

The BoJ was right and farsighted – monetary-policy prospects in Japan and implications for the JPY

by Roberto Mialich, FX Strategist (UniCredit Bank, Milan)

- The BoJ has been criticized for keeping monetary policy extra loose while other central banks began, or were close to starting, the process of normalizing interest rates.
- Yet, some G10 central banks have taken a break from hiking rates or have started discussing a return to easing. The BoJ, as the last holdout in this regard, now appears farsighted in its strategy. In addition, the BoJ revised its forward guidance in April, signaling that it would remain on hold with regard to raising rates until spring 2020.
- However, the Japanese economy is lagging, and the sales-tax rate hike from 8% to 10% in October could revive the debate about more easing to limit the drag of tighter fiscal policy on growth.
- That there are no prospects of an exit strategy and few chances, if any, that monetary policy at home will be able to be eased further are a blow to the JPY outlook. Still, the impact of this may be felt more in terms of a lower margin of appreciation than in terms of a well-established, new bearish trend.
- The USD is set to weaken, as the US economy slows, while global uncertainty may still spark new waves of risk aversion across markets and stock-flow repatriation to Japan. In our view, risks for USD-JPY are still tilted to the downside for both the rest of 2019 and 2020.

1. The Bank of Japan appears farsighted

The BoJ, as the last holdout in this regard, has maintained an ultra-loose monetary policy even when many other major central banks have either started (the Fed, the BoC and the two Nordic central banks), or have signaled their intention to soon start implementing exit strategies with regard to their respective monetary policies (the ECB and the BoE).

However, the Fed has now indicated that it would be taking a break from interest-rate normalization, and the debate centered around an easier monetary policy at the ECB has also begun as a result of weaker European growth. In hindsight, it seems that the BoJ's ultra-loose stance was not so wrong in light of the worries still weighing on the global economic picture, including the US-China trade row, concerns about growth in the US, the eurozone and China as well as Brexit developments.

Indeed, market debate has gone even further. Some central banks worldwide may reconsider a return to an easing bias, and pressure on the BoJ to make its ultra-loose monetary policy more accommodative (if possible) have also been increased.

This shift occurred after the debate in Japan also became focused on a timetable for a possible exit strategy – also due to the projected impact a prolonged period of negative interest rates would have on the banking sector.

Indeed, the BoJ smashed all these expectations at its April meeting, where it revised forward guidance by signaling that it would stay on hold with regard to raising rates at least through spring 2020¹.

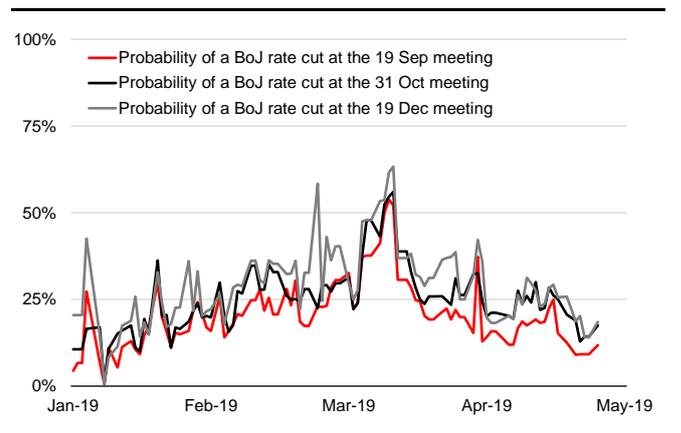
However, squeezed between global trade worries and structural problems at home, the Japanese economy is still lagging: inflation remains low, and the BoJ's latest Tankan survey for 1Q19 showed further deterioration in business expectations. The looming increase in the sale-tax rate in October could revive market debate over whether the next policy move for the BoJ may be a rate cut to contain the impact of a tightening in fiscal policy on the economy.

In the following, we examine how concrete the chances of more easing in Japan are and if and how the mix of vanished prospects of an exit strategy and risks of more monetary-policy accommodation could impact USD-JPY going forward.

2. What are the chances of the BoJ adopting an even more accommodative stance, and when would it do so?

Chart 1 shows the implied probability of a BoJ rate cut in one of the three BoJ meetings scheduled for 4Q19.

CHART 1: CHANCES OF MORE BOJ EASING INTO YEAR-END ARE STILL NOT GREAT



Source: Bloomberg, UniCredit Research

¹ See BoJ, *Statement on Monetary Policy*, 25 April 2019. The BoJ also "will consider the introduction of ETF Lending Facility which will make it possible to temporarily lend ETF that the Bank holds to market participants", but this move seems aimed at increasing liquidity in ETF markets after the BoJ has now ended up holding more than 3/4 of the entire market for ETFs.

As the chart shows, the probability assigned by investors of the BoJ becoming even more ultra-accommodative in terms of its monetary policy this year spiked above 50% in mid-March, when the Fed signaled no more tightening this year and the debate over whether there would be more BoJ easing began intensifying. At the moment, the chances investors have assigned to the BoJ's becoming even more accommodative this year remain low, below 20%.

In practice, markets do not anticipate that the bank is in a rush to cut rates again. This looks even more accurate now that the BoJ has signaled that it will not make a move concerning rates until at least spring 2020 and after BoJ governor Haruiko Kuroda added, at the press conference after the BoJ's April meeting, that ultra-low rates may remain in place even longer.

