



January 20, 2017  
Bank of Japan

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**Monetary Policy Divergence and Global Financial Stability:  
From the Perspective of Demand and Supply of Safe Assets**

*Speech at a Meeting Hosted by  
the International Bankers Association of Japan*

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## **I. Introduction**

In February 2008, the Financial Times ran an article describing the Bank of Japan as "Fortress Japan." The article noted that the Bank was functioning as a fortress for Japan, shielding the Japanese financial system from the turmoil in the global financial markets triggered by problems in the U.S. subprime mortgage loan market. As you know, the Bank's objective of maintaining financial system stability is as important as that of maintaining price stability. In order to fulfill this responsibility, not only is it important to uphold a microprudential perspective, which aims to understand the risks faced by individual financial institutions and encourages management responses thereto, but it also is important to formulate and implement policies from a macroprudential perspective, which aims to analyze and evaluate risks to the financial system as a whole.

Following the recent global financial crisis, the financial landscape is radically changing, with U.S. and European banks shrinking their balance sheets and non-banks, such as investment funds, increasing their significance. At the same time, in the sphere of monetary policy, we are now experiencing monetary policy divergence, where interest rates have been kept low for long periods in both Japan and Europe but the United States is entering a rate increase cycle. In order to maintain financial system stability in such a changing global financial environment, it is necessary to ensure that there are no hidden vulnerabilities from both the microprudential and macroprudential perspectives. Today, I would like to approach this issue through the looking glass of the demand and supply of safe assets.

## **II. Three Facts Regarding Global Financial Intermediation by Banks**

Before going into my main thesis, let me point out three facts regarding global financial intermediation by banks.

First of all, there is a close connection between fluctuations in banks' cross-border claims and global economic activity. Looking at banks' cross-border claims by destination, financial cycles have engulfed one region after another (Chart 1). In the early 1980s, there was the debt crisis centered on Latin America. Later in the decade, we saw the bubble economy in Japan. In the late 1990s, we had the Asian currency crisis, and the 2000s started with a credit bubble in the United States and Europe. Most recently, we are worried about debt expansion in emerging Asia. As these examples show, the rise and fall of economic activity coincides with the rise and fall of banks'

cross-border claims.

Secondly, looking at the nationality of banks extending U.S. dollar-denominated foreign claims, non-U.S. banks overwhelm U.S. banks in terms of market share (Chart 2). Regarding the currency composition of banks' foreign claims, with the exception of intra-European claims, more of which are now in euros, a large part of the claims globally is denominated in dollars; yen use is still not very common.<sup>1</sup> In one respect, this reflects the fact that, with much of global trade and financial transactions being conducted in dollars, non-U.S. banks are financially supporting cross-border activities, especially those of national firms.

Lastly, regarding the U.S. dollar funding of non-U.S. banks, the reliance on foreign exchange swaps (FX swaps) is trending higher (Chart 2). When non-U.S. banks extend credit in dollars, they have to fund themselves in dollars, and often their on-balance-sheet credit extensions exceed their funding in dollars. This gap in funding is usually covered by FX swaps, which exchange domestic currency with dollars. In an FX swap, the parties to the transaction simultaneously conclude the purchase and sale of two different currencies of equal value on two separate delivery dates in the opposing direction. For example, a Japanese bank would purchase some dollars against the yen in the spot market and yen against the same amount of dollars in the forward market, which is in effect obtaining dollars against yen collateral. The reliance on FX swaps can be approximated by dividing the dollar funding gap by foreign claims. It can be seen that the ratio is trending higher in the long term, with instances of sharp dips during periods of market stress.

Putting these facts together, one can conclude that it is important to monitor and analyze carefully the dollar funding environment of non-U.S. banks as a window onto the stability and potential vulnerability of the global economy and the international financial system. Looking also at the foreign claims of non-U.S. banks by nationality, following the recent global financial crisis, European banks are deleveraging while Japanese banks are enlarging their balance sheets (Chart 3). This is one reason why I feel there is a need to be vigilant regarding the international financial intermediation activities of Japanese banks.

### **III. The Foreign Exchange Swap Market and Monetary Policy Divergence**

Let us now focus on the FX swap market, which offers important clues regarding developments in

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<sup>1</sup> For developments in bank lending by currency, see the following: Avdjiev, S. and E. Takáts, "Monetary Policy Spillovers and Currency Networks in Cross-border Bank Lending," BIS Working Papers, No.549, March 2016.

global financial markets.

In textbooks on finance, it is said that "covered interest rate parity" will hold. For example, the effective interest rate when funding U.S. dollars through the FX swap market and the going rate in the U.S. short-term money market (i.e., LIBOR) should be identical. The basis of this textbook view is that, if the former is higher than the latter, there is an arbitrage opportunity, which will be exploited by a bank lending dollars raised in the short-term money market to takers in the FX swap market, until the opportunity is arbitrated away.

### ***Increases in Dollar Funding Premia in the Foreign Exchange Swap Market***

In real life, however, covered interest rate parity does not always hold, contrary to what the textbooks say. We often see periods where U.S. dollar funding costs through the FX swap market exceed the funding costs through the U.S. short-term money markets (Chart 4). Of these periods, in cases like the Japanese financial crisis in the late 1990s, the recent global financial crisis from 2008 onwards, and the euro area debt crisis between 2011 and 2012, the increases in the spreads over LIBOR, or the dollar funding premia in the FX swap market, seem to have been brought about by the deterioration in the creditworthiness of banks trying to raise dollar funds. This happens when (a) banks with shaky credit increasingly rely on funding dollars against home-currency collateral through the FX swap market as they face growing difficulties in obtaining uncollateralized funding in the U.S. short-term money market; (b) banks' counterparties, meanwhile, become increasingly reluctant to lend dollars due to concerns over counterparty credit risk, because those counterparties will incur replacement costs in case of banks' failure even if there was collateral; and (c) as a result, tighter conditions prevail in the swap market and dollar funding premia for non-U.S. banks increase.

Having said this, I should note that the recent increases in the U.S. dollar funding premia in the FX swap market are occurring without any obvious problems regarding banks' creditworthiness (Chart 4). This should imply that the mechanism for current increases in the dollar funding premia is different from that of past stress periods. Let me delve a little more into this issue.

### ***Consequences of Monetary Policy Divergence and Regulatory Reforms***

With the low interest rate environment persisting in Japan and Europe, the United States initiated "tapering" and entered a rate increase cycle. Such a divergence in monetary policy outlook influences the return-seeking behavior of financial institutions and investors. Against the background of monetary policy divergence between Japan and Europe on the one hand and the

United States on the other, the nominal return on U.S. dollar assets is now higher than the return on yen or euro assets, and financial institutions and investors in Japan and in Europe are increasing their investments in dollar assets (Chart 5). When banks invest in foreign currency denominated assets, they generally hedge foreign exchange risk in view of the high capital charges for such risk. Such FX-hedged investments in dollar assets are economically equivalent to transactions that purchase dollar assets with dollars obtained through FX swaps with yen or euros as collateral. Investments in foreign currency bonds by life insurers are less likely to be hedged compared with banks' investments, but slightly less than 70 percent of investments by Japanese life insurers seem to be hedged in recent years. The pattern of behavior suggests that recent monetary policy divergence is encouraging Japanese and European financial institutions to invest in dollar financial assets and contributing to tighter market conditions in the FX swap market.

