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JPY Cross-study: Have monetary easing and policy coordination impacted Tokyo market structure and interdependency?

29 JANUARY 2021

JPY G10 Cross-Currency Matrix

We have developed a G10 JPY cross-asset matrix covering developed country bond cross-currency asset swaps in order to update and assess the attributes of the Balance of Payments, Securities flows, and Tokyo market repo trading data of the BoJ, the MoF and the JSDA, as well as US Treasury International Capital data. Our intent is to give our observation and assessment of the current conditions of the international financial markets. This paper serves as a background research piece for our upcoming JPY G10 Cross-Currency Matrix.

Chief Japan Strategist Takahiro Sekido

January 2021

JPY Basis Reaction and the Changing Attributes of Cross-Border Bond Flows in the Tokyo Market¹

TAKAHIRO SEKIDO, TOMOKI HIRAMATSU²

Abstract

In 2020, the six central banks collaborated on monetary policy to supply USD to prevent the financial crisis on the COVID-19 pandemic. The central banks bolstered monetary easing as governments expanded fiscal spending. Thereafter, JPY basis reversed course and started to stabilize again at the end of the year. In recent years, JPY basis has tightened in response to changes in the US-European yield gap, then widened in response to strong foreign currency asset funding demands by Japanese investors. Once USD funding stabilized amid the pandemic, Japanese investors built up their holdings of US agency bonds and developed country sovereign bonds after redeeming US Treasuries. While they remained exposed to US corporate bonds, Japanese investors have been cutting their positions in other developed economy non-sovereign bonds. Japanese investors appear to have decided to maintain their US Treasury positions and shift to US agency bonds and US corporate bonds as well as other developed country sovereign bonds after redeeming US Treasuries given stable USDJPY basis, because of changes in developed country bond yield curves on USD and JPY denominated basis. Japanese investors and global financial markets may have become more interdependent during the coronavirus pandemic. This appears to have made global policy coordination and policymaker dialog with market participants even more important going forward.

Keywords: USD fund-supply operations; JPY basis; cross-border bond flows

JEL classification: E52, E58, F42

¹ We plan to submit this report to a journal for publication following peer reviews and co-study with academicians. Any errors in this report are under responsibility of the authors.

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Introduction: Monetary easing and policy coordination, changes in cross-border bond flows

In January 2016, the Bank of Japan (BoJ) introduced qualitative and quantitative monetary easing along with negative interest rates, then made a policy change to qualitative and quantitative easing with yield curve control operations in September of the same year. Japan's monetary base stood at JPY358.7 trillion at end-January 2016. Thereafter, the BoJ bolstered its framework for sustaining bold monetary policy in July 2018. In March 2020, JPY basis widened as Japanese stock prices plunged and JPY strengthened as the COVID-19 pandemic spread. The BoJ reacted on March 15 (March 16 in Japan) by agreeing to collaborate on policy with five other central banks around the world—the central banks of Canada, the UK, Europe, the US, and Switzerland—to supply USD to the markets. The six central banks agreed to supply USD funds for one week and three-month terms. On March 16, the BoJ held an emergency meeting and set up financial support operations to assist Japanese companies during the pandemic, and also decided to buy a total of JPY2 trillion of CP and corporate bonds. The European Central Bank (ECB) then established the EUR750 billion Pandemic Emergency Purchasing Program (PEPP) on March 18. On March 23, the US Fed announced it would buy an unlimited amount of US Treasuries and US government agency bonds. The BoJ announced expanded monetary easing in April, increasing the amount of CP and corporate bond purchases, expanding the collateral assets for corporate financial support as well as eligible financial institutions, and setting an incentive interest rate of 0.1% for the balance of operations.

Amidst monetary easing and falling interest rates around the world, Japanese and foreign investor securities investing flows in the Tokyo markets stood out. In March 2020, 3Mo JPY basis took on a discount, hitting -153.5bps at one point on March 20. Thereafter, (i) overseas investors turned to JPY bond asset swaps as a destination for their surplus USD funds as US and European rates fell; (ii) the front end through the long ends of the JPY basis curve tightened due to the merits of USD fund supplying; (iii) Japanese investors adjusted their foreign bond positions; and (iv) JPY basis swaps tightened after the market reacted as if in a financial crisis as real demand by Japanese companies recovered only slowly. In addition to these responses to monetary policy, governments implemented economic and fiscal policies in response to the pandemic, and the Tokyo markets stabilized again in 2H 2020. Despite the response to the COVID-19 crisis and massive fiscal spending, JPY basis stayed calm because of the new normal fiscal and monetary policy mix as well as due to the abundance of surplus funds around the world, ending the year at -9.5bps. Japan's monetary base stood at JPY617.6 trillion at end-2020.

In this paper, we consider the responses by JPY basis to changes in USD and EUR central bank balance sheet relative ratio vis-à-vis the BoJ's balance sheet (US Fed/BoJ and ECB/BoJ), based on prior research. We then analyze the structural changes in Japanese investors' cross-border investing behavior. We also note changes in Japanese investors' global bond investing behavior based on investment performance including cross-currency bond asset swaps.