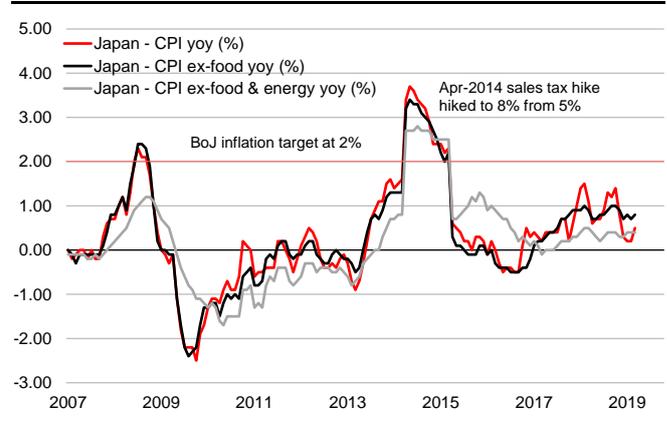
2. Reasons why more monetary-policy accommodation can still be justified in Japan...

Nonetheless, we think that the BoJ has plenty of reasons to try and further expand its ultra-loose monetary policy, if needed. A look at the latest economic data releases from Japan is enough to understand why.

In a nutshell, this reasoning is as follows:

a) Inflation at home remains stubbornly low. The latest inflation statistics for Japan indicate that price pressure remains extremely subdued. The national consumer price index (CPI) was at just +0.5% yoy in March – still far from the BoJ's target of 2%. The index that only excludes prices of fresh food and is the BoJ's preferred gauge of inflation also steadied around a mere +0.8% on an annualized basis, and the CPI's core rate, which also excludes energy prices, failed to exceed +0.3% yoy (as shown in Chart 2). Unsurprisingly, at its April meeting, the BoJ, while cutting its inflation forecasts, admitted that the 2% target will probably also be missed in the next three years. The forecast for 2022 was indeed set at just +1.6% yoy, and the 2021 forecast was cut to +1.3% yoy, from +1.4% yoy previously².

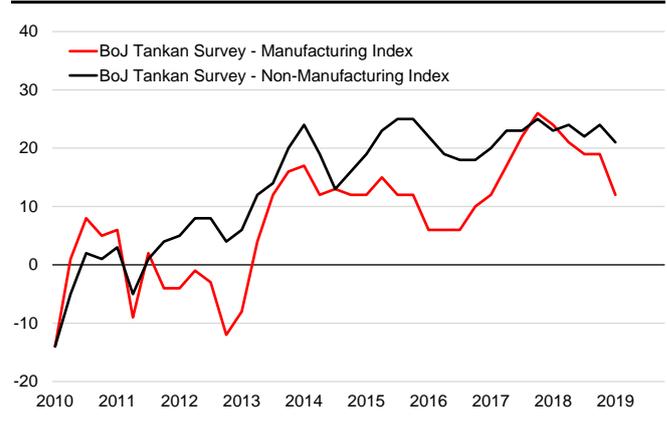
CHART 2: JAPANESE INFLATION IS STILL WELL BELOW TARGET OF 2%



Source: UniCredit Research

b) The real economy is weakening, and business expectations are also worsening. The signals indicating the health of the Japanese economy are still far from encouraging in terms of both real data and business expectations. For instance, industrial production unexpectedly shrank by 0.9% mom in March, and this more than reversed its 0.7% rebound in February. In addition, the BoJ's quarterly Tankan survey for 1Q19 showed an additional deterioration of business expectations in both the large manufacturing and the non-manufacturing sectors (as shown in Chart 3).

CHART 3: THE BOJ TANKAN SURVEYS SUGGESTS THAT BUSINESS EXPECTATIONS IN JAPAN REMAIN SLUGGISH



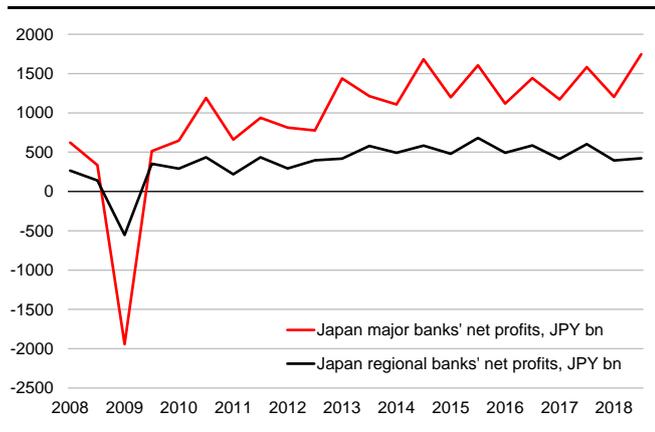
Source: Bloomberg, UniCredit Research

c) The Japanese banking sector has survived negative interest rates so far. The latest data on Japanese banks suggest that Japan's banking system is not suffering dramatically from negative interest rates at home. According to the Japan Financial Services Agency, net profits in Japan's banking sector even increased in 2018 (as shown in Chart 4).

²See BoJ *Outlook for Economic Activity and Prices* April 2019.

Major banks made nearly JPY 1.75tn in net profits last year, a roughly 10Y high, while, on the other hand, profits at regional banks were almost flat, at nearly JPY 425bn. These results contrast with the repeated concerns expressed by the BoJ that the ultra-loose monetary policy pursued since the introduction of quantitative and qualitative monetary easing in April 2013 would have ultimately become counterproductive for the economy as a result of its impact on the functioning of financial intermediation³.

