Deutsche Bank
Research

Rating
Hold

Asia
China

Energy
Chemicals

Company
QSLI

Reuters	Bloomberg	Exchange	Ticker
000792.SZ	000792 CH	SHZ	000792

Date
16 July 2018

Forecast Change

Price at 16 Jul 2018 (CNY)	9.86
Price target - 12mth (CNY)	10.40
52-week range (CNY)	20.02 - 9.55
Shenzhen Index	1,678

Huge loss revealed in preliminary 1H18 results; cut TP to RMB10.4

Profit warnings: loss at least doubled yoy in 1H18; retain Hold

QSLI announced preliminary 1H18 results with net loss of RMB1.05-1.25bn vs. loss of RMB0.52bn in 1H17, widened by 100%-139% yoy. This implies 2Q18 loss of RMB0.78-0.98bn vs 1Q18 loss of RMB0.27bn. The accelerated loss was driven by: 1) slow ramp up on magnesium integration project after production started in late 2017; 2) Haina PVC production suspension in April and accrued loss of RMB0.47bn; 3) chemical integration project impacted by limited natural gas supply and accrued loss of RMB0.33bn. We revise our estimates after accounting for the higher loss (by 129%) in 2018E but revised up 2019E earnings (by 79%) on higher ASPs due to lower RMB:USD FX. We trim our TP to RMB10.4 (9%).

Segmental update: Potash and Lithium +ve

- Potash production was roughly flat yoy at 1.93mnton while sales improved 18.9% yoy to 2.20mnton and ASP up RMB230/ton yoy in 1H18.
- Lithium carbonate (Li_2CO_3) production was 5,329ton (+129% yoy) while sales volume improved by 78% yoy to 3,950ton. The company said Lanke's new 20ktpa capacity construction has started while the 30ktpa JV project with BYD is under preparatory work stage.
- Magnesium project daily output now is at 50ton which is quite a bit of distance away from the target operational level.
- Chemical integration project production was significantly impacted by lack of natural gas supply in 1H18. The company has restarted phase 1 site in July; the current run-rate for the chemical integration project is at 150%. Conversely, due to the 4.26 accident, Haina PVC facility is still offline and may not resume in the near term.

Valuation and risk

We revised our TP to RMB10.4 based on a DCF (assuming a 6.2% WACC and 2% terminal growth). Our TP implies 1.5x P/B in with 1.5% ROE in 2019E. We see longer term risks and rewards as balanced at the current valuation, supported by a potentially ROE accretive debt-to-equity swap plan and long term structural growth of EV batteries. Key downside risks: 1) sluggish chemical prices and soft demand; and 2) unfavorable government policy. Key upside risks: 1) better-than-expected potash prices; and 2) better than expected demand.

Valuation & Risks

Vitus Leung
Research Analyst
+852-2203 6158

Johnson Wan
Research Analyst
+852-2203 6163

Eric Cui
Research Associate
+852-2203 7443

Key changes

TP	11.40 to 10.40	↓	-8.8%
Sales (FYE)	12,025 to 11,740	↓	-2.4%
Op prof margin (FYE)	9.3 to 4.3	↓	-54.0%
Net profit (FYE)	-438.7 to -1,005.6	↓	129.2%

Source: Deutsche Bank

Price/price relative

Performance (%)	1m	3m	12m
Absolute	-17.8	-23.4	-7.1
Shenzhen Index	-5.2	-12.1	-14.7