Prior research: Central bank balance sheet relative ratio and FX market responses

Dedola, Georgiadis, Gräb and Mehl (2020) recently wrote about the impact of monetary easing on foreign exchange market pricing. They analyzed relative changes to the balance sheets of the ECB and US Fed and the impact in terms of EURUSD exchange rate. This paper attempts to conduct an analysis of central bank balance sheet relative ratio vis-à-vis JPY basis in light of increased cross-border investing flows in the Tokyo markets. Like the earlier research, we found that global financial markets have grown increasingly interdependent. JPY basis is used in foreign exchange and interest rate arbitrage trading and is used not only by investors to hedge for currency risk, but also in financial trading to support corporate asset funding for international business expansion.

Assumptions: Data sources and methods

This paper looks at the response by USDJPY basis and EURJPY basis to the balance sheets of the US Fed, ECB, and BoJ. When the central bank relative ratios of the balance sheets for the relevant currency pairs underwent a shock (stronger monetary easing), we observed the response in the JPY basis of the relevant currency and also measured the duration of the response. Our observation period spanned January 2014 through November 2020, and we used monthly data for this period. In our data analysis, we conducted data analysis of the figures below to examine the effects of quantitative monetary easing. In this paper, we analyzed data using the ADF test to conduct a unit root test, using the first differential for the variables.

We analyzed the data for the JPY basis response to central bank balance sheets for the relevant currency. We used Schwarz information criterion to measure lag. The estimated responses are shown in the graph below. The Y-axis is the degree of impact of the noted variable, while the X-axis is the number of months. The dotted line shows a standard deviation of ± 2 , with 95% confidence interval. This paper assumes that JPY basis will show a monetary easing effect (portfolio rebalancing or signals) from the central bank balance sheet.

Data type	Data name	Source
Central bank balance sheets	Relative ratios of Fed, BoJ balance sheets, Relative ratios of ECB, BoJ balance sheets	Fed, ECB, BoJ
JPY basis	USDJPY basis (3Mo, 2Yr), EURJPY basis (3Mo, 2Yr)	Bloomberg

Response (i): US Fed – BoJ balance sheets, USDJPY basis

The graph below shows the response of USDJPY basis to the 1%pt expansion in the

Fed's balance sheet relative to the BoJ's. 3Mo USDJPY basis shrank by 20bps in Response to monetary easing one to two months later as the relative ratio of the Fed's balance sheet expanded relative to the BoJ's. However, USDJPY basis then took on a discount after half a year (six to seven months later), of nearly -20bps.

2Mo USDJPY basis has been slower to react to the changes in the US Fed and BoJ's balance sheets than 3Mo contracts, shrinking by around 20bps after two to three months. Thereafter, 2Mo USDJPY basis has widened in tandem with 3Mo contracts for around six to seven months before taking on a discount of more than 20bps.

This shows that JPY basis discount has tended to widen because of Japanese investors' strong outward investing activity. When the relative sizes of the US Fed and BoJ balance sheets change, cross-currency JPY basis discount has widened, leaving room for USDJPY basis arbitrage trading by foreigners, due to: (i) the relatively low level of JPY rates vis-à-vis US rates; and (ii) usage of JPY basis from Japanese investors' strong USD overseas investing activity.

Moreover, the different speeds of Response between 3Mo and 2Yr USDJPY as well as the different discount levels over the medium term appear to reflect the strength of demand for JPY basis among Japanese investors. Real demand for JPY basis is strong among Japanese banks for 2Yr contracts, which is close to the average duration of loans made overseas. Under the Fed's monetary easing, Japanese investors trading JPY basis during a shrinking JPY basis phase appear to have caused discount to widen, because of real demand by Japanese banks in order to maintain their overseas business portfolios.

Response (ii): ECB – BoJ balance sheets, EURJPY basis

The graph below illustrates the EURJPY basis response to the 1%pt expansion in relative ratio between the ECB and BoJ's balance sheets. Not only has EURJPY basis maintained a premium, with 3Mo EURJPY basis premium peaking at around 30bps after three to four months, but the premium on 2Yr contracts then peaked at more than 30bps somewhat later, after five or six months. Thereafter, premiums narrowed over the medium term, to around 10bps for 3Mo contracts and 20bps for 2Yr contracts.

Premiums have followed a narrowing trend, reflecting real demand for outward investing among Japanese investors. At the same time, JPY rates are somewhat high relative to EUR rates, and the EURJPY basis response has been limited compared to the USDJPY basis response. The asset shift trajectory from EUR to JPY within the negative interest rate sphere likely impacted the EURJPY basis response. Moreover, as described later in this paper, Japanese investors' cross-border bond flows have shown increased activity with JPY basis premium in cross-border arbitrage trading, even with European and Japanese rates in negative territory. Cross-border arbitrage trading within the negative interest rate sphere has been active among both Japanese and European

investors and may have impacted the EURJPY basis response.

