

China Economic Perspectives

Do the Facts Support the Super Bears?

Economics

China

Being bearish on China is almost consensus and understandable

Chinese economy faces serious challenges: the economy has been slowing for a few years due to both structural imbalances and cyclical factors and notwithstanding continuous policy support; a deep property adjustment and excess capacity issues have led to deflationary pressures, a sharp deterioration of corporate balance sheet, and rising debt burden. It is well understood that China's rapid increase of leverage has brought serious potential losses to the banking system which would require years to clean up. Despite still sizable current account surpluses, the RMB is facing serious depreciation pressures, partly driven by persistent capital outflows against rapidly falling FX reserves.

The latest super bearish view

Against the background of a general weak sentiment on China, some super bears are now expecting an imminent collapse of China's banking system and currency. The latest super bearish view goes like this: 1) the RMB has appreciated by over 40% and become significantly overvalued on a real effective basis, requiring a huge depreciation to correct China's imbalances; 2) the rapid credit expansion of the Chinese banking system will result in unprecedented losses which requires an immediate large bail out; 3) China would need to use FX reserves or embark on major QE to recapitalize its banks; and 4) China's official FX reserves include CIC holdings and policy bank recap funds, and are already inadequate.

We think the facts do not support a super bearish view

While we acknowledge the seriousness of challenges facing the Chinese economy and exchange rate regime currently, we do not think it as bad as some believe because: 1) the RMB appreciated from an under-valued position and we believe is only modestly over-valued, and China has no intention to risk destabilizing domestic and global markets by using a sharp depreciation to promote exports; 2) Banking sector losses should be derived from bad banking credit rather than total system assets, which would be much smaller than as currently expected by some. More importantly, banks have ample liquidity and do not have to recognize bad debt all at once, and do not require an immediate large capital injection; 3) China does not need to use FX reserves to recapitalize banks nor follow the US approach. Fiscal policy can and will continue to play a bigger role for supporting growth, and we believe the state will help recap the banks directly when necessary instead of beating around the bush; and 4) China's \$3.2 trillion in FX reserves do not include CIC assets (much of it actually from capital gains) or bank recap funds. IMF's composite metric suggests that China needs \$2.7 trillion in FX reserves without capital controls to defend against shocks and attacks – but China has capital controls and can implement them more strictly.

Our baseline: the muddle through

We expect the economy to continue to slow and corporate balance sheet to worsen. However, we see the risk of an immediate systematic financial crisis as very small, due to high domestic saving and ample banking liquidity, extensive government ownership of banks and many debtors, and capital controls. The above will enable slow recognition of NPLs with banks continuing to lend to the economy while raising more capital to help speed up debt write-off's over time. Notwithstanding serious depreciation pressures, we expect the RMB exchange rate to depreciate modestly with the help of persistent current account surplus, tighter capital controls and some loss of reserves.

Tao Wang

Economist

wang.tao@ubs.com

+852-2971 7525

Most market participants are quite bearish on China at the moment, given the recent economic and policy developments. Chinese economy does indeed face serious challenges: The economy has been slowing for a few years due to both structural imbalances and cyclical factors and notwithstanding continuous policy support; a deep property adjustment and excess capacity issues have led to deflationary pressures, a sharp deterioration of corporate balance sheet, and rising debt burden ([China Outlook](#), [Property Bubble Trouble](#), [Bubble Trouble: Halfway Through?](#)); and it is well understood that China's rapid increase of leverage has brought serious potential losses to the banking system which would require years to clean up. Despite still sizable current account surpluses, the RMB is facing serious depreciation pressures, partly driven by persistent capital outflows against rapidly falling FX reserves.

Notwithstanding these challenges, our baseline scenario is for a muddle through, with China continuing to use fiscal expansion to support growth; monetary and credit conditions being kept adequate with the help of RRR cuts, moral-suasion and capital controls against the backdrop of high domestic savings; banks continuing to lend while raising more capital to help speed up debt write-off's over time, both helped by extensive government ownership; and the government accelerating corporate and debt restructuring in the next few years. Notwithstanding serious depreciation pressures, we expect the RMB exchange rate to depreciate modestly with the help of persistent current account surplus, tighter capital controls and some loss of reserves (see [The Most Asked Questions about China](#), [The Big Picture Bottom-line](#), [The Outlook](#)). There are of course downside risks to our muddle-through scenario, particularly if cross-border capital flows are not well controlled and/or PBC remains too hawkish while corporate restructuring takes place too slowly.

