The multi-asset essay



20 December 2016

Jingle bulls, jingle bulls, jingle all the way!

'Twas the night before Christmas and the good folks of America were restless. No one really understood why. Jobs were aplenty and when asked if they expected to be better off in a year's time people were as positive as ever. Yet other surveys revealed a deep malaise. Wise men argued over explanations, not making much sense. Only Father Christmas was optimistic. He had seen this situation before and knew satisfaction levels always rebounded (figure one). This was akin to the darkest hour before Christmas morning. The sharp recoveries in sentiment seen in 1980 and 1994 would be repeated now.

Unconvinced the wise men preferred to blame factory owners for everyone's problems. The taunting of businessmen proved popular, especially the accusation that wilful underinvestment had crippled American growth. Leaflets were distributed. Some showed that corporate spending as a proportion of cash flows was depressed (figure two); others that greedy managers favoured short-term payouts over long-term investment (figure three). Father Christmas tried to convince the wise men this analysis was wrong. But by now it was so widely believed that even he received letters from children bemoaning the capex numbers at his toy shop.

Naturally corporate spending has lagged cash flow growth in America (and in the North Pole). Father Christmas patiently wrote back each time. Cash flows have soared so much in recent years that nothing could possibly match them. He would also politely warn people to ignore the wise men who bear graphs comparing nominal capex to output, or who apply only a general deflator. Instead they should observe the prices of stuff companies are actually investing in, Father Christmas would argue, such as information technology, equipment or transport. They have fallen more in price (or have risen less) than prices in the wider economy (figure four). Apply the correct deflators and businesses are in fact spending like crazy – with the one exception of property and buildings where inflation has been rampant.

The reality is that company managers are not Scrooges. Indeed aggregate real capex as a proportion of output is at or near record levels in America (figure five). It's obvious! – Father Christmas would chuckle to his reindeer. What else has caused the rampant over capacity we observe down those factory chimneys as we zoom about? And clearly too much – not too little – capex also explains why businesses are having such a hard time raising prices and growing their top lines. More than 40 per cent of American companies will have seen no revenue growth this year – globally almost half won't (figure six).

So the wise men were correct to point their fingers at businessmen – but for the wrong reason! Reckless over spending rather than deliberate under spending has led to the lack of growth and general unease. Investors were also oblivious to the decline in revenue growth caused by a profligate expansion of assets. Or maybe they were just not bothered. After all, toy factories were returning sacks of money to shareholders and equity prices were somewhere north of Lapland. This was sustainable, Father Christmas knew, because the erosion in asset-turn (revenues divided by assets) was being off-set by rising margins (figure seven) – thus supporting returns on equity.

Deutsche Bank Securities Inc.

Stuart Kirk

Head of multi-asset research (+44) 20 754-72432 stuart.kirk@db.com

John Tierney

Strategist (+1) 212 250-6795 john.tierney@db.com

Rineesh Bansal

Research Analyst (+44) 20 754-59094 rineesh.bansal@db.com

Luke Templeman

Research Analyst (+44) 20 754-17373 luke.templeman@db.com

Recent multi-asset publications						
Essays						
1.	<u>Why you shouldn't invest in</u> <u>infrastructure</u>					
2.	50 is the new 40					
3.	The bond and equity switcheroo					
Konzept						
1.	<u>The case against US</u> infrastructure mega-spending					
2.	How to solve Europe's three biggest problems					
3.	Is inflation really dead?					

Distributed on: 20/12/2016 08:00:00 GMT

Deutsche Bank does and seeks to do business with companies covered in its research reports. Thus, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. DISCLOSURES AND ANALYST CERTIFICATIONS ARE LOCATED IN APPENDIX 1. MCI (P) 057/04/2016.

This overlooked dynamic explains everything from anaemic growth and booming equities to the rise of passive funds and lull in corporate deal making. What is more, it is a global phenomenon – especially so in emerging markets where excess capacity is chronic. To most people this looks worrying, given the tailwinds of lower wages, lower rates, and worldwide tax fiddling, which have pushed margins higher, are becoming headwinds. Only Father Christmas understands what an opportunity this is. Margin pressure will force companies to change behaviour for the better – with dazzling repercussions.

