



German election: stability-led complacency

- The German election will take place on September 24. Polls indicate a fourth term for Chancellor Merkel but it remains to be seen with which coalition she will govern. The booming economy has fostered cross-party complacency and prevented the necessary debate about how to ensure Germany's future prosperity.
- The robust cyclical upswing is masking the creeping erosion of growth. By 2025, trend growth looks set to halve to only ¾%. To promote growth, measures to increase the participation rate, improve education and support more technological specialisation should rank high on the political agenda. None has made it into the public debate.
- The sustainability of the welfare system has been eroded by the outgoing coalition. Already, welfare spending accounts for a growing share in GDP (29.3%) and general government spending (43%) while demographics suggest further cost increases. The widespread feeling of rising inequality – although less evident in actual data – makes promises of even more social good deeds a temptation for parties.
- German public finances are in a comfortable situation with a budget surplus of 0.8% of GDP and the debt ratio likely to drop below the Maastricht limit of 60% of GDP by end-2020. However, rising interest rates and the ageing society look set to put public finances under considerable pressure in the medium-term.
- The future of E(M)U is not dominating the election campaign. There is a general mood among the mainstream parties to move forward and to leverage Franco-German relations for joint initiatives. We remain sceptical, though, that the next German government would be prepared for a quantum leap in the institutional framework of EMU.
- With pressures to meet the 2% NATO objective and related European initiatives, parties are being forced to take a position on the international security framework. To reach the NATO target by 2024, defence spending would have to more than double to EUR 80bn. We consider this unlikely. While the centre-right parties pledge themselves to the NATO objective, the centre-left reject the increase in military expenses.
- Germany's ageing society appears happy with the "status quo" and is more than happy to believe politicians' promises that this can be maintained in the future without any bigger (and painful) changes.

[Barbara Boettcher](#)

Economist
+49-69-910-31787

[Mark Wall](#)

Chief Economist
+44-20-754-52087



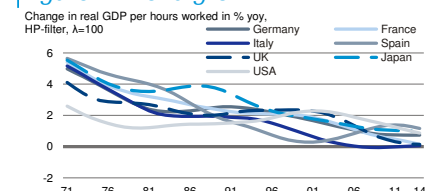
Slowing German trend growth does not seem to be a major issue in the electoral campaign

We published a [Special Report](#) on 03 July 2017 and the key points are below:

- **The developed industrial countries have experienced a steady decline in trend growth since the mid-70s – and Germany is no exception.** By 2025, trend growth looks set to halve again, to only ¼%.
- **The robust cyclical upswing is veiling this creeping erosion of growth.** The situation is rendered even graver by the fact that policymakers did not adopt significant measures to support growth during the past legislative period; indeed, they even scrapped some important reforms.
- **The performance of the German economy depends on three input factors: labour, capital and technological know-how.** Labour productivity growth is determined by capital intensity, the qualifications of workers and the pace of technological progress.
- **Labour, as an input factor, is suffering from the ageing and shrinking of the population.** Demographic changes will reduce the workforce.
- **The capital stock is currently growing at a subdued clip** and investment activity is moderate.
- **The current level of technological know-how is reflected in total factor productivity.** The growth contribution of total factor productivity has recently declined, possibly because the benefits of specialisation are shrinking and because input factors have been reallocated less efficiently.
- **It is absolutely necessary to raise the participation rate.** Against the background of accelerated structural change, this can be achieved only if the general level of qualification is raised and it becomes easier to reconcile a career and a family, particularly for women.
- **Better education and vocational training will also help to improve the quality (and thus raise the growth contribution) of labour.** More day schools are a step in the right direction. At the same time, digitalisation increases the need for regular professional training.
- **Specialisation helps to lift productivity.** That is only one reason why policymakers should support free global trade. If conditions for businesses are improved as well, Germany might see stronger capital stock growth and benefit from competitive advantages in the future.

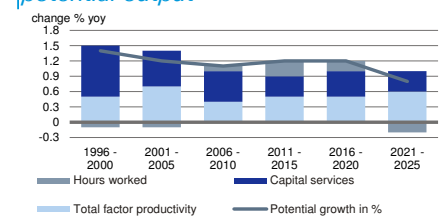
Marc Schattenberg
+49 69 910-31875
marc.schattenberg@db.com

Figure 1: Trend growth



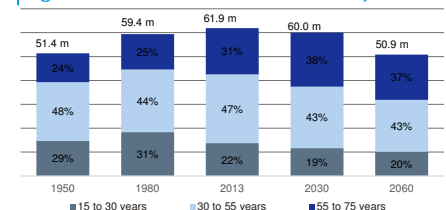
Source: German Council of Economic Experts, Deutsche Bank

