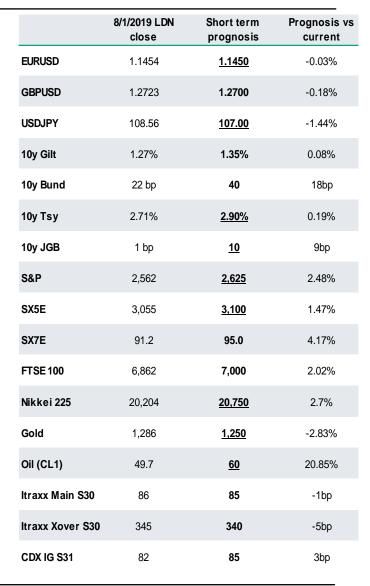
We see further potential upside for the current short covering in risky asset prices

- Global economic data continue to show a slowdown across the major economies. In the US the very low ISM numbers were a significant surprise and confirm the on-going slowdown in manufacturing across the world, as reflected in weak German and Chinese PMI.
- The combined effects of a slower economy, tightening financial conditions, high levels of credit leverage and still lofty asset valuations have raised risks for 2019.
- Not all the recent news/data has been negative. US consumer confidence remains strong, and employment growth and wage growth are accelerating. All this points to stronger consumer spending. Moreover, there are renewed expectations for a truce in the trade dispute between the US and China.
- The market is trying to price in the end of the cycle. Whilst we do see dark clouds on the horizon (especially with respect to US credit markets) we do not view this as an imminent Q1 2019 risk. As such, given the correction we have had so far, the market appears ripe for further short covering.
- Whilst financial conditions have tightened to levels similar to 2015, US GDP is currently stronger than what it was during that period. So, while tighter financial conditions are likely to impact growth, current levels are not enough to slow growth below trend.
- Rates: The market has priced out rate hikes for 2019 in both the US and Europe. Furthermore, term premium has fallen in spite of increased supply and an uptick in interest rate volatility. Current labour market conditions point to at least one or two hikes in 2019. We are of the view that rates will have to adjust higher.
- Equities: Since our Global Outlook call, the US equity correction (led by the technology sector) has pushed the S&P Equity Risk Premium back to its 12yr average. SXXE has also cheapened and the ERP is close to two standard deviations above its 12yr average. We remain neutral on US equities and continue to see little upside in European equities.
- Credit: spread underperformance has led equities, with HY spreads still 50bp wider than their mid-December levels. Outflows and weakness in the primary market continue to put pressure on spreads. Whilst we do see increasing risks of downgrades and rising defaults, we see this as a more H2 event than a current one. As such we could see some short covering in credit from current levels.
- Substantial long positioning (especially through passive funds) coupled with reduced secondary market liquidity will likely increase the asymmetric behaviour of the market. This will continue to weigh on performance in 2019.
- Trade of the week: Investors who agree with our view might consider selling the March 2020 eurodollar futures contract at 97.36.



Sources: Bloomberg, BNP Paribas





Global economic data continues to be weak but some underlying inflationary pressures are starting to appear

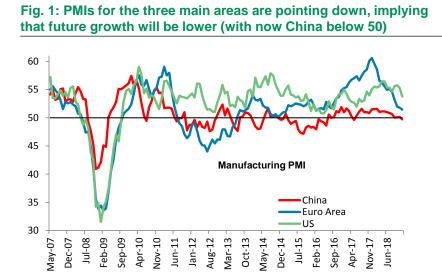


Fig. 3: Real wages are rebounding



Fig. 2: High levels of capacity utilisation to keep pressure on inflation

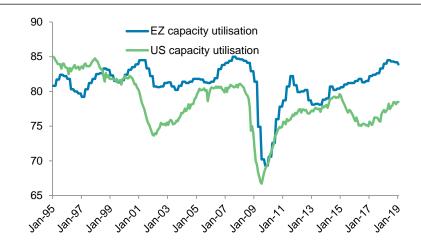


Fig. 1: Drops in PMIs in 2018 are pointing to much slower growth in 2019. The biggest drop has been in Germany, with the combined effects of a weaker EZ and slower global trade. Chinese data have also been especially worrying, with manufacturing PMI now below the key level of 50 (indicating contraction).

Fig. 2: GDP growth is also likely to be curtailed by production constraints, as utilisation capacity rates are historically high. This is especially the case in Europe where companies have not invested enough. This should drive wages higher and hence inflation.

Fig. 3: Despite the weaker outlook for GDP, real wages are finally starting to rebound. This is likely to put pressure on corporate margins, as companies are struggling to raise prices.

All sources: BNP Paribas, Macrobond and Bloomberg





China's slowdown has hit both production and consumption. This continues to be a headwind for EM and tech

Fig. 1: Economic indicators in China suggest one of the sharpest decelerations in years



Fig. 3: Recent RMB depreciation has only partly offset worsening credit conditions

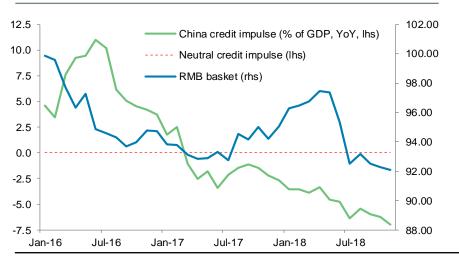


Fig. 2: Consumption growth is falling, despite the government's emphasis on shifting away from reliance on exports

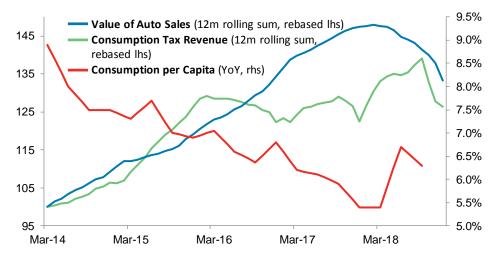


Fig. 1: Trade tensions, risk-off, and deteriorating credit conditions are all contributing to a sharp slowdown in Chinese growth and PMI. Furthermore, a sharp fall in the forward-looking new export orders component bodes poorly for the manufacturing sector.

Fig. 2: The Chinese authorities have repeatedly stated their focus on rebalancing the economy away from reliance on exports and towards sustained domestic consumption. The trade dispute with the US is making this task more complicated, which means deceleration in consumption (including the first annual drop in car sales in 20 years) is a major concern.

Fig. 3: RMB depreciation since the middle of 2018 has helped Chinese competitiveness. The PBOC also recently announced a 100bp RRR cut (releasing USD60-70bn of liquidity); however, financing from the USD10trn shadow banking sector continues to fall and the sustained contraction of credit has put significant pressure on SMEs in particular.

All sources: BNP Paribas, Bloomberg





Short-term rates and inflation swaps paint too pessimistic a picture

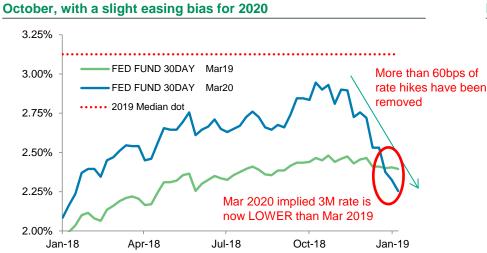


Fig. 3: Inflation swaps have dipped, with the US now close to the Fed inflation target.

Fig. 1: More than two hikes have been taken out since last

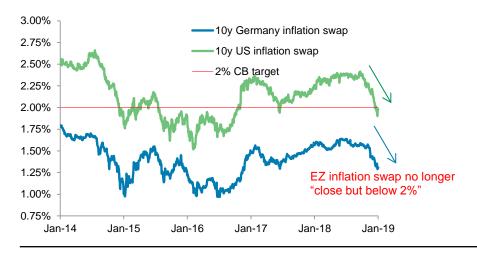


Fig. 2: Since October 2018, Dec20 expiry 3m Euribor rate has fallen by more than 30bp

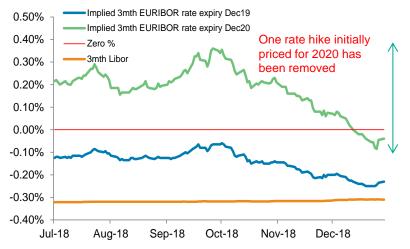


Fig. 1: Since the start of the stock market turmoil, the implied fed funds rate has dropped substantially. The futures contract expiring in Mar 2020 is implying a rate of 2.25% (by comparison, the March 2019 expiry indicates a rate of 2.40%).

Fig. 2: A similar picture has emerged in the eurozone, with futures markets undergoing a repricing of more than 30bp since the risk-off move began.

Fig. 3: Long-term breakeven levels in the US are back to the Fed's 2% target, whereas in Europe breakevens have begun to fall away from the official ECB target of "close but below 2%".