Japanese investor cross-border bond flows (2015-2020)

Japanese investors have been investing more actively in overseas securities in recent years because of the BoJ's quantitative and qualitative monetary easing. Between 2015 and 2020 (annualized 2020 figure based on results through November, page 8), Japanese investors net-acquired JPY51.7 trillion of US medium- to long-term bonds, JPY6.2 trillion of French bonds, JPY2.6 trillion of Italian bonds, JPY5.5 trillion of Australian bonds, and JPY3.0 trillion of Canadian bonds. During the same period, Japanese investors unloaded a net JPY3.9 trillion of German medium- to long-term bonds and JPY300 billion of UK bonds. Japanese investors have been buying more overseas securities, bolstered by the BoJ's quantitative monetary easing, with US securities investing the core of their investing activity. Of the medium- to long-term US bonds acquired, JPY37.4 trillion were sovereign bonds and JPY14.3 trillion were non-sovereign bonds. USD medium- to long-term bonds totaled JPY58.2 trillion and USD offshore bonds JPY6.5 trillion. US Treasury International Capital (USTIC) data shows that while Japanese investors unloaded a net USD215.3 billion of US Treasuries, they bought a net USD405.6 billion of US agency bond and USD42 billion of US corporate bonds. By currency in Japanese statistics, Japanese investors invested JPY58.2 trillion of USD medium- to long-term bonds between 2015 and 2020 (annualized figure based on data through November), JPY2.8 trillion of CAD bonds, JPY9.0 trillion of AUD bonds, JPY18.8 trillion of EUR bonds, and JPY1.0 trillion of GBP bonds. Among ex-US developed country bonds, Japanese investors also acquired significant amounts of French bonds in 2016 and 2018-2019.

Japanese cross-border bond flows (2020)

Japanese investors' acquisitions of overseas medium- to long-term bonds underwent structural changes in 2020, during the coronavirus crisis (page 8-9). While Japanese investors made net acquisitions of medium- to long-term foreign bonds by JPY13.7 trillion for the US, JPY3.8 trillion for Australia, JPY1.7 trillion for Italy, JPY1.5 trillion for Canada, and JPY700 billion for the UK, they unloaded a net JPY1.7 trillion of French bonds and JPY100 billion of German bonds. Japanese investors have been more actively buying overseas securities, propelled by quantitative easing, and while they have been focused on US securities, they have also been buying more Australian and Italian bonds on a net basis and have turned net buyers of UK bonds. They have started to unload French bonds in net terms as they have shifted to other developed country bonds and rebalanced their portfolios. Of US medium- to long-term bonds acquired by Japanese investors, sovereign bonds comprised JPY10.2 trillion and non-sovereign JPY3.4 trillion. USD-denominated medium- to long-term bonds totaled JPY15.4 trillion, and USD denominated offshore bonds JPY1.7 trillion. USTIC data shows that while Japanese unloaded a net USD16 billion of US Treasuries during this time, they net acquired US agency bond by USD93.1 billion and US corporate bonds by USD12.2 billion. Coming back to Japanese statistics, Japanese investors have changed their sovereign and non-sovereign positions among developed country bonds as follows: Canada (JPY1.5 trillion, -JPY0.027 trillion), Australia (3.8 trillion, -JPY0.6 trillion),

Germany (-JPY0.1 trillion, -JPY0.2 trillion), France (-JPY1.7 trillion, JPY0.2 trillion), Italy (JPY1.7 trillion, JPY0.011 trillion), and UK (JPY0.7 trillion, -JPY 0.2 trillion). Japanese investors net-acquired USD bonds (by JPY15.4 trillion), CAD bonds (JPY1.6 trillion), AUD bonds (JPY3.2 trillion), EUR bonds (JPY1.6 trillion), and GBP bonds (JPY900 billion). In 2020 alone, Japanese investors increased their holdings of AUD, CAD, and GBP bonds during the coronavirus crisis. Meanwhile, they expanded their exposure to EUR-denominated medium- to long-term bonds as they shifted more to Italian bonds while reducing exposure to German and French bonds.

Japanese flows, and USD and JPY-denominated bond yield curves (2020)

Japanese investors' preference for US bonds grew in 2020, as US Treasury flows hit USD14.1 billion, US agency bond flows USD46.8 billion, and US corporate bond flows USD2.5 billion in Q1. In Q2, Japanese investors unloaded a net USD5.5 billion of US agency bonds, primarily to take gains at the start of the fiscal year, while buying a net USD9.8 billion of Treasuries and USD7.3 billion of US corporate bonds. After that, they unloaded a net USD43.2 billion of US Treasuries in Q3 and Q4, while buying a net USD52.8 billion of US agency bonds and a net USD1.5 billion of US corporate bonds. While they net-acquired Australian, Canadian, and UK sovereign bonds among developed country bonds in 2020, Japanese investors unloaded Australian, Canadian, and UK non-sovereign bonds in all four quarters.

Next, we examine cross-border bond flows based on changes in the USD and JPY bond yield curves (including cross-currency basis, page 10-11). Australian and Italian bonds grew in popularity, and this kept their yield curves in positive territory when JPY basis was reflected. Investors appear to have behaved rationally. On the other hand, yields of other developed countries were not always positive in JPY terms, and they were behind JGBs in performance. However, USD-based yield levels were relatively sustained positive, so these were rational investment choices in lieu of US bonds. With USD asset funding stabilizing, Japanese investors appear to have shifted their surplus USD to other developed country bonds. We feel that during the coronavirus crisis, Japanese investors have used their US bond redemptions and maintained their US bond positions with JPY basis given the stability of USDJPY basis and while maintaining term gaps with other bond holdings. They also appear to have shifted to sovereign bonds of other developed countries while taking currency risk as their risk appetite improved.

