

**Bank Risk Premia and Abenomics:
The Return of the Japan Premium in the
Cross-Currency Swap Market**

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Mimoza Shabani^{*}, Alexis Stenfors[†] and Jan Toporowski[‡]

Abstract

This paper studies the change of the Japanese banking sector during the last two decades through the lens of money market risk premia. It makes two key contributions. First, it is shown how some important developments have been masked not only by the choice of financial market variables when attempting to assess credit and liquidity risk, but also by the *perceptions* of what these variables ought to represent. Second, the paper demonstrates why recent policies to revive the Japanese economy to end the deflationary era (labelled as ‘Abenomics’) have triggered the ‘Japan Premium’ in the cross-currency swap markets to reappear – with considerable policy implications.

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1 Introduction

High and volatile money market risk premia are symptomatic of a disturbance or breakdown of the first stage of the monetary transmission mechanism. As such, variables and indicators used to measure and decompose risks in the interbank market are crucial for central bankers and regulators alike. This was not only evident during the financial crisis of 2007-08, but already during the Japanese banking crisis in the late 1990s. Whereas the Japanese banking crisis was characterised by the emergence of the so-called Japan Premium, ‘a premium paid for interbank borrowing by Japanese banks relative to their major competitors in the United States and Europe’ (Peek & Rosengren, 1999), the financial crisis of 2007-08 resulted in higher money market risk premia in a range of currencies, as well as a worldwide demand for US dollars (the so-called ‘Dollar Premium’). In both cases, subsequent policy measures by central banks, governments and regulators were aimed at restoring health in the banking system and overall financial stability – and, in this way, to reduce the risk premia.

There are a numbers of indicators of risk in the Japanese banking system. At the present moment (December 2015), these indicators do not tell a consistent story. The Libor-Overnight Index Swap (OIS)¹ spread and the Tibor-Libor spread suggest that credit and liquidity risks are largely absent. Bank and sovereign credit default swap (CDS) spreads, increasingly used by central banks to assess creditworthiness, highlight the sensitivity of perceived risks to downgrades by rating agencies. They also serve to remind us of the connectedness between government and bank debt. However, the full risks of Abenomics are not showing up, because, rather than attributing the risk to monetary policy, it is seen as a problem of fiscal policy.

In 2004, the *Journal of Money, Credit and Banking* published a seminal paper titled ‘Credit Derivatives Premium as a New Japan Premium’ by Takatoshi Ito and Kimie Harada. The paper correctly pointed out that interbank money market benchmarks, such as Libor, did not serve as robust indicators of stress in the Japanese banking system during the early 2000s. Instead, the authors recommended the use of variables

¹ Overnight Index Swaps (OIS) are frequently used as proxies for risk free interest rates.

from the then fairly nascent CDS market, because they painted a more accurate picture of the perceived creditworthiness of individual banks. By 2008, the CDS market had not only grown exponentially, but its prices had also become adopted as a measure of vulnerabilities in the banking sector - as well as the effectiveness of extraordinary policy measures to deal with them (see, for instance, Bank of England, 2007; McAndrews, Sarkar & Wang, 2008; Soutanaeva & Strömqvist, 2009). This paper adds to and extends the earlier discussion on the Japan Premium (see, for instance, Covrig, Low & Melvin, 2004; Hanajiri, 1999; Ito & Harada, 2004, 2005; Peek & Rosengren, 1999; Spiegel, 2001). By investigating the change of the Japanese banking sector during the last two decades, we show how some important structural developments have been masked by not only the choice of risk premia, but by the *perceptions* of what they are supposed to represent. We argue that neither the Libor, *nor* the CDS, represent a sufficient and durable measure of bank funding problems. Whereas the Libor is a subjective assessment of an individual bank's borrowing cost, the CDS price represents a subjective (albeit market-determined) assessment of the probability of default of an individual bank. However widely used, neither of them necessarily involves actual transactions by the relevant entity.

We also demonstrate why recent policies to revive the Japanese economy to end the deflationary era (labelled as 'Abenomics') have triggered the Japan Premium in the cross-currency swap markets to reappear, leaving other indicators of stress largely unchanged. As such, the paper reveals that the constraint with regards to Abenomics lie not so much in the size of Japanese government debt and/or the dependence of Japanese banks on government financing, as argued by Moody's (2014ab). Rather, we show how the problem lies in the growing structural dependence of Japanese banks on US dollar swaps and their vulnerability to the exchange rate policy of Abenomics.