🗾 BNP PARIBAS

The bank for a changing world

All sources: BNP Paribas, Bloomberg



Drop in real yields unlikely to last with better tone in risky asset prices

Fig. 1: The real yield differential between the US and EZ is getting narrower



Fig. 3: We think that the US term premium is too low, especially given the current rebound in rate volatility

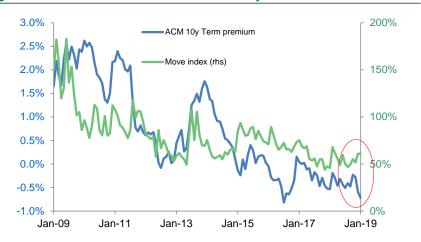


Fig. 2: Investors moved out of TIPS as US inflation numbers fell

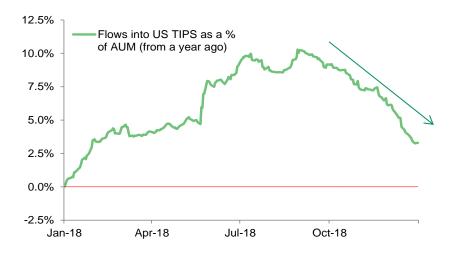
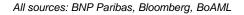


Fig. 1: US real yields are getting lower (despite the drop in inflation expectations) as the nominal yield of US Treasuries are going down at an even faster pace. We think that as stock prices start to stabilise, the pressure for higher rates will resume and that should support real yields globally.

Fig. 2: Economic data releases in the US have painted a picture of weaker growth momentum and hence weaker inflation – these factors have contributed to outflows from TIPS. We do expect oil to rebound somewhat and as such we expect inflation breakevens to rise.

Fig. 3: As rate volatility is rising, we should see a pick-up in the Term Premium and higher US nominal yields. This should keep US real yields from falling, and cap the performance of risky assets.







Current short covering in S&P is likely to continue; Europe remains cheap but lacks a catalyst to rebound

Fig. 1: After the recent correction, the S&P's ERP is back to neutral, but still not cheap



Fig 3: ...however the momentum of flows into financials remains negative

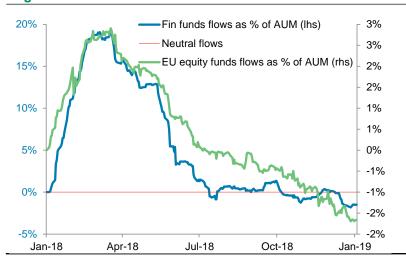


Fig. 2: This is in contrast with SXXE ERP that has reached levels last seen during the 2012 crisis...



Fig. 1: Following the drop in prices over the past few weeks, the Equity Risk premium of the S&P has reverted to its 12 year average (4.2%).

We do not have a strong conviction at the current level and ahead of the earnings season, which is likely to show a significant drop in the rate of earnings growth. Furthermore, as we expect US10y rates to start to rise again, the ERP is likely to come under pressure again.

Fig. 2: In Europe, the SXXE index has also repriced lower, pushing the ERP to levels similar to 2012 when the eurozone had much deeper issues than today.

Fig. 3: We are not bullish on European equities even at current valuations, as we do not yet see a strong catalyst coming from the financials. Both the lack of flow momentum and the prospect of low rates remain strong headwinds.

All sources: BNP Paribas, Bloomberg





Most asset classes had negative returns in 2018, and investor flows still point to risk free asset appetite

Fig. 1: EZ assets have been under pressure in 2018; EM flows have recovered after a poor 2017, and US Tsy's have attracted massive flows

Asset class	WoW % flows	MoM % flows	YoY % flows	YTD	1 yr Total return
US stocks	-0.6%	1.2%	6.0%	1.7%	-5.4%
US HY	-0.7%	-4.0%	-12.9%	2.0%	-0.9%
US HG	0.2%	0.1%	3.7%	0.3%	-1.9%
US loans	-0.8%	-10.1%	-5.5%	1.9%	2.1%
US GVT	6.8%	17.2%	70.8%	0.1%	1.4%
EU stocks	-0.1%	-0.6%	-1.7%	1.8%	-13.4%
EU HY	-0.4%	-2.7%	-13.3%	-0.3%	-4.5%
EU HG	0.0%	-0.9%	-8.6%	-0.3%	-1.9%
EM Bonds	0.3%	0.0%	2.8%	0.9%	-2.3%
EM stocks	0.5%	2.4%	7.5%	1.3%	-16.9%

Fig. 3: The flattening of the curve in the US has weighed on the performance of financials...

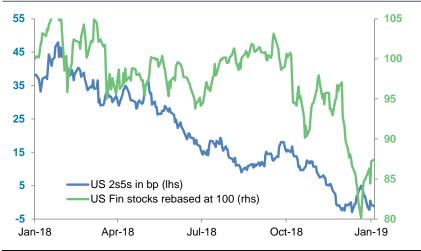


Fig. 2: With weaker equity prices in Q4, acceleration of flows into US Treasuries dwarfed other markets, especially IG bonds

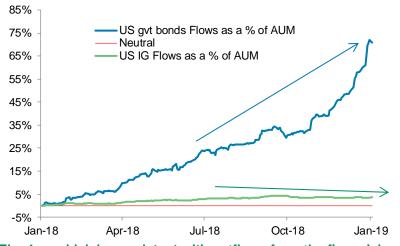
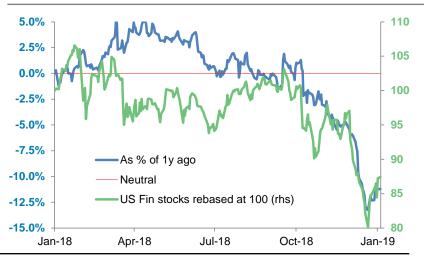


Fig. 4: ...which is consistent with outflows from the financial sector. A reversal in rates would be supportive for flows in the short term

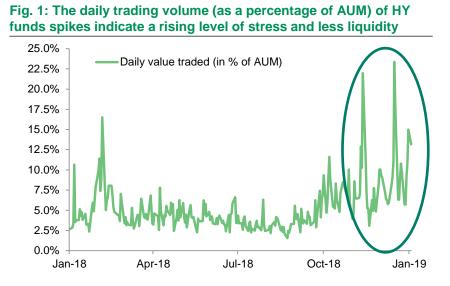


All sources: BNP Paribas, Bloomberg



MARKETS 360 | 9

The lack of secondary market liquidity is a key risk





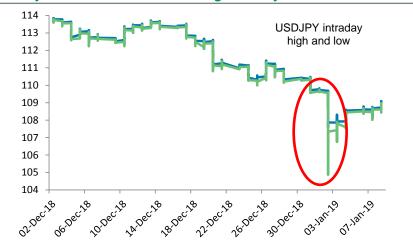
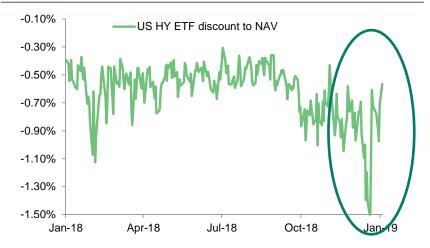


Fig. 2: During periods of heightened volatility, the discount between the traded price and the NAV of HY funds is rising



Figs. 1 and 2 show that during the recent widening in the US HY credit market, funds' daily trading volumes spiked while the discount of market price to NAV rose. This shows that during periods of widening the cost of liquidity can rise sharply. As we see more outflows and new issuance discounts, the occurrence of such events (as well as risk premia) are likely to rise.

Fig. 3: The drop in market liquidity is not limited to the HY markets as the recent sharp drop in the USDJPY shows. On 2 January, the USDJPY intraday price range was more than four points.

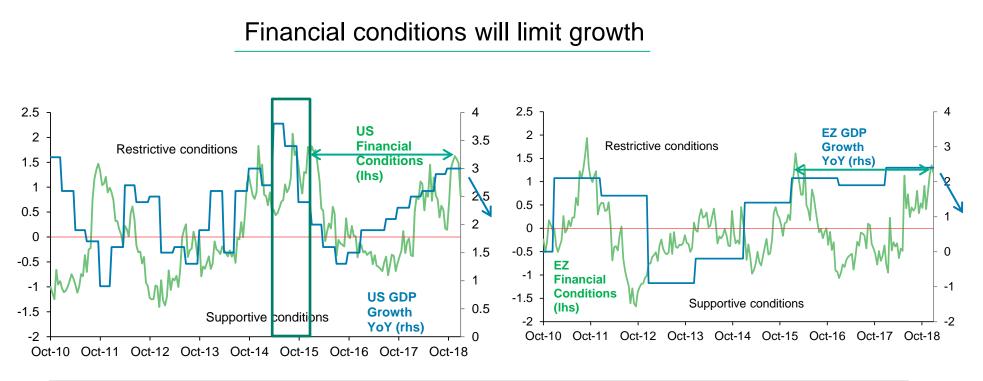
We think that the combination of outflows and greater and rising new issue discounts is likely to prevent credit spreads from performing beyond the current short covering move.