Source: Deutsche Bank

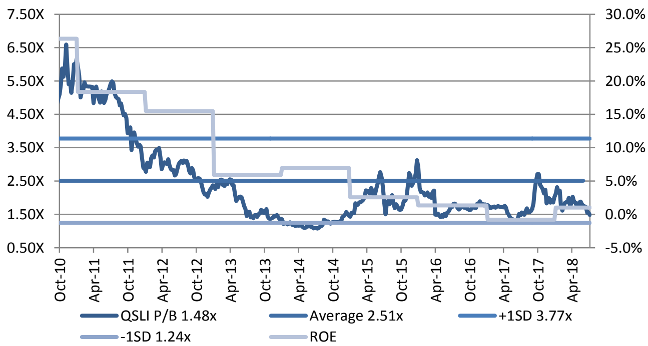
Forecasts and ratios

Year End Dec 31	2016A	2017A	2018E	2019E	2020E
Sales (CNYm)	10,364.1	11,699.4	11,740.3	13,792.8	15,155.1
EBITDA (CNYm)	3,172.2	3,421.9	3,706.8	5,417.7	6,741.7
Reported NPAT (CNYm)	339.6	-4,159.2	-1,005.6	315.3	631.6
Reported EPS FD(CNY)	0.12	-1.49	-0.36	0.11	0.23
DB EPS FD(CNY)	0.12	-1.49	-0.36	0.11	0.23
OLD DB EPS FD(CNY)	0.12	-1.49	-0.16	0.06	0.20
% Change	0.0%	-0.0%	129.2%	79.5%	13.7%
DB EPS growth (%)	-47.5	–	75.8	–	100.3
Price/Book (x)	2.2	1.9	1.4	1.4	1.4
PER (x)	158.7	–	–	87.1	43.5
EV/EBITDA (x)	29.1	24.8	18.4	12.7	9.6
DPS (net) (CNY)	0.01	0.00	0.00	0.00	0.00
Yield (net) (%)	0.1	0.0	0.0	0.0	0.0

Source: Deutsche Bank estimates, company data

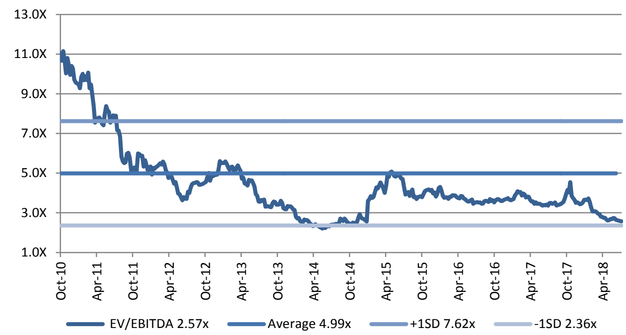
Valuation charts

Figure 1: 12-month forward P/B



Source:Bloomberg Finance L.P. Deutsche bank estimates

Figure 2: 12-month forward EV/EBITDA



Source:Bloomberg Finance L.P. Deutsche bank estimates

Model updated: 16 July 2018

Running the numbers

Asia

China

Chemicals

QSLI

Reuters: 000792.SZ Bloomberg: 000792 CH

Hold

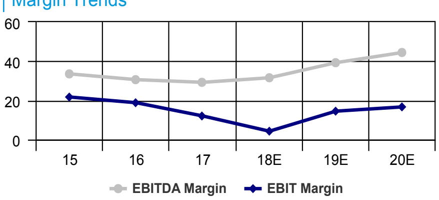
Price (16 Jul 18)	CNY 9.86
Target Price	CNY 10.40
52 Week range	CNY 9.55 - 20.02
Market cap (m)	CNYm 23,524 USDm 3,519.7

Company Profile

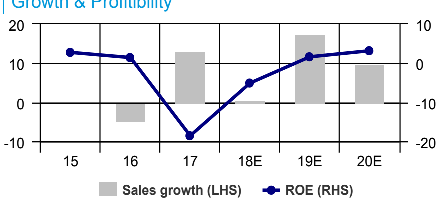
QSLI is the largest potash fertilizer (MOP) manufacturer in China with 3.5mntpa of capacity and its new 1.5mntpa capacity is expected to come on-stream for a production trial in 2H16, which would boost capacity by 43%.

