NOMURA

Special Macro Topics

FOREIGN EXCHANGE



Curve Convergence Coming – EUR vs. US

We look for a 100bp+ move in the US/EUR 5s30s box

The bond market is pricing the largest macroeconomic divergence between the US and Europe since 1999. At least that's what the yield curve tells us - and the yield curve tends to be closely correlated with the output gap. The 1yr forwards along the US curve are pan flat, but the European forwards curve is comparatively very steep (Figure 2) - i.e. the euro area is a long way behind the US in the business cycle.

It is hard to disagree with this outright assessment with US policy rates over 225bp higher than those in Europe. However, we believe the Fed is approaching the end of its tightening cycle, while the ECB still has substantial work to do. We do not expect these levels of macro-divergence to be sustained, and believe investors should position themselves for a substantial convergence in US and euro area yield curves.

The data are sending a different message to the bond market

Actually, the data suggest Europe is probably a lot closer to the US in the cycle than the yield curves would suggest. Figure 3 plots our measures of the output gap for the US and euro area, and both are firmly in positive territory. The OECD's output gap estimates are similar. Growth in the US is much stronger than in Europe at the moment, but both are tracking above trend for now. In fact, relative to long-run averages European growth looks more impressive.

Overlaying the 5s30s US/euro area box vs our output gap measures suggests the bond market is pricing the relative output gaps of the US and euro area incorrectly (Figure 4). But of course, the yield curve is driven by expectations of future policy rates, not just economic data. There is a policymaker reaction function component to the market's pricing. The elephant in the room is of course inflation – or rather – the lack of it in the euro area. This has driven unprecedented monetary easing in the euro area, despite growth rates tracking above trend for some time.

Global Markets Research

28 August 2018

Visit <u>Themes and Trades</u> website for strategic cross asset ideas.

Research analysts

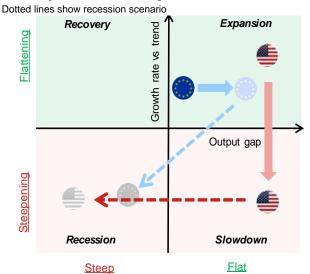
Asset Allocation Strategy

Sam Bonney - NIpIc sam.bonney@nomura.com +44 20 7103 4729

European Fixed Income Research

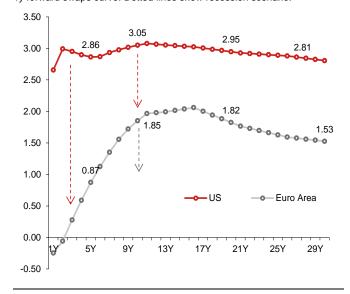
Andy Chaytor - NIplc andy.chaytor@nomura.com +44 20 7103 1219

Fig. 1: Euro area should converge with US – either "normally" or "forced" through a recession



Source: Nomura

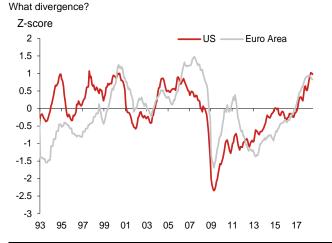
Fig. 2: ECB has little scope to cut in a recession- unlike Fed 1y forward swaps curve. Dotted lines show recession scenario.



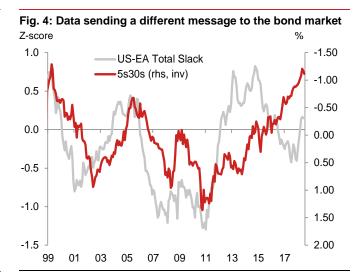
Source: Nomura, Bloomberg

Production Complete: 2018-08-28 08:55 UTC

Fig. 3: Output gaps for the US and euro area



Source: Nomura, Macrobond, Datastream. See footnote for details on slack. ¹



Source: Nomura, Macrobond, Datastream, See footnote for details on slack measure.

The next step is convergence

When we consider the possible scenarios ahead, we are drawn to the conclusion that a convergence is almost unavoidable. We'll outline why below – as always, there's a hard way and an easy way.

1) The easy way: As the US is ahead of the euro area in the business cycle, it faces growth headwinds sooner. Tight monetary policy, ebbing fiscal stimulus and supply-side constraints will slow US growth – eventually below trend. The US curve starts to (gradually) steepen. Meanwhile, ECB policy is still very accommodative. Fiscal policy is also likely to turn gradually looser in the quarters ahead. In the absence of a substantial shock, growth can be sustained at above-trend rates for a long time, allowing the ECB to normalise policy gradually. The euro area curve bear flattens.