Japanese investors showed a greater preference for US bonds, especially Treasuries, during the financial crisis sparked by the coronavirus pandemic, but they also returned to their US bond portfolio stances (redeeming fewer US Treasuries and amassing more US agency bonds) of up through 2019 as investment sentiment improved in 2H. During this time, Japanese investors have shown greater preference for sovereign bonds as bond investments for non-US developed countries, and their net unloading of non-sovereign bonds has been striking. In managing their US bond portfolios, Japanese investors typically focus on yield, especially for US agency bonds and US corporate bonds, during normal times. During the financial crisis, they boosted the weighting of US

Treasuries. On the other hand, Japanese investors have been buying sovereign bonds of other developed countries, while non-sovereign investing has been losing luster.

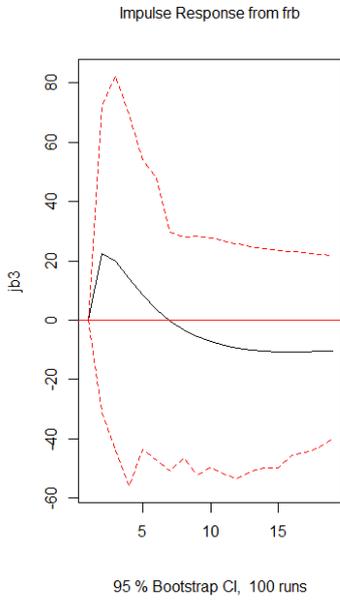
Japanese investors may have altered their investing behavior of making investing decisions in light of both basis premium and credit spreads. Japanese investors have been making investment decisions in consideration of investing performance and controllability of foreign bond positions, given expectations that low interest rates around the world will persist for a long while. Investment flow characteristics to take either cross-border JPY basis premium or credit spreads have been seen during this phase, as Tokyo market microstructure and transmission changes.

Conclusion: JPY basis and cross-border bond flow attributes reflect importance of policy coordination

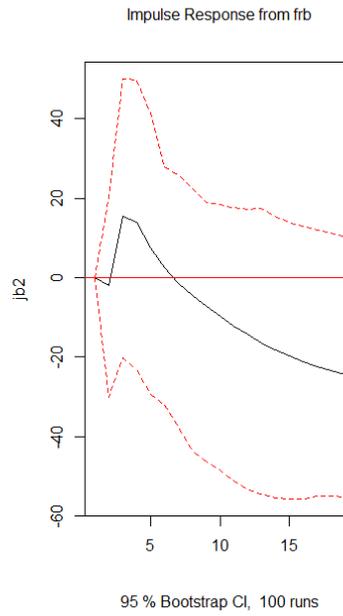
Since 2016, central banks around the world have increasingly been working in tandem to bolster monetary easing, as the BoJ has been implementing quantitative monetary easing. While not the intention of central bank monetary easing, ultimately their policies may have increased the interdependency of financial markets around the world. Financial and fiscal authorities have looked to the lessons of past financial crises in their decisive policy responses, and this has forestalled another financial crisis for global financial markets. USD fund supplying operations coordinated among key central banks have helped to stabilize the JPY basis market, and Japanese investors have continued to fund overseas assets. Because of this, a selloff of cross-border assets was averted, and international financial risk contagion was contained. We feel that the importance of global policy coordination as well as the necessity of dialog about market structure among not only policymakers but also market participants have grown during the coronavirus crisis. If the central banks had not coordinated on policy, then (i) Japanese investors may have further cut their US bond positions; and (ii) risk contagion may have led to positions being unwound with other developed country bonds, which were an alternative investment destination as US bond portfolios were rebalanced. During the 2020 coronavirus crisis, (iii) JPY basis premium may have shaped global investor behavior, along with developed country credit spreads. Global financial markets have grown increasingly interdependent during the coronavirus pandemic, and the Tokyo market's microstructure and transmission mechanism, especially with JPY basis, has changed as policy coordination among key central banks has grown more important.