This paper is structured as follows. Section 2 gives an overview of the Japanese banking sector, with reference to the crisis during the 1990s and the subsequent 'Japan Premium', which were associated with the problems revealed in the aftermath of the country's stock market crash. Section 3 discusses the global financial crisis and the Eurozone sovereign crisis, highlighting the position, and perception, of Japanese banks in that context. Section 4 explains the policies associated with Abenomics,

which we argue could act as a trigger (but not a cause) of a return of the Japan Premium in the cross-currency swap markets. Section 5 concludes.

2 The Japanese Banking Crisis

2.1 The Banking Sector

The vast amount of literature devoted to the Japanese economy supports a claim that it is one of the most studied economies of all time. This is both in explaining the high economic growth the country experienced during the period 1953-1973, and the prolonged recession during the 1990s and the subsequent slow recovery. After the post war occupation ended, the growth rate of Japan's economy was on par with the rest of the world, but the country soon became one of the strongest growing economies, averaging 10% per year. During the early 1970s, the growth rate slowed to an average of 4% per annum, but was still considered the highest amongst advanced economies. By the late 1980s, Japanese banks had come to be considered as some of the strongest in the world. In 1988, seven Japanese banks were ranked among the world's top ten in terms of assets (Hoshi, 2001). However, in the aftermath of the 1989 stock market crash, the Japanese economy entered a prolonged slump, from which it has yet to recover.

The economic slowdown and the onset of asset price deflation had a significant negative impact on the health of Japanese banks and other financial institutions. In the years following the stock market crash, the soundness of the Japanese banking system weakened - culminating with the spectacular failures of several highly important financial institutions in 1997. The Japanese banking sector started to show signs of weakness already in late 1994 when the operations of two credit cooperatives, Tokyo Kyowa and Anzen Credit, were closed. Tokyo Kyodo Bank was created, funded by the Bank of Japan, commercial banks and credit cooperatives, by the regulatory bodies to assume all assets and liabilities of the two insolvent credit cooperatives (Kanaya & Woo, 2000). A year later, two credit unions, the Cosmo Credit Corporation and Kizu Credit Cooperative, and one regional bank, also collapsed.

These failures were followed by a scandal concerning Daiwa bank later in November the same year. The bank was forced to close its operations in the US following accusations of illegal activities in covering up around \$1.1 trillion in bond trade losses (Truell, 1995). In 1995, Standard & Poor's downgraded four major Japanese banks, and further downgrades were announced by both Moody's and Standard & Poor's. By 1998, a total of 19 Japanese banks had been downgraded (Miyajima & Yafeh, 2003).

In 1997, the Japanese economy experienced another recession when higher consumption taxes were implemented. In April 1997, the operations of Nissan Life Insurance were suspended by the Ministry of Finance. On 3 November, Sanyo Securities, a second-tier securities firm in Japan, filed for bankruptcy. On the same day, Sanyo also defaulted on its overnight interbank loans, making it the first default in the Japanese interbank market. By mid November, Yamaichi Securities, one of Japan's large four securities companies, and Hokkaido Takushoku Bank, one of the country's city banks, collapsed. On the 26 November, the failure of Tokuyo City bank, a small regional bank, was announced (Montgomery & Shimizutani, 2009). These failures were associated with severe disruptions in the interbank market, a sell-off of bank shares on the Tokyo Stock Exchange and an increase in the 'Japan Premium' (Kanaya & Woo, 2000; Krawczyk, 2006).

2.2 *The Japan Premium*

The *jusen*² crisis, together with the bankruptcies of the above-mentioned financial institutions, led to the emergence of the so-called 'Japan Premium': a premium on borrowing costs of Japanese banks in the international financial markets. The failure of Hyogo Bank, with assets worth \$37 billion and the first listed bank failure in Japan, influenced the Japan Premium since it highlighted the increasing inability of Japanese banks to access unsecured funds in foreign currencies, and to a lesser degree also in Japanese yen.