And the winds have already turned in America. For example, average hourly earnings growth has doubled since two years ago (figure eight) and keeps rising. Even Father Christmas's laziest elf appreciates that his labour is scarce these days and has demanded more porridge. Meanwhile borrowing costs have turned upwards having declined for most of the millennium (illustration nine). Finally, there is less scope for taxes to fall than everyone thinks – American companies already pay a much lower effective tax rate than they did a decade ago (figure ten).

Margin pressure is the snowball in the face company bosses need to start investing more cleverly. Out with the irrational extra production line, fourteenth systems patch or mindless overseas expansion in order to boast being global. And in with capex that boosts productivity and returns. So ineffectually have most firms been spending money that investment will rise despite being elevated in real terms. The biggest gains will be made by the lowest quality companies. Forget about robots and artificial intelligence; this is about basic new IT infrastructure, client relationship software or logistics systems. So many companies do not do the simple things well because the tailwind of low wages, taxes and interest rates has meant they haven't needed to. Only the top ten per cent of American companies have managed to significantly boost their returns on capital, excluding goodwill, over the past 15 years (figure 11). Other developed countries have similar skews too.

That so many companies are in need of a capex overhaul is what then creates a virtuous economic cycle – with productivity the missing piece. More investment raises aggregate demand because a third of corporate America's revenues are exposed to domestic capex spending. This maintains the upward pressure on wages which are strongly correlated with higher productivity (figure 12). Also note that an appreciating dollar helps make companies more productive. Finally, income growth means more consumption and so the aggregate demand cycle keeps spinning. Which toy maker wouldn't be happy to grant his little helpers a pay rise in this scenario?

But it is not just growth that rejoices. Equity and bond markets would also sing hallelujah. All else being equal, higher productivity allows American workers to make wage gains without labour receiving a greater share of total economic output (in other words, company profit margins do not collapse). Likewise, bond markets can avoid a sell off because productivity growth keeps inflation under control as incomes rise. These are no Christmas miracles; rather both statements are outcomes derived from immutable macroeconomic identities (figure 13).

And should a fiscal stimulus also grace America next year – perhaps an errant sleigh-load of expensive presents is spilled – this would exacerbate the shift in the composition of returns from margins to asset-turn, because revenues would rise even more, as would wage and interest costs. But stimulus or no stimulus there are two groups of citizens in particular that stand to be more satisfied come the holiday season next year. The first are active managers, a cowered bunch that have long suffered besides those who don't even believe in Father Christmas but rather the cult of passive investing (figure 14).

Why should index funds underperform stock pickers from here? Because it will pay to begin sorting the good from the bad. There was no need for investors to discriminate in the past as elevated margins meant even the worst firms could support high payout ratios – with low interest rates making yield even more attractive. For the reasons mentioned earlier it has become harder for these payout ratios to be sustained, yet companies stretched themselves because dividend stocks outperformed (Illustration 15). Hence the fall in dividend yield dispersion and rise in the dispersion of payout ratios (figure 16). Cracks are appearing already. In Europe, for example, more firms are resorting to scrip dividends as they struggle to maintain payouts.

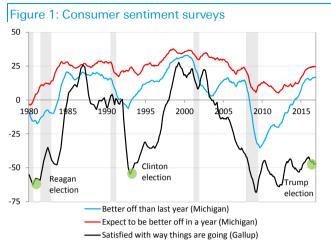
With a falling dispersion in dividend yields ratios active managers cared less about quality, so long as they received their cheque. Even more so with passive funds of course – by definition they buy and sell without prejudice. This explains why the spread of total returns has shrunk over the years, even as the dispersion in company operating metrics rose (figure 17). Put simply, quality differences between firms were ignored. No wonder passive investing thrived. But as margins come under pressure and the gap between winners and losers opens up, expect index funds to lag active managers, reversing years of outperformance (figure 18).

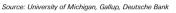
A widening of total returns also means dealmakers are about to see all their Christmases come at once. For too many years poor quality companies have been disproportionally expensive and good ones not expensive enough. This has stymied the mergers and acquisitions market because it makes the numbers harder to add up. As valuations stretch again, however, the better toy makers can go after their poorly run peers. Of course deals still only make sense if potential capitalised synergies exceed the premiums paid – but the latter should become relatively smaller in absolute terms.