Price Performance

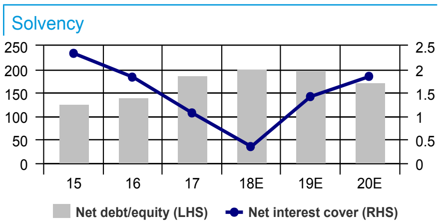
Margin Trends



Growth & Profitability



Solvency



Vitus Leung
+852 2203 6158 vitus.leung@db.com

Fiscal year end 31-Dec	2015	2016	2017	2018E	2019E	2020E
Financial Summary						
DB EPS (CNY)	0.23	0.12	-1.49	-0.36	0.11	0.23
Reported EPS (CNY)	0.23	0.12	-1.49	-0.36	0.11	0.23
DPS (CNY)	0.02	0.01	0.00	0.00	0.00	0.00
BVPS (CNY)	8.2	8.8	7.3	6.9	7.0	7.2
Weighted average shares (m)	2,410	2,786	2,786	2,786	2,786	2,786
Average market cap (CNYm)	58,814	53,884	41,981	23,524	23,524	23,524
Enterprise value (CNYm)	90,958	92,178	84,757	68,103	68,615	64,472
Valuation Metrics						
P/E (DB) (x)	105.2	158.7	nm	nm	87.1	43.5
P/E (Reported) (x)	105.2	158.7	nm	nm	87.1	43.5
P/BV (x)	3.12	2.17	1.92	1.43	1.41	1.36
FCF Yield (%)	nm	nm	nm	nm	3.7	20.9
Dividend Yield (%)	0.1	0.1	0.0	0.0	0.0	0.0
EV/Sales (x)	8.4	8.9	7.2	5.8	5.0	4.3
EV/EBITDA (x)	24.9	29.1	24.8	18.4	12.7	9.6
EV/EBIT (x)	38.5	47.2	60.1	135.4	34.3	25.5
Income Statement (CNYm)						
Sales revenue	10,882	10,364	11,699	11,740	13,793	15,155
Gross profit	5,690	4,424	3,921	4,018	5,682	6,375
EBITDA	3,652	3,172	3,422	3,707	5,418	6,742
Depreciation	1,249	1,182	1,964	3,147	3,356	4,150
Amortisation	38	39	48	57	60	61
EBIT	2,365	1,951	1,410	503	2,002	2,530
Net interest income(expense)	-1,012	-1,065	-1,319	-1,426	-1,414	-1,370
Associates/affiliates	0	0	0	0	0	0
Exceptionals/extraordinaries	-1,151	-956	-4,320	0	0	0
Other pre-tax income/(expense)	560	558	105	-20	-22	-24
Profit before tax	762	488	-4,124	-943	567	1,136
Income tax expense	218	280	165	-38	142	284
Minorities	-15	-132	-129	100	110	220
Other post-tax income/(expense)	0	0	0	0	0	0
Net profit	559	340	-4,159	-1,006	315	632
DB adjustments (including dilution)	0	0	0	0	0	0
DB Net profit	559	340	-4,159	-1,006	315	632
Cash Flow (CNYm)						
Cash flow from operations	753	2,026	1,518	3,719	4,507	7,229
Net Capex	-5,119	-3,321	-2,444	-3,996	-3,496	-1,496
Free cash flow	-4,366	-1,294	-926	-277	1,011	5,733
Equity raised/(bought back)	4,862	1,482	265	0	0	0
Dividends paid	-2,579	-2,311	-2,296	-1,426	-1,414	-1,370
Net inc/(dec) in borrowings	6,588	-1,966	3,873	870	-316	-1,092
Other investing/financing cash flows	1,227	944	-343	0	0	0
Net cash flow	5,732	-3,145	572	-833	-718	3,272
Change in working capital	-3,236	-1,597	-1,820	-6	-747	796
Balance Sheet (CNYm)						
Cash and other liquid assets	9,031	5,813	6,256	5,422	4,704	7,976
Tangible fixed assets	61,594	65,680	63,311	64,094	64,178	61,504
Goodwill/intangible assets	767	816	1,204	1,213	1,211	1,169
Associates/investments	563	617	574	574	574	574
Other assets	8,759	10,020	11,072	11,003	12,109	12,408
Total assets	80,713	82,946	82,419	82,308	82,776	83,631
Interest bearing debt	40,166	42,876	47,606	48,476	48,160	47,068
Other liabilities	16,065	13,698	12,576	12,501	12,860	13,955
Total liabilities	56,231	56,574	60,182	60,977	61,021	61,023
Shareholders' equity	22,911	24,524	20,236	19,231	19,546	20,178
Minorities	1,572	1,847	2,000	2,100	2,210	2,430
Total shareholders' equity	24,482	26,372	22,236	21,331	21,756	22,608
Net debt	31,135	37,063	41,350	43,054	43,456	39,092
Key Company Metrics						
Sales growth (%)	nm	-4.8	12.9	0.3	17.5	9.9
DB EPS growth (%)	na	-47.5	na	75.8	na	100.3
EBITDA Margin (%)	33.6	30.6	29.2	31.6	39.3	44.5
EBIT Margin (%)	21.7	18.8	12.1	4.3	14.5	16.7
Payout ratio (%)	8.9	10.9	nm	nm	0.0	0.0
ROE (%)	2.8	1.4	-18.6	-5.1	1.6	3.2
Capex/sales (%)	47.1	32.0	20.9	34.1	25.4	9.9
Capex/depreciation (x)	4.0	2.7	1.2	1.2	1.0	0.4
Net debt/equity (%)	127.2	140.5	186.0	201.8	199.7	172.9
Net interest cover (x)	2.3	1.8	1.1	0.4	1.4	1.8