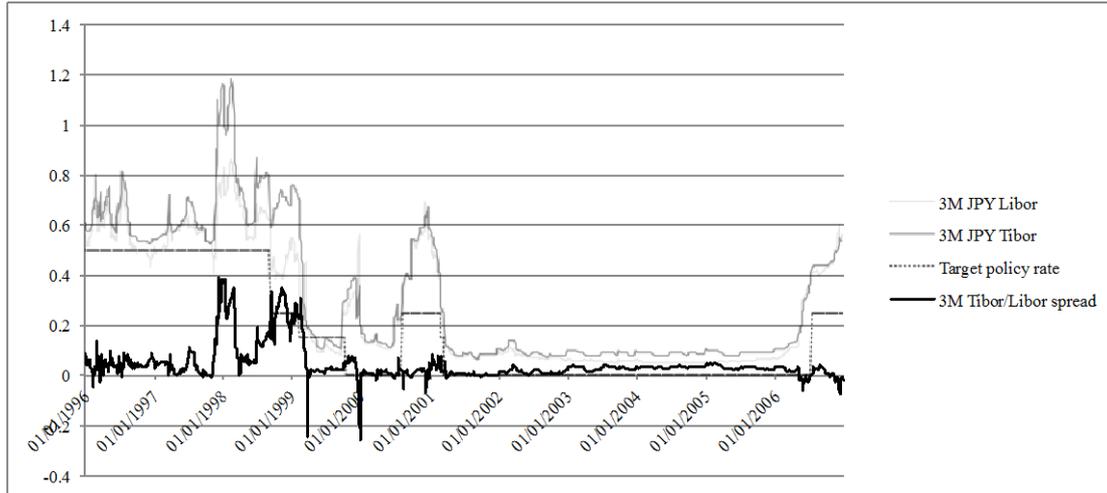
² The *jusen* companies, which were housing loan companies formed by banks, faced severe financial distress in the early 1990s after the real estate bubble had burst.

Prior to the Hyogo collapse, the Japanese government had intervened when needed to prevent potential failures of financial institutions, by arranging a merger of the insolvent bank with a sound bank. With such a policy framework, Japanese banks had therefore been perceived to be solvent and safe by financial market participants. When the authorities failed to save Hyogo Bank, however, this perception radically changed – resulting in a premium on Japanese banks’ borrowing costs. Indeed, as Spiegel (2001) notes, the *trigger* for this premium to emerge was a change in government policy.

The Japan Premium was reflected in two financial market indicators in particular: the Tibor-Libor spread and the cross-currency swap (CRS) spread. The Libor (London Interbank Offered Rate) is a benchmark for the short-term interbank money market in which large banks state they can borrow from each other in major currencies. The Tibor (Tokyo Interbank Offered Rate) is a similar benchmark set in Tokyo. The Japanese yen Libor and Tibor are interbank money market benchmarks for yen deposits respectively. They should theoretically reflect not only the current and expected future official rate of the Bank of Japan, but also incorporate credit and liquidity risk (Stenfors, 2014).

The Tibor panel largely consisted of Japanese banks, whereas the London-based Libor mainly included European and American banks. Hence, a higher Tibor could be seen as a reflection of the increased funding cost (i.e. perceived creditworthiness and ability to access liquidity) of Japanese banks compared to that of their foreign peers. The individual Libor-submissions by the few large Japanese banks that were part of the panel in London were consistently higher and thus mostly omitted from the calculation of the Libor average – thereby leaving the Japanese yen Libor fixing largely in the hands of non-Japanese banks without funding issues. As can be seen from Figure 1, the 3-month Tibor-Libor spread for Japanese yen widened sharply during this period. Hence, the jump in the Tibor-Libor spread could be said to have originated in higher *perceived* credit risk directly leading to funding liquidity risk that the benchmarks were supposed to express.

Figure 1: 3M Tibor/Libor spread 01.01.1996 - 29.12.2006



Source: Datastream, Bloomberg and authors' own calculations

However, overall market liquidity in Japanese yen was not affected in the same way. Transactions in yen between non-Japanese banks continued normally and despite becoming considerably more volatile, market illiquidity did not force foreign banks to liquidate yen-denominated assets on a large scale. As such, market indicators did not point towards a 'Japanese yen crisis', but a 'Japanese banking crisis'.