Here is where we think the facts do not support a super bearish view:

Point one: the exchange rate is significantly over-valued and a large depreciation is warranted to solve the domestic growth problem. This view believes that because its real effective exchange rate has appreciated by over 40% since the global financial crisis, China needs a dramatic devaluation to regain export competitiveness, something the Chinese government will soon implement.

While the RMB has appreciated significantly in the past few years, it started from an under-valued position and China has also seen faster productivity gains compared with its trading partners. That is why despite the big adjustment in exchange rate and external balances, China still had a sizable current account surplus in 2013, before the sharp decline in oil and commodity prices made the surplus even bigger (Figure 1). It is true that RMB appreciation may have overshoot in the past two years as the USD appreciated against currencies of China's major competitors. However, the IMF thinks the RMB is close to its fair value and we estimate that RMB real effective exchange rate is only 5-10% over-valued (Figure 2).

Also, as we have written earlier ([Why and what you need to know about CNY](#), [What Next for the RMB?](#), [Trade Data & CNY](#)), there are other important reasons why China may not want to use currency depreciation to help solve its economic woes: As the second largest economy and biggest exporter, depreciating the currency sharply will likely lead to even larger depreciation of many competitor currencies, which may destabilize global markets with limited benefit to China; the government is also concerned that a large depreciation may lead to panic outflows that could destabilize expectations and domestic financial markets; while depreciation can help exporters, it is questionable that all of it will be passed on by exporters to their selling prices or how much any subsequent export improvement can help alleviate the real drag on Chinese growth from excess capacity in much of the heavy industrial sector.

Figure 1: China has sizable current account surplus

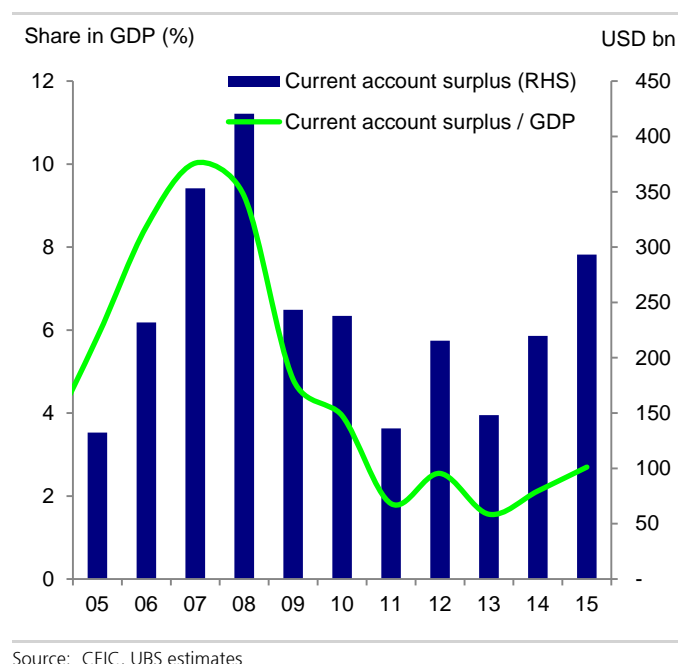


Figure 2: 2014 RMB REER assessments

| | Approach | Desired CA adjustment (% of GDP) | Desired REER change (%) |
|------|----------------------------------|-------------------------------------|----------------------------|
| IMF | Current Account Panel Regression | -3 ~ -1 | 3~12 |
| | The REER Index Model | | 6.5 |
| | The REER Level Model | | -6.8 |
| PIIE | Macroeconomic Balance Approach | none | none |
| UBS | Macroeconomic Balance Approach | 0.5-0.9 | -1.8~-3.3 |

Note: Using 2014 data, both the IMF's 2015 staff report and the Peterson Institute of International Economics (PIIE) found that the RMB was no longer under-valued. Our estimate suggested a similar result. RMB real effective exchange rate appreciated by 10% on average in 2015 vs 2014, and by 4% at end 2015 vs end 2014, despite a modest depreciation against USD by 5% during the same period.