Source: Company data, Deutsche Bank estimates

Appendix 1

Important Disclosures

*Other information available upon request

Disclosure checklist

Company	Ticker	Recent price*	Disclosure
QSLI	000792.SZ	9.86 (CNY) 16 Jul 2018	NA

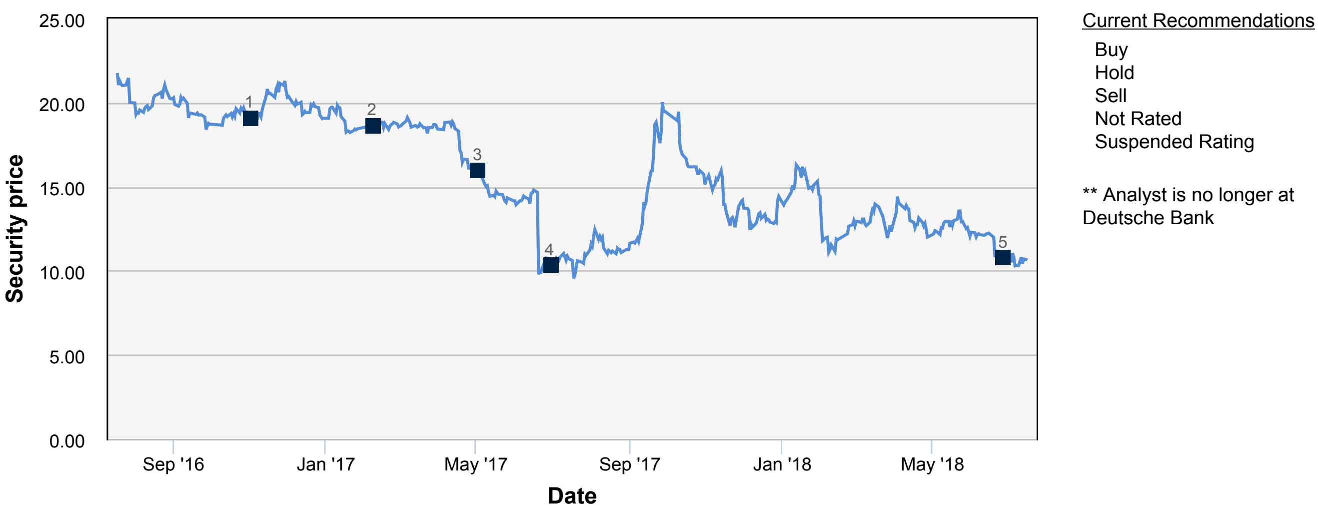
*Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors . Other information is sourced from Deutsche Bank, subject companies, and other sources. For disclosures pertaining to recommendations 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 https://research.db.com/Research/Disclosures/CompanySearch. Aside from within this report, important risk and conflict disclosures can also be found at https://research.db.com/Research/Topics/Equities?topicId=RB0002. Investors are strongly encouraged to review this information before investing.