US Fed/BoJ and ECB/BoJ in relative balance sheet changes and JPY basis

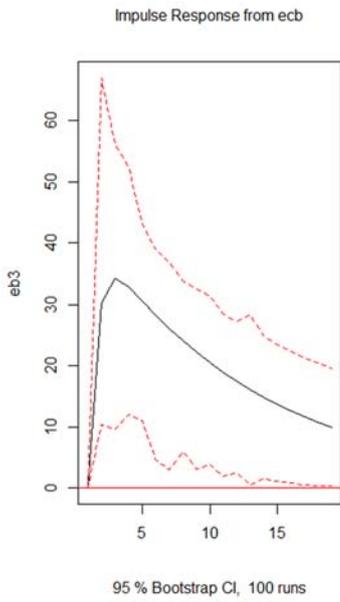
USDJPY basis 3M



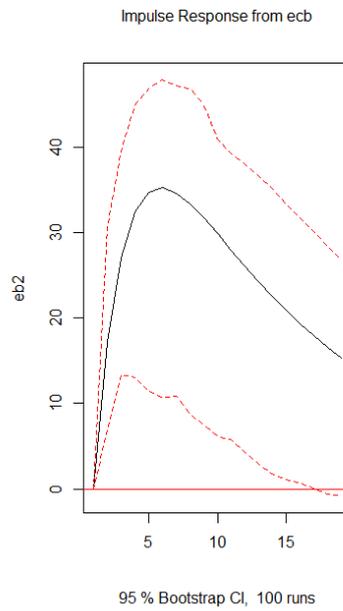
USDJPY basis 2Y



EURJPY basis 3M

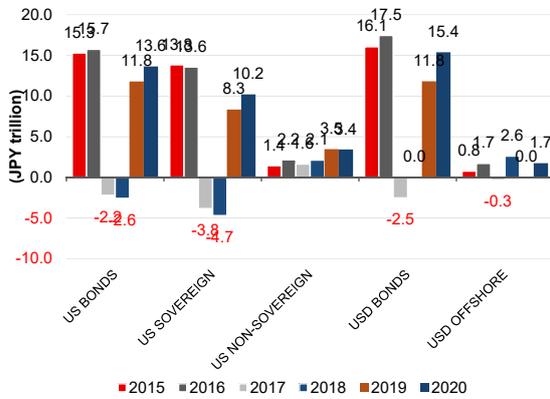


EURJPY basis 2Y

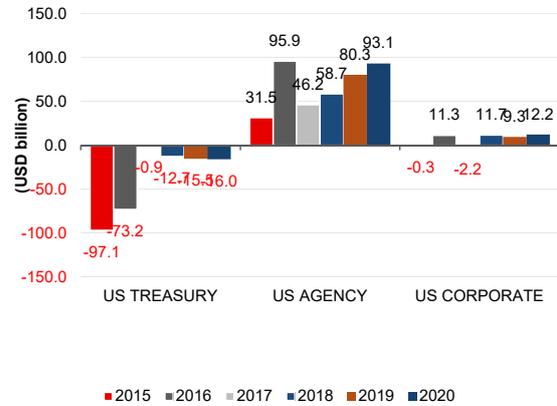


Japanese investors' securities investing (mid to long term bonds) in 2015-2020

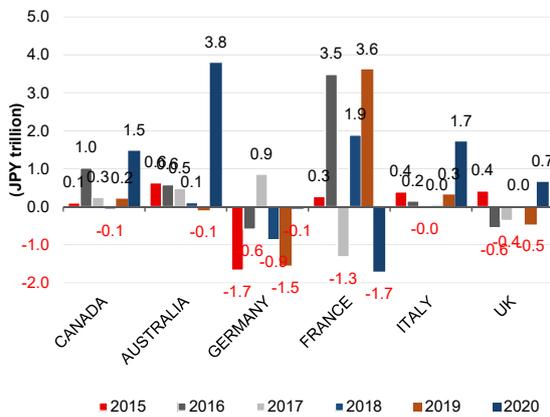
Japanese flows to the US and in USD denominated



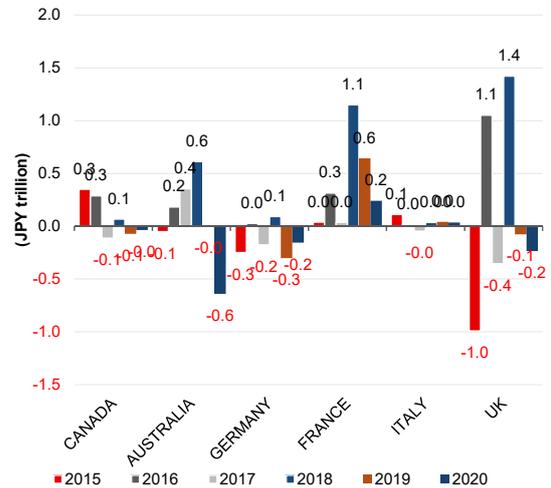
Japanese flows to the US (USTIC)



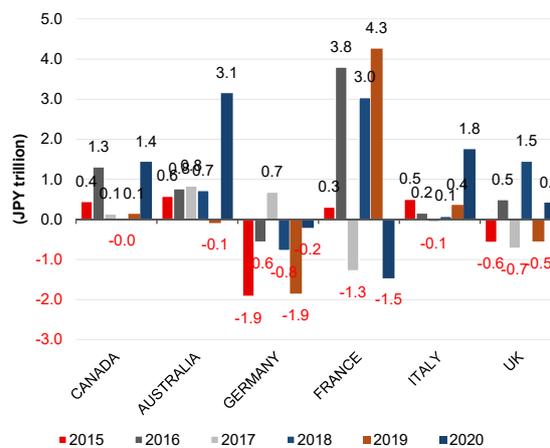
Japanese flows to other G10 bonds



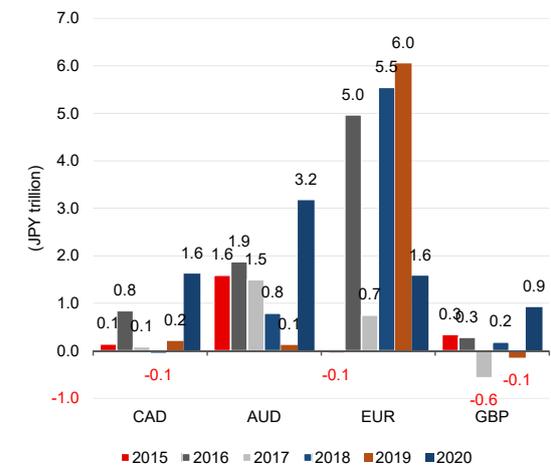
Japanese flows to other G10 sovereign bonds