Meanwhile, this is not the first time that we have experienced monetary policy divergence between Japan and the United States. For example, monetary policies also diverged in the middle of the 2000s, with the Bank of Japan continuing its quantitative easing while the Federal Reserve gradually raised its policy rate, and during this period, Japanese financial institutions increased their purchases of U.S. Treasury paper and agency securities. The U.S. dollar funding premia, however, did not visibly increase during this period; i.e., broadly speaking, covered interest rate parity held (Chart 4). One has to wonder why, in the FX swap market, reactions to monetary policy divergence between Japan and the United States differ between then and now. Of the several likely explanations, I would like to point out the effects of regulation on banks that are active in the global financial market.<sup>2</sup>

As I noted earlier, if the U.S. dollar funding rate in the FX swap market is higher than the going rate in the U.S. short-term money market (i.e., LIBOR), there is an arbitrage opportunity where a financial institution could definitely profit by swapping dollars obtained in the money market. Nevertheless, when a financial institution wishes to conduct such a transaction, it would have to enlarge its balance sheet. Recently introduced financial regulations, such as the leverage ratio, which have the effect of increasing capital requirements for balance sheet expansion relative to the more traditional risk-based capital ratio, seem to be dampening arbitrage trading. More specifically, even when the swap market conditions tighten due to monetary policy divergence between the United States and Japan, U.S. banks and others that used to provide dollars are not prepared to

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<sup>2</sup> The following paper by Bank of Japan staff analyzes the effects of monetary policy divergence and regulatory reform on market conditions in the FX swap market from both theoretical and empirical perspectives: Iida, T., T. Kimura, and N. Sudo, "Regulatory Reforms and the Dollar Funding of Global Banks: Evidence from the Impact of Monetary Policy Divergence," Bank of Japan Working Paper, 16-E-14, August 2016.

increase the supply of dollar funds because of higher costs for arbitrage trading. This is one of the reasons why we now see dollar funding premia.<sup>3</sup> Meanwhile, up until the middle of the 2000s, regulatory constraints were less acute than today, and it was easier for banks to conduct arbitrage trading, which in turn seemed to result in a more ample supply of dollar funds and little or no dollar funding premia.

#### **IV. Bank Debt and Financial System Stability**

Recent financial regulation reforms are not only affecting the suppliers of U.S. dollars, as we have just seen, but also the takers of dollars. For the next few minutes, I would like to touch upon U.S. money market fund (MMF) reform, which affected the dollar funding of global financial institutions, from the perspective of Japanese banks.

##### ***Changes in Debt Composition at Japanese Banks***

Even in an environment where arbitrage trading by banks supplying U.S. dollars is constrained, the dollar funding premia in the FX swap market may decline if non-U.S. financial institutions (including Japanese banks) can shift their funding from the relatively expensive swap market to the (uncollateralized) U.S. short-term money market. Considering that there are no serious concerns regarding the creditworthiness of non-U.S. banks at this juncture, these banks should be able to increase uncollateralized funding through commercial paper (CP) and certificates of deposit (CDs), for example. This is not the case, however, because a substantial part of CP and CDs issued by non-U.S. banks used to be purchased by "prime" MMFs, and their issue had to be compressed considerably, following the U.S. MMF reform, which came into effect last October (Chart 6). The reform, introduced under new U.S. SEC rules, requires the adoption of floating net asset value (NAV) and imposition of redemption fees, and opens the possibility of restricting redemption. This prompted a huge shift in funds from prime MMFs to "government" MMFs, which invest mostly in U.S. government securities and are exempt from the new rules. This in turn significantly affected

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<sup>3</sup> The effects of financial regulation are typically observed in the quarter-end spikes of U.S. dollar funding costs, as follows: (a) Since around 2013, U.S. banks have deleveraged, due partly to the stricter leverage ratio in the United States (in which a higher ratio than international rules is required, and is calculated on the basis of daily averaged assets); (b) non-U.S. banks, European banks in particular, which previously had increased positions in the U.S. money market, have started to shrink their balance sheets at quarter-ends since the middle of 2014, partly to hold down the leverage ratio at quarter-ends (in many countries, although not in the United States, banks report only the leverage ratio at quarter-ends); (c) at quarter-ends, U.S. banks increase market-making and arbitrage-trading activities in the money market at higher rates, inclusive of higher costs posed by regulation.

the dollar funding of global banks.

The effects of the MMF reform were not small, but Japanese banks were able to cope, not by compressing their assets, but by changing the composition of their funding (Chart 7). Looking at the foreign currency denominated balance sheets of major Japanese banks, for approximately six months preceding last October, they actually increased their assets, including an increase of 33 billion U.S. dollars in overseas loans.<sup>4</sup> On the liabilities side of the balance sheet, there was a decrease of 62 billion dollars in CP and CD issues, which was more than compensated for by an increase of 67 billion dollars in client-related deposits, reflecting banks' efforts to build up stable funding sources, and an increase of 26 billion dollars in repo funding. These major banks were thus able to avoid increasing their reliance on relatively expensive funding through the FX swap market.

### ***Bank Debt and Safe Assets***

One interesting question here is why major Japanese banks were able to pull off such a significant change in their balance sheets in such short order. Let me reflect on this from the viewpoint of balancing supply and demand of U.S. dollar-denominated financial assets at the macro level. The key phrase is "safe assets."

Financial intermediaries perform an important function of investing in risky assets while issuing safe debt. Debt issued by private financial institutions, along with securities issued by governments, constitutes safe assets that are provided to the economy. A prime example of such a function is the bank deposit. Through the results of recent research on safe assets, we are now aware of two empirical regularities over long periods.<sup>5</sup> The first point is that the share of safe assets in the whole universe of financial assets including equities is more or less constant. In other words, the demand for safe debt has been relatively constant as a fraction of the total assets in the economy. The second point is that safe debt issued by the government and safe debt issued by private financial intermediaries are substitutes. These two regularities indicate that fluctuations in the stock or price of government debt crowd in or crowd out safe debt issued by financial intermediaries so that the share of safe assets as a whole may be kept constant.

When we attempt to assess the market conditions regarding safe assets in the U.S. financial system, the rise and fall of the "yield spread," which is the difference between the stock yield and long-term

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<sup>4</sup> Given that foreign currency-denominated balance sheets of Japanese banks are predominantly based on U.S. dollars, Chart 7 essentially shows the features of U.S. dollar-denominated balance sheets.

<sup>5</sup> See Gorton, G., S. Lewellen, and A. Metrick, 2012 "The Safe-Asset Share." *American Economic Review*, 102(3): 101-06.

government bond yield, is quite illuminating (Chart 8). From the early 1990s to the early 2000s, the stock yield and the Treasury yield moved almost in tandem and the yield spread remained mostly around zero; after that, however, we find persistent and very large spreads. The size of the spread is now beyond a level that can be explained by expected growth in corporate earnings or equity risk premium.<sup>6</sup> Such persistently wide yield spreads indicate that the demand-supply balance of safe assets has been much tighter than that of risky assets. An additional demand for safe debt issued by the U.S. government has probably resulted from the need for emerging market authorities to invest their foreign exchange reserves or from the need to comply with regulations that require financial institutions to hold certain amounts of safe assets. With such increase in demand for U.S. Treasuries, the price of Treasuries will rise (and their yields will fall), and following the recent global financial crisis, the demand for safe assets from U.S. investors was fulfilled by debt instruments substitutable for U.S. Treasuries and issued by financial institutions. In particular, dollar-denominated highly rated paper issued by non-U.S. banks, mainly from Canada and Australia, was preferred by U.S. investors.<sup>7</sup>

In this environment, the U.S. MMF reform, which I mentioned a few minutes ago, had the effect of further increasing demand for U.S. Treasuries.<sup>8</sup> As funds shifted from prime MMFs, which invest in CP and CDs, to government MMFs, which invest in U.S. government securities, the yield on U.S. government securities was pushed down (Chart 9). When Treasury Bill yields fall well below LIBOR, which is the benchmark yield for debt instruments issued by private banks, the demand for safe debt issued by banks will increase because substitutable Treasury Bills become relatively expensive. That is, while prime MMFs have become less attractive as safe assets, an increase in demand for U.S. government debt without a concomitant increase in supply could also lead to an increase in safe debt issued by financial intermediaries so that the safe asset share may be kept constant. Such overall rebalancing of the financial asset portfolio in the U.S. dollar financial market enabled major Japanese banks to adjust the liability side of their balance sheets and focus on increasing client-related deposits.

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<sup>6</sup> See Ichiue, H., T. Kimura, T. Nakamura, and H. Hasebe, "The Supply and Demand of Safe Assets and the Scarcity Premium for Government Bonds," *Bank of Japan Review*, 12-J-1, January 2012 (in Japanese only).

<sup>7</sup> See Bertaut, C., A. Tabova, and V. Wong, "The Replacement of Safe Assets: Evidence from the U.S. Bond Portfolio," Board of Governors of the Federal Reserve System, *International Finance Discussion Papers*, No.1123, October 2014.