The Japan Premium was also noticed in the foreign exchange swap and cross-currency swap markets. According to the covered interest parity (CIP), interest rate differentials between two currencies should be perfectly reflected in the foreign exchange swap price, otherwise arbitrage would be possible. In terms of Japanese yen against US dollars, this can be expressed as:

$$(1 + i_t^{\text{¥}}) = \frac{F_t^{\text{\$/¥}}}{S^{\text{\$/¥}}} (1 + i_t^{\text{\$}}), \quad (1)$$

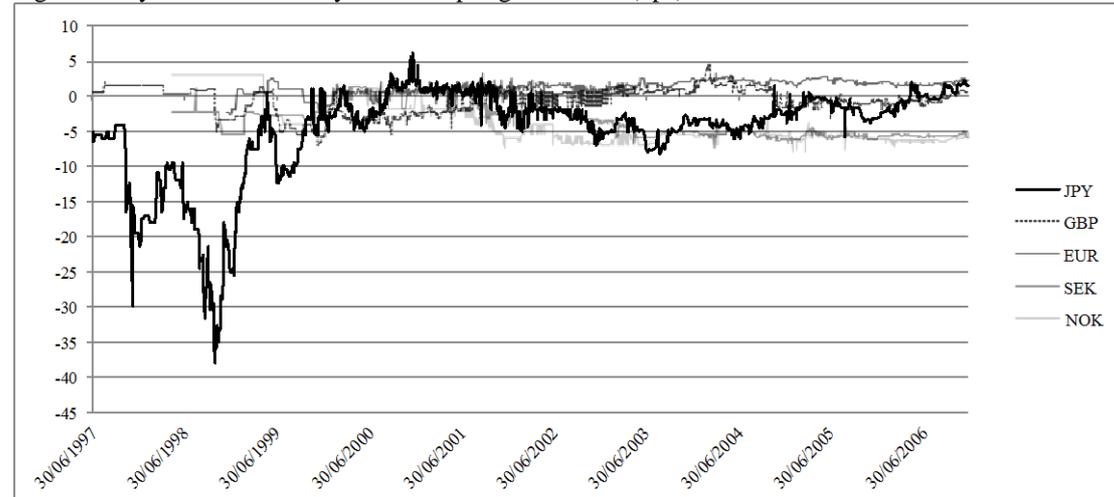
where $i_t^{\text{\$}}$ is the US interest rate (typically expressed in the US dollar Libor), and $i_t^{\text{¥}}$ the yen interest rate (such as yen Libor) for maturity t . $S^{\text{\$/¥}}$ and $F_t^{\text{\$/¥}}$ represent the foreign exchange spot and forward rates between the currencies respectively. This particular kind of arbitrage had generally ensured that the deviation from the CIP had tended to be close to zero.

Following the market convention, interbank foreign exchange swaps are generally quoted against US dollars. Deviations from the CIP are therefore normally measured

as the difference between the *implied* interest rate (using the US dollar interest rate and the foreign exchange transactions) and the benchmark interest rate for the counter currency. Since the floating rate index for a cross-currency basis swap typically is the 3-month Libor, whereas the maturity of the contract can be up to 10 years or longer, the instrument can be viewed as a market price for a string of 3-month CIP deviations for a specific maturity. Thus, the CRS market essentially provides us with a yield curve for expected future deviations from the CIP. If the base currency Libor premium is set at zero, the deviation, or spread, is expressed as a basis point premium or discount on the counter currency Libor.

Although Japanese banks were offered ample liquidity in yen from domestic sources (particularly the Bank of Japan) they needed foreign currency funding as a result of large-scale investments made abroad during previous boom years. Since the Bank of Japan could not offer US dollar reserves, and the Eurocurrency markets dried up for the Japanese banks (being perceived as less creditworthy), they had to turn to the foreign exchange swap and cross-currency swap markets. In this way, they could use their yen liquidity to swap them into US dollars, which they required. When Japanese banks headed for this last funding avenue, the CIP deviations became larger, indicating that, for traders holding Japanese yen, swapping them to US dollars (or other foreign currencies through dollars) would be much more expensive than indicated in the Eurodollar market. Figure 2, showing the 1-year cross-currency basis swap for selected currencies against US dollars, illustrates the difficulty of Japanese banks to access funding in US dollars in comparison to their peers in other countries during this period.