CHART 4: JAPANESE BANKING-SECTOR PROFITS NOT HURT BY ULTRA-LOOSE BOJ MOENETARY POLICY



Source: Bloomberg, UniCredit Research

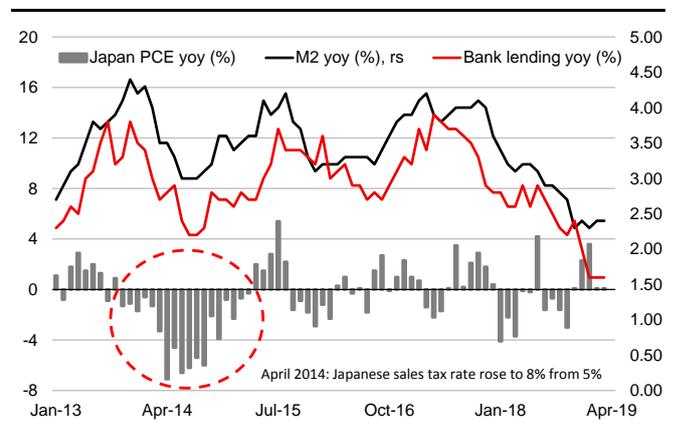
d) The expected sales-tax-rate hike to 10% in October may not push inflation up but could harm the economy further. Lastly, the ultra-loose monetary policy pursued so far has failed to bring inflation into its target range nor has it spurred household consumption and in turn growth at home. Yet, the debate about more BoJ easing may well resume after the summer, given the government’s intention to raise the sales tax rate to 10% from 8% in October. Indeed, past experience suggests that increasing sales tax, and thereby making fiscal policy in Japan a tad tighter, may ultimately hurt the economy and may require compensation by way of monetary policy. We are referring here in particular to what happened in Japan after the sales tax rate was lifted to its current 8% from 5% in April 2014. As shown in Chart 2, the spike in Japanese inflation induced by this was only temporary, with the initial increase having been completely absorbed by May 2015. The hike in the sales tax was unable to spark a definitive upward trend in price dynamics.

³This is the concept of “reversal rate”, i.e. the possibility that, if the central bank lowers interest rates too far, constraints on the banking sector tighten through a decline in net interest-rate margins, impairing, as a result, financial institutions’ intermediation function, so that the effects of monetary easing on the economy reverse and becomes contractionary. Mr. Kuroda was quite explicit with regard to this in a speech given in November 2017. See Haruiko Kuroda, *Quantitative and Qualitative Monetary Easing and Economic Theory*, speech at the University of Zurich, 13 November 2017.

Chart 5 also shows that the hike in the sales tax rate has also progressively depressed personal consumer expenditure (PCE), which shrank until early 2015. Indeed, this contraction in household consumption took place alongside decreases in money supply (M2) and bank lending.

Fears that the economy may suffer again could explain why the new sales-tax hike is not taken fully for granted by market participants. However, should this measure ultimately be implemented, pressure on the BoJ to limit any negative impact it may have on the economy would likely increase sharply, especially if new data releases in between confirm that the Japanese economy has taken the brunt of any impact once again.

CHART 5: INCREASING THE SALES TAX IN JAPAN: THE APRIL 2014 EXPERIENCE



Source: Bloomberg, UniCredit Research

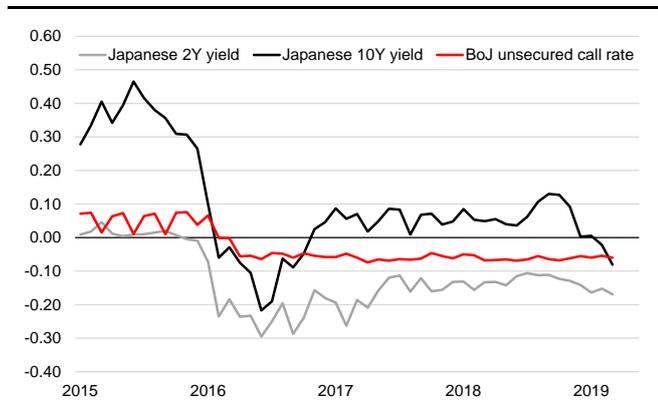
3. ...and risks that would be implied by more easing in Japan

Yet, any justification for additional easing in Japan is not likely to be easy or without risks or negative repercussions.

The main objection here is that, given the inefficacy of the BoJ’s loose monetary policy so far, it is reasonable to ask why even more easing would be expected to succeed at this juncture especially given the following:

a) The Japanese monetary and yield curves are already mostly in negative territory. Additional easing would exert additional downside pressure on the Japanese interest-rate structure now that not only the short end but more importantly also the yield curve in Japan have fallen into negative territory – at least until the 10Y maturity, as shown in Chart 6.

