38.57	32.14

Cash Flow Statement (RMB mn)

Metrics	2017	2018	2019E	2020E	2021E
Pre-Tax Income	169	315	1,336	1,440	1,189
Income Tax Paid	-45	-86	-323	-375	-307
Depreciation and Amortisation	63	65	149	156	163
Change of Working Capital	0	0	-324	-82	90
Other Cash Flow from Operations	4	-77	28	21	20
Sub-Total of Cash Flow from Operations	192	217	867	1,161	1,155
Capital Expenditure	-247	-466	-75	-75	-75
Cash Flow from Investing	0	0	0	0	0

Balance Sheet (RMB mn)

Metrics	2017	2018	2019E	2020E	2021E
Cash & Cash Equivalents	360	124	657	1,722	2,782
Inventory	115	210	126	156	210
Accounts Receivable	485	521	910	1,006	978
Other Current Assets	18	20	20	20	20
Current Assets	978	875	1,713	2,904	3,991
Property, Plant and Equipment	1,120	1,496	1,422	1,340	1,251
Long-Term Equity Investments	0	0	0	0	0
Intangibles	1	3	3	3	3
Others	157	135	135	135	135
Non-Current Assets	1,278	1,634	1,560	1,478	1,389
Total Assets	2,256	2,509	3,273	4,382	5,380
Short-Term Loans	87	231	0	0	0
Accounts Payable	496	446	451	492	602
Other Current Liabilities	123	194	171	174	180
Current liabilities	705	871	622	666	782
Long-Term Loans	387	286	286	286	286
Other Long-Term Liabilities	22	31	31	31	31
Non-Current Liabilities	409	318	318	318	318
Total Liabilities	1,114	1,189	939	984	1,100
Share Capital and Reserves	1,141	1,330	2,344	3,409	4,292
Capital Reserves	0	-11	-11	-11	-11
Total Equity to Shareholders	1,141	1,319	2,333	3,398	4,281
Minority Interests	1	1	1	0	0
Total Equity	1,142	1,320	2,333	3,399	4,281
Total Liabilities and Owners' Equity	2,256	2,509	3,273	4,382	5,380

Key Financial Metrics

Metrics	2017	2018	2019E	2020E	2021E
Operating Revenue %	18.41%	21.58%	64.31%	10.12%	-0.66%
Operating Income %	17.22%	70.62%	330.30%	8.32%	-17.69%
Net Income %	-15.24%	83.87%	342.80%	5.17%	-17.21%
Gross Margin	29.60%	35.07%	66.74%	65.56%	56.35%
EBITDA Margin	9.61%	10.97%	32.35%	29.91%	26.19%
Net Margin	9.91%	14.98%	40.38%	38.57%	32.14%
ROE %	10.91%	17.35%	43.45%	31.36%	20.61%
ROA %	5.52%	9.12%	30.97%	24.32%	16.40%
Debt-to-Asset	0.49	0.47	0.29	0.22	0.20

Other Cash Flow from Investing	-10	3	0	0	0	Ratio					
Sub-Total of Cash Flow from Investing	-257	-463	-75	-75	-75	Tax Rate	-26.54%	-27.34%	-24.16%	-26.01%	-25.84%
Shares Issue	94	0	0	0	0	Dividend Payout Ratio	0.00%	0.00%	0.00%	0.00%	0.00%
Change in Net Debt	64	63	-231	0	0						
Dividend Paid	0	0	0	0	0						
Other Cash Flow from Financing	-130	-53	-28	-21	-20						
Sub-Total of Cash Flow from Financing	28	10	-259	-21	-20						
Net Increase of Cash and Cash Equivalents	-38	-237	533	1,065	1,060						

Source: Company announcements, Research Division, CITIC SECURITIES estimates

Analyst Certification

Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (i) all of the views expressed accurately reflect his or her personal views about those securities and issuers, and (ii) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