Financial conditions in both the US and eurozone remain highly restrictive



Financial conditions are at similar levels as what we witnessed in 2015, however the US economy, and to a lesser extent the European economy, are in a better state than during that period. Credit spreads would need to widen much more with a more sustained equity selloff to have the same negative impact on growth as in 2015.



All sources: BNP Paribas, Bloomberg



How does 2018-19 compare with 2014-15

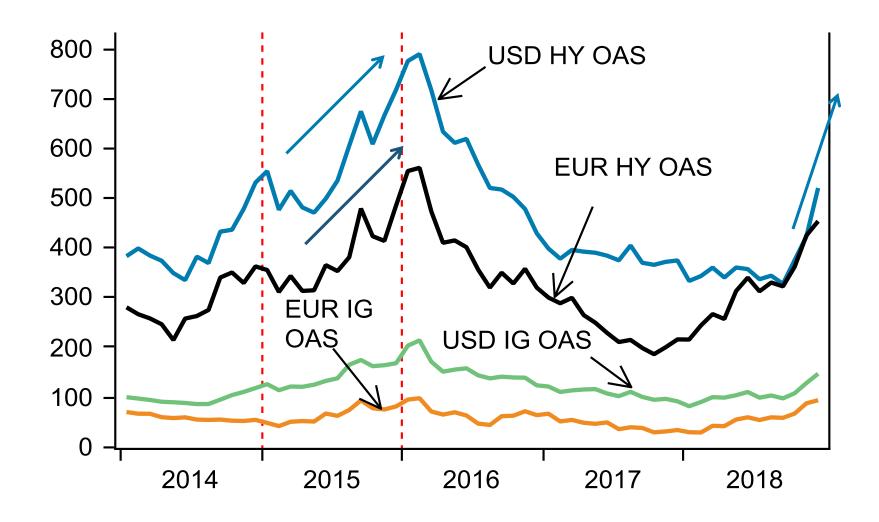
	2014	2015	2016	2017	2018
GDP growth %y/y United States	2.7%	2.0%	1.9%	2.5%	3.0%
Unemployment rate % United States	5.6%	5.0%	4.7%	4.1%	3.9%
Output gap United States (IMF) %	-1.2%	-0.1%	-0.2%	0.2%	1.1%
nflation rate %y/y United States	0.8%	0.7%	2.1%	2.1%	2.2%
Policy rate Fed	0.25%	0.50%	0.75%	1.50%	2.50%
Real policy rate Fed	-0.6%	-0.2%	-1.4%	-0.6%	0.3%
10y bond yield United States	2.17	2.3	2.5	2.4	2.7
DIL (WTI)	53	37	54	60	45
S&P500 %y/y	11.8%	-0.7%	10.0%	29.6%	-6.2%
VIX PE ratio Equity risk premium % United States Profit margin % S&P500	19% 17 3.6% 9.3%	18% 17 3.5% 8.5%	13% 19 2.8% 8.6%	11% 20 2.6% 9.1%	25% 15 3.8% 10.1%
IG Credit spread in bp HY Credit spread in bp	131 483	165 660	122 404	93 343	153 526





All sources: BNP Paribas, IMF, Macrobond and Bloomberg

While credit markets have cheapened to attractive levels, if 2019 is anything like 2015 there is further downside to be had



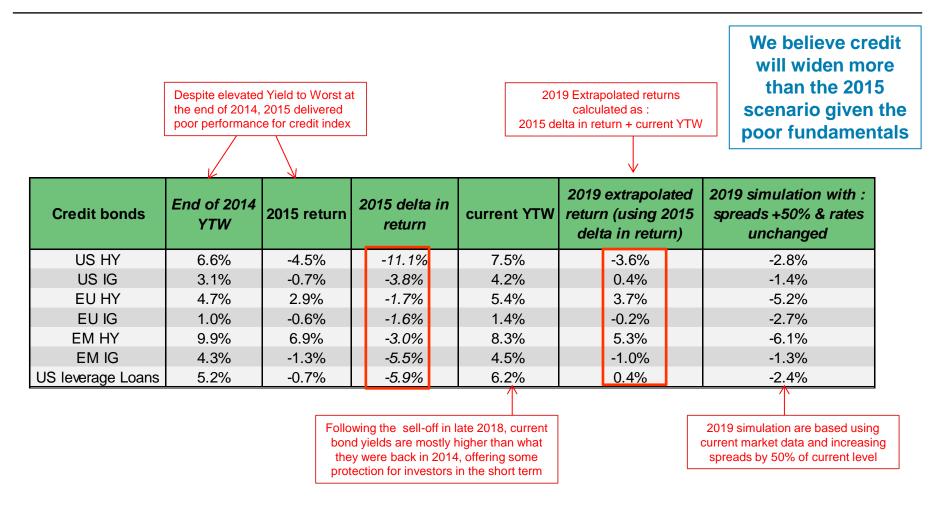


The bank for a changing world



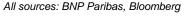
All sources: BNP Paribas, Macrobond and Bloomberg

Credit: we think that in 2019 corporate bonds returns will be driven more by credit spreads, rather than by interest rates



(*) The 2019 simulation are computed results using spreads assumptions and are NOT BNPP's forecasts.







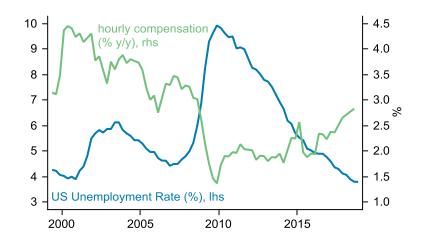
Trade of the week: short US March 2020 Eurodollar futures contract

- We believe markets have become too pessimistic regarding growth and inflation.
- We don't see the US entering into recession in the near term (although we do expect US growth to slow in 2019, to 2.1% from 2.8% in 2018). The US economy remains strong with consumer confidence near record high. Furthermore, the current post war low unemployment rates is now starting to push wage growth up (Fig. 1) and is supportive for the economy.
- The US futures (eurodollars) market has priced out all rate hikes in 2019 and is now pricing in rate cuts in 2020, as the 2020 expiry price is above the price of the 2019 maturity (Fig. 2).
- We believe what is currently priced in terms of rate cuts in early 2020 paints a too pessimistic of the US economy. We expect the eurodollar curve to normalise to upward sloping from inverted currently.
- Investors who agree with our view might consider selling the March 2020 eurodollar futures contract at 97.38.

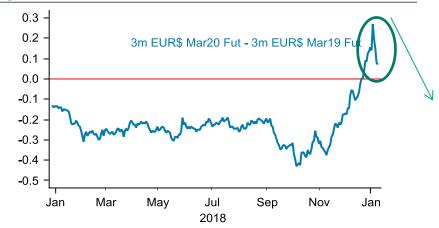
<u>Trade of the week:</u> Short 90Day Euro\$ Future Mar 20 (EDH0 COMB Comdty) at 97.36 with a target at 97.13 and a stop 97.47.

MAR Number : TR-8921









All sources: BNP Paribas, Macrobond and Bloomberg





This document has been written by our Strategist and Economist teams within the BNP Paribas group of companies (collectively "BNPP"); it does not purport to be an exhaustive analysis, and may be subject to conflicts of interest resulting from their interaction with sales and trading which could affect the objectivity of this report. This document is non-independent research for the purpose of the UK Financial Conduct Authority rules. For the purposes of the recast Markets in Financial Instruments Directive (2014/65/EU) (MiFID II), non-independent research constitutes a marketing communication. This document is not investment research for the purposes of MiFID II. It has not been prepared in accordance with legal requirements designed to provide the independence of investment research, and is not subject to any prohibition on dealing ahead of the dissemination of investment research.

The content in this document/communication may also contain "Research" as defined under the MiFID II unbundling rules. If the document/communication contains Research, it is intended for those firms who are either in scope of the MiFID II unbundling rules and have signed up to one of the BNPP Global Markets Research packages, or firms that are out of scope of the MiFID II unbundling rules and therefore not required to pay for Research under MiFID II. Please note that it is your firm's responsibility to ensure that you do not view or use the Research content in this document if your firm has not signed up to one of the BNPP Global Markets Research content in this document if your firm has not signed up to one of the BNPP Global Markets Research packages, except where your firm is out of scope of the MiFID II.