Japanese flows to other G10 non-sovereign bonds



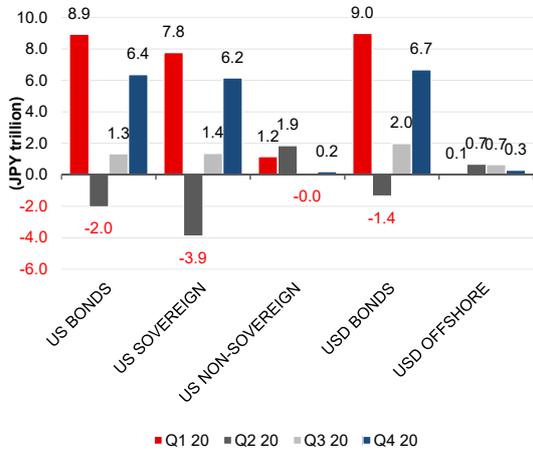
Japanese flows to other G10 by currency



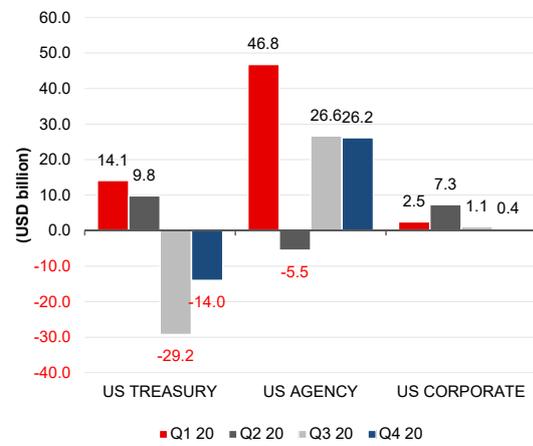
(Note) 2020: Q1-Q4 (January to November) annualized.
 (Data source) Japanese Balance of Payments and US TIC

Japanese investors' securities investing (mid to long term bonds) Quarterly in 2020

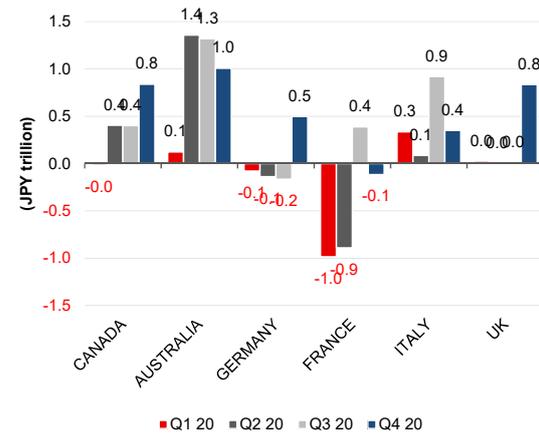
Japanese flows to the US and in USD denominated



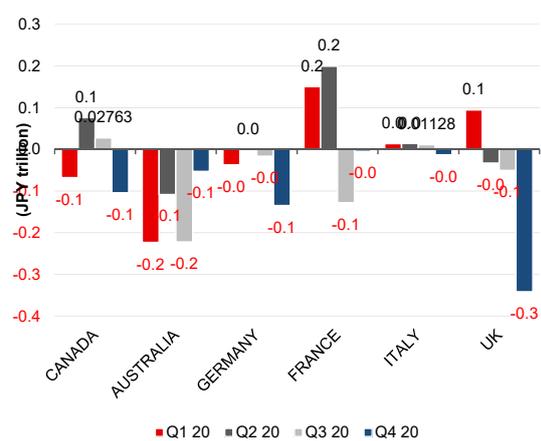
Japanese flows to the US (USTIC)



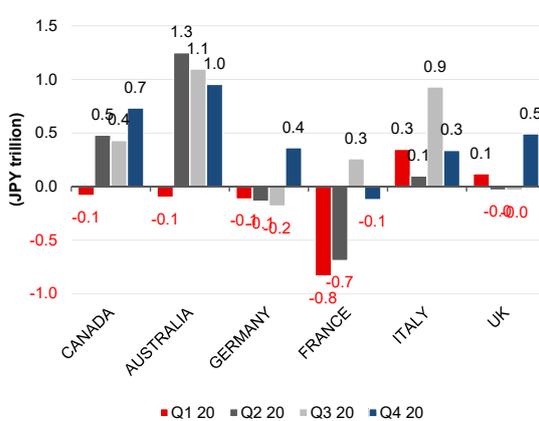
Japanese flows to other G10 bonds



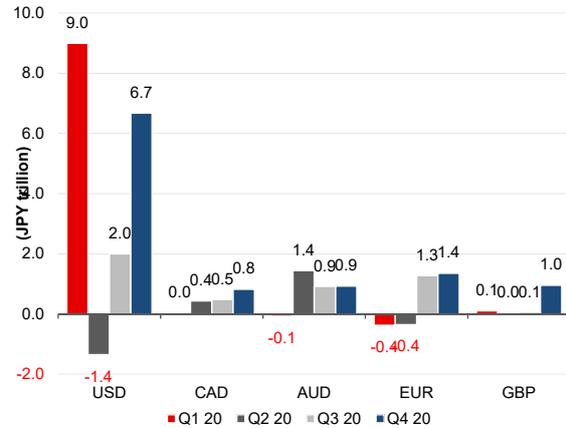
Japanese flows to other G10 sovereign bonds