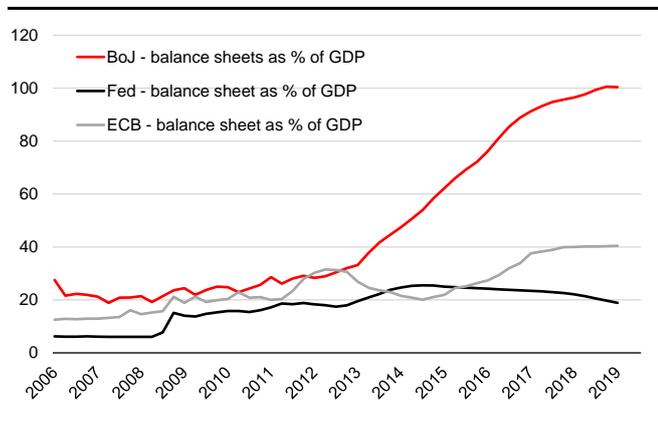
CHART 6: JAPANESE YIELDS IN NEGATIVE TERRITORY UP TO THE 10Y MATURITY



Source: Bloomberg, UniCredit Research

b) The BoJ's balance sheet would expand even further. Additional liquidity injections by the BoJ would inflate even further the bank's balance sheet, the size of which would likely reach a new and very dangerous record high of over 100% of national GDP. Chart 7 shows that the BoJ's exposure to the financial system as a percentage of Japanese GDP is above 100%, a multiple of the current exposure of both the Fed (20%) and the ECB (40%).

CHART 7: THE BOJ'S EXPOSURE TO THE FINANCIAL SYSTEM REMAINS A MULTIPLE OF BOTH THE FED AND THE ECB



Source: Bloomberg, UniCredit Research

Indeed, as indicated in the previous section, the main reason why the BoJ should become even more accommodative, in our view, would be to allow it to claim a more defensive justification (rather than a simulative function currently). If fiscal policy were to become tighter in the meantime, this would grant the BoJ the ability to cushion the Japanese economy somewhat and allow it to take measures to prevent more economic weakness or to mitigate deflation risks.

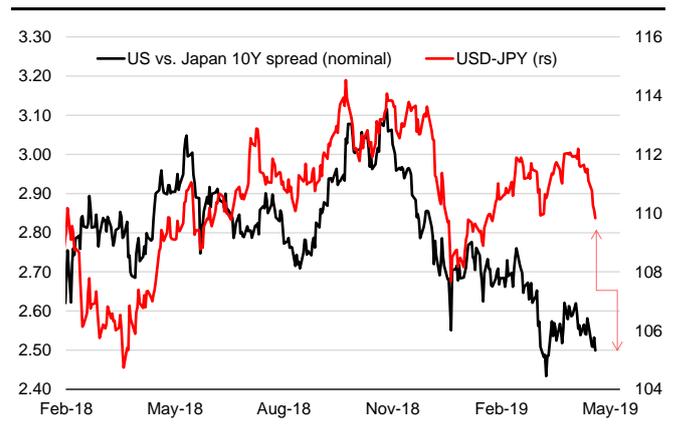
4. Would new BoJ easing negatively affect the JPY? This time may be different.

Admittedly, that the BoJ seems to lack an exit strategy (at least at the moment) and that there are some chances of more easing (if needed) represents a bad mix for the JPY's prospects. However, this time, the impact of any easing may be different.

As usual, a good way to address the analysis at this point is to consider the most liquid JPY exchange rate, USD-JPY, and the 10Y nominal-yield spread between the US and Japanese government debt, as shown in Chart 8.

As the data in Chart 8 suggest, this differential has proven, in the past, to be a good driver of USD-JPY dynamics, and correlation between the two series has resumed after it weakened a bit last February, with USD-JPY now rallying close to 112 on news that the BoJ is mulling further easing – while the 10Y yield spread between the two countries' debt has narrowed further.

CHART 8: THE 10Y NOMINAL YIELD DIFFERENTIAL REMAINS A GOOD TRACKER OF USD-JPY FLUCTUATIONS

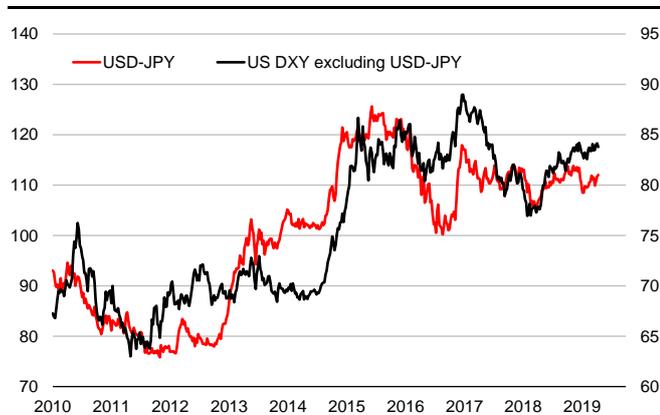


Source: Bloomberg, UniCredit Research

Hence, if one imagines a further decline in Japanese long-term yields in case of more BoJ easing, why would such a scenario not be USD-JPY-positive this time?

a) A lower USD across the board tends to drag USD-JPY down. First, in our scenario, we expect the USD to be weaker from 2H19 onwards on the back of further evidence that the US economy is slowing. In turn, this would force the Fed to cut rates three times from spring 2020 onwards, i.e. exactly until the deadline the BoJ has fixed to keep rates on hold, and in general, USD-JPY generally tends to follow the behavior of the US dollar per se. A weaker USD across the board is thus likely to also drag the USD-JPY lower. To show this, we rebased the DXY index by excluding the USD-JPY component, which makes for 13.6% of the entire DXY index. The results are shown in Chart 9 and confirm the co-movements of the two series.