STEER[™] is a trade mark of BNPP. MARKETS 360 is a trade mark of BNP Paribas

This document constitutes a marketing communication and has been prepared by BNPP for, and is directed at, (a) Professional Clients and Eligible Counterparties as defined by the recast Markets in Financial Instruments Directive (2014/65/EU) (MiFID II), and (b) where relevant, persons who have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, and at other persons to whom it may lawfully be communicated (together "Relevant Persons") under the regulations of any relevant jurisdiction. Any investment or investment activity to which this document relates is available only to and will be engaged in only with Relevant Persons. Any person who is not a Relevant Person should not act or rely on this document or its content.

Securities described herein may not be eligible for sale in all jurisdictions or to certain categories of investors.

The information and opinions contained in this document have been obtained from, or are based on, public sources believed to be reliable, but there is no guarantee of the accuracy, completeness or fitness for any particular purpose of such information and such information may not have been independently verified by BNPP or by any person. None of BNPP, any of its subsidiary undertakings or affiliates or its members, directors, officers, agents or employees accepts any responsibility or liability whatsoever or makes any representation or warranty, express or implied, as to the accuracy and completeness of the information or any opinions based thereon and contained in this document and it should not be relied upon as such.

This document does not constitute or form any part of any offer to sell or issue and is not a solicitation of any offer to purchase any financial instrument, nor shall it or any part of it nor the fact of its distribution form the basis of, or be relied on, in connection with any contract or investment decision. To the extent that any transaction is subsequently entered into between the recipient and BNPP, such transaction will be entered into upon such terms as may be agreed by the parties in the relevant documentation.

Information and opinions contained in this document are published for the information of recipients, but are not to be relied upon as authoritative or taken in substitution for the exercise of judgment by any recipient, are subject to change without notice and not intended to provide the sole basis of any evaluation of the instruments discussed herein. In providing this document, BNPP does not offer investment, financial, legal, tax or any other type of advice to, nor has any fiduciary duties towards, recipients. Any reference to past performance is not indicative of future performance, which may be better or worse than prior results. Any hypothetical, past performance, in any way, of future performance. To the fullest extent permitted by law, no BNPP group company accepts any liability whatsoever (including in negligence) for any direct or consequential loss arising from any use of or reliance on material contained in this document even where advised of the possibility of such losses. All estimates and opinions included in this document are made as of the date of this document. Unless

BNPP may make a market in, or may, as principal or agent, buy or sell securities of any issuer or person mentioned in this document or derivatives thereon. Prices, yields and other similar information included in this document are included for information purposes however numerous factors will affect market pricing at any particular time, such information may be subject to rapid change and there is no certainty that transactions could be executed at any specified price.

BNPP may have a financial interest in any issuer or person mentioned in this document, including a long or short position in their securities and/or options, futures or other derivative instruments based thereon, or vice versa. BNPP, including its officers and employees may serve or have served as an officer, director or in an advisory capacity for any person mentioned in this document. BNPP may, from time to time, solicit, perform or have performed investment banking, underwriting or other services (including acting as adviser, manager, underwriter or lender) within the last 12 months for any person referred to in this document. BNPP may be a party to an agreement with any person relating to the production of this document. BNPP may to the extent permitted by law, have acted upon or used the information contained herein, or the analysis on which it was based, before the document was published. BNPP may receive or intend to seek compensation for investment banking services in the next three months from or in relation to any person mentioned in this document. Any person mentioned in this document may have been provided with relevant sections of this document prior to its publication in order to verify its factual accuracy.

This document is for information purposes only and there is no assurance that a transaction(s) will be entered into on such indicative terms. Any indicative price(s) contained herein have been prepared in good faith in accordance with BNPP's own internal models and calculation methods and/or are based on or use available price sources where considered relevant. Indicative price(s) based on different models or assumptions may yield different results. Numerous factors may affect the price(s), which may or may not be taken into account. Therefore, these indicative price(s) may vary significantly from indicative price(s) obtained from other sources or market participants. BNPP expressly disclaims any responsibility for the accuracy or completeness of its own internal models or calculation methods, the accuracy or reliability of any price sources used, any errors or omissions in computing or disseminating these indicative price(s), and for any use you make of the price(s) provided. The indicative price(s) do not represent (i) the actual terms on which any existing transactions or (iv) the calculation or estimate of an amount that would be payable following an early termination of the transactions or (iv) the price(s) given to the transactions by BNPP in its own books of account for financial reporting, credit or risk management purposes. As an investment bank with a wide range of activities, BNPP may face conflicts of interest, which are resolved under applicable legal provisions and internal guidelines. You should be aware, however, that BNPP may engage in transactions in a manner inconsistent with the views expressed in this document, either for its own account of tor the calculations.





This document may contain certain performance data based on back-testing, i.e. simulations of performance of a strategy, index or assets as if it had actually existed during a defined period of time. To the extent any such performance data is included, the scenarios, simulations, development expectations and forecasts contained in this document are for illustrative purposes only. All estimates and opinions included in this document constitute the judgment of BNPP and its affiliates as of the date of the document and may be subject to change without notice. This type of information has inherent limitations which recipients must consider carefully. While the information has been prepared in good faith in accordance with BNPP's own internal models and other relevant sources, an analysis based on different models or assumptions may yield different results. Unlike actual performance records, simulated performance returns or scenarios may not necessarily reflect certain market factors such as liquidity constraints, fees and transactions costs. Actual historical or back tested past performance does not constitute an indication of future results or performance.

This document is only intended to generate discussion regarding particular products and investments and is subject to change or may be discontinued. We are willing to discuss it with you on the understanding that you have sufficient knowledge, experience and professional advice to understand and make your own independent evaluation of the merits and risk of the information and any proposed structures. The information contained herein is not and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell securities described herein, or solicitation of an offer to buy securities described herein, in Canada, the U.S. or any other province or territory nor shall it be deemed to provide investment, tax, accounting or other advice. Transactions involving the product(s) described in this document may involve a high degree of risk and the value of such transactions may be highly volatile. Such risks include, without limitation, risk of adverse or unanticipated market developments, risk of counterparty or issuer default, risk of adverse events involving any underlying reference obligation or entity and risk of illiquidity. In certain transactions, counterparties may lose their entire investment or incur an unlimited loss. The tax or information herein is believed reliable but BNPP and its affiliates do not warrant or guarantee is completeness or accuracy. All information, terms and pricing set forth herein reflect our judgment at the date and time hereof and are subject to change without notice. In the event that we were to enter into a transaction with you, we will do so as principal (and not as agent or in any other capacity, including, without limitation, as your fluciary, advisor or otherwise). Only in the event of a potential transaction will an offering document be product(s) described herein in which case, you should refer to the prospectus or offering document relating to the above potential transaction which includes important information, including risk fac

Prior to transacting, you should ensure that you fully understand (either on your own or through the use of independent expert advisors) the terms of the transaction and any legal, tax and accounting considerations applicable to them. You should also consult with independent advisors and consultants (including, without limitation, legal counsel) to determine whether entering into any securities transactions contemplated herein would be contrary to local laws. The information contained herein is provided to you on a strictly confidential basis and you agree that it may not be copied, reproduced or otherwise distributed by you, whether in whole or in part (other than to your professional advisors), without our prior written consent. Neither we, nor any of our affiliates, nor any of their respective directors, partners, officers, employees or representatives accepts any liability whatsoever for any direct or consequential loss arising from any use of this document or their content; and any of the foregoing may from time to time act as manager, co-manager or underwriter of a public offering or otherwise, in the capacity of principal or agent, deal in, hold or act as market makers or advisors, brokers or commercial and/or investment bankers in relation to the securities or related derivatives that are discussed herein. BNPP and its affiliates may (or may in the future) hold a position or act as a market maker in the financial instruments discussed, or act as an advisor, manager, underwriter or lender to such issuer. In no circumstances shall BNPP or its affiliates be obliged to disclose any information that it has received on a confidential basis or to disclose the existence thereof.

The information presented herein does not comprise a prospectus of securities for the purposes of EU Directive 2003/71/EC (as amended from time to time).

This document was produced by a BNPP group company. This document is for the use of intended recipients and may not be reproduced (in whole or in part) or delivered or transmitted to any other person without the prior written consent of BNPP. By accepting this document you agree to this.