<sup>8</sup> The following paper reviews the shift of funds from prime MMFs to government MMFs from the perspective of the supply and demand for safe assets: U.S. Securities and Exchange Commission, "Demand and Supply of Safe Assets in the Economy," memo, March 2014.

## *Safe Assets and Financial Vulnerability*

At this point, you might wonder why I am deploying as arcane a concept as safe assets in order to explain the changes in the debt composition of Japanese banks. I have done so because the supply and demand of safe assets is an important reference point for monitoring and assessing the stability and potential vulnerabilities of the financial system.

Let us look back at the mid-2000s. At that time, as the yield spread suggests, the demand-supply balance of U.S. dollar safe assets tightened. In response, U.S. and European investors searching for yields bought large amounts of highly rated asset-backed securities issued by private financial intermediaries with the perception that these financial instruments were safe but gave yields that were only a little better than U.S. Treasuries. In turn, the issue of asset-backed securities, in particular mortgage-backed securities, rose to meet increased demand from investors. We know that not everybody lived happily thereafter: when problems surfaced in the U.S. subprime mortgage sector followed by the global financial crisis, the asset-backed securities lost their status as safe assets.<sup>9</sup> Furthermore, the increasingly noticeable outflow of wholesale deposits from European banks, which aggressively invested in securitized instruments, could be explained at least in part by doubts over the appropriateness of regarding certain bank deposits as safe assets. The same mechanism seems to have been at work when U.S. MMFs reduced their exposure to CP issued by European banks during the European debt crisis beginning in 2011.<sup>10</sup>

To sum up, debt instruments issued by private financial intermediaries may be regarded as safe assets substitutable for government securities in tranquil times, but it should be borne in mind that, when the going gets rough, those instruments could lose their status as safe assets. With this in mind, the Bank of Japan conducted stress tests on foreign currency liquidity risk at Japanese banks and published the results thereof in the *Financial System Report* (most recently in October 2016). According to those tests, even when the availability of foreign currency funding is impaired, in addition to elevated funding premia for foreign currencies in times of stress, Japanese banks would withstand the stress and remain viable. The Bank is also of the view that Japanese banks would be able to maintain sufficient levels of capital, which is a *sine qua non* of their debt instruments being

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<sup>9</sup> In addition to securitized instruments backed by residential mortgages (RMBSs), the period saw substantial increases in the issuance of collateralized loan obligations (CLOs) backed by loans financing leveraged buyouts (LBOs), and commercial mortgage-backed securities (CMBSs). In addition, it became increasingly common to see "re-securitized" instruments called asset-backed securities collateralized debt obligations (ABS CDOs), which were securitized instruments backed by (primary) securitized products such as RMBSs. The price of these instruments, even of highly rated ones, fell significantly after the second half of 2007.

<sup>10</sup> See Ivashina, V., D. S. Scharfstein, and J. C. Stein, 2015 "Dollar Funding and the Lending Behaviour of Global Banks," *Quarterly Journal of Economics*, vol. 130, pp. 1241-1281.

regarded as safe assets, even under a tail-event scenario depicting the recent global financial crisis. Of course, the Bank encourages individual Japanese banks not to be complacent and pursue enhanced management of liquidity risk, under the assumption that their issued debt is more or less "runnable."<sup>11</sup>

## **V. Increasing Importance of Non-Banks in the International Financial System**

Up until now, I have focused on global financial intermediation by banks, but after the global financial crisis, we cannot ignore the increasing importance of non-banks in the international financial system.<sup>12</sup> For the next few minutes, let me focus on this development and the effects on and implications for Japan through the looking glass of the FX swap market.

### *Changes in the Market Structure of Foreign Exchange Swaps*

As described earlier, major Japanese banks, which can tap a relatively wide range of funding markets, are currently refraining from heavily using the FX swap market for their U.S. dollar funding (Chart 7). Having said that, statistics for Japanese financial institutions as a whole indicate that there are large funding increases in that market (Chart 10). This reflects the increasing demand for hedging dollar exposures from financial institutions that have limited funding options compared with major banks. Looking at the statistics on outstanding external securities investments by financial institutions, non-banks -- such as insurers, pension funds, and investment trusts -- are increasing their investments as fast as banks (Chart 11). While pension funds are not expected to hedge their exposures, life insurers seem to be hedging slightly less than 70 percent of their foreign currency exposures in recent years. Investment trusts also seem to hedge their foreign exchange risk in response to requests from investors, such as banks or households.

Against this increased hedging demand, as U.S. banks refrain from engaging in arbitrage trading in response to regulatory requirements, we see increasing relative importance of non-banks -- such as sovereign wealth funds (SWFs), reserve managers of emerging market economies, and private investment funds -- as suppliers of U.S. dollars in the FX swap market. The existence of dollar funding premia in the swap market signifies an opportunity for suppliers of U.S. dollars to obtain yen funding at a very low rate. As a result, overseas non-banks that have dollars to spare can invest

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<sup>11</sup> As to runnable debt, see Bao, J., J. David, and S. Han, "The Runnables," FEDS Notes, September 3, 2015.

<sup>12</sup> For example, see Financial Stability Board, "Global Shadow Banking Monitoring Report," 2015.

in Japanese government securities (JGSs), even if the nominal yields on such paper are zero or negative, and secure yields as good as or higher than U.S. government securities without taking on foreign exchange risk. The fact that transaction volumes of FX swaps are positively correlated with inward bond investments underscores the investment patterns of overseas non-banks regarding FX-hedged investments in JGSs (Chart 12). In an environment where the demand-supply balance of dollar safe assets is very tight, FX-hedged investments in JGSs may be viewed by investors as safe assets substitutable for U.S. government securities.

### *The Swap Market and the Amplification of Procyclicality in Global Liquidity*

One note of caution here is that FX-hedged Japanese government paper is not always a stable substitute for U.S. government paper just as debt instruments issued by banks. In other words, overseas non-banks cannot be regarded as stable sources of U.S. dollar funding. In fact, Japanese inward bond investments statistics tend to decline sharply in times of market stress (Chart 12). That means that, in times of stress, overseas non-banks have a tendency to reduce their FX-hedged investments in JGSs and hence their dollar supply in the FX swap market. For example, when currencies of emerging market economies started to slide after the Chinese stock market crashed in the middle of 2015, market participants talked of emerging market reserve managers, aware of the potential need to defend their currencies, refraining from offering dollars in the fixed-term FX swap market and shifting their dollars into more liquid markets such as U.S. Treasury Bills.<sup>13</sup> Similar observations were heard when currencies of emerging market economies weakened following the U.S. presidential election in November 2016. In short, while FX-hedged investments in JGSs are regarded as substitutes for U.S. government securities in tranquil times, this could easily break down in times of market stress.

Turning to SWFs of oil-producing economies, one often hears market talk that, when oil prices fall and the country's fiscal position deteriorates, those SWFs tend to reduce their allocation of U.S. dollars to the FX swap market, reflecting the reduced availability of investable funds. Staff analysis at the Bank of Japan confirms that there is a positive correlation between fluctuations in oil prices and transaction volumes in the FX swap market.<sup>14</sup>

Such patterns, shown by overseas non-banks, of supplying dollar funds in the FX swap market could exacerbate the procyclicality of international financial intermediation (Chart 13). For

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<sup>13</sup> For example, see Arai, F., Y. Makabe, Y. Okawara, and T. Nagano, "Recent Trends in Cross-currency Basis," Bank of Japan Review, 16-E-7, September 2016.

<sup>14</sup> See Iida et al. (2016) in footnote 2.

example, when emerging market economies are growing strongly, commodity demand would rise, leading to increases in commodity prices including oil. Emerging market currencies would also appreciate. In such an environment, increases in the assets of SWFs of oil-producing economies would see those SWFs allocating some of the increases for investment in the FX swap market. At emerging market economies, authorities would intervene to prevent the appreciation of their currencies, and at least a part of U.S. dollars purchased in those interventions would be invested in the FX swap market. Consequently, dollar funding premia in the FX swap market would decline and encourage non-U.S. financial institutions to extend dollar credit. If this results in capital inflows and increases in investment in emerging market economies, growth in those economies would accelerate. On the other hand, if growth in emerging market economies were to decline for one reason or another, the currencies of those economies would depreciate and commodity prices would decline, reflecting weaker demand. Subsequently, the mechanism I have just described would go into reverse gear. As SWFs of oil-producing economies and reserve managers of emerging market economies restrain the supply of dollars in the FX swap market, dollar funding premia would rise, non-U.S. financial institutions would cut back on their lending and securities investments in emerging market economies, and growth of emerging market economies consequently would be further adversely affected. An interest rate increase in the United States could amplify such procyclicality in intermediation if such an action brings about rapid and large-scale capital outflow from emerging market economies.