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. Vitus Leung

Historical recommendations and target price. QSLI (000792.SZ)

(as of 07/16/2018)



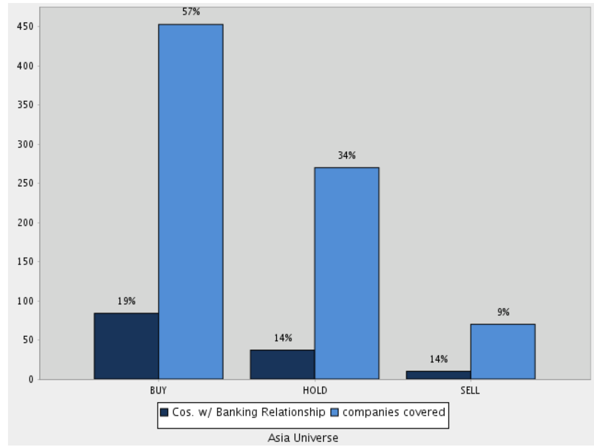
1.	11/02/2016	Hold, Target Price Change CNY 18.50 Vitus Leung
2.	02/08/2017	Hold, Target Price Change CNY 19.10 Vitus Leung
3.	05/03/2017	Hold, Target Price Change CNY 17.50 Vitus Leung
4.	06/30/2017	Hold, Target Price Change CNY 11.66 Vitus Leung
5.	06/27/2018	Hold, Target Price Change CNY 11.40 Vitus Leung

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 pro-jected 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. Hyperlinks to third-party websites in this report are provided for reader convenience only. Deutsche Bank neither endorses the content nor is responsible for the accuracy or security controls of those websites.

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, perspectives 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 may be inconsistent with Deutsche Bank's existing longer-term ratings. Some trade ideas for equities are listed as Catalyst Calls on the Research Website (https://research.db.com/Research/) , and can be found on the general coverage list and also on the covered company ' s page. A Catalyst Call represents a high-conviction belief by an analyst that a stock will outperform or underperform the market and/or a specified sector over a time frame of no less than two weeks and no more than three months. In addition to Catalyst Calls, analysts may occasionally discuss with our clients, and with Deutsche Bank salespersons and 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 an opinion, forecast or estimate changes or 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 or of the Research Department Management, and 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. Performance calculations exclude transaction costs, unless otherwise indicated. 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 also sourced from Deutsche Bank, subject companies, and other parties.

The Deutsche Bank Research Department is independent of other business 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 are available on our website (https://research.db.com/Research/) under Disclaimer.

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 liquidation of positions), and settlement issues related to local clearing houses are also important risk factors. 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. 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. Funding in a currency that differs from the currency in which coupons are denominated carries FX risk. Options on swaps (swaptions) the risks typical to options in addition to the risks related to rates movements.

Derivative transactions involve numerous risks including market, counterparty default and illiquidity risk. The appropriateness of these products for use by investors depends on the investors' own circumstances, including their tax position, their regulatory environment and the nature of their other assets and liabilities; 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 – up to theoretically unlimited losses. 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://research.db.com/Research/ on each company ' s research page. Investors are strongly encouraged to review this information before investing.

Deutsche Bank (which includes Deutsche Bank AG, its branches and affiliated companies) is not acting as a financial adviser, consultant or fiduciary to you or any of your agents (collectively, "You" or "Your") with respect to any information provided in this report. Deutsche Bank does not provide investment, legal, tax or accounting advice, Deutsche Bank is not acting as your impartial adviser, and does not express any opinion or recommendation whatsoever as to any strategies, products or any other information presented in the materials. Information contained herein is being provided solely on the basis that the recipient will make an independent assessment of the merits of any investment decision, and it does not constitute a recommendation of, or express an opinion on, any product or service or any trading strategy.