Japanese flows to other G10 non-sovereign bonds



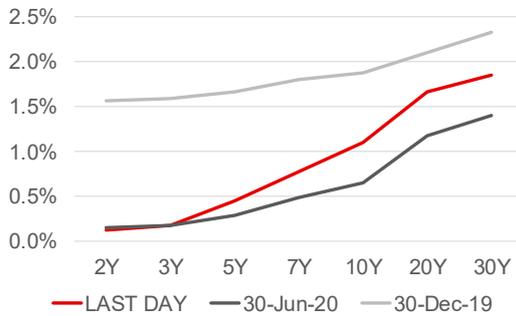
Japanese flows to other G10 by currency



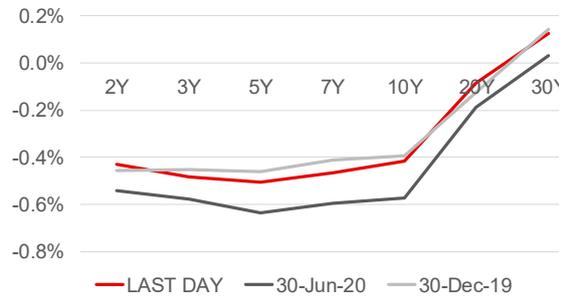
(Note) Q4: October to November quartered.
 (Data source) Japanese Balance of Payments and US TIC

USD denominated and JPY denominated govies yield curve changes (as of 25th January 2021)