### ***Interdependencies between Non-Banks and Banks***

As I noted at the beginning today, fluctuations in external credit extended by non-U.S. banks significantly affected the global economy (Charts 1 and 2). It also is a fact that, in the past, non-banks such as SWFs and emerging market reserve managers had influenced the U.S. dollar funding and credit activities of non-US banks.<sup>15</sup> For example, dollar deposits at European banks were among the preferred destinations of investments by emerging market authorities, who have increased their foreign exchange reserves in the 2000s, in view of the lessons learned during their currency crises of the 1990s. Dollar deposits of European banks also enjoyed inflows of SWF

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<sup>15</sup> The Latin American Debt Crisis of the early 1980s was heavily influenced by international financial intermediation stemming from abundant oil revenues. More specifically, following the two oil crises, a large amount of oil revenues flowed into the oil-producing economies, and the money was lent to Latin American economies via banks in the developed economies. Meanwhile, during the Japanese bubble economy of the late 1980s, Japanese banks increased offshore funding and significantly increased lending through "impact loans," which were outside the lending volume restrictions imposed by the Bank of Japan through "window guidance." European banks, which were the main lenders to Japanese banks in the offshore market, were sourcing a substantial part of their funding from the Middle East. As such, the impact loans were indirectly supported by oil revenues.

money, which benefited from high oil prices until the summer of 2008. Subsequently, with the global financial crisis and euro-area debt crisis, such deposits were withdrawn and contributed to the deleveraging involving dollar assets at European banks.<sup>16</sup>

The interdependencies between non-banks and banks have a history of procyclically amplifying international financial intermediation in many forms. The developments in the FX swap market represent only one manifestation of the interdependencies between overseas non-banks and Japanese financial institutions. In order to maintain the stability of the international financial system, it is important for the relevant authorities to always monitor and understand such interdependencies.

## **VI. Final Words**

Let me summarize my key points.

Non-U.S. financial institutions play a very important role in international financial intermediation, which is dominantly U.S. dollar based. Monetary policy divergence between the U.S. and other economies is likely to result in an increase of external claims of non-U.S. financial institutions and hence they would be pressed for increased dollar funding. Given that there seems to be excess demand for U.S. government securities, which are safe assets, the demand for debt instruments issued by private financial intermediaries, which are substitutes of U.S. government securities, would increase in tranquil times. Consequently, non-U.S. financial institutions would be able to increase their dollar funding without difficulty. Meanwhile, from the viewpoint of investors holding dollar funds, FX-hedged investments in non-U.S. sovereign securities arising from FX swap transactions are substitutes of U.S. government securities. Here again, non-U.S. financial institutions would be able to increase dollar funding through the FX swap market, although costs could increase. Historically, however, there is evidence that the substitutability of debt instruments issued by private financial intermediaries and FX-hedged investments in non-U.S. sovereign securities might be compromised in times of stress, and this could negatively impact dollar funding liquidity at non-U.S. financial institutions. Considering that the dollar funding of non-U.S. financial institutions could be influenced by the investment behavior of non-banks -- including SWFs, emerging market reserve managers, and investment funds -- we need to be mindful of the

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<sup>16</sup> For more detail, see Nakaso, H., "Financial Crises and Central Banks' Lender of Last Resort Function," Remarks at the Executive Forum Hosted by the World Bank "Impact of the financial crises on central bank functions," April 2013.

possibility of the behavior of banks and non-banks echoing each other under monetary policy divergence and thus amplifying fluctuations in international financial intermediation and real economic activity.

In addition, it is important to closely monitor risk-taking activities of non-U.S. financial institutions. Under monetary policy divergence, U.S. dollar funding premia in the FX swap market could easily spike higher. As such, the Bank of Japan would continue to monitor the activities of Japanese banks so as to ensure that they would not, in response to increased funding costs for their dollar investments, embark on excessive risk taking in terms of both credit risk and liquidity risk.

As much as monetary policy divergence itself is a product of central bank policy actions in each economy aiming at price stability, it also is the responsibility of central banks to ensure that such monetary policy actions would not destabilize the international financial system through the behaviors of financial institutions. Today, the Japanese financial system remains stable. The Bank of Japan will continue to encourage financial institutions to maintain a strong financial footing, which prevents risks from materializing, and also strengthen its monitoring and analysis of developments in the international financial system. The Bank, in coordination with other central banks, will also enhance schemes to provide foreign currency liquidity to act as a backstop in case of financial crises. I would like to conclude my observations today by promising you that, consistent with what is in the Bank of Japan Act, the Bank will continue to discharge its responsibilities as "Fortress Japan" and maintain financial intermediation functions in Japan.

Thank you very much for your attention.

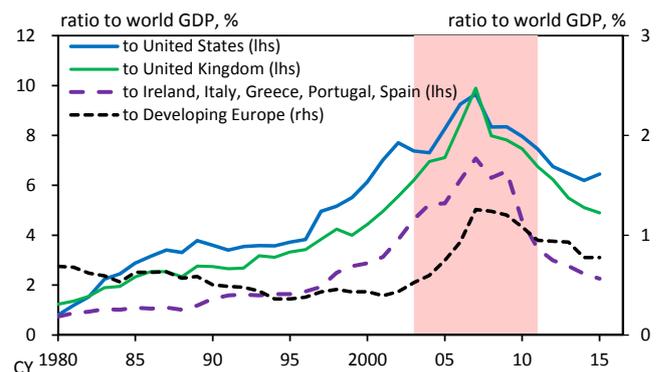
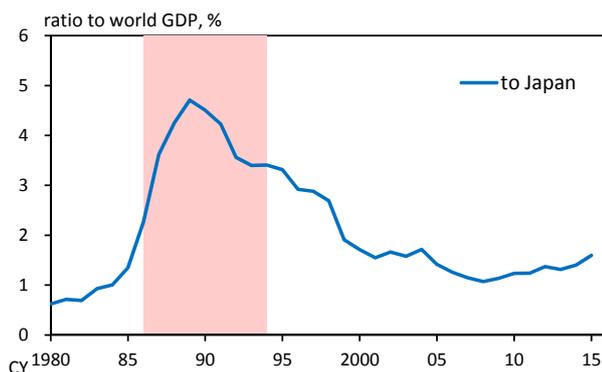
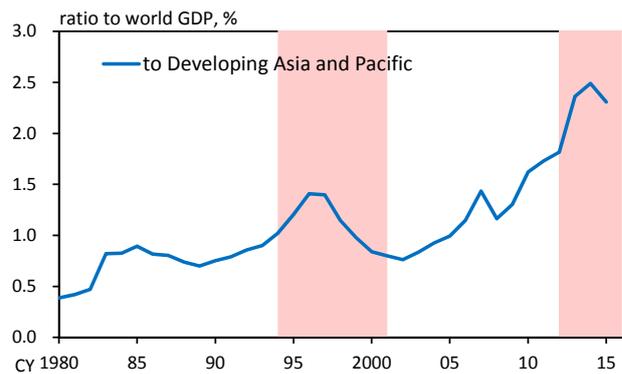
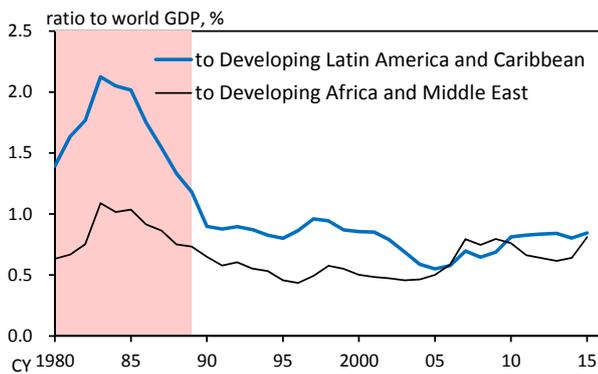
# Monetary Policy Divergence and Global Financial Stability: From the Perspective of Demand and Supply of Safe Assets