United States Disclosures:

Important Option Disclosures: Options are complex instruments that are not suitable for every investor, may involve a high degree of risk, and may be appropriate investments only for sophisticated investors who are capable of understanding and assuming the risks involved. Supporting documentation for any claims, comparisons, recommendations, statistics or other technical data will be supplied upon request. Any trade information is preliminary and not intended as an official transaction confirmation. If the information contained herein regards options related content, such information is available only to persons who have received the proper option risk disclosure documents. For a copy of the Option Clearing Corporation's Characteristics and Risks of Standardized Options, please contact your BNPP sales representative or visit the OCC's website at http://www.theocc.com/about/publications/character-risks.jsp

Important ETF Disclosures: For any ETFs discussed in this document, you should consider the investment objectives, risks, and charges and expenses of the investment company carefully before investing. The prospectus, and if available, the summary prospectus should be read carefully before investing. As with any investment, ETFs have risks. These include the general risks associated with investing in the underlying assets, potential tracking error, and the possibility that particular indices may lag other market segments or active managers. In addition, ETFs investing in international markets may include currency and geopolitical risks, while fixed income ETF risks also include credit and interest rate risk. BNPP and its affiliates may hold a position or act as a market maker in the financial instruments discussed, or act as an advisory, manager, underwriter, or lender to such issuer. As a result, BNPP may have potential conflicts of interest relating to the ETFs that are discussed in this material. In connection with these activities, BNPP may receive a fee, may be deemed to be an underwriter of the ETF shares, and may receive information about pending creations or redemption of the securities covered in this material. In connection with these activities, BNPP may act as end disclose the existence of such information about pending creations or redemptions of large blocks of ETF shares. Under no circumstances shall BNPP or its affiliates be obliged to disclose the existence of such information. BNPP also may act as a market maker or block positioner in the ETF shares discussed in this material. In Particular in the intervents underlying the ETF shares or for its own account while you are pation of the index whose performance the ETF seeks to track. As a result, BNPP may be buying or selling ETF shares (or the instruments underlying the ETF shares) for other customers or for its own account while you are pation of the index whose performance the ETF seeks to track. As a result, BNPP may be buying or selling ETF s

Important Disclosures for Convertibles Securities or other Securities not registered under US Securities Laws: Certain securities discussed herein may not be registered under the Securities Act of 1933, as amended, and therefore are considered "restricted securities" provides and the securities action of the Securities action of the Securities action of under the Securities action of the Securities act





This report may be distributed (i) by BNPP Securities Corp. ("BNPPSC") to U.S. persons who qualify as "institutional investors" under FINRA Rule 2210(a)(4), or (ii) by a subsidiary or affiliate of BNPP that is not registered as a U.S. broker-dealer only to U.S. persons who are considered "major U.S. institutional investors" (as such term is defined in Rule 15a-6 under the Securities Exchange Act of 1934, as amended). BNPPSC accepts responsibility for the content of a report prepared by another non-U.S. affiliate only when distributed to U.S. persons by BNPPSC. U.S. persons who wish to effect transactions in securities based on the information provided herein must do so through BNPPSC unless otherwise authorized by law to transact through a non-U.S. affiliate of BNPP. BNPPSC, a subsidiary of BNPP, is a broker dealer and futures commission (SEC), Commodity Futures Trading Commission (CFTC), Financial Industry Regulatory Authority (FINRA), and National Futures Association (NFA) and is a member of the New York Stock Exchange (NYSE), other principal exchanges, and the Securities Investor Protection Corporation (SIPC). Some of the securities mentioned in this document have not been registered under the U.S. Securities Act of 1933, as amended, and may not be offered or sold in the U.S. or to a U.S. person absent registration or an applicable exemption from the U.S. registration requirements. SUBJECT TO, §§ 1.71 AND 23.605 OF THE URPORMATION OF BNPP'S CLIENTS AND IS A GENERAL SOLICITATION OF DERIVATIVES BUSINESS FOR THE PURPOSES OF, AND TO THE EXTENT IT IS SUBJECT TO, §§ 1.71 AND 23.605 OF THE U.S. COMMODITY EXCHANGE ACT.

UK: In the UK, this document is being communicated by BNPP London Branch. 10 Harewood Avenue, London NW1 6AA; tel: +44 20 7595 2000; fax: +44 20 7595 2555- www.bnpparibas.com. Incorporated in France with Limited Liability. Registered Office: 16 boulevard des Italiens, 75009 Paris, France. 662 042 449 RCS Paris. BNPP London Branch is lead supervised by the European Central Bank (ECB) and the Autorité de Contrôle Prudentiel et de Résolution (ACPR). BNPP London Branch is authorised by the ECB, the ACPR and the Prudential Regulation Authority and subject to limited regulation by the Financial Conduct Authority and Prudential Regulation Authority. Details about the extent of our authorisation and regulation by the Prudential Regulation Authority, and regulation by the Financial Conduct Authority are available from us on request. BNPP London Branch is registered in England and Wales under no. FC13447.

France: This report is produced and/or is distributed in France by BNPP SA and/or BNPP Arbitrage. BNPP SA is incorporated in France with Limited Liability (Registered Office: 16 boulevard des Italiens, 75009 Paris, France, 662 042 449 RCS Paris, www.bnpparibas.com) is authorized and supervised by European Central Bank (ECB) and by Autorité de Contrôle Prudentiel et de Résolution (ACPR) in respect of supervisions for which the competence remains at national level, in terms of Council Regulation n° 1024/2013 of 15 October 2013 conferring specific tasks on the ECB concerning policies relating to the prudential supervision of credit institutions. BNPP Arbitrage is an unlimited liability company, whose registered office is 160/162 boulevard Mac Donald 75019 Paris, registered with the Paris Trade and Companies Registry under number 394 895 833. It is authorised and supervised by the Autorité de Contrôle Prudentiel et de Résolution and the Autorité des Marchés Finance.

Germany: This report is being distributed in Germany by BNPP S.A. Niederlassung Deutschland, a branch of BNPP S.A. whose head office is in Paris, France. 662 042 449 RCS Paris, www.bnpparibas.com). BNPP Niederlassung Deutschland is authorized and lead supervised by the European Central Bank (ECB) and by Autorité de Contrôle Prudentiel et de Résolution (ACPR) and is subject to limited supervision and regulation by Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) in respect of supervisions for which the competence remains at national level, in terms of Council Regulation n° 2013/1024 of 15 October 2013 conferring specific tasks on the ECB concerning policies relating to the prudential supervision between the national competent authorities in case of branches and applicable national rules and regulations. BNPP Niederlassung Deutschland is registered with locations at Europa Allee 12, 60327 Frankfurt (commercial register HRB Frankfurt am Main 40950) and Bahnhofstrasse 55, 90429 Nuremberg (commercial register Nuremberg HRB Nürnberg 31129).

Belgium: BNPP Fortis SA/NV is authorized and supervised by European Central Bank (ECB) and by the National Bank of Belgium, boulevard de Berlaimont 14, 1000 Brussels, and is also under the supervision on investor and consumer protection of the Financial Services and Markets Authority (FSMA), rue du congrès 12-14, 1000 Brussels and is authorized as insurance agent under FSMA number 25789 A.

Ireland: This report is being distributed in Ireland by BNPP S.A., Dublin Branch. BNPP is incorporated in France as a Société Anonyme and regulated in France by the European Central Bank and by the Autorité de Contrôle Prudentiel et de Résolution.

Italy: This report is being distributed by BNPP Italian Branch (Succursale Italia) which is authorised and lead supervised by the European Central Bank (ECB) and the Autorité de Contrôle Prudentiel et de Résolution and regulated by the Autorité des Marchés Financiers, and this authorisation has been notified to the Bank of Italy. BNPP Succursale Italia is the Italian branch of a company incorporated under the laws of France having its registered office at 16, Boulevard des Italiens, 75009, Paris, whose offices are located in Piazza Lina Bo Bardi 3, Milan, tax code and registration number at the Companies Registry of Milan No. 0444690157, is enrolled in the register of the banks held by Bank of Italy under No. 5482, duly authorised to provide in Italy banking and investment services according the principle of the mutual recognition. The branch is subject to limited regulation by the Bank of Italy and the CONSOB respectively.

Netherlands: This report is being distributed in the Netherlands by BNPP Fortis SA/NV, Netherlands Branch, a branch of BNPP SA/NV whose head office is in Brussels, Belgium. BNPP Fortis SA/NV, Netherlands Branch, Herengracht 595, 1017 CE Amsterdam, is authorised and supervised by the European Central Bank (ECB) and the National Bank of Belgium and is also supervised by the Belgian Financial Services and Markets Authority (FSMA) and it is subject to limited regulation by the Netherlands Authority for the Financial Markets (AFM) and the Dutch Central Bank (De Nederlandsche Bank).

Portugal: BNPP – Sucursal em Portugal Avenida 5 de Outubro, 206, 1050-065 Lisboa, Portugal. www.bnpparibas.com. Incorporated in France with Limited Liability. Registered Office: 16 boulevard des Italiens, 75009 Paris, France. 662 042 449 RCS Paris. BNPP – Sucursal em Portugal is lead supervised by the European Central Bank (ECB) and the Autorité de Contrôle Prudentiel et de Résolution (ACPR). BNPP - Sucursal em Portugal is authorized by the ECB, the ACPR and Resolution and it is authorized and subject to limited regulation by Banco de Portugal and Comissão do Mercado de Valores Mobiliários. BNPP - Sucursal em Portugal is registered in C.R.C. of Lisbon under no. NIPC 980000416. VAT Number PT 980 000 416."