CITIC Securities Investment Rating Definitions

Investment Rating Standard		Rating	Definition
Investment ratings contained in this report consist of stock ratings and industry ratings (unless otherwise specified). The rating standard is the relative stock performance over six to twelve months following the filing date, i.e., the rate of change in the company's stock price (or sector indexes) compared to relevant major stock market indices over the same period as the benchmark, among which, the CSI 300 Index for China A shares; the NEEQ Component Index (for equities through agreement transfer) and NEEQ Market Making Component Index (for equities through market making) for NEEQ market; the MSCI China A Index for HK stock market; and NASDAQ Composite Index or S&P 500 Index for the US stock market.	Stock Rating	Buy	an increase over 20% compared to relevant major stock market indices over the same period;
		Overweight	an increase of 5%~20% compared to relevant major stock market indices over the same period;
		Hold	an increase of -10%~5% compared to relevant major stock market indices over the same period;
		Sell	a decrease over 10% compared to relevant major stock market indices over the same period;
	Industry Rating	Outperform	an increase over 10% compared to relevant major stock market indices over the same period;
		Neutral	an increase of -10%~10% compared to relevant major stock market indices over the same period;
		Underperform	a decrease over 10% compared to relevant major stock market indices over the same period

Other Disclosures

This research report has been prepared by CITIC Securities Co., Ltd. or its subsidiaries. CITIC Securities Co., Ltd., its global subsidiaries, branches and affiliates (for disclaimers applicable to this research report, CLSA group of companies are excluded) are referred to herein as CITIC SECURITIES.

Legal Entity Disclosure

This research report is distributed in PRC (excluding HK, Macau and Taiwan) by CITIC Securities Co., Ltd. (under the supervision of Chinese Securities Regulatory Commission with its securities business license No: Z20374000). This research report is distributed by the following institutions representing CITIC Securities in the following countries and regions: distributed in HK by CLSA Limited; distributed in Taiwan by CL Securities Taiwan Co., Ltd.; distributed in Australia by CLSA Australia Pty Ltd.; distributed in the United States by CLSA group of companies (except CLSA Americas, LLC ("CLSA Americas")); distributed in Singapore by CLSA Singapore Pte Ltd. (Company Registration No: 198703750W); distributed in the European Union by CLSA (UK); distributed in India by CLSA India Private Limited (Add: 8/F, Dalamal House, Nariman Point, Mumbai 400021; Tel: +91-22-66505050; Fax: +91-22-22840271; Company Identification Number: U67120MH1994PLC083118; Registration Number with Securities and Exchange Board of India: INZ000001735 for security broker, INM000010619 for merchant bank and INH000001113 for stock research and analysis); distributed in Indonesia by PT CLSA Sekuritas Indonesia; distributed in Japan by CLSA Securities Japan Co., Ltd.; distributed in South Korea by CLSA Securities Korea Ltd.; distributed in Malaysia by CLSA Securities Malaysia Sdn Bhd; distributed in Philippines by CLSA Philippines Inc. (member of the Securities Investor Protection Fund and Philippine Stock Exchange); distributed in Thailand by CLSA Securities (Thailand) Limited.

Global Disclaimer

China: According to the securities business license granted by Chinese Securities Regulatory Commission, the business scope of CITIC Securities Co., Ltd. covers securities investment consulting.

United States: This research report has been prepared by CITIC Securities Co., Ltd. This research report is distributed in the United States solely to "Major U.S. Institutional Investor" as defined in Rule 15a-6 of the Securities Exchange Act of 1934 of the United States and dealing with CLSA Americas by CLSA group of companies (except CLSA Americas). The delivery of this report to any person in the United States shall not be deemed a recommendation of CITIC Securities Co. to effect any transactions in the securities discussed herein or an endorsement of any opinion expressed herein. Any person receiving this research report from CITIC Securities and CLSA group of companies and wishing to effect any transaction in the US in any security discussed in the report should do so through CLSA Americas.