Normally when a researcher slips in "in the absence of a substantial shock" it is the Achilles heel to the argument and strategy. Not in this case.

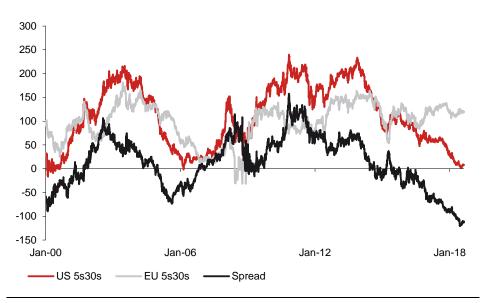
2) The hard way: If economies' won't converge naturally, a recession will do the work for them. To keep things simple, we'll assume a global recession. Under a recession scenario, the Fed could cut – quite aggressively as it has substantial policy ammunition now rates are almost 2%. The belly and the long end of the curve rallies, but not as much as the front end. The US curve bull steepens.

But what can the ECB do in a recession? With rates at -40bp, front-end rates cannot be meaningfully cut. The ECB can either promise rates will stay lower for even longer than currently (strengthen forward guidance), or can resort to unconventional measures once more. Either of these cause the belly and longend to rally, while the front-end is anchored by the ELB. The euro area curve bull flattens.

For visual thinkers, we've tried to represent these arguments stylistically in Figure 1. In either scenario, the US curve steepens while the euro area curve flattens. The "easy way" presents a relatively benign environment that could see several more years of both curves flattening, but Europe should flatten more. The reason that there is a possibility for the trade to work in either direction is that the curves in the US and euro area are close to different extremes – the euro area curve is near its steepest levels of the past 20 years, the US is very much at the flat end of the range, as shown in Figure 5.

¹ Note: Total economic slack measure incorporates three equally-weighted components: 1) product market slack - output gap measures, capacity utilisation, 2) supply chain slack – supplier delivery times, order backlogs, 3) labour market slack – unemployment rate/ difference from NAIRU. Z-scores take over a 1995-present sample. Source: Nomura, Macrobond, DataStream

Fig. 5: Very divergent 5s30s curves lead to an extreme level on the spread



Source: Nomura, Bloomberg

How much bond market convergence could we see in a recession?

Let's assume we get a global recession tomorrow. Let's also assume that the market goes to pricing the Fed cuts rates to 0.25% and holds them there for a few years before raising them towards a lower "neutral rate" of 1.75% in 10 years and beyond – a notch below the levels reached in the summer of 2016.

Meanwhile in Europe, the market prices the ECB will keep rates at -0.40% for four years (unable to cut), while it lowers its 10yr and beyond terminal rate expectation in Europe to 1%, around levels the 10y1y forward reached in September 2016.

Figures 6 and 7 show what happens to the yield curve. In the US we see 2s10s steepen 60bp, and 5s30s nearly 100bp. Meanwhile, because the ECB cannot meaningfully cut front-end rates the EUR curve flattens – around 40bp in 2s10s and 20bp in 5s30s. This would see a box trade in 2s10s move ~100bp and 5s30s ~120bp.

Fig. 6: Recession - US yield curve under dovish Fed % bp 3.50 0 2.95 2 92 2.88 3.00 -50 2.50 -100 2.00 -150 1 48 1.50 -200 1.00 -250 0.50 0.00 9Y 17Y 21Y 25Y 29Y 13Y - Implied Yield Curve Change (bp, rhs)

Source: Nomura, Bloomberg. Note: Implied yield curve shows recession scenario.

Fig. 7: Recession - EA yield curve under hand-tied ECB % bp 2.00 0 -10 1 49 1.50 -20 -30 0.89 1.00 0.74 -40 0.61 -50 0.50 -60 -70 0.00 -80 1Y 13Y 17Y 25 29Y Actual Curve Implied Yield Curve Change (bp, rhs)

Source: Nomura, Bloomberg. Note: Implied yield curve shows recession scenario.

Why now?

We view this trade as having scope to perform on a multi-quarter, even multi-year horizon. But over recent years the US curve has substantially out-flattened the European curve (see Fig. 5). Why do we think now is the time to position the other way?