January 20, 2017

*Speech at a Meeting Hosted by  
the International Bankers Association of Japan*

Hiroshi Nakaso  
Deputy Governor of the Bank of Japan

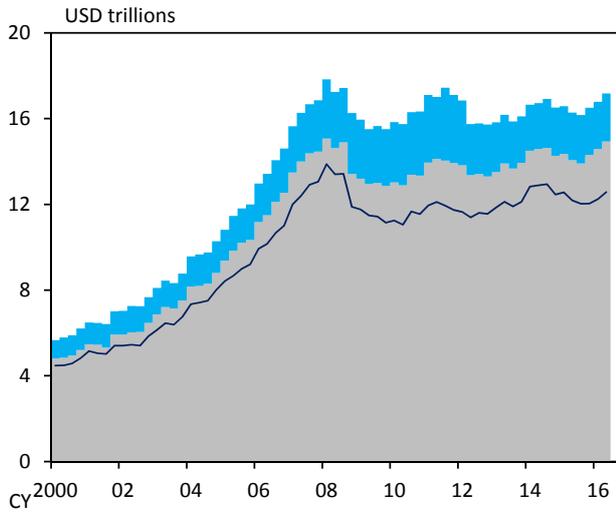
**Chart 1 Cross-Border Claims of Banks in the World by Residence of Counterparty**



Notes: 1. Latest data as at end-December 2015.  
2. Shaded areas indicate major credit cycle phases.  
Sources: BIS; IMF.

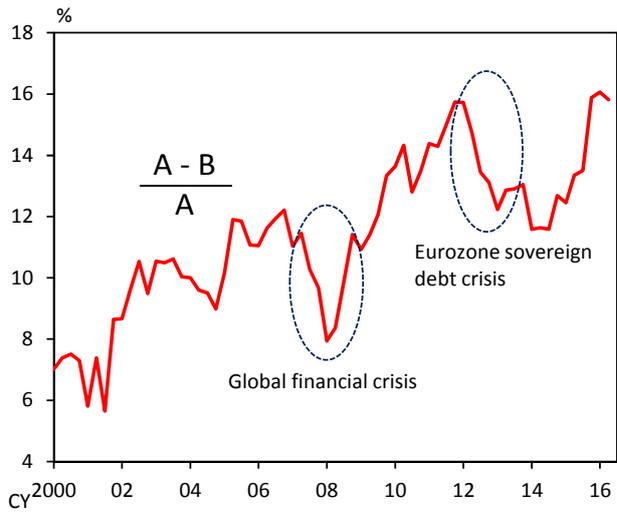
# Chart 2 USD-Denominated Foreign Positions of Banks

## U.S. and non-U.S. banks' USD-denominated foreign claims



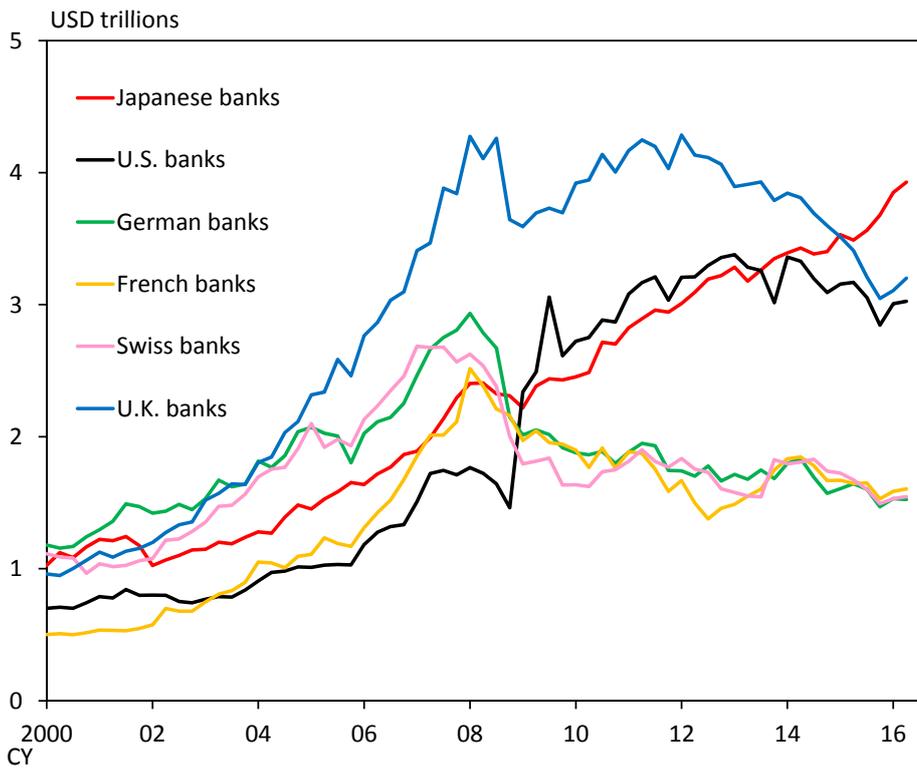
- U.S. banks' USD-denominated foreign claims
- Non-U.S. banks' USD-denominated foreign claims (A)
- Non-U.S. banks' USD-denominated foreign liabilities (B)

## Non-U.S. banks' cross-currency funding ratio



Notes: 1. Latest data as at end-June 2016.  
 2. "Non-U.S. banks' USD-denominated foreign claims" and "Non-U.S. banks' USD-denominated foreign liabilities" are calculated as USD-denominated foreign claims and liabilities of all reporting countries after excluding those of U.S. banks, respectively.  
 3. "Non-U.S. banks' cross-currency funding ratio" is calculated as "Non-U.S. banks' USD-denominated foreign claims" less "Non-U.S. banks' USD-denominated foreign liabilities," divided by "Non-U.S. banks' USD-denominated foreign claims."  
 Source: BIS.

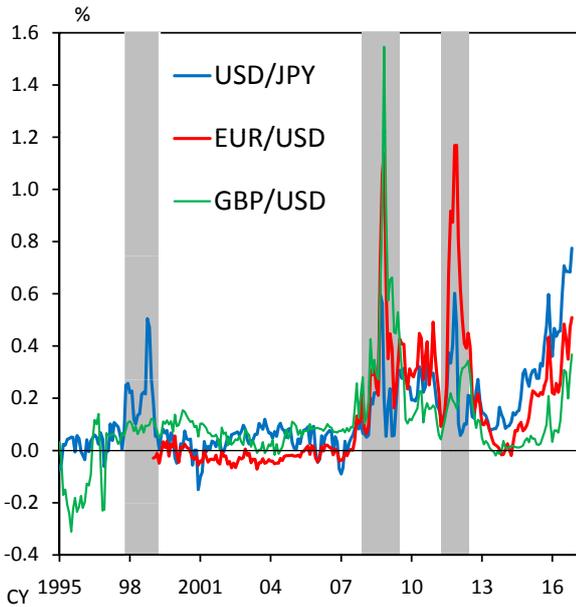
# Chart 3 Foreign Claims by Bank Nationality



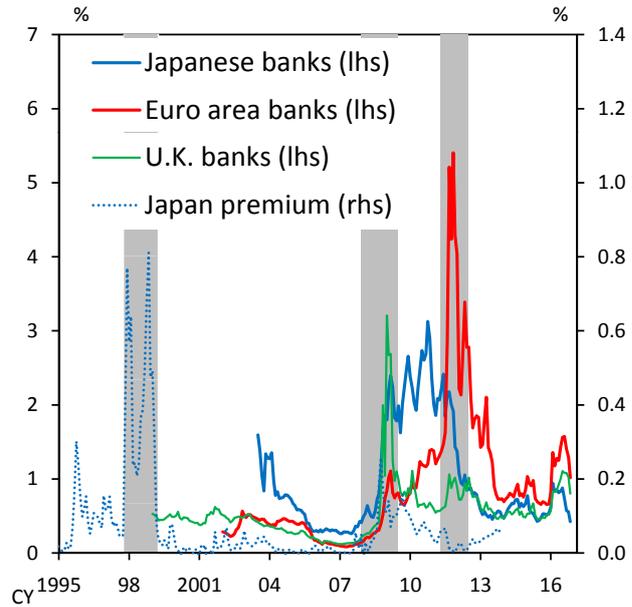
Notes: 1. Latest data as at end-June 2016.  
 2. Euro area claims for German and French banks are excluded.  
 Source: BIS.