Figure 2: Medium-term projection of potential output



Source: Deutsche Bundesbank, Deutsche Bank

Figure 3: Workforce in Germany



Figures 2030 and 2060 based on results of the 13th coordinated population projection (var. 2). Source: Federal Statistical Office of Germany, BiB, Deutsche Bank



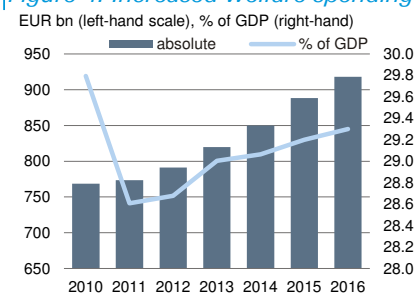
Parties not focusing enough on sustainability

We published a [Special Report](#) on 17 July 2017 and the key points are below:

- The debate over welfare policy in Germany appears to be paradoxical.** On the one hand, revenues and spending in the welfare systems have never been so high – and both are set to continue to increase sharply. In 2015, welfare spending per capita reached almost EUR 10,900 – some 9% higher than in the UK. Nevertheless, some critics believe that there is a social imbalance.
- The welfare system is better than its reputation in Germany suggests.** Social security continues to have a positive impact. Welfare spending significantly reduces the number of people at risk of poverty (2015: from 25.1% to 16.7%). In particular, there is no reason to interpret the situation facing the elderly as dire. The number of elderly recipients of basic welfare benefits has fallen by 2.5% over the past year. By contrast, single parents and the unemployed are at higher risk of poverty. This shows how important integration into the labour market is to prevent poverty.
- The welfare system operates under favourable conditions at the moment.** Not only is it benefiting from the positive economic trend, the impact of population ageing is (still) relatively low. The number of over-65s has only increased by roughly 0.2 million on average over the past few years, whereas this figure is expected to grow by double that margin annually over the next decade. This means that rising welfare costs are on the horizon.
- However, planning for the future is playing second fiddle to another issue on the campaign trail.** Instead, many proposals are based on further expansion of the welfare state, even though the current government has already burdened taxpayers with avoidable costs.
- The Social Democrats (SPD) and the Left (Die Linke) in particular want to move away from consolidation of the public pension scheme.** A guarantee of the current replacement rate (48% of average income) and stable contribution rates can exist in the scheme only if there are no barriers to long-term economic growth and to labour market flexibility and if government subsidies to the scheme increase further. However, the former does not hold at the moment and would likely be thwarted by the latter.
- In terms of healthcare, the Free Democratic Party (FDP) is one of the main proponents of increased competition.** The SPD, the Greens and the Left want to merge private and statutory health insurance into a single “citizens’ insurance” system. However, it is doubtful whether this would lead to “greater equality” given the opaque and unmethodical distribution of costs through income-dependent contributions. Provisions are set aside for old age in private health insurances, so long-term sustainability in the healthcare system would be lost in the event of a merger.

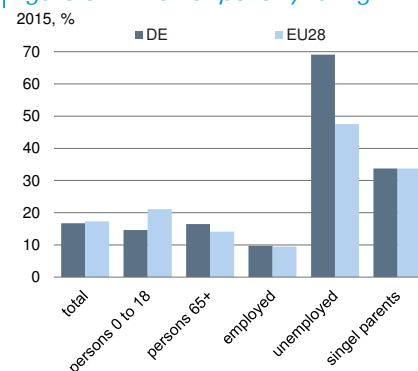
Dieter Braeuninger
+49 69 910-31708
dieter.braeuninger@db.com

Figure 4: Increased welfare spending



Source: BMAS, Statistisches Bundesamt, Deutsche Bank

Figure 5: At-risk-of-poverty rating*



*At risk of poverty = less than 60% of the medianequivalent income of the population as a whole Source: Eurostat, Statistisches Bundesamt, Deutsche Bank



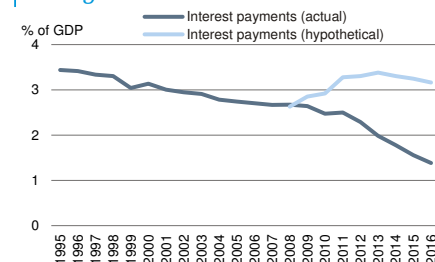
Germany's fiscal situation

We published a [Special Report](#) on 19 July 2017 and the key points are below:

- In an international comparison, Germany's fiscal situation is very good – thanks to robust GDP growth and zero interest rates.** Other important industrial countries, such as the US or Japan, are still struggling with high fiscal deficits and rising public-sector debt. Germany, however, is the only G7 country that has generated fiscal surpluses since 2014, helping to considerably reduce its debt ratio.
- In the short to medium term, dynamic revenue growth should help ensure that Germany's fiscal situation remains comfortable, even though expenses look set to rise strongly as well.** The budget complies with both national and European debt-limiting rules, and there is a considerable safety margin. The 2017 update of the Stability Programme foresees positive fiscal balances at the general government level for the years from 2017 to 2021, which means that – provided growth remains strong and interest rates low – the debt ratio might drop below the Maastricht limit of 60% of GDP by end-2020.
- Public finances are currently benefiting from buoyant growth, low interest rates and a “demographic respite”.** According to our calculations, the German government saved almost EUR 260 bn in interest payments between 2008 and 2016. However, the current fiscal surplus, which is to a large extent due to these special factors, should not be used to justify permanent expense increases or cuts in taxes and/or social security contributions.
- Rising interest rates and the ageing society look set to put public finances under considerable pressure beginning in the middle of the coming decade.** The ageing society will result in significant burdens for public budgets in the near future, as government revenues (taxes, social security contributions) will probably advance at a slower pace on the back of a shrinking workforce and lower potential growth, while government expenses boom at the same time (in particular for statutory pensions, healthcare and old-age care).
- However, the long-term fiscal risks do not appear to play a major role in the current election campaign.** Rather, politicians have included calls for tax cuts and expense increases in their parties' election programmes given the current favourable fiscal situation.
- To prepare the economy and public-sector finances for the ageing of the population and avoid major abrupt fiscal adjustments in the future,** the parties should not make increasingly more electoral promises that they will be hard pressed to pay for in the longer term.

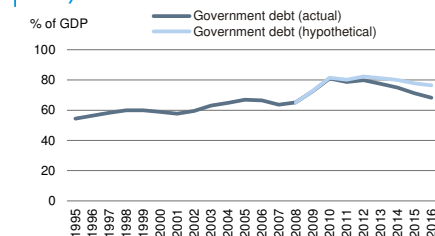
Sebastian Becker
+49 69 910-21548
sebastian-b.becker@db.com

Figure 6: Low interest rates have helped the government to save interest to a significant extent



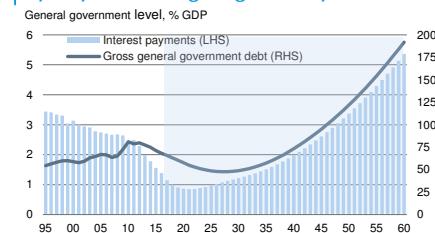
Hypothetical interest expenditure calculated on the basis of an unchanged implied interest rate of 4.2% (level of 2007) from 2008. Source: AMECO, Eurostat, Deutsche Bank

Figure 7: Without the low interest rates, the level of debt would be higher today



Hypothetical interest expenditure calculated on the basis of an unchanged implied interest rate of 4.2% (level of 2007) from 2008. Source: AMECO, Eurostat, Deutsche Bank

Figure 8: German debt ratio might rise rapidly due to ageing society



Source: AMECO, Deutsche Bank



Packed European agenda for the next government

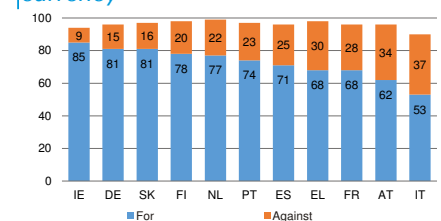
We published a [Special Report](#) on 03 August 2017 and the key points are below:

- The now more benign economic and public environment in the EU allows it to fundamentally address shortcomings of the E(M)U.** The current backlash of populism, rising public support for the European project and the pick-up in the economy give politics more leeway to foster the debate on institutional and policy reforms.
- The next German government's term is faced with numerous challenges that might turn into political risks for Europe and thus require sensible management:** (i) A deal on Brexit and future EU-UK relations (ii) negotiating the post-Brexit budget (iii) coping with the migration flows (iv) overhauling the framework of the euro area (EA) including Banking Union and institutional questions. Improving the EU's economic performance and coherence should be self-evident, though.
- A revitalised relationship with France offers Germany the chance to mitigate the unwanted and unintended label of the "European hegemon".** It provides an opportunity for substantive steps to further stabilise the EA albeit Germany and France need to find common ground on many issues and seek the support of the other member states. The concept of a multi-speed Europe might be an option to move ahead with the EA but it has disadvantages in other regards. Balancing (financial) solidarity with (fiscal) solidity and (reform) conditionality will remain essential for selling changes in the EA to the German public.
- European policy issues are still less of a topic for the German electorate.** Reflecting the general attitude of the German public, mainstream parties are all various shades of pro-EU. Both CDU/CSU and SPD are supporting a broader and deeper upgrade of the EA architecture but manifestos differ in terms of commitment and detail. The Liberals call for a strengthening of the fiscal framework, e.g. an insolvency regime for the EA, whereas SPD and Greens favour a deeper social union and further EU-wide investment. An EU migration policy or more cooperation in home and security affairs are common features in the parties' positions.
- The next government's composition is likely to impact on Germany's European policy course.** While there is a general political mood to move forward just how much will depend on the partners in the government. The appetite for ambitious reforms of the EU might be larger in another CDU/CSU/SPD coalition given the overlap of their positions. A conservative-liberal coalition will not refrain from reforms but might alter both speed and scope of them.
- An important signpost could be the German EU presidency in 2020.** Most of the proposals for the evolution of E(M)U require complex agreements or even changes to the EU Treaties as they would involve further loss of sovereignty. During its last presidency in 2007 Germany paved the way for the Lisbon Treaty. Given the need for referenda in some member states, though, any treaty changes in this respect remain a difficult endeavour in the by then EU-27.

Barbara Boettcher
(+49) 69 910-31787
barbara.boettcher@db.com

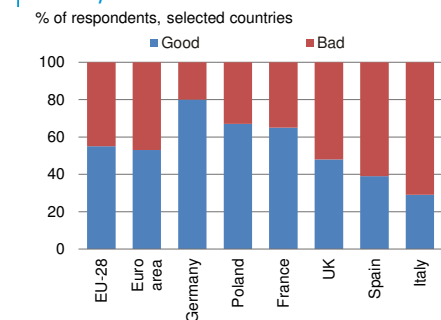
Kevin Koerner
(+49) 69 910-31718
kevin.koerner@db.com

Figure 9: Popular opinion on the single currency



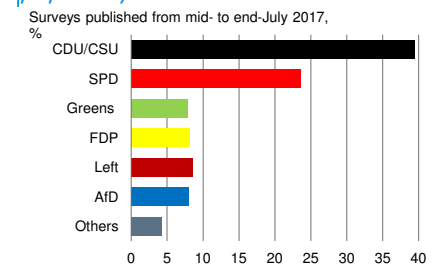
Source: Eurobarometer Spring 2017, Deutsche Bank

Figure 10: View on German Leadership in Europe



Source: IfD Allensbach April 2017, Deutsche Bank

Figure 11: Major political parties' popularity on the federal level*



*Average of major surveys (Allensbach, Infratest Dimap, Forsa, Forschungsgruppe Wahlen, TNS Emnid) Source: Wahlrecht.de, Deutsche Bank



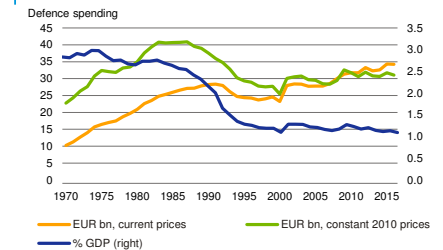
German defence policy

We published a [Special Report](#) on 08 August 2017 and the key points are below:

- Defence up on the political agenda.** Usually rather an anathema in German electoral campaigns, defence policy and the question of defence spending have moved into the light of public attention ahead of September parliamentary elections. The debate is fuelled by the experience of the refugee crisis, US criticism of Europe's NATO spending but also regained momentum for European integration, including efforts towards a European Defence Union.
- German public supports NATO membership and EU defence integration, majority against increased defence spending.** According to polls, most Germans favour a common EU defence and security policy while NATO membership is backed by at least two-thirds. At the same time, a majority of 64% opposes an increase of military expenses.
- Current medium-term budget planning not towards 2% NATO objective.** The German government initiated a "turnaround in the financing of the Bundeswehr" to meet alliance commitments and adjust to a changing security environment. To reach NATO's 2% of GDP target by 2024, defence spending would have to more than double to c.EUR 80 bn. Spending increases planned by the FinMin suggest that the defence/GDP ratio might remain close to current levels of around 1.2%, but tweaks to the medium-term budget are common under a new government.
- More fiscal leeway for spending increases than many NATO/Eurozone partners.** Germany is in a more comfortable fiscal position to reach the NATO target than many other Eurozone/NATO peers. France will cut its defence spending this year to stay in the Maastricht fiscal limit – but at 1.8% of GDP is closer to the NATO objective. More is demanded of other euro area members, such as Spain and Italy with limited fiscal space and defence spending at half the NATO target.
- Spend 'better' rather than 'more' - European synergies in the focus.** Emphasizing national budget constraints, European initiatives for deeper defence integration pushed by France and Germany focus on better use of resources, interoperability and reduction of duplicity in military expenditures. But efficiency gains will not free Europe from the necessity of increasing spending on R&D and modern military equipment.
- Mainstream parties agree on international security framework, not on the details.** Mirroring the German populace, most mainstream German political parties broadly agree in their commitment to NATO membership and European defence integration. There seems to be a consensus that a more holistic security framework is required, taking into account increasing interconnections between foreign, defence and development policy and even between foreign and domestic policy. Both sides stress the importance of strengthening German development aid towards the 0.7% of GNI OECD target. But while the centreright parties pledge themselves to the 2% NATO objective, the centre-left reject the implied increase in military expenses.