• **Fed guidance shift:** The Fed is approaching the neutral rate and thus the end of the "auto-tightening" era. Its language is likely to change in the next few

months, possibly removing its assessment that 'the stance of monetary policy remains accommodative' in the September statement. Reduced emphasis on forward guidance and increased data dependence are also likely. While the Fed is unlikely to bow to pressure from the Trump administration against tighter policy, the costs of over-tightening are now arguably higher.

- Growth momentum: US growth surprises have been in positive territory since
 October last year, undoubtedly aided by the US administration's pro-cyclical
 fiscal policy. This is peaking around now and our US economists' q-o-q growth
 forecasts substantially moderate going into 2019 (see here). US sentiment
 indicators are tracking in the 90th percentile the risk is they move lower.
 Meanwhile European economic surprises, having been in negative territory, are
 starting to turn higher.
- ECB at peak dovishness: The strengthening of the ECB's forward guidance at June's meeting was a substantial dovish surprise to the market, with the ECB pledging to keep policy rates on hold through the summer of 2019. However, should inflation rise gradually as we expect, this ought to be the last meaningful dovish surprise delivered by the ECB.

Risks to the trade

We consider this an extremely attractive trade for investors' portfolios in the current environment. You don't need an economist to tell you we are moving towards a latecycle phase (Figure 8).

We think investors should be looking for strategies that can perform in both a benign and negative environment. As we have argued above, we believe this trade can perform in both. But what are the risks to this trade?

- Substantial nominal growth surprise in the US With ebbing fiscal stimulus and US protectionism, we think any surprise to nominal growth is more likely to come from the inflation side. The Fed already expects inflation to move higher, but substantial surprises to the upside could push the market to price further Fed tightening well above the neutral rate. This is likely the greatest risk to our trade long front-end US inflation could hedge out this risk.
 - However, our economists have euro area core CPI inflation rising more than that of the US in the next few years with the spread narrowing towards 0.9% by end 2020 from 1.3% currently. Rising inflation should be more important for the ECB still yet to embark on a hiking cycle, while US monetary policy is already much tighter. Inflation will likely overshoot in the US, but remember the Fed's inflation target is symmetric around 2%, while the ECB's Germanic roots set the inflation target "below but close to" 2%. We are also seeing encouraging signs from the euro area labour market (see Figures 8-9).
- Continued negative inflation surprises in the euro area We may find ourselves in a benign growth environment, but euro area inflation is nowhere to be seen. This could cause the market to further remove front-end expectations for ECB normalisation, steepening the EUR curve. We are relatively comfortable holding this risk. First, we prefer 5s30s flatteners rather than 2s10s, so that we are not entirely hostage to the ECB's forward guidance. And second, if inflation persistently surprises negatively it would eventually be viewed as a chronic problem, which would likely drive a Japan-style flattening of the European curve.
- ECB cuts even further negative next recession Deeply negative rates
 would likely eventually cause distortions in Europe's banking system. The BOJ
 has learned about the pain of cutting too much the hard way. And even so, the
 argument still stands that the Fed has a lot more scope to cut than the ECB.
- Italy As the submission of the Italian budget approaches (end-September to parliament), market attention will likely be more drawn to Italy. Correlations between the US/euro area box trade and the BTP-Bund spread have been weak recently, but peripheral risk could hurt the trade if it is viewed as systemic (as it was in the euro crisis). An aggressive approach from the 5Star/League coalition could work against us; however, our base case is for controversial spending plans to be scaled down/ phased in gradually (see Italy's budget).

Fig. 8: "Late cycle" story count
Bloomberg monthly hits

250
200
150
50
06
08
10
12
14
16
18

Source: Bloomberg

Fig. 9: We forecast euro area inflation to rise more than US

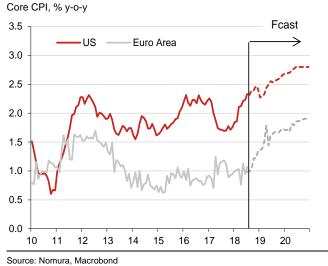


Fig. 10: Euro area wage data showing promise



Source: Nomura, Macrobond.

What actual trade to have

We find our above analysis provides a strong argument for looking for a secular change in the relative dynamics of the US and euro area curves, and arguing to enter US curve steepeners against euro area curve flatteners. The question is where on the curve to do this. Our analysis argues for a 5s30s box, although there is some negative carry in this trade. If you want to avoid that you can look at a 2s10s box (which actually has marginally positive carry), but we find the fundamentals less compelling for that.