# Chart 4 FX Swap Implied USD Funding Rates and Banks' Creditworthiness

## FX swap implied USD funding rates (Deviation from USD LIBOR)



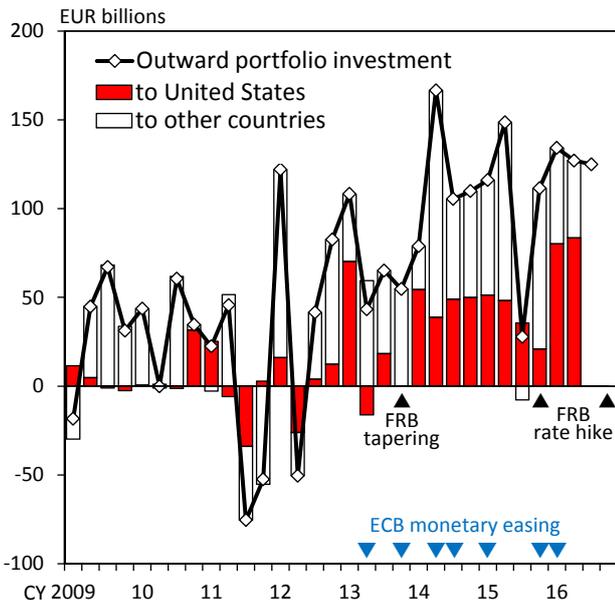
## Non-U.S. banks' default probability (Expected Default Frequency)



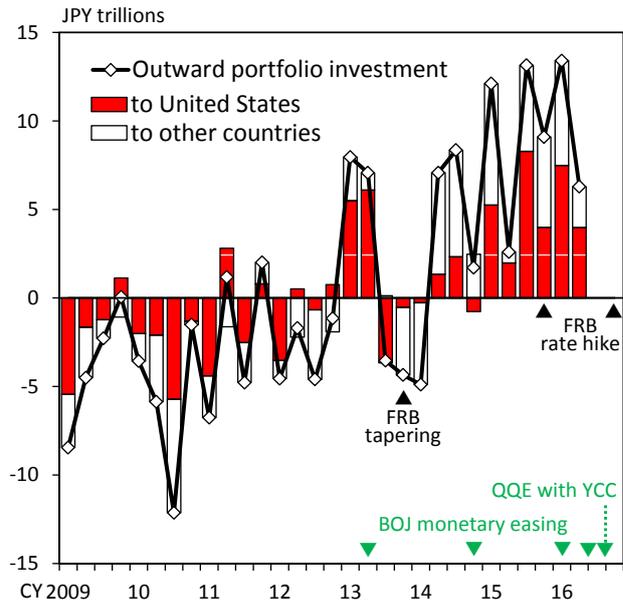
Notes: 1. Latest data as at November 2016.  
 2. The shaded areas correspond to Japan's financial crisis (November 1997 through March 1999), the global financial crisis (December 2007 through June 2009), and the Eurozone sovereign debt crisis (May 2011 through June 2012).  
 3. Non-U.S. banks' default probability is the average of the EDF (Expected Default Frequency) of G-SIBs that are headquartered in each jurisdiction. "Japan Premium" is calculated as 3-month USD TIBOR less 3-month USD LIBOR.  
 Sources: Bloomberg; Moody's; BOJ.

# Chart 5 Outward Portfolio Investment (Euro Area and Japan)

## Euro area



## Japan

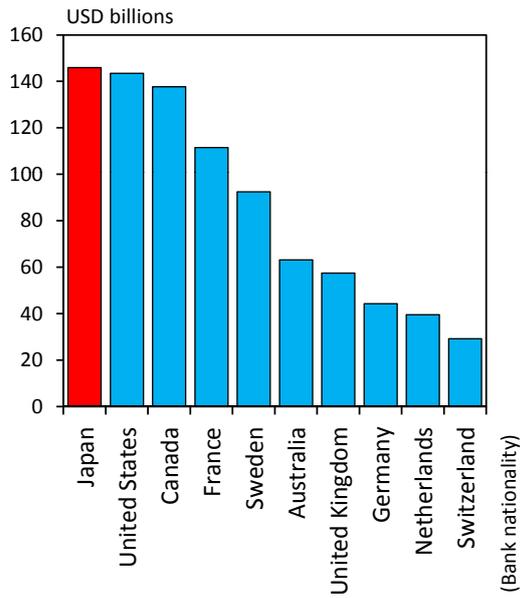


Notes: 1. Latest data for euro area as at end-September 2016, data for Japan as at end-June 2016.  
 2. In each chart, ▲/▼ indicates the timing and direction of monetary policy changes since 2013.  
 Sources: ECB; Ministry of Finance; BOJ.

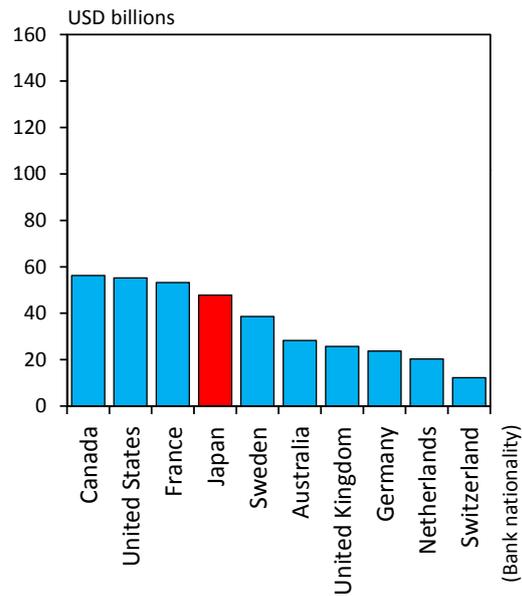
Chart 6

Prime MMF Holdings of Bank Related Securities

As at end-June 2016



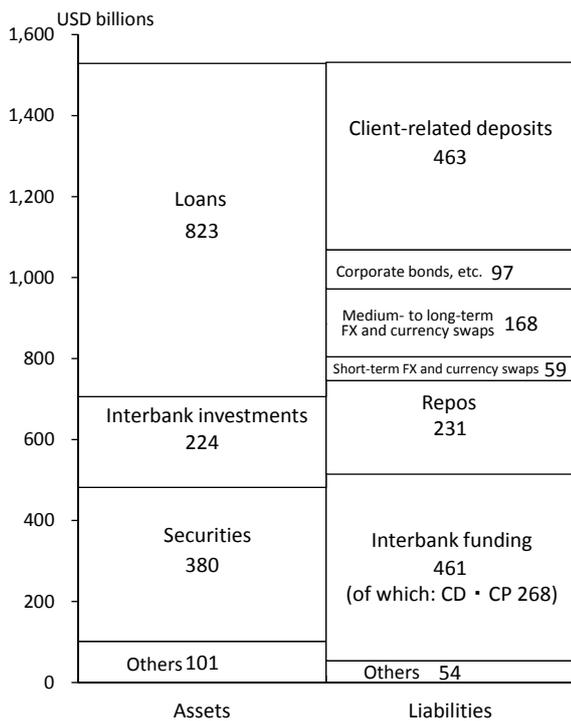
As at end-October 2016



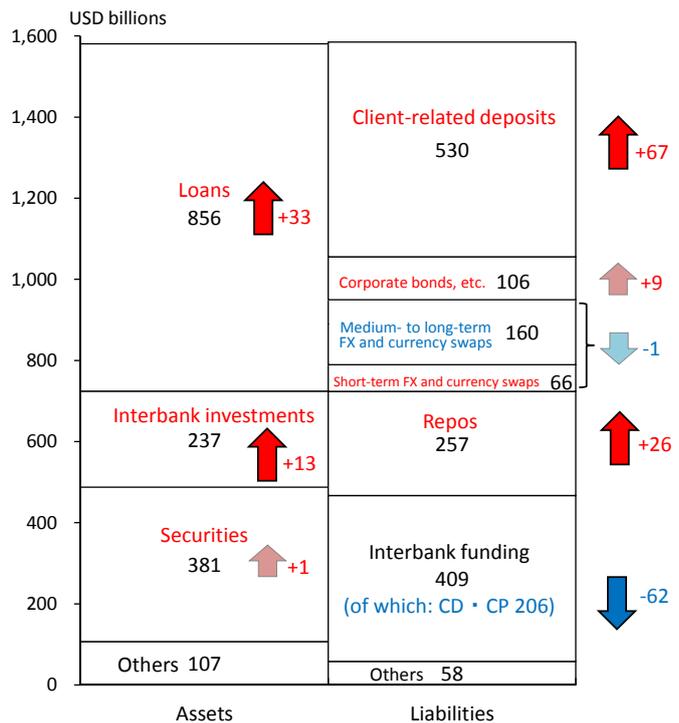
Note: Prime MMF holdings of bank related securities are aggregated by country based on the location of banks' global headquarters. "Australia" includes New Zealand. Source: SEC.