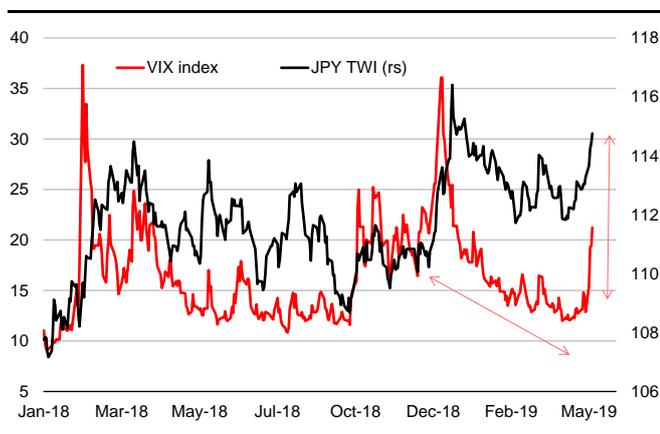
CHART 9: USD-JPY STILL SENSITIVE TO USD DYNAMICS ACROSS THE BOARD (DXY EXCLUDING USD-JPY)



Source: Bloomberg, UniCredit Research

b) The global picture still calls for caution, which would likely favor safe-haven currencies. Sources of uncertainty (Brexit, China, equity markets, etc.) have not disappeared. Chart 10 shows that the JPY in trade-weighted term (TWI) has been quiet so far this year. The Chicago Board Options Exchange Volatility Index (VIX index), which serves as a gauge of global risk aversion, has also stayed mostly subdued, thus confirming some co-movements between the two series, also in this case. Hence, an abrupt spike in risk-off sentiment across markets worldwide could still trigger a shift towards safe-haven currencies, and namely towards the JPY – such as that which occurred in the last few days following renewed pressure from the Trump administration on Beijing with regard to trade, a situation that was immediately felt by global equities and resulted in USD-JPY moving back even below the 110 handle.

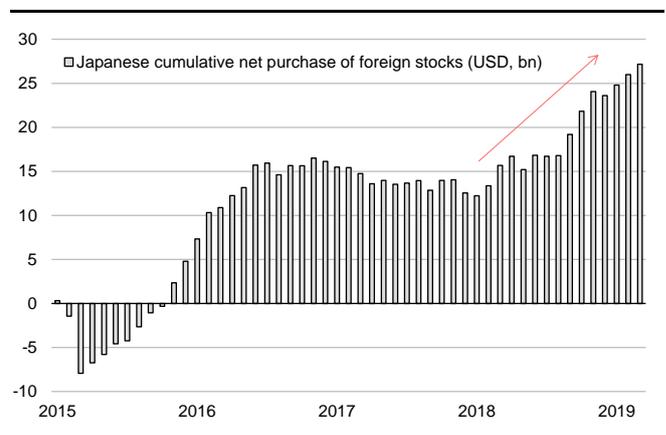
CHART 10: JPY STILL SENSITIVE TO SHIFT IN GLOBAL RISK SENTIMENT, AS RENEWED TRADE TENSIONS SUGGEST



Source: Bloomberg, UniCredit Research

c) A downward correction in stock markets worldwide could spark an increase in the repatriation of Japanese investment flows. Lastly, if the slowdown of the US economy we expect is significant enough to trigger a correction among US stocks and in turn in the equity market worldwide, this could also result in a higher JPY, not only due to the safe-haven role of the Japanese currency but also given the expected repatriation of funds invested abroad by Japanese investors, which a sell-off in world equity markets would likely trigger. Probably also as a result of heavy bond buying by the BoJ and the low yields on foreign bonds, Japanese investors have strongly increased their cumulative exposure to non-Japanese equity markets since 2016, as shown in Chart 11.

CHART 11: JAPANESE INVESTORS HAVE INCREASED THEIR EXPOSURE TO FOREIGN STOCK MARKETS



Source: Bloomberg, UniCredit Research

This in turn represents a source of vulnerability, as it could trigger an exit from foreign stocks and redirect funds back home, should the latest record market highs be reversed when (and if) the US economy slows.

5. A weaker USD-JPY still lies ahead, but the BoJ-easing debate may slow the pace of decline

In the previous sections, we analyzed the current status of monetary policy in Japan and its implications for the JPY going forward. Recently revised forward guidance suggests that the BoJ's holding steady with regard to hiking rates until spring 2020 remains the most likely scenario ahead. In turn, this would mean that the debate about an exit strategy has been set aside for the moment – at least unless an acceleration in inflation at home becomes visible and robust. However, this does not rule out that the debate over more easing could resume after the summer if a sales-tax hike is implemented.

There being no monetary tightening on the visible horizon and the potential for more easing if needed represents, in theory, a dreadful mix for the JPY. However, we do not think prospects of this kind may necessarily result in a heavy JPY sell-off.

This time is probably different, at least because we have penciled in a weaker USD scenario from 2H19 on, when, presumably, the US economy will slow and the Fed will consider three rate cuts exactly from spring 2020 onwards. A US economic downturn itself may rattle Wall Street after it recently reached record highs. In turn, such a scenario may alarm stock markets worldwide, to which Japanese investors have increased exposure. The JPY may thus benefit from investment-flow repatriation to Japan, and more prudence worldwide may enhance its role as a safe-haven currency.