Figures 10 and 11 show the 1yr rolling correlation between curves and outright yields for the US and euro area swaps market. In 2s10s the curves are in very different places, with the US having gone back to the 'old world' style negative correlations between curve and yields, while the euro area is still very much in the 'QE-era' correlations.

However, for 5s30s, the euro area has now caught up with the US in going into a negative correlation, as the markets expect a hiking cycle by the ECB. The reason 2s10s has not done so yet is that the ECB's forward guidance means 50% of the fixings of a 2yr swap are effectively immovable. That hugely drags down the potential beta of 2yr to other parts of the curve and means that a bear flattening of 2yr yields is very difficult. So if you do like the overall argument for curve convergence, but cannot stomach the negative carry on 5s30s, then at least set the 2s10s box with a one year forward start.

Fig. 11: Correlation of 5s30s vs 10s 260-day rolling

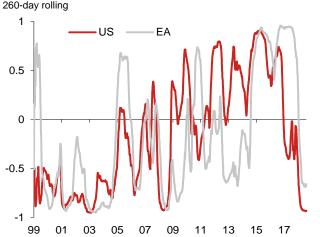
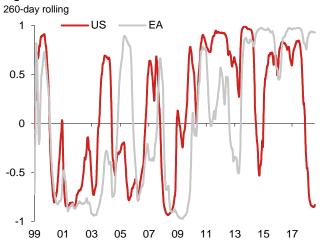


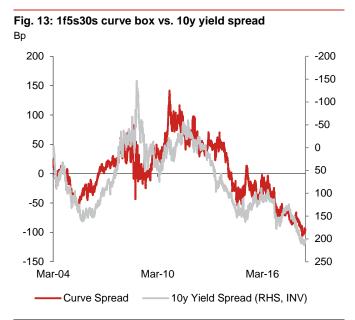
Fig. 12: Correlation of 2s10s vs 5s

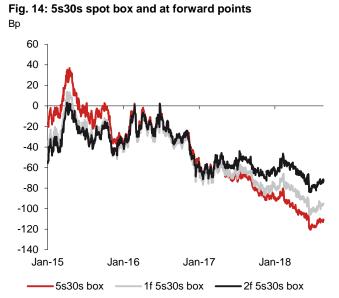


Source: Nomura, Bloomberg.

There is a close correlation between the curve box and the absolute yield spread as Figure 13 shows, but with a 65% r-squared on a long-run correlation, they are far from identical trades. Our box is most likely to work in an environment, where that spread starts to narrow, but we prefer the box as it more accurately reflects a change in the relative position of the cycles going forward. Additionally, you are hedged if Europe goes

down a "Japanification" route, or that risk starts to be reflected in the yield curve. For what it's worth, based on the correlation above, the box is currently ~30bp too negative compared with the yield spread.





Source: Nomura, Bloomberg

Source: Nomura, Bloomberg

We enter into a 1f5s30s box – EUR flattener vs. USD steepener at -95bp. We target a spot 5s30s level of 0bp in one year's time. We believe further out than that the trade can move into positive territory.

Appendix A-1

Analyst Certification

We, Sam Bonney and Andy Chaytor, hereby certify (1) that the views expressed in this Research report accurately reflect our personal views about any or all of the subject securities or issuers referred to in this Research report, (2) no part of our compensation was, is or will be directly or indirectly related to the specific recommendations or views expressed in this Research report and (3) no part of our compensation is tied to any specific investment banking transactions performed by Nomura Securities International, Inc., Nomura International plc or any other Nomura Group company.

Issuer Specific Regulatory Disclosures

The terms "Nomura" and "Nomura Group" used herein refers to Nomura Holdings, Inc. and its affiliates and subsidiaries, including Nomura Securities International, Inc. ('NSI') and Instinet, LLC('ILLC'), U. S. registered broker dealers and members of SIPC.

Issuer	Disclosures
UNITED STATES OF AMERICA	A13

A13 The Nomura Group has a significant financial interest (non-equity) in the issuer.