Figure 2: 1-year cross currency basis swaps against USD (bps) 30.6.1997-29.12.2006



Source: Bloomberg

2.3 The Aftermath of the Japanese Banking Crisis

In response to the 1996 banking crisis, the Japanese government passed two laws for financial stability in February 1998, allowing the Deposit Insurance Corporation to use ¥30 trillion of public money to bail out troubled banks and to strengthen depositor protection. ¥17 trillion was made available to provide full deposit protection, and the remaining ¥13 trillion went to banks with financial difficulties (Montgomery & Shimizutani, 2009). In March 1998, 21 banks applied for government funds, with the exception of Tokyo-Mitsubishi bank that was persuaded to apply for a capital injection. All major city banks received on average ¥100 billion each, whereas three Regional banks, Yokohoma Bank, Ashikaga Bank and Hokuriku Bank applied for smaller funds (ibid). In total, ¥1.8 trillion was spent on capital injections, mainly in the form of subordinated debt, for the banking system.

Financial stability was far from achieved, however, and the crisis continued further in 1998. In June 1998, the newly created financial regulator, The Financial Supervisory Agency, took over supervisory powers from the Ministry of Finance and other regulatory bodies to supervise banks and other financial institutions, such as securities firms, insurance companies, *shinkin* banks and credit cooperatives³. In an attempt to

³ The Ministry of Finance had previously supervised banks, securities firms, insurance companies and other non-bank financial institutions, whereas the Regional Financial Bureaus had been the supervisor

resolve the problems in the banking system, the Diet passed in October 1998 two laws: the Financial Revitalization and the Financial Early Strengthening Laws. These were to give the authorities better tools to deal with bank failures, rather than relying on finding suitable healthy banks to take over failed banks. The laws also provided more funds for bank resolution. A total of ¥60 trillion (12% of GDP) of government funds were made available to strengthen the Japanese banking sector. Of this, ¥25 trillion was allocated to recapitalise weak but solvent banks, ¥18 trillion for the insolvent banks to assist their liquidation and/or nationalisation and ¥17 trillion to fully protect the deposits of insolvent banks (Kanaya & Woo, 2000).

Following the new legislation, the Long Term Credit Bank of Japan (LTCB) was nationalised in October 1998. LTCB (ranked the 9th largest bank in the world by assets in 1989) applied voluntarily for nationalisation, after suffering massive losses due to non-performing loans to the real estate sector and *jusen* companies. In March 2000, the bank was sold to the US investment fund Ripplewood Holdings and reopened for business as a private commercial bank under the name Shinsei Bank. In November 1998, another nationalisation took place, that of Nippon Credit Bank. The credit bank was involuntarily nationalised, since previous attempts to strengthen its financial position had been unsuccessful. Nippon Credit Bank was later sold, and renamed Aozora Bank in 2001.

In 1999, a second round of capital injections of around ¥15 trillion was provided to a total of 15 banks. However, rather than a standard capital amount, this time banks received government funds in accordance to their individual financial needs. In order to qualify for the requested capital injection, the Financial Revitalization Commission, which was established under the Financial Revitalization Law, required banks to provide a restructuring plan, which had to include plans to raise capital in the private sector (Montgomery & Shimizutani, 2009).

The year 1999 marks the beginning of the so-called ‘merger-wave’ period. In May that year, Mitsui Trust and Chuo Trust announced their merger plans (Kanaya & Woo, 2000). A few months later, Industrial Bank of Japan, Dai-Ichi Kangyo Bank and

of shinkin banks, and credit cooperative were under the supervision of prefectural governments (Kanaya & Woo, 2000).