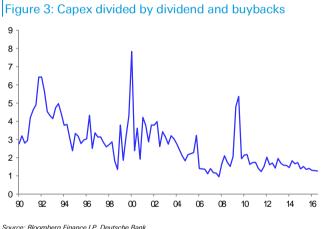
Likewise for bankers advising the bottom end of the toy industry, time is running out on a once in a generation opportunity to acquire much higher quality companies that are relatively too cheap. This explains the purchase of Apple shares earlier in the year by Warren Buffett (whose favourite company also designed Father Christmas's costume). Such deals may be hard to pitch to investors, who may fret over lower multiple stocks buying higher ones. But bankers must counter that the gap is only going to widen, making the compensating synergies even more difficult to achieve.

Deals, stock picking, more investment, wage and productivity gains, growth – as Father Christmas gazes down from his sleigh he is as merry as he has been in years. A much welcome cyclical upturn shall bring more presents for everyone, driven by a positive change in business behaviour due to the free-for-all in margins nearing its end. Expect people to be happier, and for the wise men who long questioned America's economic potential to squabble over who predicted the recovery first.

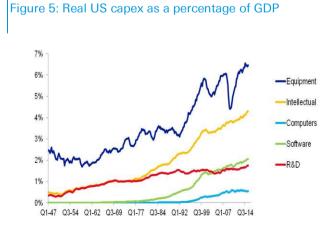
Figures







Source: Bloomberg Finance LP, Deutsche Bank

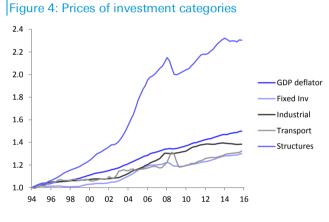


Source: National accounts, Deutsche Bank



Net Repurchases/Operating cash flow 0.4 0.2 0.0 -0.2 90 92 94 96 98 00 02 04 06 08 10 12 16

Source: Bloomberg Finance LP, Deutsche Bank



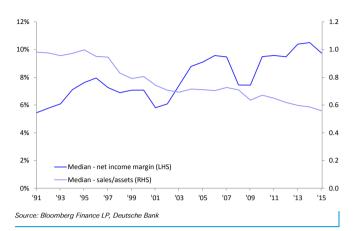
Source: National accounts, Deutsche Bank

Figure 6: Percentage of companies with negative sales growth by region

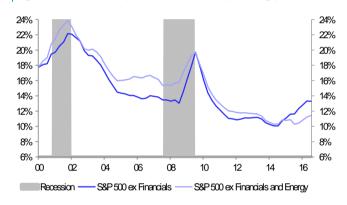
	2014	2015	2016 est			
Europe	46%	35%	41%			
US	27%	52%	41%			
Japan	17%	41%	79%			
Emerging markets	36%	46%	47%			
Global	33%	45%	46%			
Source: Company reports, Bloomberg Finance LP, Deutsche Bank, CROCI						



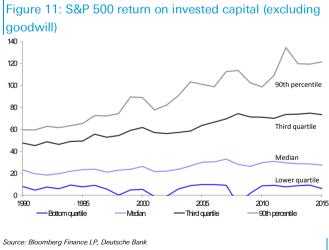


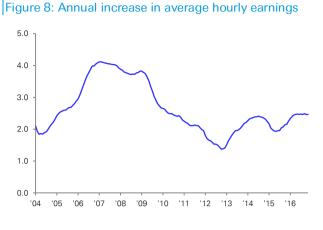




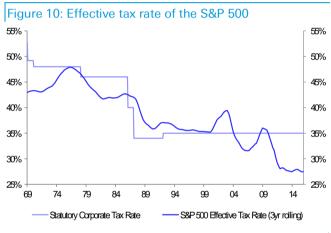


Source: Compustat, Deutsche Bank













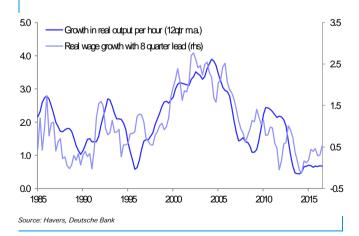
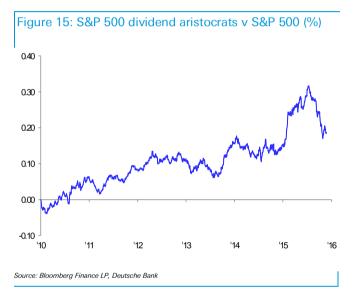