Chart 7 Japanese Major Banks' Foreign Currency Denominated Balance Sheet

As at end-March 2016



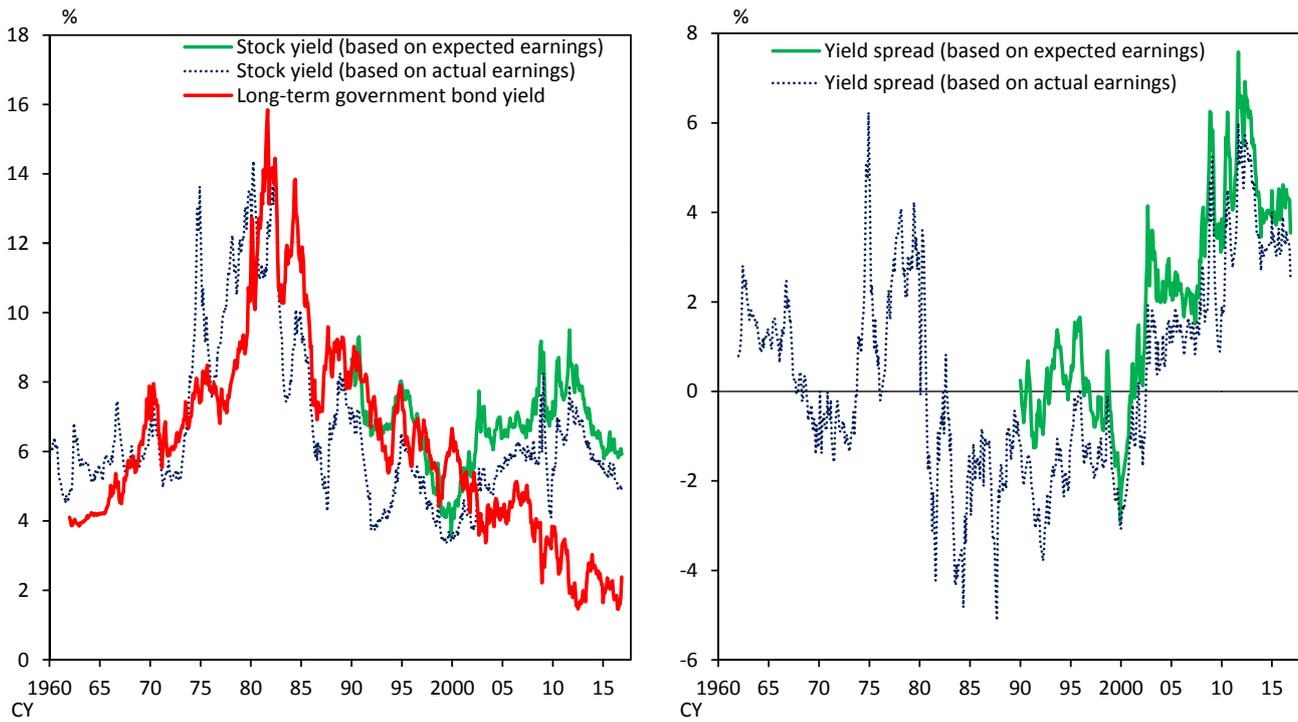
As at end-October 2016



Note: The charts include major banks classified as internationally active banks. Source: BOJ.

# Chart 8

# U.S. Yield Spreads

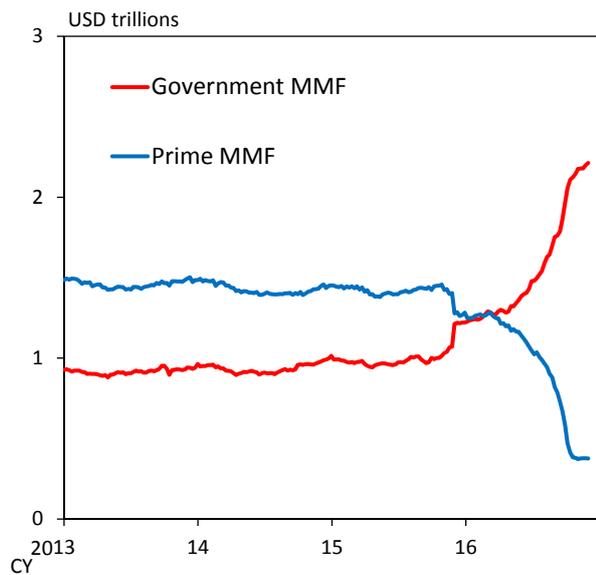


Notes: 1. Latest data as at end-November 2016.  
 2. Stock yield = EPS / stock price. "Stock yield (based on expected earnings)" is calculated using EPS (forward twelve months), "Stock yield (based on actual earnings)" is calculated using EPS (trailing twelve months). Yield spread = Stock yield - Long-term government bond yield.  
 3. S&P 500 for stock price; U.S. 10-year government bond for long-term government bond yield.  
 Source: Bloomberg.

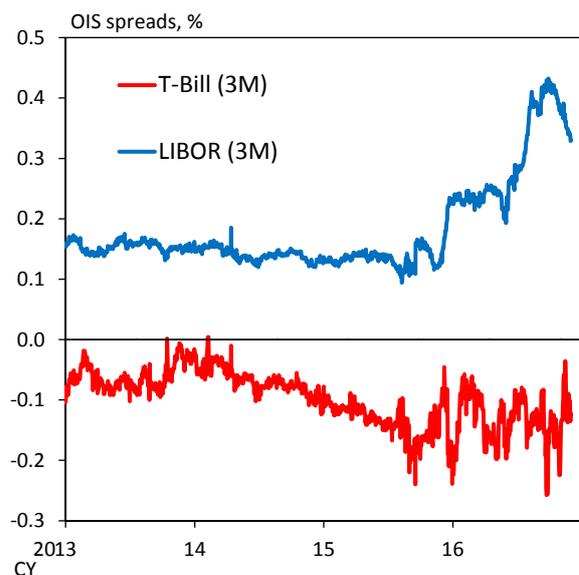
# Chart 9

# The Impact of U.S. MMF Reform

## MMF assets



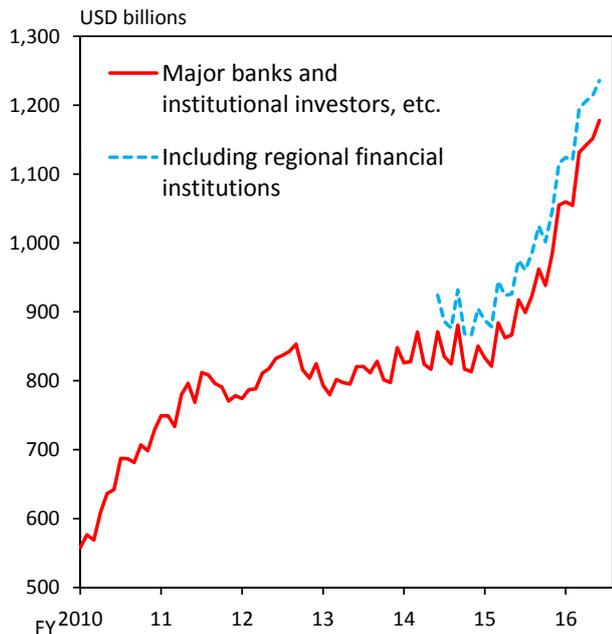
## U.S. short-term rates



Note: Latest data as at end-November 2016.  
 Source: Bloomberg.