Accordingly, unless the Japanese economy contracts dramatically, presenting an idiosyncratic risk to Japan and forcing the BoJ to implement massive liquidity injections, more monetary easing at home may affect the JPY this time by reducing its margin of appreciation rather than triggering a heavy sell-off. In our view, risks for USD-JPY remain tilted to the downside for the rest of 2019 and for 2020.

Author

Roberto Mialich, FX Strategist
(UniCredit Bank, Milan)
+392 88 62-0658
roberto.mialich@unicredit.eu

Editors

Dr. Philip Gisdakis, Head of Strategy Research,
Head of Credit Strategy Research
(UniCredit Bank, Munich)
+49 89 378-13228
philip.gisdakis@unicredit.de

Elia Lattuga, Deputy Head of Strategy Research,
Cross Asset Strategist
(UniCredit Bank, London)
+44 207 826-1642
elia.lattuga@unicredit.eu

Previous editions of FX Perspectives

- » CZK: Valuation not a barrier to further gradual depreciation - 4 April 2019
- » Commodity currencies in dire straits as their central banks turn dovish - 21 March 2019
- » RUB: valuation with (and without) the budget rule - 1 March 2019
- » Looking at past episodes when the Fed took a pause: Implications for EUR-USD - 7 February 2019
- » FX implications of repricing risk in current G10 forward curves - 29 November 2018
- » Deal or no deal? Assessing the Brexit risk premium in GBP spot and options markets - 18 October 2018
- » 'Stairway to (safe) havens': reshuffling the rank of favored currencies - 2 October 2018
- » Q&A on the CNY - 23 July 2018
- » USD-JPY: exiting lethargy may be more abrupt than markets expect - 4 July 2018
- » The Turkish Lira - Q & A following the latest rout - 25 May 2018
- » Q & A regarding the dollar rally: reasons, outlook and risks - 10 May 2018
- » Commodity currencies: time for the AUD and the CAD to close the gap with the NZD - 26 April 2018
- » SEK risks from Swedish housing market slowdown - 13 April 2018
- » EUR-CHF: 1.20 will likely be the peak - 29 March 2018
- » ZAR: valuation is not a barrier to further appreciation - 15 March 2018
- » Is there life in sterling? Yes, and mostly against the USD - 1 March 2018
- » US deficit spells more trouble for the dollar - 15 February 2018
- » Reappraising the CNY: Valuation, FX flows and PBoC tolerance - 1 February 2018
- » Italian elections no threat to EUR strength - 16 January 2018
- » Brace for a small - yet meaningful - change in BoJ policy in 2018 and a stronger Yen - 14 December 2017
- » Two fallacies on the link between a US 'tax holiday' on overseas profits and the USD: now is... - 30 November 2017
- » BEER update: why undervaluation of the Nordics has been persistent - 2 November 2017
- » EMFX & BoP metrics: in which measure should we trust? - 19 October 2017
- » EUR-CHF: faster convergence to fair value - 3 October 2017
- » Slicing and dicing EUR-USD historical overshooting patterns: it may be a long way before... - 21 September 2017
- » How high can JPY go? Dissecting the rally so far - 7 September 2017
- » EUR-USD: on the highway to fair value - 27 July 2017
- » EMFX ? when should we start fretting about US yields? - 13 July 2017
- » EUR-GBP: What if the BoE hikes rates? - 3 July 2017
- » The rotation towards euro-centric currencies - 14 June 2017
- » CNY fixings: Still rules-based, or back to discretion? - 1 June 2017
- » Positive fair-value dynamics suggest ongoing EUR-USD support from fundamentals - 19 May 2017
- » Underperformance of two Nordics presents buying opportunity - 4 May 2017
- » RUB and energy prices: should we mind the gap? - 20 April 2017
- » Post-Brexit portfolio flows and sterling: too early to become bullish on the GBP - 6 April 2017
- » USD-JPY after the Fed hike: time to lower our forecasts further - 23 March 2017
- » Global growth to trump US yields as FX driver - 9 March 2017
- » A Q&A on our CEEMEA FX views - 23 February 2017
- » FX at times of rising European spreads: EUR-JPY downside provides the best insurance against... - 9 February 2017
- » RUB: why CBR FX purchases are unlikely to hurt the ruble - 26 January 2017
- » Why 2017 is shaping up to be a strong year for commodity FX - 12 January 2017
- » CAD: still weak after Trump but with a better picture ahead - 1 December 2016
- » EM FX & the ?Trump Tantrum? ? why this time could be different - 17 November 2016

Legal Notices

Glossary

A comprehensive glossary for many of the terms used in the report is available on our website: [link](#)

Disclaimer

Our recommendations are based on information obtained from or are based upon public information sources that we consider to be reliable, but for the completeness and accuracy of which we assume no liability. All information, estimates, opinions, projections and forecasts included in this report represent the independent judgment of the analysts as of the date of the issue unless stated otherwise. We reserve the right to modify the views expressed herein at any time without notice. Moreover, we reserve the right not to update this information or to discontinue it altogether without notice. This report may contain links to websites of third parties, the content of which is not controlled by UniCredit Bank. No liability is assumed for the content of these third-party websites.