Source: IMF, PIIE, UBS estimates

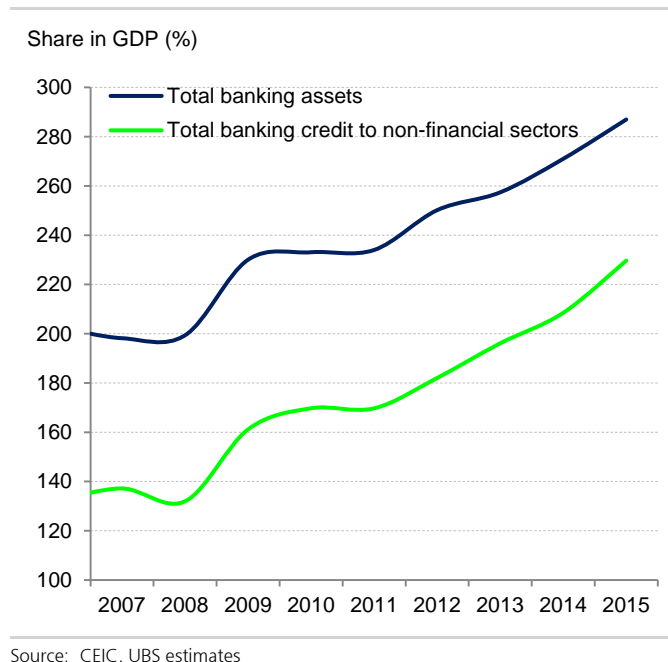
Point two: China's banking sector is 340% of GDP, 10% loss would be over 30% of GDP or more than \$3.5 trillion, which would require an immediate and large bail out.

It is true that China's credit has expanded rapidly since the global financial crisis, mainly in the form of bank loans and off-balance sheet bank credit, and China's banking system is the largest in the world – almost 290% of GDP at end 2015 (Figure 3). We have written extensively on the issue of unsustainable trend of leverage increase, likely much larger bad debts, and the need to take decisive action to avoid a debt-deflation trap ([The Most Asked Questions about China](#), [China 2016-2017 outlook](#), [China: Hello Minsky?](#), [How Bad Is China's Debt Problem?](#)). However, banking sector assets also include bank reserves kept at the central bank and substantial inter-bank assets. We estimate that overall bank sector credit to all non-financials, including both loans and off-balance sheet credit such as commercial bills and all trust assets stood at about 230% of GDP in 2015, of which more than 50% was to the government and about 140% to the corporate sector. Therefore, even a 10% NPL with zero recovery would still lead to a much smaller loss than suggested in a super bearish scenario.

While Chinese banks may indeed incur substantial losses over time from bad debts and some losses may have started to emerge already, they do not require immediate large recapitalization. China's banking system still enjoys ample liquidity –

the most important thing for banks – in the form of cheap deposits thanks to a high saving rate and under-developed financial markets. The Chinese government has extensive control and ownership over/of banks as well as SOE and local government borrowers, and has always made depositors whole. These combined factors mean that recognition of non-performing loans will be slow, banks and debtors will be asked to renegotiate and restructure debt rather than engage in a rapid write-off. We expect banks to gradually raise capital through various means (policy banks, accounting for about 10% of financial system assets, have already received government recapitalization in 2015), but do not see the need for a large bail out immediately.

Figure 3: China's credit has expanded rapidly since GFC



Point three: China needs to use FX reserves or print more than \$10 trillion to recapitalize its banking system. As the US Fed had to use massive QEs to help banks raise \$650 billion in capital, the PBC would need to print more than \$10 trillion worth of RMB to help recapitalize China's banking system.

There is a common misunderstanding that China needs to use FX reserves to recapitalize banks. Actually, it does not. Although China has done so more than once before, it was for other reasons such as bypassing lengthy legislative (National People's Congress) procedures to speed up bank reform and listing ([Does China Have Enough FX Reserves?](#)). Back in 2003 and 2005, when big state banks received FX reserves as capital, PBC exchanged its foreign assets with state banks' equity shares (through Huijin). So PBC's FX assets declined and its domestic equity assets increased. Later, the Ministry of Finance (after NPC approval) bought these equity shares from the PBC with special government bonds. The PBC's domestic assets (claims on the government) thus increased while its equity assets declined. When Chinese banks receive FX reserves as capital, they actually need to exchange it for RMB as their lending is predominantly in RMB. That is exactly what happened to the recapitalization FX – which later ended up back on the PBC's balance sheet as FX assets. **In the end, all that changed in the PBC's balance sheet was an increase in claims on the government on the asset side, and an increase in money supply on the liability side, with no net impact on FX reserves.** Of course, having large FX reserves are useful in dealing with capital outflows and shoring up confidence in the context that recapitalizing banks leads to more monetary easing and outflows.

On the second point, China does not have to take the US Fed approach to bank recapitalization. First, the Fed's multiple rounds of QE arguably are mainly aimed at reviving the economy in the absence of major fiscal stimulus. In the case of China, fiscal policy has and will likely continue to take a bigger role in supporting the economy. Second, unlike their US counterparts, Chinese banks are mostly owned (or majority owned in the case of listed banks) by the government, which

will likely participate in any recapitalization, and there is no ideological qualm about that either. Therefore, if banks need X amount of capital, China's government can directly inject X amount less market/corporate participation into them – instead of beating about the bush and flooding the market with liquidity at multiples of the required amount. Here it is also important to note that the government's balance sheet is in reasonable shape (even after taking into account local government debt and other contingent liabilities, total government debt to GDP ratio is about 60% of GDP) and can help with recapitalizing banks if needed.