Fuji Bank revealed their merger plans, forming Mizuho Group. All three banks were amongst the largest banks in Japan, with total assets worth ¥42.1 trillion, ¥52.5 trillion and ¥46.4 trillion respectively (Harada & Ito, 2012). In October of the same year, Sumitomo Bank and Sakura bank, which had ¥51.5 trillion and ¥48.3 trillion in assets respectively, also announced that they would merge to form Sumitomo Mitsui Financial Group (ibid). In March 2000, Asahi Bank, Tokai Bank and Sanwa Bank announced their plan to merge, forming UFJ Holdings⁴. In April, the creation of the Mitsubishi Tokyo Financial Group was announced through a merger of Bank of Tokyo-Mitsubishi (¥69.8 trillion in assets), Mitsubishi Trust Bank (¥16.4 trillion in assets) and Nippon Trust Bank. In 2001, Daiwa bank and Asahi bank merged to form Resona Holdings.

To sum up, the Japanese banking crisis resulted in the Japan Premium, and was followed by vast changes in the Japanese banking system. After a series of bank capital injections by the government, the premium (both in terms of the Tibor-Libor and the cross-currency swap spread) disappeared around March 1999. As Spiegel (2001) points out, the Japan Premium was directly affected by the financial strength of the borrowing Japanese banks. However, it was also affected by the policy of the Bank of Japan (or ultimately the Ministry of Finance) through its ability or desire to act as Lender of Last Resort, and also its willingness (and ability) to shield unsecured creditors from losses. The offshore premium faced by a borrowing Japanese bank was therefore a function of both the actual economic characteristics of that bank and the *expectations* in the market concerning government intervention in the event of its insolvency. Indeed, Peek & Rosengreen (1999) found empirical evidence that the Japan Premium played a major role in the shaping of government policy towards the banking sector. Actions to strengthen supervision increased the premium; government announcements that occurred in the absence of concrete actions appeared to be ineffective, whereas injections of funds into the banking system decreased the Japan Premium.

⁴ At the time of the announcement, Sanwa Bank had ¥47.6 trillion in assets and Tokai Bank's assets were worth ¥30.4 trillion (Harada & Ito, 2012). Asahi Bank did not join the formation of UFJ Holdings.

Renewed uncertainty with regards to the banking sector caused the Japan Premium to reappear in 2001, albeit minimally. According to Ito & Harada (2004), however, the individual yen Libor submissions by the Japanese banks understated the perceived creditworthiness of the Japanese banks at the time. When probabilities of default, as perceived by market participants, were derived from the CDS market (which was relatively new at the time), a considerably more worrying picture of bank vulnerability emerged. Consequently, the authors argued that CDS spreads were a more accurate gauge for the Japan Premium, and recommended its further use. Nonetheless, ‘normality’ was rather quickly restored and risk premia in Japan and elsewhere remained low up until 2007.

3 The Financial Crisis of 2007-08

3.1 The ‘Negative’ Japan Premium

High, volatile or systematic deviations of the Libor from the risk-free interest rate are symptomatic of the disturbance or breakdown of the first stage of the monetary transmission mechanism. From the end of the Japanese banking crisis up until August 2007, the Libor, Tibor and their equivalent benchmarks elsewhere appear to have worked as intended. Changes, or expected changes, in the official central bank rates filtered through relatively smoothly to money market rates – lending support to the assumption that a repo rate change will lead to a proportional change in money market rates and benchmarks supposed to reflect these. The extra premium related to credit and/or liquidity issues had more or less disappeared.

Indeed, market participants not active in the Japanese yen market - or having no memory of the Japanese banking crisis - had, until 2007, become used to very small deviations of the Libor from the official, and expected future, central bank rate. Due to low volatility, and low perceived risk, banks had become able to combine money market instruments together to create an extensive pool of market liquidity and become accustomed to this way of creating such liquidity. Hedges between instruments and currencies enabled traders to ‘buy time’. Access to liquidity was

therefore easy and central bank operations became increasingly transparent and predictable. Reoccurring year-end liquidity issues could be easily dismissed as temporary, and were smoothed out by sufficient central bank liquidity measures. Central bankers, in turn, having grown accustomed to a seemingly liquid, transparent and well-functioning money market more or less without credit and liquidity issues during decades, could rely on the first stage of the monetary transmission mechanism and Libor to keep money market rates in the range set by monetary policy. Monetary policy could focus instead on channels affecting output and inflation and on increasing transparency and minimising monetary policy surprises.