Important Disclosures

Online availability of research and conflict-of-interest disclosures

Nomura Group research is available on www.nomuranow.com/research, Bloomberg, Capital IQ, Factset, Reuters and ThomsonOne. Important disclosures may be read at http://go.nomuranow.com/research/globalresearchportal/pages/disclosures/disclosures/aspx or requested from Nomura Securities International, Inc., or Instinet, LLC on 1-877-865-5752. If you have any difficulties with the website, please email grpsupport@nomura.com for help.

The analysts responsible for preparing this report have received compensation based upon various factors including the firm's total revenues, a portion of which is generated by Investment Banking activities. Unless otherwise noted, the non-US analysts listed at the front of this report are not registered/qualified as research analysts under FINRA rules, may not be associated persons of NSI or ILLC, and may not be subject to FINRA Rule 2241 restrictions on communications with covered companies, public appearances, and trading securities held by a research analyst account.

Nomura Global Financial Products Inc. ("NGFP") Nomura Derivative Products Inc. ("NDPI") and Nomura International plc. ("NIPIc") are registered with the Commodities Futures Trading Commission and the National Futures Association (NFA) as swap dealers. NGFP, NDPI, and NIPIc are generally engaged in the trading of swaps and other derivative products, any of which may be the subject of this report.

ADDITIONAL DISCLOSURES REQUIRED IN THE U.S.

Principal Trading: Nomura Securities International, Inc and its affiliates will usually trade as principal in the fixed income securities (or in related derivatives) that are the subject of this research report. Analyst Interactions with other Nomura Securities International, Inc. Personnel: The fixed income research analysts of Nomura Securities International, Inc and its affiliates regularly interact with sales and trading desk personnel in connection with obtaining liquidity and pricing information for their respective coverage universe.

Valuation methodology - Fixed Income

Nomura's Fixed Income Strategists express views on the price of securities and financial markets by providing trade recommendations. These can be relative value recommendations, directional trade recommendations, asset allocation recommendations, or a mixture of all three. The analysis which is embedded in a trade recommendation would include, but not be limited to:

- Fundamental analysis regarding whether a security's price deviates from its underlying macro- or micro-economic fundamentals.
- Quantitative analysis of price variations.
- Technical factors such as regulatory changes, changes to risk appetite in the market, unexpected rating actions, primary market activity and supply/ demand considerations.

The timeframe for a trade recommendation is variable. Tactical ideas have a short timeframe, typically less than three months. Strategic trade ideas have a longer timeframe of typically more than three months.

For the purposes of the EU Market Abuse Regulation, the distribution of ratings published by Nomura Global Fixed Income Research is as follows:

53% have been assigned a Buy (or equivalent) rating; 86% of issuers with this rating were supplied material services* by the Nomura Group**. 0% have been assigned a Neutral (or equivalent) rating.

47% have been assigned a Sell (or equivalent) rating; 83% of issuers with this rating were supplied material services by the Nomura Group. As at 3 July 2018.