This report is for information purposes only and (i) does not constitute or form part of any offer for sale or subscription of or solicitation of any offer to buy or subscribe for any financial, money market or investment instrument or any security, (ii) is neither intended as such an offer for sale or subscription of or solicitation of an offer to buy or subscribe for any financial, money market or investment instrument or any security nor (iii) as marketing material within the meaning of applicable prospectus law. The investment possibilities discussed in this report may not be suitable for certain investors depending on their specific investment objectives and time horizon or in the context of their overall financial situation. The investments discussed may fluctuate in price or value. Investors may get back less than they invested. Fluctuations in exchange rates may have an adverse effect on the value of investments. Furthermore, past performance is not necessarily indicative of future results. In particular, the risks associated with an investment in the financial, money market or investment instrument or security under discussion are not explained in their entirety.

This information is given without any warranty on an "as is" basis and should not be regarded as a substitute for obtaining individual advice. Investors must make their own determination of the appropriateness of an investment in any instruments referred to herein based on the merits and risks involved, their own investment strategy and their legal, fiscal and financial position. As this document does not qualify as an investment recommendation or as a direct investment recommendation, neither this document nor any part of it shall form the basis of, or be relied on in connection with or act as an inducement to enter into, any contract or commitment whatsoever. Investors are urged to contact their bank's investment advisor for individual explanations and advice.

Neither UniCredit Bank AG, UniCredit Bank AG London Branch, UniCredit Bank AG Milan Branch, UniCredit Bank AG Vienna Branch, UniCredit Bank Austria AG, UniCredit Bulbank, Zagrebačka banka d.d., UniCredit Bank Czech Republic and Slovakia, ZAO UniCredit Bank Russia, UniCredit Bank Czech Republic and Slovakia Slovakia Branch, UniCredit Bank Romania, UniCredit Bank AG New York Branch nor any of their respective directors, officers or employees nor any other person accepts any liability whatsoever (in negligence or otherwise) for any loss howsoever arising from any use of this document or its contents or otherwise arising in connection therewith.

This report is being distributed by electronic and ordinary mail to professional investors, who are expected to make their own investment decisions without undue reliance on this publication, and may not be redistributed, reproduced or published in whole or in part for any purpose.

Responsibility for the content of this publication lies with:

UniCredit Group and its subsidiaries are subject to regulation by the European Central Bank

- a) UniCredit Bank AG (UniCredit Bank, Munich or Frankfurt), Arabellastraße 12, 81925 Munich, Germany, (also responsible for the distribution pursuant to §34b WpHG). Regulatory authority: "BaFin" – Bundesanstalt für Finanzdienstleistungsaufsicht, Marie-Curie-Str. 24-28, 60439 Frankfurt, Germany.
- b) UniCredit Bank AG London Branch (UniCredit Bank, London), Moor House, 120 London Wall, London EC2Y 5ET, United Kingdom. Regulatory authority: "BaFin" – Bundesanstalt für Finanzdienstleistungsaufsicht, Marie-Curie-Str. 24-28, 60439 Frankfurt, Germany and subject to limited regulation by the Financial Conduct Authority, 12 Endeavour Square, London E20 1JN, United Kingdom and Prudential Regulation Authority 20 Moorgate, London, EC2R 6DA, United Kingdom. Further details regarding our regulatory status are available on request.
- c) UniCredit Bank AG Milan Branch (UniCredit Bank, Milan), Piazza Gae Aulenti, 4 - Torre C, 20154 Milan, Italy, duly authorized by the Bank of Italy to provide investment services. Regulatory authority: "Bank of Italy", Via Nazionale 91, 00184 Roma, Italy and Bundesanstalt für Finanzdienstleistungsaufsicht, Marie-Curie-Str. 24-28, 60439 Frankfurt, Germany.
- d) UniCredit Bank AG Vienna Branch (UniCredit Bank, Vienna), Rothschildplatz 1, 1020 Vienna, Austria. Regulatory authority: Finanzmarktaufsichtsbehörde (FMA), Otto-Wagner-Platz 5, 1090 Vienna, Austria and subject to limited regulation by the "BaFin" – Bundesanstalt für Finanzdienstleistungsaufsicht, Marie-Curie-Str. 24-28, 60439 Frankfurt, Germany. Details about the extent of our regulation by the Bundesanstalt für Finanzdienstleistungsaufsicht are available from us on request.
- e) UniCredit Bank Austria AG (Bank Austria), Rothschildplatz 1, 1020 Vienna, Austria. Regulatory authority: Finanzmarktaufsichtsbehörde (FMA), Otto-Wagner-Platz 5, 1090 Vienna, Austria
- f) UniCredit Bulbank, Sveta Nedelya Sq. 7, BG-1000 Sofia, Bulgaria. Regulatory authority: Financial Supervision Commission (FSC), 16 Budapeshta str., 1000 Sofia, Bulgaria
- g) Zagrebačka banka d.d., Trg bana Josipa Jelačića 10, HR-10000 Zagreb, Croatia. Regulatory authority: Croatian Agency for Supervision of Financial Services, Franje Račkoga 6, 10000 Zagreb, Croatia
- h) UniCredit Bank Czech Republic and Slovakia, Želetavská 1525/1, 140 92 Praha 4, Czech Republic. Regulatory authority: CNB Czech National Bank, Na Příkopě 28, 115 03 Praha 1, Czech Republic
- i) ZAO UniCredit Bank Russia (UniCredit Russia), Prechistsenskaya nab. 9, RF-119034 Moscow, Russia. Regulatory authority: Federal Service on Financial Markets, 9 Leninsky prospekt, Moscow 119991, Russia
- j) UniCredit Bank Czech Republic and Slovakia, Slovakia Branch, Šancova 1/A, SK-813 33 Bratislava, Slovakia. Regulatory authority: CNB Czech National Bank, Na Příkopě 28, 115 03 Praha 1, Czech Republic and subject to limited regulation by the National Bank of Slovakia, Imricha Karvaša 1, 813 25 Bratislava, Slovakia. Regulatory authority: National Bank of Slovakia, Imricha Karvaša 1, 813 25 Bratislava, Slovakia
- k) UniCredit Bank Romania, Bucharest 1F Expozitiei Boulevard, 012101 Bucharest 1, Romania. Regulatory authority: National Bank of Romania, 25 Lipscani Street, 030031, 3rd District, Bucharest, Romania
- l) UniCredit Bank AG New York Branch (UniCredit Bank, New York), 150 East 42nd Street, New York, NY 10017. Regulatory authority: "BaFin" – Bundesanstalt für Finanzdienstleistungsaufsicht, Marie-Curie-Str. 24-28, 60439 Frankfurt, Germany and New York State Department of Financial Services, One State Street, New York, NY 10004-1511