For market participants, central bankers and the public alike, this symmetry came to an abrupt end with the advent of the financial crisis in the United States. The demise of the US subprime mortgage market during the first half of 2007 and resulting defaults led to a widening of CDS spreads referencing asset-backed securities – first containing those with the lowest credit-ratings, and then rapidly spreading to medium- and even top-rated credit quality. Severe losses were faced by, amongst others, the UBS hedge fund Dillon Read, two hedge funds run by Bear Sterns and the US home loan lender Countrywide. As a result, the market for asset-backed commercial paper began to dry up quickly. The crisis then spread outside the US, with the German bank IKB being the first European institution to report rollover problems. During the first week of August 2007, a range of quantitative hedge funds suffered large losses - triggering margin calls and fire sales. On 9 August 2007, the French bank BNP Paribas froze redemptions for three investment funds, citing its inability to value structured products. Thus, the asset-backed mortgage credit risk associated with subprime lending had fairly quickly come to affect the global uncollateralised money market (Brunnermeier, 2009; Khandani & Lo, 2007).

Central banks acted swiftly, with the European Central Bank (ECB) injecting €5 billion and the Federal Reserve \$24 billion overnight. On 17 August, the Federal Reserve broadened the type of collateral accepted, increased the lending horizon to 30 days and lowered the discount window by 0.5% to 5.75%. However, the measure was not deemed a success. The 7,000 or so banks that could borrow at the discount window were historically reluctant to do so because of the stigma associated with it. Using the discount window would signal desperation and hence a lack of

creditworthiness in the market. A series of write-downs in October and November 2007 pushed up the total loss in the mortgage market. When the Federal Reserve realised that rate cuts announced during the autumn did not filter through the monetary transmission mechanism, it introduced the Term Auction Facility (TAF) where banks could borrow from the Federal Reserve without using the discount window. As the Libor-OIS spreads narrowed between December 2007 and February 2008 after the TAF was introduced, the measure was judged to be working. However, spreads started to widen again and in March the Federal Reserve took new measures by expanding the TAF, and by introducing the new Term Securities Lending Facility. A loan package to Bear Sterns through JP Morgan, and a new Primary Dealers Credit Facility, was also announced.

Similar market movements were observed in other currencies. With inflation targeting, price stability had gradually become more important than financial stability as a central bank goal. Having become more transparent themselves, central banks now had become more reliant on information and signals provided by the banks and the markets. Not only was the US economy slowing down at a very rapid pace, and the housing market coming to a complete standstill following the sub-prime crisis. The speed of write-downs by banks was alarming. To uncertainty about counterparties' exposures was now added uncertainty about banks' own exposures. Liquidity risk increased as banks increased their precautionary holdings of cash. Market liquidity also deteriorated, not least as the market makers of the various money market instruments tended to be banks already in trouble.

Central banks found themselves in a difficult position as their monetary policy lost its purchase on the money markets. Decomposing the Libor had become almost synonymous with assessing the effectiveness of central bank policy in dealing with the crisis. Theoretically, the Libor (or Tibor) should not only reflect current and expected future risk-free interest rates, but also credit and liquidity risk. Should banks face credit constraints, these ought to be reflected in the individual Libor submissions and result in a higher average reported Libor. The standard technique, at the time, was to quantify each of these components. By assuming that the Libor was a reflection of the offshore money market, and taking the OIS market prices as given and representing the risk-free interest rate for a given maturity, it simply become a task of