*As defined by the EU Market Abuse Regulation

**The Nomura Group as defined in the Disclaimer section at the end of this report

Disclaimers

This publication contains material that has been prepared by the Nomura Group entity identified on page 1 and, if applicable, with the contributions of one or more Nomura Group entities whose employees and their respective affiliations are specified on page 1 or identified elsewhere in the publication. The term "Nomura Group" used herein refers to Nomura Holdings, Inc. and its affiliates and subsidiaries including: Nomura Securities Co., Ltd. ('NSC') Tokyo, Japan; Nomura International plc ('NIplc'), UK; Nomura Securities International, Inc. ('NSI'), New York, US; Instinet, LLC ('ILLC'); Nomura International (Hong Kong) Ltd. ('NIHK'), Hong Kong; Nomura Financial Investment (Korea) Co., Ltd. ('NFIK'), Korea (Information on Nomura analysts registered with the Korea Financial Investment Association ('KOFIA') can be found on the KOFIA Intranet at http://dis.kofia.or.kr); Nomura Singapore Ltd. ('NSL'), Singapore (Registration number 197201440E, regulated by the Monetary Authority of Singapore); Nomura Australia Ltd. ('NAL'), Australia (ABN 48 003 032 513), regulated by the Australian Securities and Investment Commission ('ASIC') and holder of an Australian financial services licence number 246412; PT Nomura Sekuritas Indonesia ('PTNSI'); Nomura Securities Malaysia Sdn. Bhd. ('NSM'), Malaysia; NIHK, Taipei Branch ('NITB'), Taiwan; Nomura Financial Advisory and Securities (India) Private Limited ('NFASL'), Mumbai, India (Registered Address: Ceejay House, Level 11, Plot F, Shivsagar Estate, Dr. Annie Besant Road, Worli, Mumbai- 400 018, India; Tel: +91 22 4037 4037, Fax: +91 22 4037 4111; CIN No: U74140MH2007PTC169116. SEBI Registration No. for Stock Broking activities: BSE INB011299030, NSE INB231299034, INF231299034, INE 231299034, MCX: INE261299034; SEBI Registration No. for Merchant Banking: INM000011419; SEBI Registration No. for Research: INH000001014 and NIplc, Madrid Branch ('NIplc, Madrid'), 'CNS Thailand' next to an analyst's name on the front page of a research report indicates that the analyst is employed by Capital Nomura Securities Public Company Limited ('CNS') to provide research assistance services to NSL under an agreement between CNS and NSL. 'NSFSPL' next to an employee's name on the front page of a research report indicates that the individual is employed by Nomura Structured Finance Services Private Limited to provide assistance to certain Nomura entities under inter-company agreements. The "BDO-NS" (which stands for "BDO Nomura Securities, Inc.") placed next to an analyst's name on the front page of a research report indicates that the analyst is employed by BDO Unibank Inc. ("BDO Unibank") who has been seconded to BDO-NS, to provide research assistance services to NSL under an agreement between BDO Unibank, NSL and BDO-NS. BDO-NS is a Philippines securities dealer, which is a joint venture between BDO Unibank and the Nomura Group.

THIS MATERIAL IS: (I) FOR YOUR PRIVATE INFORMATION, AND WE ARE NOT SOLICITING ANY ACTION BASED UPON IT; (II) NOT TO BE CONSTRUED AS AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY ANY SECURITY IN ANY JURISDICTION WHERE SUCH OFFER OR SOLICITATION WOULD BE ILLEGAL; AND (III) OTHER THAN DISCLOSURES RELATING TO THE NOMURA GROUP, BASED UPON INFORMATION FROM SOURCES THAT WE CONSIDER RELIABLE, BUT HAS NOT BEEN INDEPENDENTLY VERIFIED BY NOMURA GROUP.

Other than disclosures relating to the Nomura Group, the Nomura Group does not warrant or represent that the document is accurate, complete, reliable, fit for any particular purpose or merchantable and does not accept liability for any act (or decision not to act) resulting from use of this document and related data. To the maximum extent permissible all warranties and other assurances by the Nomura Group are hereby excluded and the Nomura Group shall have no liability for the use, misuse, or distribution of this information.

Opinions or estimates expressed are current opinions as of the original publication date appearing on this material and the information, including the opinions and estimates contained herein, are subject to change without notice. The Nomura Group is under no duty to update this document. Any comments or statements made herein are those of the author(s) and may differ from views held by other parties within Nomura Group. Clients should consider whether any advice or recommendation in this report is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The Nomura Group does not provide tax advice.

The Nomura Group, and/or its officers, directors and employees, may, to the extent permitted by applicable law and/or regulation, deal as principal, agent, or otherwise, or have long or short positions in, or buy or sell, the securities, commodities or instruments, or options or other derivative instruments based thereon, of issuers or securities mentioned herein. The Nomura Group companies may also act as market maker or liquidity provider (within the meaning of applicable regulations in the UK) in the financial instruments of the issuer. Where the activity of market maker is carried out in accordance with the definition given to it by specific laws and regulations of the US or other jurisdictions, this will be separately disclosed within the specific issuer disclosures.

This document may contain information obtained from third parties, including ratings from credit ratings agencies such as Standard & Poor's. Reproduction and distribution of third-party content in any form is prohibited except with the prior written permission of the related third-party. Third-party content providers do not guarantee the accuracy, completeness, timeliness or availability of any information, including ratings, and are not responsible for any errors or omissions (negligent or otherwise), regardless of the cause, or for the results obtained from the use of such content. Third-party content providers give no express or implied warranties, including, but not limited to, any warranties of merchantability or fitness for a particular purpose or use. Third-party content providers shall not be liable for any direct, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including lost income or profits and opportunity costs) in connection with any use of their content, including ratings. Credit ratings are statements of opinions and are not statements of fact or recommendations to purchase hold or sell securities. They do not address the suitability of securities or the suitability of securities for investment purposes, and should not be relied on as investment advice.