Point Four: China's useable official FX reserves are much less than \$3.2 trillion after excluding holdings of sovereign wealth fund assets and money used to recapitalize banks, and are already below what IMF considers adequate.

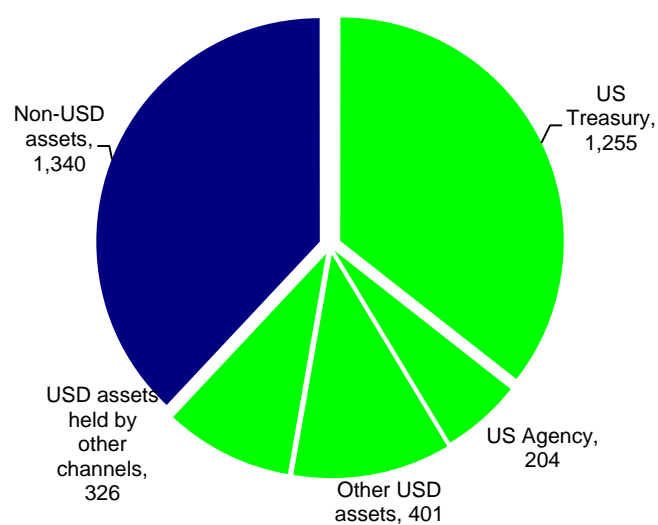
First, typically FX reserves are used to cover balance of payment transactions, such as short-term debt obligations and import bills. From that perspective, China has more than enough (see details in [Does China Have Enough FX Reserves?](#)). Taking into account a country's need **to defend against shocks and attacks**, analysts sometimes use more money-based indicators to measure reserves. Based on the IMF's composite metric, which takes into account capital outflows, **China would need \$1.5 trillion in reserves with capital controls and \$2.7 trillion without controls** as of end-2015. Obviously, **China still has capital controls**, even if they are somewhat porous. This means the required FX reserve level for China should be somewhere in between the two figures, depending on how much controls China can and plans to exercise.

Second, **current official FX reserves of \$3.2 trillion do not include CIC assets or bank recap funds**. When CIC received its first \$200 billion in 2007, the accounting was very clear – Ministry of Finance issued special bonds of the equivalent amount in exchange for the FX reserves PBC had provided, including those used for recapitalizing the big banks. So the PBC's balance sheet saw its FX assets decline and domestic assets (claims on the government) increase. Since then, CIC has reportedly received other FX transfers over the years, but well below \$100 billion in total. What about the roughly \$700 billion in total assets now at CIC? More than \$400 billion are domestic assets, most of which are capital gains made from its equity holdings of domestic financial institutions. Indeed, some of its over-\$200 billion in overseas investments was also accrued via capital gains and investment income. As for the more recent recapitalization of Chinese policy banks, and the Asia Infrastructure Investment Bank and Silk Road Fund, these funds have also been deducted from FX reserves, though the accounting is more convoluted than in the case of CIC ([What Investors Should Know about China's Capital Outflows](#)). One thing remains clear however, **until recently, China had consistently faced a challenge of capital inflows and appreciation pressure, which therefore saw the government encouraging outflows and diversifying FX assets away from official reserves into other forms of investment**. In other words, official FX reserves under-represented China's useable foreign assets, which were either listed as "other foreign assets" on PBC's balance sheet or held on the balance sheets of other entities.

As we have written earlier ([Why and what you need to know about CNY](#), and [Does China Have Enough FX Reserves?](#)), more than \$2 trillion of China's official reserves were held in G-10 government bonds, of which more than half is in US treasuries, with the rest of the \$3.2 trillion held in US agency debt, overseas equity, corporate bonds and various other assets, including through third party money managers (Figure 4). As we have cautioned, which assets are considered liquid in a traditional sense may not apply to China because of the enormous size of its holdings. Perhaps more importantly, we believe China will not rely solely on FX reserves to defend currency stability or fend off market pressures. As Governor Zhou confirmed in a recent interview, we believe China will use both tighter capital controls and increased exchange rate flexibility as well ([Governor Zhou Speaks on RMB and Capital Flows](#)).