Further details regarding our regulatory status are available on request.

ANALYST DECLARATION

The analyst's remuneration has not been, and will not be, geared to the recommendations or views expressed in this report, neither directly nor indirectly.

All of the views expressed accurately reflect the analyst's views, which have not been influenced by considerations of UniCredit Bank's business or client relationships.

POTENTIAL CONFLICTS OF INTERESTS

You will find a list of keys for company specific regulatory disclosures on our website <https://www.unicreditresearch.eu/index.php?id=disclaimer>.

RECOMMENDATIONS, RATINGS AND EVALUATION METHODOLOGY

You will find the history of rating regarding recommendation changes as well as an overview of the breakdown in absolute and relative terms of our investment ratings, and a note on the evaluation basis for interest-bearing securities on our website <https://www.unicreditresearch.eu/index.php?id=disclaimer> and <https://www.unicreditresearch.eu/index.php?id=legalnotices>.

ADDITIONAL REQUIRED DISCLOSURES UNDER THE LAWS AND REGULATIONS OF JURISDICTIONS INDICATED

You will find a list of further additional required disclosures under the laws and regulations of the jurisdictions indicated on our website <https://www.unicreditresearch.eu/index.php?id=disclaimer>.

UniCredit Research*

Strategy Research



Erik F. Nielsen
Group Chief Economist
Global Head of CIB Research
+44 207 826-1765
erik.nielsen@unicredit.eu



Dr. Ingo Heimig
Head of Research Operations
& Regulatory Controls
+49 89 378-13952
ingo.heimig@unicredit.de

Head of Strategy Research



Dr. Philip Gisdakis
Head of Strategy Research
+49 89 378-13228
philip.gisdakis@unicredit.de

FI Strategy Research



Michael Rottmann
Head
+49 89 378-15121
michael.rottman1@unicredit.de



Dr. Luca Cazzulani
Deputy Head
+39 02 8862-0640
luca.cazzulani@unicredit.eu



Francesco Maria Di Bella
FI Strategist
+39 02 8862-0850
francescomaria.dibella@unicredit.eu



Chiara Cremonesi
FI Strategist
+44 207 826-1771
chiara.cremonesi@unicredit.eu



Kornelius Purps
FI Strategist
+49 89 378-12753
kornelius.purps@unicredit.de

FX Strategy Research



Kathrin Goretzki, CFA
FX Strategist
+44 207 826-6076
kathrin.goretzki@unicredit.eu



Kiran Kowshik
EM FX Strategist
+44 207 826-6080
kiran.kowshik@unicredit.eu



Roberto Mialich
FX Strategist
+39 02 8862-0658
roberto.mialich@unicredit.eu

Credit Strategy Research



Dr. Philip Gisdakis
Head
+49 89 378-13228
philip.gisdakis@unicredit.de



Holger Kapitza
Credit & High Yield Strategy
+49 89 378-28745
holger.kapitza@unicredit.de



Dr. Stefan Kolek
EEMEA Corporate Credits & Strategy
+49 89 378-12495
stefan.kolek@unicredit.de

Equity Strategy Research



Christian Stocker, CEFA
Lead Equity Sector Strategist
+49 89 378-18603
christian.stocker@unicredit.de



Elia Lattuga
Deputy Head of Strategy Research
Cross Asset Strategist
+44 207 826-1642
elia.lattuga@unicredit.eu

Cross Asset Strategy Research

UniCredit Research, Corporate & Investment Banking, UniCredit Bank AG, Am Eisbach 4, D-80538 Munich, globalresearch@unicredit.de
Bloomberg: UCCR, Internet: www.unicreditresearch.eu

SR 19/2

*UniCredit Research is the joint research department of UniCredit Bank AG (UniCredit Bank, Munich or Frankfurt), UniCredit Bank AG London Branch (UniCredit Bank, London), UniCredit Bank AG Milan Branch (UniCredit Bank, Milan), UniCredit Bank New York (UniCredit Bank, New York), UniCredit Bank AG Vienna Branch (UniCredit Bank, Vienna), UniCredit Bank Austria AG (Bank Austria), UniCredit Bulbank, Zagrebačka banka d.d., UniCredit Bank Czech Republic and Slovakia, ZAO UniCredit Bank Russia (UniCredit Russia), UniCredit Bank Romania.