Any MSCI sourced information in this document is the exclusive property of MSCI Inc. ('MSCI'). Without prior written permission of MSCI, this information and any other MSCI intellectual property may not be reproduced, re-disseminated or used to create any financial products, including any indices. This information is provided on an "as is" basis. The user assumes the entire risk of any use made of this information. MSCI, its affiliates and any third party involved in, or related to, computing or compiling the information hereby expressly disclaim all warranties of originality, accuracy, completeness, merchantability or fitness for a particular purpose with respect to any of this information. Without limiting any of the foregoing, in no event shall MSCI, any of its affiliates or any third party involved in, or related to, computing or compiling the information have any liability for any damages of any kind. MSCI and the MSCI indexes are services marks of MSCI and its affiliates.

The intellectual property rights and any other rights, in Russell/Nomura Japan Equity Index belong to Nomura Securities Co., Ltd. ("Nomura") and Frank Russell Company ("Russell"). Nomura and Russell do not guarantee accuracy, completeness, reliability, usefulness, marketability, merchantability or fitness of the Index, and do not account for business activities or services that any index user and/or its affiliates undertakes with the use of the Index.

Investors should consider this document as only a single factor in making their investment decision and, as such, the report should not be viewed as identifying or suggesting all risks, direct or indirect, that may be associated with any investment decision. Nomura Group produces a number of different types of research product including, among others, fundamental analysis and quantitative analysis; recommendations contained in one type of research product may differ from recommendations contained in other types of research product, whether as a result of differing time horizons, methodologies or otherwise. The Nomura Group publishes research product in a number of different ways including the posting of product on the Nomura Group portals and/or distribution directly to clients. Different groups of clients may receive different products and services from the research department depending on their individual requirements.

Figures presented herein may refer to past performance or simulations based on past performance which are not reliable indicators of future performance. Where the information contains an indication of future performance, such forecasts may not be a reliable indicator of future performance. Moreover, simulations are based on models and simplifying assumptions which may oversimplify and not reflect the future distribution of returns. Any figure, strategy or index created and published for illustrative purposes within this document is not intended for "use" as a "benchmark" as defined by the European Benchmark Regulation.

Certain securities are subject to fluctuations in exchange rates that could have an adverse effect on the value or price of, or income derived from, the investment.

With respect to Fixed Income Research: Recommendations fall into two categories: tactical, which typically last up to three months; or strategic, which typically last from 6-12 months. However, trade recommendations may be reviewed at any time as circumstances change. 'Stop loss' levels for trades are also provided; which, if hit, closes the trade recommendation automatically. Prices and yields shown in recommendations are taken at the time of submission for publication and are based on either indicative Bloomberg, Reuters or Nomura prices and yields at that time. The prices and yields shown are not necessarily those at which the trade recommendation can be implemented.

The securities described herein may not have been registered under the US Securities Act of 1933 (the '1933 Act'), and, in such case, may not be offered or sold in the US or to US persons unless they have been registered under the 1933 Act, or except in compliance with an exemption from the registration requirements of the 1933 Act. Unless governing law permits otherwise, any transaction should be executed via a Nomura entity in your home jurisdiction.