Spain: This report is being distributed in Spain by BNPP S.A., S.E., a branch of BNPP S.A. whose head office is in Paris, France (Registered Office: 16 boulevard des Italiens, 75009 Paris, France). BNPP S.A., S.E., C/Ribera de Loira 28, Madrid 28042 is authorised and supervised by the European Central Bank (ECB) and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and subject to limited regulation by the Bank of Spain.





Switzerland: This report is intended solely for customers who are "Qualified Investors" as defined in article 10 paragraphs 3 and 4 of the Federal Act on Collective Investment Schemes of 23 June 2006 (CISA) and the relevant provisions of the Federal Ordinance on Collective Investment Schemes of 22 November 2006 (CISO). "Qualified Investors" includes, among others, regulated financial intermediaries such as banks, securities fund management companies and asset manageres of collective investment schemes, regulated insurance institutions as well as pension funds and companies with professional treasury operations. This document may not be suitable for customers who are not Qualified Investors and should only be used and passed on to Qualified Investors. For specification purposes, a "Swiss Corporate Customer" is a Client which is a corporate entity, incorporated and existing under the laws of Switzerland and which qualifies as "Qualified Investor" as defined above." BNPP (Suisse) SA is authorised as bank and as securities dealer by the Swiss Financial Market Supervisory Authority FINMA. BNPP (Suisse) SA is registered at the Geneva commercial register under No. CHE-102.922.193. BNPP (Suisse) SA is incorporated in Switzerland with limited liability. Registered Office: 2, place de Hollande, 1204 Geneva, Switzerland.

Canada: The information contained herein is not, and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell securities described herein, in Canada or any province or territory thereof. Any offer or sale of the securities described herein in Canada will be made only under an exemption from the requirements to file prospectus with the relevant Canadian securities regulators and only by a dealer properly registered under applicable securities laws or, alternatively, pursuant to an exemption from the dealer registration requirement in the relevant province or territory of Canada in which such offer or sale is made. The information contained herein is not tailored to the needs of the recipient. To the extent that the information contained herein references securities of an issuer incorporated, formed or created under the laws of Canada or a province or territory of Canada, any trades in such securities the conducted through a dealer registered in Canada. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed judgment upon these materials, the information contained herein or the merits of the securities described herein, and any representation to the contrary is an offence.

Brazil: This report was prepared by Banco BNPP Brasil S.A. or by its subsidiaries, affiliates and controlled companies, together referred to as "BNPP", for information purposes only and do not represent an offer or request for investment of assets. Banco BNPP Brasil S.A. is a financial institution duly incorporated in Brazil and duly authorized by the Central Bank of Brazil and by the Brazilian Securities Commission to manage investment funds. Notwithstanding the caution to obtain and manage the information presented, BNPP shall not be responsible for the accidental publication of incorrect information, nor for investment decisions taken based on the information contained herein. Banco BNPP Brasil S.A. shall not be responsible to update or revise any information contained herein. Banco

Turkey: This report is being distributed in Turkey by TEB Investment (TEB YATIRIM MENKUL DEĞERLER A.Ş., TEB Kampüs D Blok Saray Mahallesi, Küçüksu Caddesi Sokullu Sokak, No:7 34768 Ümraniye, İstanbul, Turkey, trade register number: 358354, www.tebyatirim.com.tr) and TEB (TÜRK EKONOMI BANKASI A.Ş., TEB Kampüs C ve D Blok, Saray Mahallesi Küçüksu Caddesi Sokullu Sokak No:7 34768 Ümraniye, İstanbul, Turkey, Trade register number: 358354, www.tebyatirim.com.tr) and TEB (TÜRK EKONOMI BANKASI A.Ş., TEB Kampüs C ve D Blok, Saray Mahallesi Küçüksu Caddesi Sokullu Sokak No:7 34768 Ümraniye, İstanbul, Turkey, Trade register number: 358356, www.teb.com.tr). Notice Published in accordance with "Communique on Principles Regarding Investment Services, Activities and Ancillary Services". No: III-37.1 issued by the Capital Markets Board of Turkey. The investment related information, commentary and recommendations contained herein do not constitute investment advisory agreements executed between investors and brokerage companies or portfolio management companies or non-deposit accepting banks. The commentary and recommendations contained herein are based on the personal views of the persons who have made such commentary and recommendations. These views may not conform to your financial standing or to your risk and return preferences. Therefore, investment decisions based solely on the information provided herein may fail to produce results in accordance.

Israel: BNPP does not hold a licence under the Investment Advice and Marketing Law of Israel, to offer investment advice of any type, including, but not limited to, investment advice relating to any financial products.

Bahrain: This document is being distributed in Bahrain by BNPP Wholesale Bank Bahrain, a branch of BNPP S.A. whose head office is in Paris, France (Registered Office: 16 boulevard des Italiens, 75009 Paris, France). BNPP Wholesale Bank Bahrain is licensed and regulated as a Registered Institution by the Central Bank of Bahrain – CBB. This document does not, nor is it intended to, constitute an offer to issue, sell or acquire, or solicit an offer to sell or acquire any securities or to enter into any transaction.

South Africa: BNPP is a bank incorporated in France with a local branch registered with the South African Reserve Bank and registered as an external company in terms of the South African Companies Act, 2008. BNPP is an authorised Financial Services Provider (FSP 44610) and subject to regulation by the Financial Services Board and South African Reserve Bank. It is also a licensed member of the Johannesburg Stock Exchange. BNPP does not expressly or by implication represent, recommend or propose that the information and/or financial products referred to in this report are appropriate to the particular investment objectives, financial situation or particular needs of the recipient. This document further does not constitute advice (whether financial, legal, tax or otherwise) as contemplated in the Financial Advisory and Intermediary Services Act, 2002.

Australia: This material, and any information in related marketing presentations (the Material), is being distributed in Australia by BNPP ABN 23 000 000 117, a branch of BNPP 662 042 449 R.C.S., a licensed bank whose head office is in Paris, France. BNPP is licensed in Australia as a Foreign Approved Deposit-taking Institution by the Australian Prudential Regulation Authority (APRA) and delivers financial services to Wholesale clients under its Australian Financial Services Licence (AFSL) No. 238043 which is regulated by the Australian Securities & Investments Commission (ASIC). The Material is directed to Wholesale clients only and is not intended for Retail clients (as both terms are defined by the Corporations Act 2001, sections 761G and 761GA). The Material is subject to change without notice and BNPP is under no obligation to update the information or correct any inaccuracy that may appear at a later date.

China: This document is being distributed in the People's Republic of China ("PRC", excluding the Hong Kong or Macau Special Administrative Regions or Taiwan) by BNPP (China) Limited ("BNPP China"), a subsidiary of BNPP. BNPP China is a commercial bank licensed by the China Banking Regulatory Commission to carry on banking business in the PRC.

Hong Kong - Branch: This document is prepared and distributed by BNP Paribas Hong Kong Branch, a branch of BNP Paribas whose head office is in Paris, France. BNP Paribas Hong Kong Branch is registered as a Licensed Bank under the Banking Ordinance and regulated by the Hong Kong Monetary Authority. BNP Paribas Hong Kong Branch is also a Registered Institution regulated by the Securities and Futures Commission for the conduct of Regulated Activity Types 1, 4, 6 and 9 under the Securities and Futures Ordinance. This document may not be circulated, distributed, reproduced or disclosed (in whole or in part and in any manner whatsoever) to any other person without the prior written consent of BNP Paribas Hong Kong Branch.





Hong Kong - Securities: This document is intended only for the Professional Investors in Hong Kong. This document is prepared and distributed by BNPP Securities (Asia) Limited. BNPP Securities (Asia) Limited is a Licensed Corporation regulated by the Securities and Futures Commission for the conduct of Regulated Activity Types 1, 2, 4, and 6 under the Securities and Futures Ordinance. This document may not be circulated, distributed, reproduced or disclosed (in whole or in part and in any manner whatsoever) to any other person without the prior written consent of BNPP Securities (Asia) Limited. Some products or transactions described in this document may not be authorised in Hong Kong and may not be available to Hong Kong investors.

India - Branch: BNPP India branch is licensed by Reserve Bank of India to carry on banking business in India and is regulated by the Banking Regulation Act 1949, Securities & Exchange Board of India Act 1992, and other related regulations issued by Government of India and regulatory bodies such as Reserve Bank of India, Securities and Exchange Board of India etc. from time to time. For the purpose of distribution in India this document is prepared for counterparties who have fair knowledge of risk associated with foreign exchange market, Institutional Investors & Counterparties, Expert Investors and for those clients and investors whose risk management policies are in place.