Figure 4: Composition of China's official FX reserves

China FX reserve breakdown (USD bn, as Oct 2015)



Source: US Treasury TIC annual survey, UBS estimates

Required Disclosures

This report has been prepared by UBS Securities Asia Limited, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

For information on the ways in which UBS manages conflicts and maintains independence of its research product; historical performance information; and certain additional disclosures concerning UBS research recommendations, please visit www.ubs.com/disclosures. The figures contained in performance charts refer to the past; past performance is not a reliable indicator of future results. Additional information will be made available upon request. UBS Securities Co. Limited is licensed to conduct securities investment consultancy businesses by the China Securities Regulatory Commission. UBS acts or may act as principal in the debt securities (or in related derivatives) that may be the subject of this report.

Analyst Certification: Each research analyst primarily responsible for the content of this research report, in whole or in part, certifies that with respect to each security or issuer that the analyst covered in this report: (1) all of the views expressed accurately reflect his or her personal views about those securities or issuers and were prepared in an independent manner, including with respect to UBS, and (2) no part of his or her compensation was, is, or will be, directly or indirectly, related to the specific recommendations or views expressed by that research analyst in the research report.

Unless otherwise indicated, please refer to the Valuation and Risk sections within the body of this report. For a complete set of disclosure statements associated with the companies discussed in this report, including information on valuation and risk, please contact UBS Securities LLC, 1285 Avenue of Americas, New York, NY 10019, USA, Attention: Investment Research.

Global Disclaimer

This document has been prepared by UBS Securities Asia Limited, an affiliate of UBS AG. UBS AG, its subsidiaries, branches and affiliates are referred to herein as UBS.

Global Research is provided to our clients through UBS Neo, the UBS Client Portal and UBS.com (each a "System"). It may also be made available through third party vendors and distributed by UBS and/or third parties via e-mail or alternative electronic means. The level and types of services provided by Global Research to a client may vary depending upon various factors such as a client's individual preferences as to the frequency and manner of receiving communications, a client's risk profile and investment focus and perspective (e.g. market wide, sector specific, long-term, short-term, etc.), the size and scope of the overall client relationship with UBS and legal and regulatory constraints.

When you receive Global Research through a System, your access and/or use of such Global Research is subject to this Global Research Disclaimer and to the terms of use governing the applicable System.

When you receive Global Research via a third party vendor, e-mail or other electronic means, your use shall be subject to this Global Research Disclaimer and to UBS's Terms of Use/Disclaimer (<http://www.ubs.com/global/en/legalinfo2/disclaimer.html>). By accessing and/or using Global Research in this manner, you are indicating that you have read and agree to be bound by our Terms of Use/Disclaimer. In addition, you consent to UBS processing your personal data and using cookies in accordance with our Privacy Statement (<http://www.ubs.com/global/en/legalinfo2/privacy.html>) and cookie notice (<http://www.ubs.com/global/en/homepage/cookies/cookie-management.html>).

If you receive Global Research, whether through a System or by any other means, you agree that you shall not copy, revise, amend, create a derivative work, transfer to any third party, or in any way commercially exploit any UBS research provided via Global Research or otherwise, and that you shall not extract data from any research or estimates provided to you via Global Research or otherwise, without the prior written consent of UBS.

For access to all available Global Research on UBS Neo and the Client Portal, please contact your UBS sales representative.

This document is for distribution only as may be permitted by law. It is not directed to, or intended for distribution to or use by, any person or entity who is a citizen or resident of or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or would subject UBS to any registration or licensing requirement within such jurisdiction. It is published solely for information purposes; it is not an advertisement nor is it a solicitation or an offer to buy or sell any financial instruments or to participate in any particular trading strategy. No representation or warranty, either expressed or implied, is provided in relation to the accuracy, completeness or reliability of the information contained in this document ('the Information'), except with respect to Information concerning UBS. The Information is not intended to be a complete statement or summary of the securities, markets or developments referred to in the document. UBS does not undertake to update or keep current the Information. Any opinions expressed in this document may change without notice and may differ or be contrary to opinions expressed by other business areas or groups of UBS. Any statements contained in this report attributed to a third party represent UBS's interpretation of the data, information and/or opinions provided by that third party either publicly or through a subscription service, and such use and interpretation have not been reviewed by the third party.

Nothing in this document constitutes a representation that any investment strategy or recommendation is suitable or appropriate to an investor's individual circumstances or otherwise constitutes a personal recommendation. Investments involve risks, and investors should exercise prudence and their own judgement in making their investment decisions. The financial instruments described in the document may not be eligible for sale in all jurisdictions or to certain categories of investors. Options, derivative products and futures are not suitable for all investors, and trading in these instruments is considered risky. Mortgage and asset-backed securities may involve a high degree of risk and may be highly volatile in response to fluctuations in interest rates or other market conditions. Foreign currency rates of exchange may adversely affect the value, price or income of any security or related instrument referred to in the document. For investment advice, trade execution or other enquiries, clients should contact their local sales representative.