This document has been approved for distribution in the UK and European Economic Area as investment research by NIplc. NIplc is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority. NIplc is a member of the London Stock Exchange. This document does not constitute a personal recommendation within the meaning of applicable regulations in the UK, or take into account the particular investment objectives, financial situations, or needs of individual investors. This document is intended only for investors who are 'eligible counterparties' or 'professional clients' for the purposes of applicable regulations in the UK, and may not, therefore, be redistributed to persons who are 'retail clients' for such purposes. This document has been approved by NIHK, which is regulated by the Hong Kong Securities and Futures Commission, for distribution in Hong Kong by NIHK. This document has been approved for distribution in Australia by NAL, which is authorized and regulated in Australia by the ASIC. This document has also been approved for distribution in Malaysia by NSM. In Singapore, this document has been distributed by NSL. NSL accepts legal responsibility for the content of this document, where it concerns securities, futures and foreign exchange, issued by their foreign affiliates in respect of recipients who are not accredited, expert or institutional investors as defined by the Securities and Futures Act (Chapter 289). Recipients of this document in Singapore should contact NSL in respect of matters arising from, or in connection with, this document. Unless prohibited by the provisions of Regulation S of the 1933 Act, this material is distributed in the US, by NSI, a US-registered broker-dealer, which accepts responsibility for its contents in accordance with the provisions of Rule 15a-6, under the US Securities Exchange Act of 1934. The entity that prepared this document permits its separately operated affiliates within the Nomura Group to make copies of such documents available to their clients. This document has not been approved for distribution to persons other than 'Authorised Persons', 'Exempt Persons' or 'Institutions' (as defined by the Capital Markets Authority) in the Kingdom of Saudi Arabia ('Saudi Arabia') or 'professional clients' (as defined by the Dubai Financial Services Authority) in the United Arab Emirates ('UAE') or a 'Market Counterparty' or 'Business Customers' (as defined by the Qatar Financial Centre Regulatory Authority) in the State of Qatar ('Qatar') by Nomura Saudi Arabia, NIplc or any other member of the Nomura Group, as the case may be. Neither this document nor any copy thereof may be taken or transmitted or distributed, directly or indirectly, by any person other than those authorised to do so into Saudi Arabia or in the UAE or in Qatar or to any person other than 'Authorised Persons', 'Exempt Persons' or 'Institutions' located in Saudi Arabia or 'professional clients' in the UAE or a 'Market Counterparty' or 'Business Customers' in Qatar . By accepting to receive this document, you represent that you are not located in Saudi Arabia or that you are an 'Authorised Person', an 'Exempt Person' or an 'Institution' in Saudi Arabia or that you are a 'professional client' in the UAE or a 'Market Counterparty' or 'Business Customers' in Qatar and agree to comply with these restrictions. Any failure to comply with these restrictions may constitute a violation of the laws of the UAE or Saudi Arabia or Qatar.

Notice to Canadian Investors: This research report is not a personal recommendation and does not take into account the investment objectives, financial situation or particular needs of any particular individual or account. It is made available to you in reliance on NI 31-103, section 8.25. For report with reference of TAIWAN public companies or authored by Taiwan based research analyst:

THIS DOCUMENT IS SOLELY FOR REFERENCE ONLY. You should independently evaluate the investment risks and are solely responsible for your investment decisions. NO PORTION OF THE REPORT MAY BE REPRODUCED OR QUOTED BY THE PRESS OR ANY OTHER PERSON WITHOUT WRITTEN AUTHORIZATION FROM NOMURA GROUP. Pursuant to Operational Regulations Governing Securities Firms Recommending Trades in Securities to Customers and/or other applicable laws or regulations in Taiwan, you are prohibited to provide the reports to others (including but not limited to related parties, affiliated companies and any other third parties) or engage in any activities in connection with the reports which may involve conflicts of interests. INFORMATION ON SECURITIES / INSTRUMENTS NOT EXECUTABLE BY NOMURA INTERNATIONAL (HONG KONG) LTD., TAIPEI BRANCH IS FOR INFORMATIONAL PURPOSES ONLY AND IS NOT BE CONSTRUED AS A RECOMMENDATION OR A SOLICITATION TO TRADE IN SUCH SECURITIES / INSTRUMENTS.

NO PART OF THIS MATERIAL MAY BE (I) COPIED, PHOTOCOPIED, OR DUPLICATED IN ANY FORM, BY ANY MEANS; OR (II) REDISTRIBUTED WITHOUT THE PRIOR WRITTEN CONSENT OF A MEMBER OF THE NOMURA GROUP. If this document has been distributed by electronic transmission, such as e-mail, then such transmission cannot be guaranteed to be secure or error-free as information could be intercepted, corrupted, lost, destroyed, arrive late or incomplete, or contain viruses. The sender therefore does not accept liability for any errors or omissions in the contents of this document, which may arise as a result of electronic transmission. If verification is required, please request a hard-copy version.

The Nomura Group manages conflicts with respect to the production of research through its compliance policies and procedures (including, but not limited to, Conflicts of Interest, Chinese Wall and Confidentiality policies) as well as through the maintenance of Chinese Walls and employee training.

Additional information regarding the methodologies or models used in the production of any investment recommendations contained within this document is available upon request by contacting the Research Analysts listed on the front page. Disclosures information is available upon request and disclosure information is available at the Nomura Disclosure web page:

http://go.nomuranow.com/research/globalresearchportal/pages/disclosures/disclosures.aspx Copyright © 2018 Nomura International plc. All rights reserved.