India: In India, this document is being distributed by BNP Paribas Securities India Pvt. Ltd. ("BNPPSIPL"), having its registered office at 8th floor, BNP Paribas House, 1 North Avenue, Maker Maxity, Bandra Kurla Complex, Bandra (East), Mumbai 400 051, INDIA (Tel. no. +91 22 3370 4000 / 6196 4000, Fax no. +91 22 6196 4363). BNPPSIPL is registered with the Securities and Exchange Board of India ("SEBI") as a research analyst; and as a stockbroker in the Equities and the Futures & Options segments of National Stock Exchange of India Ltd. ("NSE") and BSE Ltd. and in the Currency Derivatives segment of NSE (SEBI Regn. No.: INZ000161834, INH00000792; CIN: U74920MH2008FTC182807; Website: www.bnpparibas.co.in).

Indonesia: This document is being distributed by PT Bank BNPP Indonesia, whose registered office is Menara BCA - 35th Floor, Grand Indonesia, Jalan M.H Thamrin No.1, Jakarta 10310, Indonesia; Tel : +62 21 2358 6262; Fax: +62 21 2358 6098. PT Bank BNPP Indonesia is regulated by Bank of Indonesia. Details about the extent of our authorisation by Bank of Indonesia are available on request. This document is not directed at individuals or retail clients.

Japan - Branch: This document is being distributed to Japanese based firms by BNPP Tokyo Branch, or by a subsidiary or affiliate of BNPP not registered as a financial instruments firm in Japan, only to Japan-based Institutional Investors and Professional Investors as defined by the Financial Instruments and Exchange Act of Japan. BNPP Tokyo Branch is a Registered Financial Institution, Kanto Finance Bureau-Kinsho-#98, and a member of the Japanese Bankers Association (JBA), the Japan Securities Dealers Association and the Financial Futures Association of Japan. BNPP Tokyo Branch accepts responsibility for the content of a report prepared by another non-Japan affiliate only when distributed to Japan-based firms by BNPP Tokyo Branch.

Japan - Securities: This document is being distributed to Japanese based firms by BNPP Securities (Japan) Limited or by a subsidiary or affiliate of BNPP not registered as a financial instruments firm in Japan, to certain financial institutions defined by article 17-3, item 1 of the Financial Instruments and Exchange Act Enforcement Order. BNPP Securities (Japan) Limited is a financial instruments firm registered according to the Financial Instruments and Exchange Act Enforcement Order. BNPP Securities (Japan) Limited is a financial instruments firm registered according to the Financial Instruments and Exchange Act of Japan and a member of the Japan Securities Dealers Association, Type II Financial Instruments Firms Association and the Financial Futures Association of Japan. BNPP Securities (Japan) Limited accepts responsibility for the content of a report prepared by another non-Japan affiliate only when distributed to Japan by BNPP Securities (Japan) Limited. Some foreign securities stated on this report are not disclosed according to the Financial Instruments and Exchange Act of Japan. If there is any mention of credit ratings in the document, it is a Japanese regulatory requirement to include a prescribed "explanatory note on non-registered credit rating". The full text is contained in the separate document titled "Additional Disclaimer for Japan" (for both Branch and Securities).

Malaysia - BNPP Malaysia Berhad: (Company No. 918091-T) is incorporated in Malaysia under the Companies Act of Malaysia, 1965. It is a licensed institution under the Financial Services Act 2013 and is regulated by Bank Negara Malaysia.

BNPP Capital (Malaysia) Sdn Bhd: (Company No. 247454-M) is incorporated in Malaysia under the Companies Act of Malaysia, 1965. It is a licensed institution under the Capital Markets and Services Act 2007 and is regulated by Securities Commission Malaysia.

Malaysia Labuan - Branch: BNPP, a company registered under the laws of France [with company number 662 042 449 RCS PARIS / its registered office at [Paris] etc] ("BNPP" or "the Bank"), acting through its Labuan branch at Level 9 (D), Main Office Tower, Financial Park Labuan, Jalan Merdeka, 87000 F.T. Labuan, Malaysia.

Philippines: This report is being distributed in the Philippines by BNPP Manila Branch, an Offshore Banking Unit (OBU) of BNPP whose head office is in Paris, France. BNPP Manila OBU is registered as an offshore banking unit under Presidential Decree No. 1034 (PD 1034), and regulated by the Bangko Sentral ng Pilipinas. This report is being distributed in the Philippines to qualified clients of OBUs as allowed under PD 1034, and is qualified in its entirety to the products and services allowed under PD 1034.

Singapore - Branch: BNP Paribas, Singapore Branch is a licensed bank regulated by the Monetary Authority of Singapore. This document is not intended for investors in Singapore who are not Institutional Investors or Accredited Investors within the meaning of the Securities and Futures Act. Some products or transactions described in this document may not be authorised in Singapore and may not be available to Singapore investors.

South Korea - Branch: BNPP Seoul Branch is regulated by the Financial Services Commission and Financial Supervisory Service for the conduct of its financial investment business in the Republic of Korea. This document does not constitute an offer to sell to or the solicitation of an offer to buy from any person any financial products where it is unlawful to make the offer or solicitation in South Korea.

South Korea - Securities: BNPP Securities Korea is registered as a Licensed Financial Investment Business Entity under the FINANCIAL INVESTMENT BUSINESS AND CAPITAL MARKETS ACT and regulated by the Financial Supervisory Service and Financial Services Commission. This document is distributed by BNPP Securities Korea Co., Ltd. in Korea to Professional Investors only and is not intended for investors in Korea who are not Professional Investor within the meaning of the Article 9 (5) (professional investor) of the FINANCIAL INVESTMENT BUSINESS AND CAPITAL MARKETS ACT and should not be passed onto an ysuch persons. Some products or transactions described in this document may not be authorised in Korea and may not be available to Korea investors. Information in this document is for general circulation to the intended recipients only and is not a recommendation or investment advice to recipients hereof since it does not take into account the specific investment objectives, financial situation and the particular needs of any particular recipient ("Specific Requirements"). A recipient of this document should seek advice from its/his own financial adviser regarding the suitability of the products or transactions (taking into account the recipient's Specific Requirements) as well as the risks involved in such products or transactions before a commitment to purchase or enter into any product or transactions (taking into account the recipient's Specific Requirements).





Taiwan - Branch: This report is being distributed in Taiwan by BNPP Taipei Branch, Taichung Branch, Kaohsiung Branch and/or Offshore Banking Unit, branches of BNPP and is regulated by the Financial Supervisory Commission, R.O.C under the Banking Act and Offshore Banking Act. This document is directed only at Taiwanese counterparties who are licensed or who have the capacities to purchase or transact in such products. Some products or transactions described in this document may not be authorised in Taiwan and may not be available to Taiwan investors. This document does not constitute an offer to sult or the solicitation of any person any financial products where it is unlawful to make the offer or solicitation in Taiwan. Information in this document is for general circulation to the intended recipients only and is not a recommendation or investment advice to recipients hereof since it does not take into account the specific investment objectives, financial situation and the particular needs of any particular recipient ("Specific Requirements"). A recipient of this document should seek advice from its/his own financial adviser regarding the suitability of the products or transactions (taking into account the recipient's Specific Requirements) as well as the risks involved in such products or transactions before a commitment to purchase or enter into any product or transaction is made. The material is subject to change without notice and BNPP is under no obligation to update the information or correct any inaccuracy that may appear at a later date (Applicable for the products distributed to non-Professional Institutional Investors).

Taiwan - Securities: This document is being distributed in Taiwan to professional investors only. Such information is for your reference only. The reader should independently evaluate the investment risks and is solely responsible for their investment decision. Information on securities that do not trade in Taiwan is for informational purposes only and is not to be construed as a recommendation or a solicitation to trade in such securities. BNPP Securities (Taiwan) Co., Ltd. may not execute transactions for clients in these securities. This publication may not be distributed to the public media or quoted or used by the public media without the express written consent of BNPP.

Thailand: BNPP Bangkok branch is regulated in Thailand by the Bank of Thailand and the Securities and Exchange Commission. This document does not constitute an offer to sell to or solicitation of an offer to buy from any person any financial products where it is unlawful to make the offer or solicitation in Thailand.

Vietnam: This document is distributed in Viet Nam by BNPP Ho Chi Minh City Branch, registered in Viet Nam under No. 05/NH-GP. This publication is prepared for investors who have legal standing and is not intended for Private Customers in the territory of Viet Nam and should not be passed on to any such persons. It is directed only at Vietnamese counterparties who have the capacity and licence authorised by SBV to purchase from or transact with offshore counterparties. By accepting this document you agree to be bound by the foregoing limitations.