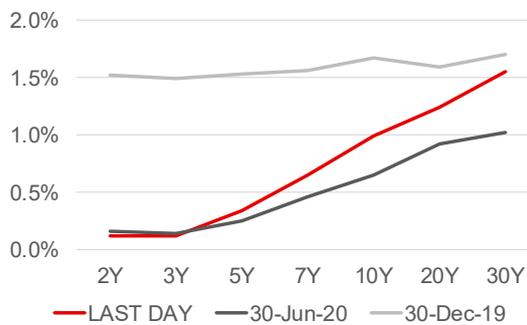
USD - US Treasuries



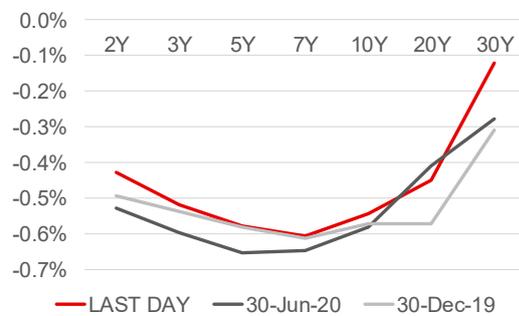
JPY – US Treasuries



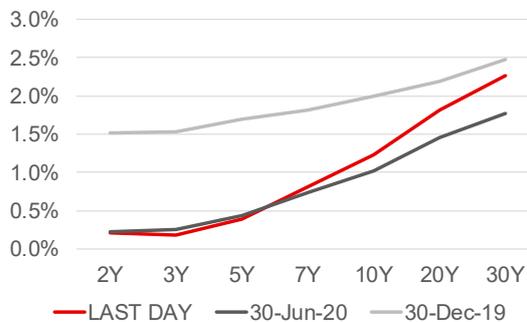
USD – Germany bunds



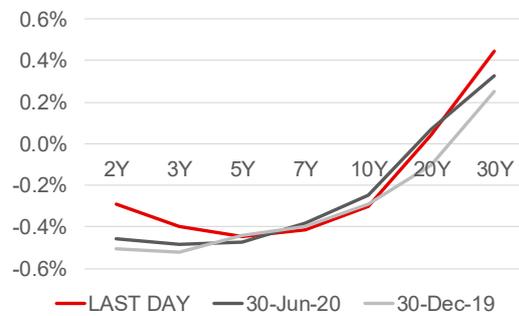
JPY – Germany bunds



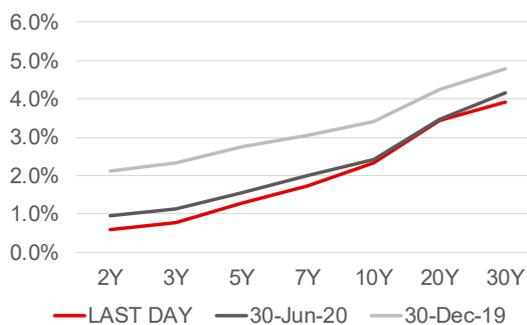
USD – French govies



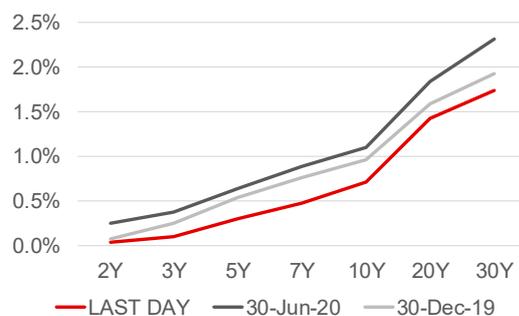
JPY – French govies



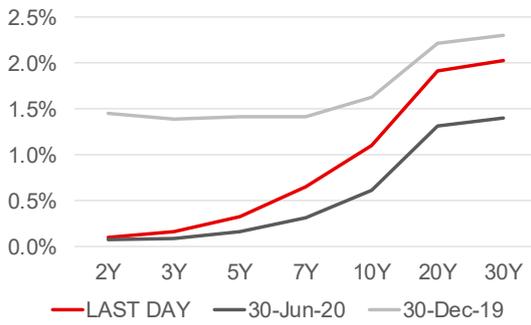
USD – Italian govies



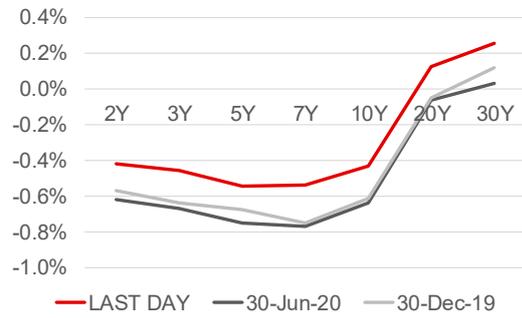
JPY – Italian govies



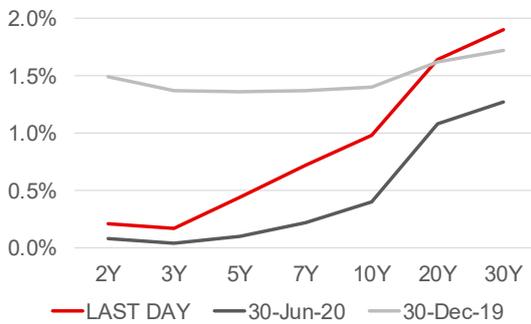
USD – UK Gilts



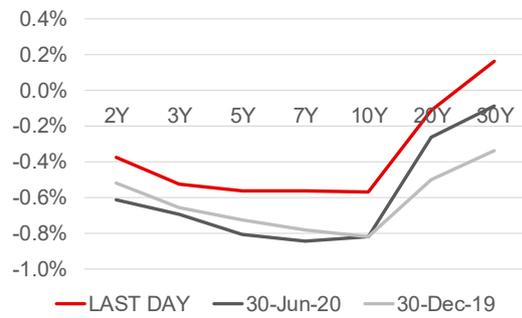
JPY – UK Gilts



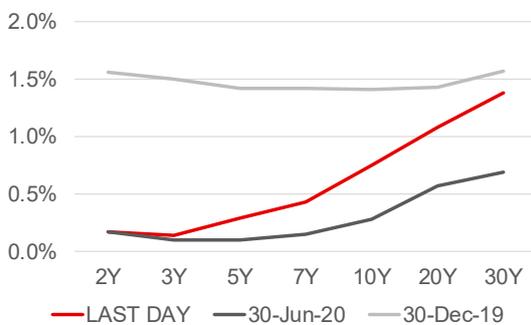
USD – Aussie govies



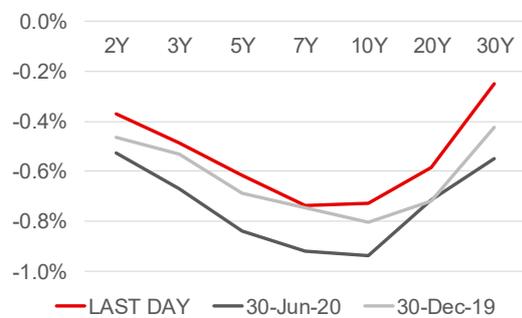
JPY – Aussie govies



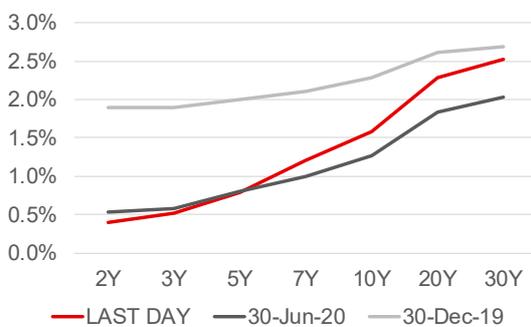
USD – Canadian govies



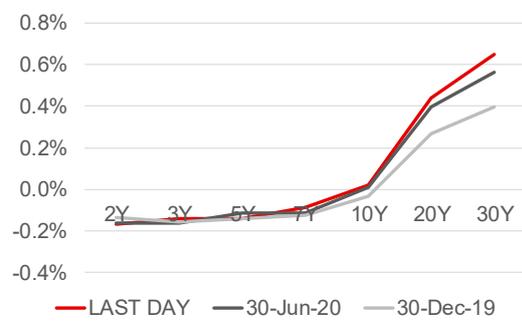
JPY – Canadian govies



USD - JGBs



JPY - JGBs



References:

Dedola, L., Georgiadis, G., Gräß, J., and Mehl, A. (2020), “Does a big bazooka matter? Quantitative easing policies and exchange rates?” ECB RESEARCH BULLETIN NO. 76.

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