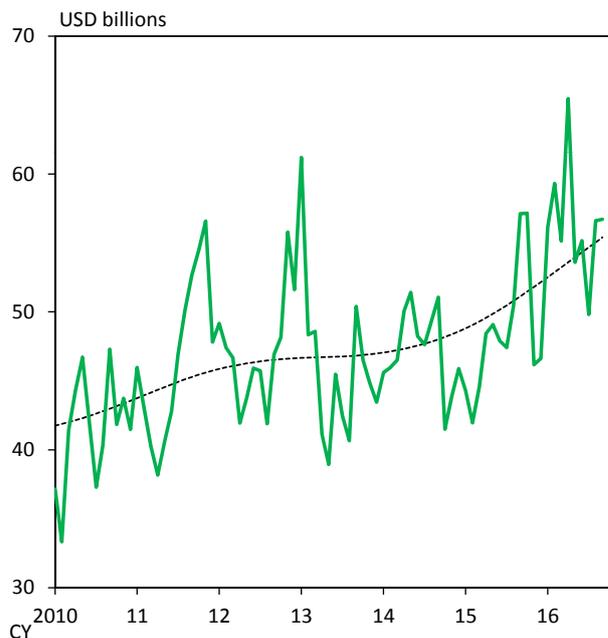
## Chart 10 Amount of Foreign Currency Funding and FX Swap Transaction Volume

**Amount of foreign currency funding via FX swaps and currency swaps by Japanese financial institutions**



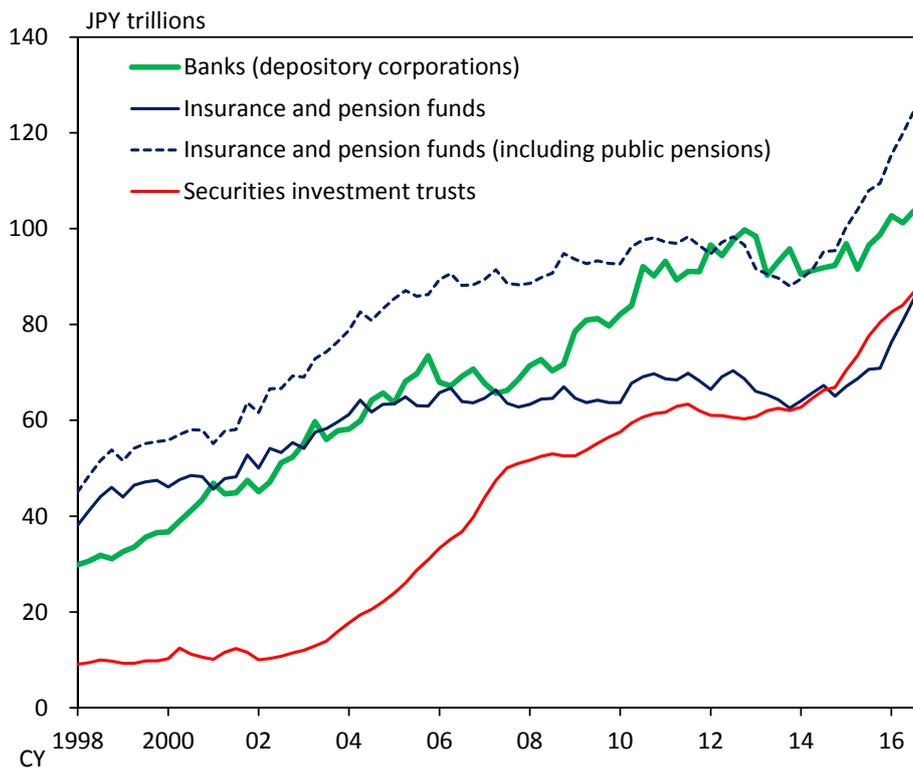
Notes: 1. Estimates by the BOJ. Latest data as at end-September 2016.  
 2. "Major banks and institutional investors, etc." includes major banks, depository institutions with a particular focus on market investment, and life insurance companies.  
 Sources: Bloomberg; The Life Insurance Association of Japan; Published accounts of each company; BOJ.

**Transaction volume in the FX swap market (USD/JPY) via Tokyo FX market brokers**



Notes: 1. Latest data as at September 2016.  
 2. Average transaction volume for each business day (includes outright forwards).  
 3. Trends are calculated using the two-sided HP filter.  
 Source: BOJ.

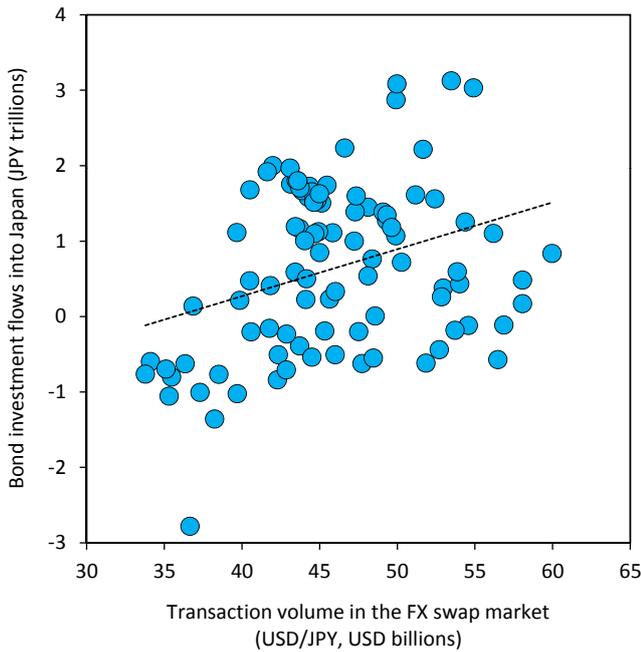
## Chart 11 Japanese Financial Institutions' Outward Investments in Foreign Securities



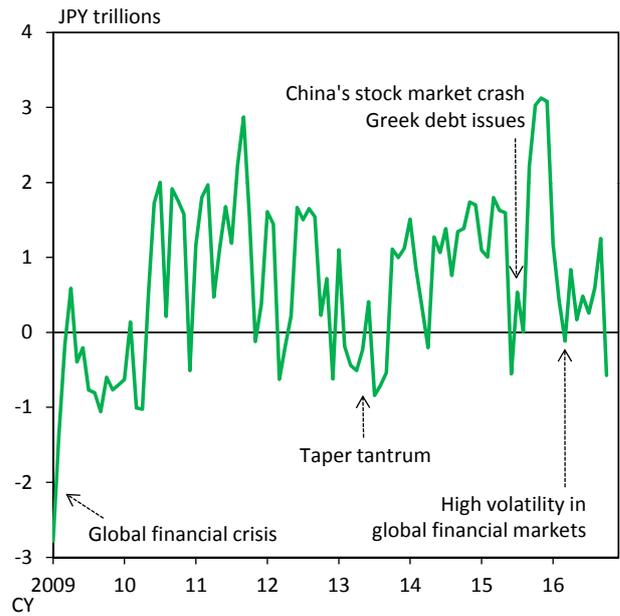
Notes: 1. Latest data as at end-September 2016.  
 2. The amounts are calculated by adding the flow during each period to the stock as at end-December 1997, to adjust for the impact of exchange rate fluctuations.  
 Source: BOJ.

# Chart 12 Transaction Volume in the FX Swap Market and Bond Investment Flows

Scatter plot (CY2009 - CY2016)



Bond investment flows into Japan



Notes: 1. Latest data as at October 2016.  
 2. Figures are 3-month backward moving averages.  
 3. The transaction volume in the FX swap market (USD/JPY) is the average (via Tokyo FX market brokers) for each business day and includes outright forwards.  
 Sources: Ministry of Finance; BOJ.

# Chart 13 Global Liquidity Amplification Mechanism through the FX Swap Market