Figure 13: Components of nominal wages and growth

- % change in labour share of output
- +% change in prices
- + % change in productivity
- = % change in nominal wages

Source: Deutsche Bank



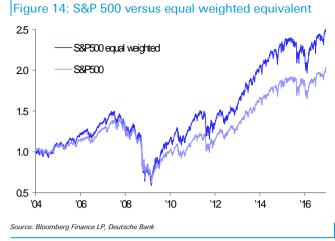
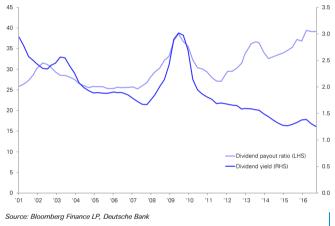
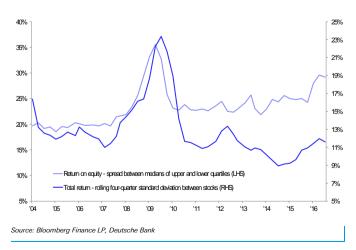


Figure 16: Dispersion of S&P 500 dividend payout ratio and dispersion of dividend yield







Appendix 1

Important Disclosures

*Other information available upon request

Prices are current as of the end of the previous trading session unless otherwise indicated and are sourced from local exchanges via Reuters, Bloomberg and other vendors . Other information is sourced from Deutsche Bank, subject companies, and other sources. For disclosures pertaining to recommendations or estimates made on securities other than the primary subject of this research, please see the most recently published company report or visit our global disclosure look-up page on our website at http://gm.db.com/ger/disclosure/DisclosureDirectory.eqsr. Aside from within this report, important conflict disclosures can also be found at https://gm.db.com/equities under the "Disclosures Lookup" and "Legal" tabs. Investors are strongly encouraged to review this information before investing.

Analyst Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst(s). 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. John Tierney/Rineesh Bansal/Luke Templeman/Stuart Kirk

Equity rating key

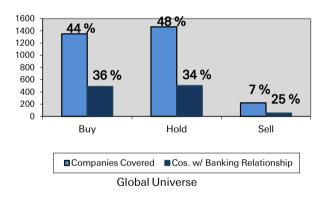
Buy: Based on a current 12- month view of total share-holder return (TSR = percentage change in share price from current price to projected target price plus pro-jected dividend yield), we recommend that investors buy the stock.

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

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

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

Equity rating dispersion and banking relationships



Additional Information

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Korea: Distributed by Deutsche Securities Korea Co.

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

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

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

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

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

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

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



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

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

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

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



David Folkerts-Landau

Group Chief Economist and Global Head of Research

Michael Spencer

Head of APAC Research

Global Head of Economics

Raj Hindocha **Global Chief Operating Officer** Research

Anthony Klarman Global Head of **Debt Research**

Paul Reynolds Head of EMEA **Equity Research**

Dave Clark Head of APAC Equity Research

Head of Thematic Research

International Commerce Centre,

1 Austin Road West, Kowloon,

Deutsche Bank AG

Tel: (852) 2203 8888

Filiale Hongkong

Hong Kong

Steve Pollard Head of Americas Research Global Head of Equity Research

Deutsche Securities Inc.

Chiyoda-ku, Tokyo 100-6171

2-11-1 Nagatacho

Sanno Park Tower

Tel: (81) 3 5156 6770

Japan

Pam Finelli Global Head of Equity Derivatives Research

Andreas Neubauer Head of Research - Germany Stuart Kirk

International locations

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

Deutsche Bank AG London

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

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

Tel: (1) 212 250 2500

Deutsche Bank Securities Inc. 60 Wall Street New York, NY 10005 United States of America