The value of any investment or income may go down as well as up, and investors may not get back the full (or any) amount invested. Past performance is not necessarily a guide to future performance. Neither UBS nor any of its directors, employees or agents accepts any liability for any loss (including investment loss) or damage arising out of the use of all or any of the Information.

Any prices stated in this document are for information purposes only and do not represent valuations for individual securities or other financial instruments. There is no representation that any transaction can or could have been effected at those prices, and any prices do not necessarily reflect UBS's internal books and records or theoretical model-based valuations and may be based on certain assumptions. Different assumptions by UBS or any other source may yield substantially different results.

This document and the Information are produced by UBS as part of its research function and are provided to you solely for general background information. UBS has no regard to the specific investment objectives, financial situation or particular needs of any specific recipient. In no circumstances may this document or any of the Information be used for any of the following purposes:

- (i) valuation or accounting purposes;
- (ii) to determine the amounts due or payable, the price or the value of any financial instrument or financial contract; or
- (iii) to measure the performance of any financial instrument.

By receiving this document and the Information you will be deemed to represent and warrant to UBS that you will not use this document or any of the Information for any of the above purposes or otherwise rely upon this document or any of the Information.

Research will initiate, update and cease coverage solely at the discretion of UBS Investment Bank Research Management. The analysis contained in this document is based on numerous assumptions. Different assumptions could result in materially different results. The analyst(s) responsible for the preparation of this document may interact with trading desk personnel, sales personnel and other parties for the purpose of gathering, applying and interpreting market information. UBS relies on information barriers to control the flow of information contained in one or more areas within UBS into other areas, units, groups or affiliates of UBS. The compensation of the analyst who prepared this document is determined exclusively by research management and senior management (not including investment banking). Analyst compensation is not based on investment banking revenues; however, compensation may relate to the revenues of UBS Investment Bank as a whole, of which investment banking, sales and trading are a part.

For financial instruments admitted to trading on an EU regulated market: UBS AG, its affiliates or subsidiaries (excluding UBS Securities LLC) acts as a market maker or liquidity provider (in accordance with the interpretation of these terms in the UK) in the financial instruments of the issuer save that where the activity of liquidity provider is carried out in accordance with the definition given to it by the laws and regulations of any other EU jurisdictions, such information is separately disclosed in this document. For financial instruments admitted to trading on a non-EU regulated market: UBS may act as a market maker save that where this activity is carried out in the US in accordance with the definition given to it by the relevant laws and regulations, such activity will be specifically disclosed in this document. UBS may have issued a warrant the value of which is based on one or more of the financial instruments referred to in the document. UBS and its affiliates and employees may have long or short positions, trade as principal and buy and sell in instruments or derivatives identified herein; such transactions or positions may be inconsistent with the opinions expressed in this document.

United Kingdom and the rest of Europe: Except as otherwise specified herein, this material is distributed by UBS Limited to persons who are eligible counterparties or professional clients. UBS Limited is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. **France:** Prepared by UBS Limited and distributed by UBS Limited and UBS Securities France S.A. UBS Securities France S.A. is regulated by the ACPR (Autorité de Contrôle Prudentiel et de Résolution) and the Autorité des Marchés Financiers (AMF). Where an analyst of UBS Securities France S.A. has contributed to this document, the document is also deemed to have been prepared by UBS Securities France S.A. **Germany:** Prepared by UBS Limited and distributed by UBS Limited and UBS Deutschland AG. UBS Deutschland AG is regulated by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin). **Spain:** Prepared by UBS Limited and distributed by UBS Limited and UBS Securities España SV, SA. UBS Securities España SV, SA is regulated by the Comisión Nacional del Mercado de Valores (CNMV). **Turkey:** Distributed by UBS Limited. No information in this document is provided for the purpose of offering, marketing and sale by any means of any capital market instruments and services in the Republic of Turkey. Therefore, this document may not be considered as an offer made or to be made to residents of the Republic of Turkey. UBS AG is not licensed by the Turkish Capital Market Board under the provisions of the Capital Market Law (Law No. 6362). Accordingly, neither this document nor any other offering material related to the instruments/services may be utilized in connection with providing any capital market services to persons within the Republic of Turkey without the prior approval of the Capital Market Board. However, according to article 15 (d) (ii) of the Decree No. 32, there is no restriction on the purchase or sale of the securities abroad by residents of the Republic of Turkey. **Poland:** Distributed by UBS Limited (spółka z ograniczoną odpowiedzialnością) Oddział w Polsce regulated by the Polish Financial Supervision Authority. Where an analyst of UBS Limited (spółka z ograniczoną odpowiedzialnością) Oddział w Polsce has contributed to this