The information presented is general in nature and is not directed to retirement accounts or any specific person or account type, and is therefore provided to You on the express basis that it is not advice, and You may not rely upon it in making Your decision. The information we provide is being directed only to persons we believe to be financially sophisticated, who are capable of evaluating investment risks independently, both in general and with regard to particular transactions and investment strategies, and who understand that Deutsche Bank has financial interests in the offering of its products and services. If this is not the case, or if You are an IRA or other retail investor receiving this directly from us, we ask that you inform us immediately.

In July 2018, Deutsche Bank revised its rating system for short term ideas whereby the branding has been changed to Catalyst Calls ("CC") from SOLAR ideas; the rating categories for Catalyst Calls originated in the Americas region have been made consistent with the categories used by Analysts globally; and the effective time period for CCs has been reduced from a maximum of 180 days to 90 days.

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 or Deutsche Securities Asia Limited (save that any research relating to futures contracts within the meaning of the Hong Kong Securities and Futures Ordinance Cap. 571 shall be distributed solely by Deutsche Securities Asia Limited). The provisions set out above in the "Additional Information" section shall apply to the fullest extent permissible by local laws and regulations, including without limitation the Code of Conduct for Persons Licensed or Registered with the Securities and Futures Commission. .

India: Prepared by Deutsche Equities India Private Limited (DEIPL) having CIN: U65990MH2002PTC137431 and registered office at 14th Floor, The Capital, C-70, G Block, Bandra Kurla Complex Mumbai (India) 400051. Tel: + 91 22 7180 4444. It is registered by the Securities and Exchange Board of India (SEBI) as a Stock broker bearing registration nos.: NSE (Capital Market Segment) - INB231196834, NSE (F&O Segment) INF231196834, NSE (Currency Derivatives Segment) INE231196834, BSE (Capital Market Segment) INB011196830; Merchant Banker bearing SEBI Registration no.: INM000010833 and Research Analyst bearing SEBI Registration no.: INH000001741. DEIPL may have received administrative warnings from the SEBI for breaches of Indian regulations. The transmission of research through DEIPL is Deutsche Bank's determination and will not make a recipient a client of DEIPL. Deutsche Bank and/or its affiliate(s) may have debt holdings or positions in the subject company. With regard to information on associates, please refer to the "Shareholdings" section in the Annual Report at: https://www.db.com/ir/en/annual-reports.htm .

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: This report is issued 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 by Deutsche Bank 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 undertake only the financial services activities that fall within the scope of its existing QFCRA license. Its 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 only to Business Customers, as defined by the Qatar Financial Centre Regulatory Authority.

Russia: The 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 undertake only the financial services activities that fall within the scope of its existing CMA license. Its 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 available only to Professional Clients, as defined by the Dubai Financial Services Authority.

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. Please refer to Australia-specific research disclosures and related information at https://australia.db.com/australia/content/research-information.html Where research refers to any particular financial product recipients of the research should consider any product disclosure statement, prospectus or other applicable disclosure document before making any decision about whether to acquire the product. In preparing this report, the primary analyst or an individual who assisted in the preparation of this report has likely been in contact with the company that is the subject of this research for confirmation/clarification of data, facts, statements, permission to use company-sourced material in the report, and/or site-visit attendance. Without prior approval from Research Management, analysts may not accept from current or potential Banking clients the costs of travel, accommodations, or other expenses incurred by analysts attending site visits, conferences, social events, and the like. Similarly, without prior approval from Research Management and Anti-Bribery and Corruption ("ABC") team, analysts may not accept perks or other items of value for their personal use from issuers they cover.

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

Spyros Mesomeris
Global Head of Quantitative
and QIS Research

International Production 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
Mainzer Landstrasse 11-17
60329 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