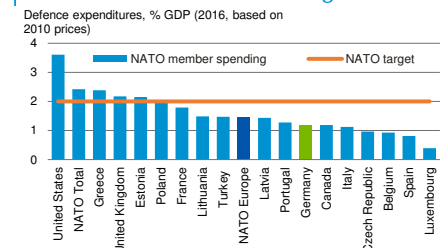
Kevin Koerner
(+49) 69 910-31718
kevin.koerner@db.com

Figure 12: German defence spending down in real terms/share of GDP after cold war



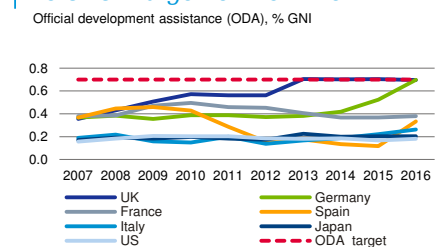
* Note: Break in GDP deflator/GDP series in 1991. Source: Finance Ministry, Statistisches Bundesamt, Deutsche Bank

Figure 13: German defence spending below 2% of GDP NATO target



Source: NATO, Deutsche Bank

Figure 14: German development aid hits OECD target for first time



Source: OECD, Deutsche Bank



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. Barbara Boettcher, Mark Wall



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 these 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 or otherwise. Deutsche Bank and/or its affiliates may also be holding debt or equity securities of the issuers it writes on. Analysts are paid in part based on the profitability of Deutsche Bank AG and its affiliates, which includes investment banking, trading and principal trading revenues.

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

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



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

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

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

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

Deutsche Bank (which includes Deutsche Bank AG, its branches and all affiliated companies) is not acting as a financial adviser, consultant or fiduciary to you, any of your agents (collectively, "You" or "Your") with respect to any information provided in the materials attached hereto. 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.

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.

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

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

Korea: Distributed by Deutsche Securities Korea Co.

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

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

Taiwan: Information on securities/investments that trade in Taiwan is for your reference only. Readers should independently evaluate investment risks and are solely responsible for their investment decisions. Deutsche Bank research may not be distributed to the Taiwan public media or quoted or used by the Taiwan public media without written consent. Information on securities/instruments that do not trade in Taiwan is for informational purposes only and is not to be



construed as a recommendation to trade in such securities/instruments. Deutsche Securities Asia Limited, Taipei Branch may not execute transactions for clients in these securities/instruments.

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

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

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

United Arab Emirates: Deutsche Bank AG in the Dubai International Financial Centre (registered no. 00045) is regulated by the Dubai Financial Services Authority. Deutsche Bank AG - DIFC Branch may only undertake the financial services activities that fall within the scope of its existing DFSA license. Principal place of business in the DIFC: Dubai International Financial Centre, The Gate Village, Building 5, PO Box 504902, Dubai, U.A.E. This information has been distributed by Deutsche Bank AG. Related financial products or services are only available to Professional Clients, as defined by the Dubai Financial Services Authority.

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

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

Additional information relative to securities, other financial products or issuers discussed in this report is available upon request. This report may not be reproduced, distributed or published without Deutsche Bank's prior written consent. Copyright © 2017 Deutsche Bank AG



David Folkerts-Landau

Group Chief Economist and Global Head of Research

Raj Hindocha
Global Chief Operating Officer
Research

Michael Spencer
Head of APAC Research
Global Head of Economics

Steve Pollard
Head of Americas Research
Global Head of Equity Research

Anthony Klarman
Global Head of
Debt Research

Paul Reynolds
Head of EMEA
Equity Research

Dave Clark
Head of APAC
Equity Research

Pam Finelli
Global Head of
Equity Derivatives Research

Andreas Neubauer
Head of Research - Germany

Spyros Mesomeris
Global Head of Quantitative
and QIS Research

International locations

Deutsche Bank AG

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

Deutsche Bank AG

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