Singapore: This research report is distributed in Singapore to "institutional investors, accredited investors and professional investors" as defined under s.4A (1) of the Singapore Securities and Futures Act by CLSA Singapore Pte Ltd. (capital markets services licence holder and an exempt financial adviser). Sections 33, 34, 35 and 36 of Financial Advisers (Amendment) Regulations 2005 under Financial Advisers Act of Singapore that specify institutional investors, accredited investors, professional investors and oversees investors as well as sections 25, 27 and 36 of the Financial Advisers Act do not apply to CLSA Singapore Pte Ltd. Should you have any questions regarding this report, you should contact CLSA Singapore Pte Ltd. (Tel: +65 6416 7888). MCI (P) 071/10/2018.

Canada: This research report has been prepared by CITIC Securities Co., Ltd. The delivery of this report to any person in Canada shall not be

deemed a recommendation of CITIC Securities Co. to effect any transactions in the securities discussed herein or an endorsement of any opinion expressed herein.

United Kingdom: This UK disclosure shall be governed by and construed in accordance with English law. This research report shall be classified as a marketing document in the United Kingdom. This research report has not been prepared in accordance with FCA Handbook legal requirements designed to promote the independence of investment research reports and it is not subject to any prohibition on dealing ahead of the dissemination of investment research reports. This research report is distributed in the European Union by CLSA (UK) which is authorized and regulated by FCA of the UK. This research report shall be exclusively made available to investment professionals as defined in Article 19 of the Financial Services and Markets Act 2000 (Regulated Activities) Order and any investment activity contained in this report shall be solely engaged with such professionals. Non investment professionals shall not rely on this report.

General Disclosures

This research report is confidential and is intended for the use of the addressee(s) only. This research report is not directed to, or intended for distribution to, any person where such distribution, publication, availability or use would be contrary to local law or regulation. It is published solely for information purposes; it is not an offer or an invitation to make an offer, to buy or sell any securities or financial instruments. Addressee(s) of this report shall not be deemed clients of CITIC Securities. This report is not intended to provide personal investment recommendations or strategies and it does not take into account the specific investment objectives, individual circumstances and the particular needs of any specific person. Investors should exercise prudence and their own judgement regarding the appropriateness of any securities or financial instruments discussed or recommended in this report.

Sources of the information contained in this document are believed by CITIC Securities to be reliable and CITIC Securities is under no obligation to ensure the accuracy or completeness of the information. CITIC Securities shall not be responsible or liable, directly or indirectly, for any damage or loss caused by or in connection with any use of such information herein. Any security or financial instrument mentioned in the document may involve risks, difficult to sell or not suitable for all investors. Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument referred to in the document. Past performance is not necessarily a guide to future performance.

Materials, opinions and forecasts contained in this report reflect judgements made by individual analysts on the report date. Any opinions expressed in this document may change without notice and may differ or be contrary to opinions expressed by other business areas, units or affiliates of CITIC Securities in similar reports resulting from different assumptions, standards, opinions and analysis approaches. CITIC Securities has no obligation to alert addressee(s) to such changes. CITIC Securities relies on information barriers to control the flow of information contained in one or more areas within CITIC Securities into other areas, units, groups or affiliates of CITIC Securities. The compensation of the analyst who prepared this document is determined exclusively by research management and senior management of CITIC Securities. Analyst compensation is not based on investment banking revenues of CITIC Securities; however, compensation may relate to the revenues of CITIC Securities Investment Bank as a whole, of which investment banking, sales and trading are a part.

Any third-party financial institution transmitting this report shall be solely for the transmission. Any person dealing with this institution and wishing to effect any transaction or obtain further information in any security discussed in the report should do so through this institution. This report does not constitute any investment advice to clients dealing with the financial institution provided by CITIC Securities. Neither CITIC Securities nor any of its officers, directors or employees accepts any liability for any direct or indirect loss or damage (for clients dealing with the aforementioned financial institution) arising out of the use of this report or all and any of the Information herein.

This research report may not be redistributed, retransmitted or reproduced, in any form or manner, without the express written consent of CITIC Securities.

Copyright © 2019 CITIC Securities. All rights reserved.