Canada: This particular section applies to recipients who are located within or otherwise represent or are connected to and doing business within Canada. In the event of a direct conflict or inconsistency between the above and this section, this section will prevail to supplement the above as it applies to Canada, and shall be interpreted to supplement and not restrict the application of the above to the fullest extent possible. BNP Paribas operates in Canada as a Schedule III Bank, and equally under International Dealer Exemption as applicable in various Canadian provinces, having a Quebec office located at 1981 MCGILL COLLEGE AVE, 4th floor, MONTREAL, Quebec, H3A 2W8, and an Ontario office located at 155 Wellington Street West, Suite 3110, Toronto, Ontario, M5V 3H1, Canada ("BNP Paribas"). For recipients located in Québec, upon receipt of this document, each recipient hereby confirms that it has expressly requested that it be drawn up in the English language only. Pour les résidents du Québec, par la réception de ce document, chaque destinataire confirme par les présentes qu'il a expressément exigé que celui-ci soit rédigé en anglais seulement. THIS DOCUMENT IS CONFIDENTIAL AND IS BEING SUBMITTED TO SELECTED RECIPIENTS ONLY WHO QUALIFY, AS REQUIRED UNDER APPLICABLE LAW IN CANADA, AS CANADIAN "PERMITTED CLIENTS" [as defined in Section 1.1 of National Instrument 31-103 Registration Requirements, Exemptions and province in which the recipient is resident), as an "ACCREDITED INVESTORS" [as defined in Section 1.1 of National Instrument 45-106 Prospectus and Registration Exemptions, or, if resident in Ontario, Section 73.3(1) of the Quebec C adeding province in which the recipient is resident) (all the above National instruments, Blanket Order and Acts specified in this paragraph collectively, the "Specific Canadian Texts"). The information contained herein is not, and under no circumstances is to be construed as, a prospectus, an advertisement, a public offering, an offer to sell Securities described herein in Can

Canada: BNP Paribas (Canada) Securities Inc./ Bnp Paribas (Canada) Valeurs Mobilières Inc. Is a corporation governed by the Canada Business Corporations Act, and owned by BNP Paribas. It is headquartered at 1981 MCGILL COLLEGE AVE, 4th floor, MONTREAL, Quebec, H3A 2W8, and is registered in Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario, PEI and Saskatchewan as an Investment Dealer, and in Quebec as both an Investment Dealer and Derivatives Dealer. It is equally registered as an IIROC Dealer Member. Any offer or sale of any Securities described herein in Canada will be made only under an exemption from the requirements to file a prospectus with the relevant Canadian securities regulators, or, alternatively, pursuant to an exemption from dealer registration requirements in the relevant province or territory of Canada and is not tailored to the needs of the recipient. To the extent that the information contained herein references Securities of an issuer or territory of Canada, any trades in such securities must be conducted through an investment dealer (as defined in Section 1.1 of NI 31-103) registered in Canada. No securities commission or similar regulatory authority in Canada has reviewed or in any way passed judgment upon these materials, the information contained herein or the merits of the Securities described herein, and any representation to the contrary is an offence. Financial instruments of the type described herein may involve a high degree of risk and their value may be highly volatile. Such risks one or more underlying entities; (ii) default or insolvency of one or more underlying entities; (iii) adverse or unanticipated market events or developments, political developments or result in loss for you. You may be province or territory of ne and the result in the relevant province or territory of the respective province or territory or file and the respective or insolvency of one or more underlying entities; (ii) adverse or unanticipated market event

Some or all of the information contained in this document may already have been published on https://globalmarkets.bnpparibas.com





© BNPP (2019). All rights reserved.

IMPORTANT DISCLOSURES by producers and disseminators of investment recommendations for the purposes of the Market Abuse Regulation:

Although the disclosures provided herein have been prepared on the basis of information we believe to be accurate, we do not guarantee the accuracy, completeness or reasonableness of any such disclosures. The disclosures provided herein have been prepared in good faith and are based on internal calculations, which may include, without limitation, rounding and approximations.

BNPP and/or its affiliates may be a market maker or liquidity provider in financial instruments of the issuer mentioned in the recommendation. BNPP and/or its affiliates may provide such services as described in Sections A and B of Annex I of MiFID II (Directive 2014/65/EU), to the Issuer to which this investment recommendation relates. However, BNPP is unable to disclose specific relationships/agreements due to client confidentiality obligations.

Section A and B services include A. Investment services and activities: (1) Reception and transmission of orders in relation to one or more financial instruments; (2) Execution of orders on behalf of clients; (3) Dealing on own account; (4) Portfolio management; (5) Investment advice; (6) Underwriting of financial instruments and/or placing of financial instruments on a firm commitment basis; (7) Placing of financial instruments without a firm commitment basis; (8) Operation of an MTF; and (9) Operation of an OTF. B. Ancillary services: (1) Safekeeping and administration of financial instruments for the account of clients, including custodianship and related services such as cash/collateral management and excluding maintaining securities accounts at the top tier level; (2) Granting credits or loans to an investor to allow him to carry out a transaction in or more financial instruments, where the firm granting the credit or loan is involved in the transaction; (3) Advice to undertakings on capital structure, industrial strategy and related matters and advice and services relating to mergers and the purchase of undertakings; (4) Foreign exchange services where these are connected to the provision of investment services; (5) Investment research and financial instruments; (6) Services related to underwriting; and (7) Investment services and activities as well as ancillary services of the type included under Section A or B of Annex 1 related to the underlying of the derivatives included under points (5), (6), (7) and (10) of Section C (detailing the MiFID II Financial Instruments) where these are connected to the provision of investment services.

BNPP and/or its affiliates do not, as a matter of policy, permit pre-arrangements with issuers to produce recommendations. BNPP and/or its affiliates as a matter of policy do not permit issuers to review or see unpublished recommendations. BNPP and/or its affiliates acknowledge the importance of conflicts of interest prevention and have established robust policies and procedures and maintain effective organisational structure to prevent and avoid conflicts of interest that could impair the objectivity of this recommendation including, but not limited to, information barriers, personal account dealing restrictions and management of inside information.

BNPP and/or its affiliates understand the importance of protecting confidential information and maintain a "need to know" approach when dealing with any confidential information. Information barriers are a key arrangement we have in place in this regard. Such arrangements, along with embedded policies and procedures, provide that information held in the course of carrying on one part of its business to be withheld from and not to be used in the course of carrying on another part of its business. It is a way of managing conflicts of interest whereby the business of the bank is separated by physical and non-physical information barriers. The Control Room manages this information flow between different areas of the bank where confidential information including inside information and proprietary information is safeguarded. There is also a conflict clearance process before getting involved in a deal or transaction.

In addition, there is a mitigation measure to manage conflicts of interest for each transaction with controls put in place to restrict the information flow, involvement of personnel and handling of client relations between each transaction in such a way that the different interests are appropriately protected. Gifts and Entertainment policy is to monitor physical gifts, benefits and invitation to events that is in line with the firm policy and Anti-Bribery regulations. BNPP maintains several policies with respect to conflicts of interest including our Personal Account Dealing and Outside Business Interests policies which sit alongside our general Conflicts of Interest.

The remuneration of the individual producer of the investment recommendation may be linked to trading or any other fees in relation to their global business line received by BNPP and/or affiliates.

IMPORTANT DISCLOSURES by disseminators of investment recommendations for the purposes of the Market Abuse Regulation:

The BNPP disseminator of the investment recommendation is identified above including information regarding the relevant competent authorities which regulate the disseminator. The name of the individual producer within BNPP or an affiliate and the legal entity the individual producer is associated with is identified above in this document. The date and time of the first dissemination of this investment recommendation by BNPP or an affiliate above. Where this investment recommendation by BNPP or elevant individual is contained in the communication by that individual disseminator.

The disseminator and producer of the investment recommendations are part of the same group, i.e. the BNPP group. The relevant Market Abuse Regulation disclosures required to be made by producers and disseminators of investment recommendations are provided by the producer for and on behalf of the BNPP Group legal entities disseminating those recommendations and the same disclosures also apply to the disseminator.

If an investment recommendation is disseminated by an individual within BNPP or an affiliate via Bloomberg chat or email, the disseminator's job title is available in their Bloomberg profile or bio. If an investment recommendation is disseminated by an individual within BNPP or an affiliate via email, the individual disseminator's job title is available in their email signature.

For further details on the basis of recommendation specific disclosures available at this link (e.g. valuations or methodologies, and the underlying assumptions, used to evaluate financial instruments or issuers, interests or conflicts that could impair objectivity recommendations or to 12 month history of recommendations history) are available at https://globalmarkets.bnpparibas.com/gmportal/private/globalTradeIdea. If you are unable to access the website please contact your BNPP representative for a copy of this document.