document, the document is also deemed to have been prepared by UBS Limited (spółka z ograniczoną odpowiedzialnością) Oddział w Polsce. **Russia:** Prepared and distributed by UBS Bank (OOO). **Switzerland:** Distributed by UBS AG to persons who are institutional investors only. UBS AG is regulated by the Swiss Financial Market Supervisory Authority (FINMA). **Italy:** Prepared by UBS Limited and distributed by UBS Italia Sim S.p.A. UBS Italia Sim S.p.A. is regulated by the Bank of Italy and by the Commissione Nazionale per le Società e la Borsa (CONSOB). Where an analyst of UBS Italia Sim S.p.A. has contributed to this document, the document is also deemed to have been prepared by UBS Italia Sim S.p.A. **South Africa:** Distributed by UBS South Africa (Pty) Limited (Registration No. 1995/011140/07), an authorised user of the JSE and an authorised Financial Services Provider (FSP 7328). **Israel:** This material is distributed by UBS Limited. UBS Limited is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. UBS Securities Israel Ltd is a licensed Investment Marketer that is supervised by the Israel Securities Authority (ISA). UBS Limited and its affiliates incorporated outside Israel are not licensed under the Israeli Advisory Law. UBS Limited is not covered by insurance as required from a licensee under the Israeli Advisory Law. UBS may engage among others in issuance of Financial Assets or in distribution of Financial Assets of other issuers for fees or other benefits. UBS Limited and its affiliates may prefer various Financial Assets to which they have or may have Affiliation (as such term is defined under the Israeli Advisory Law). Nothing in this Material should be considered as investment advice under the Israeli Advisory Law. This Material is being issued only to and/or is directed only at persons who are Eligible Clients within the meaning of the Israeli Advisory Law, and this material must not be relied on or acted upon by any other persons. **Saudi Arabia:** This document has been issued by UBS AG (and/or any of its subsidiaries, branches or affiliates), a public company limited by shares, incorporated in Switzerland with its registered offices at Aeschenvorstadt 1, CH-4051 Basel and Bahnhofstrasse 45, CH-8001 Zurich. This publication has been approved by UBS Saudi Arabia (a subsidiary of UBS AG), a Saudi closed joint stock company incorporated in the Kingdom of Saudi Arabia under commercial register number 1010257812 having its registered office at Tatweer Towers, P.O. Box 75724, Riyadh 11588, Kingdom of Saudi Arabia. UBS Saudi Arabia is authorized and regulated by the Capital Market Authority to conduct securities business under license number 08113-37. **Dubai:** The information distributed by UBS AG Dubai Branch is intended for Professional Clients only and is not for further distribution within the United Arab Emirates. **United States:** Distributed to US persons by either UBS Securities LLC or by UBS Financial Services Inc., subsidiaries of UBS AG; or by a group, subsidiary or affiliate of UBS AG that is not registered as a US broker-dealer (a 'non-US affiliate') to major US institutional investors only. UBS Securities LLC or UBS Financial Services Inc. accepts responsibility for the content of a document prepared by another non-US affiliate when distributed to US persons by UBS Securities LLC or UBS Financial Services Inc. All transactions by a US person in the securities mentioned in this document must be effected through UBS Securities LLC or UBS Financial Services Inc., and not through a non-US affiliate. UBS Securities LLC is not acting as a municipal advisor to any municipal entity or obligated person within the meaning of Section 15B of the Securities Exchange Act (the "Municipal Advisor Rule"), and the opinions or views contained herein are not intended to be, and do not constitute, advice within the meaning of the Municipal Advisor Rule. **Canada:** Distributed by UBS Securities Canada Inc., a registered investment dealer in Canada and a Member-Canadian Investor Protection Fund, or by another affiliate of UBS AG that is registered to conduct business in Canada or is otherwise exempt from registration. **Brazil:** Except as otherwise specified herein, this material is prepared by UBS Brasil CCTVM S.A. to persons who are eligible investors residing in Brazil, which are considered to be: (i) financial institutions, (ii) insurance firms and investment capital companies, (iii) supplementary pension entities, (iv) entities that hold financial investments higher than R\$300,000.00 and that confirm the status of qualified investors in written, (v) investment funds, (vi) securities portfolio managers and securities consultants duly authorized by Comissão de Valores Mobiliários (CVM), regarding their own investments, and (vii) social security systems created by the Federal Government, States, and Municipalities. **Hong Kong:** Distributed by UBS Securities Asia Limited and/or UBS AG, Hong Kong Branch. **Singapore:** Distributed by UBS Securities Pte. Ltd. [MCI (P) 018/09/2015 and Co. Reg. No.: 198500648C] or UBS AG, Singapore Branch. Please contact UBS Securities Pte. Ltd., an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110); or UBS AG, Singapore Branch, an exempt financial adviser under the Singapore Financial Advisers Act (Cap. 110) and a wholesale bank licensed under the Singapore Banking Act (Cap. 19) regulated by the Monetary Authority of Singapore, in respect of any matters arising from, or in connection with, the analysis or document. The recipients of this document represent and warrant that they are accredited and institutional investors as defined in the Securities and Futures Act (Cap. 289). **Japan:** Distributed by UBS Securities Japan Co., Ltd. to professional investors (except as otherwise permitted). Where this document has been prepared by UBS Securities Japan Co., Ltd., UBS Securities Japan Co., Ltd. is the author, publisher and distributor of the document. Distributed by UBS AG, Tokyo Branch to Professional Investors (except as otherwise permitted) in relation to foreign exchange and other banking businesses when relevant. **Australia:** Clients of UBS AG: Distributed by UBS AG (Holder of Australian Financial Services License No. 231087). Clients of UBS Securities Australia Ltd: Distributed by UBS Securities Australia Ltd (Holder of Australian Financial Services License No. 231098). Clients of UBS Wealth Management Australia Ltd: Distributed by UBS Wealth Management Australia Ltd (Holder of Australian Financial Services License No. 231127). This Document contains general information and/or general advice only and does not constitute personal financial product advice. As such, the Information in this document has been prepared without taking into account any investor's objectives, financial situation or needs, and investors should, before acting on the Information, consider the appropriateness of the Information, having regard to their objectives, financial situation and needs. If the Information contained in this document relates to the acquisition, or potential acquisition of a particular financial product by a 'Retail' client as defined by section 761G of the Corporations Act 2001 where a Product Disclosure Statement would be required, the retail client should obtain and consider the Product Disclosure Statement relating to the product before making any decision about whether to acquire the product. The UBS Securities Australia Limited Financial Services Guide is available at: www.ubs.com/ecs-research-fsg. **New Zealand:** Distributed by UBS New Zealand Ltd. The information and recommendations in this publication are provided for general information purposes only. To the extent that any such information or recommendations constitute financial advice, they do not take into account any person's particular financial situation or goals. We recommend that recipients seek advice specific to their circumstances from their financial advisor. **Korea:** Distributed in Korea by UBS Securities Pte. Ltd., Seoul Branch. This document may have been edited or contributed to from time to time by affiliates of UBS Securities Pte. Ltd., Seoul Branch. **Malaysia:** This material is authorized to be distributed in Malaysia by UBS Securities Malaysia Sdn. Bhd (Capital Markets Services License No.: CMSL/A0063/2007). This material is intended for professional/institutional clients only and not for distribution to any retail clients. **India:** Prepared by UBS Securities India Private Ltd. (Corporate Identity Number U67120MH1996PTC097299) 2/F, 2 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai (India) 400051. Phone: +912261556000. It provides brokerage services bearing SEBI Registration Numbers: NSE (Capital Market Segment): INB230951431, NSE (F&O Segment) INF230951431, NSE (Currency Derivatives Segment) INE230951431, BSE (Capital Market Segment) INB010951437; merchant banking services bearing SEBI Registration Number: INM000010809 and Research Analyst services bearing SEBI Registration Number: INH000001204. UBS AG, its affiliates or subsidiaries may have debt holdings or positions in the subject Indian company/companies. Within the past 12 months, UBS AG, its affiliates or subsidiaries may have received compensation for non-investment banking securities-related services and/or non-securities services from the subject Indian company/companies. The subject company/companies may have been a client/clients of UBS AG, its affiliates or subsidiaries during the 12 months preceding the date of distribution of the research report with respect to investment banking and/or non-investment banking securities-related services and/or non-securities services. With regard to information on associates, please refer to the Annual Report at: http://www.ubs.com/global/en/about_ubs/investor_relations/annualreporting.html

The disclosures contained in research documents produced by UBS Limited shall be governed by and construed in accordance with English law.

UBS specifically prohibits the redistribution of this document in whole or in part without the written permission of UBS and UBS accepts no liability whatsoever for the actions of third parties in this respect. Images may depict objects or elements that are protected by third party copyright, trademarks and other intellectual property rights. © UBS 2016. The key symbol and UBS are among the registered and unregistered trademarks of UBS. All rights reserved.