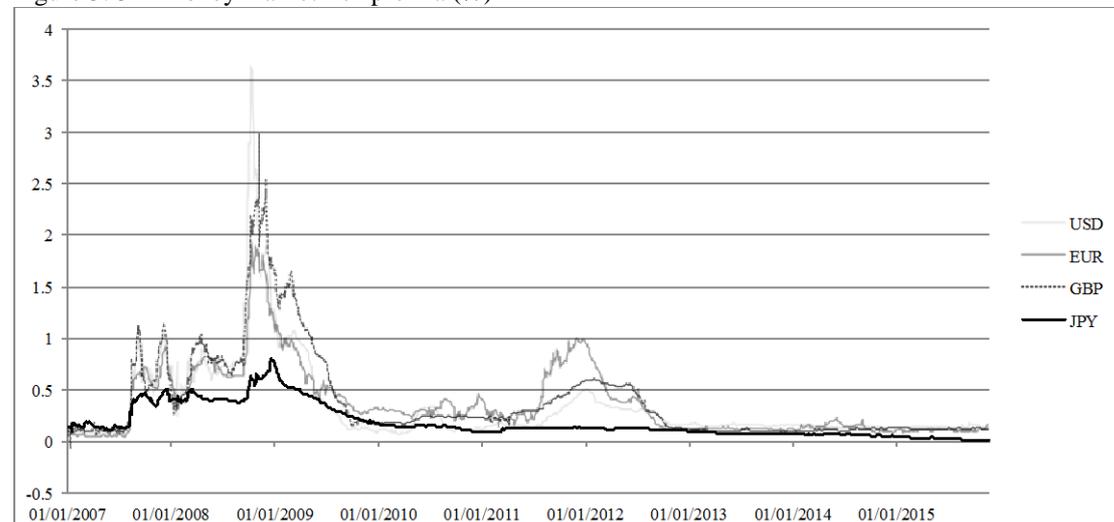
allocating the difference between the two variables into the appropriate credit and/or liquidity components making up the spread (see, for instance, McAndrews, Sarkar & Wang, 2008; Soultanaeva & Strömquist, 2009). In fact, if a measure for credit risk could be agreed upon, the remaining component could be regarded as ‘non-credit’, or liquidity risk. This was the approach taken by the Bank of England (2007) in an indicative decomposition of Libor. In principle, CDS spreads should reflect the probability of default of the reference entity, the loss given default and some compensation for uncertainty about these factors. By assuming that investors recover 40% of their deposits in the event of default, and by ignoring any liquidity effects in the CDS market itself, an implied (risk-neutral) probability of default for the underlying security is derived. Then, using the OIS as a measure for the risk-free interest rate and adding the credit risk they arrive at an interest rate that includes credit risk. The residual premium from the Libor-OIS spread is the ‘non-credit premium’, or simply speaking the ‘liquidity premium’. The results show that during the beginning of the market turbulence, liquidity issues played the key role whereas credit issues were less significant. The assumption that the independent variable (i.e. Libor) was based upon actual transactions between banks was central to attempts to decompose money market risk premia in the aftermath of the financial crisis of 2007-08. As Stenfors (2014) points out, however, underlying risks in the banking sector might be masked should the Libor be manipulated or understated – as evidenced by regulatory investigations around the world in recent years. Following the collapse of Lehman Brothers, discounted securities buying operations by central banks across the developed countries were reinforced, effectively taking the money onto central banks’ balance sheets.

Even though the Japanese banking sector was stable and relatively unaffected by the financial crisis, the country’s economy was hit the hardest in comparison to other developed economies (The Economist, 2009). One of the main reasons given by several commentators for the poor performance of the Japanese economy in the aftermath of the financial crisis was the decline in exports, as a consequence of falling foreign demand. In response to the recession Japan experienced in 2008-09, the government announced a ¥10 trillion fiscal stimulus in April 2009. This was in addition to the previous IMF-recommended stimulus measures, amounting to ¥12 trillion, which accounts for 2% of GDP (Nakamoto, 2009). The Bank of Japan also

intervened to support the recovery of the economy by means of purchasing government bonds (The Economist, 2009). Other measures of monetary easing included fixed-rate funds supplying operations, as well as clearer commitments to maintaining a virtually zero interest rate policy (Lam, 2011). In October 2010, the Bank of Japan also introduced a new asset purchase programme under a Comprehensive Monetary Easing (CME) policy. It facilitated purchases of various financial assets such as government securities, but also private sector commercial paper, corporate bonds, exchange-traded funds and Japan real estate investment trusts (J-REITs) (Bank of Japan, 2010).

At the height of the US financial crisis, credit, market and liquidity risk rose significantly and became reflected in the Libor-OIS spreads and its equivalents in other financial centres (see Figure 3) These indicated that the difference between the funding costs of large banks and the risk-free rate had increased significantly. As can be seen, however, the reaction in the Japanese yen market was considerably less pronounced.

Figure 3: 3M Money market risk premia (%)

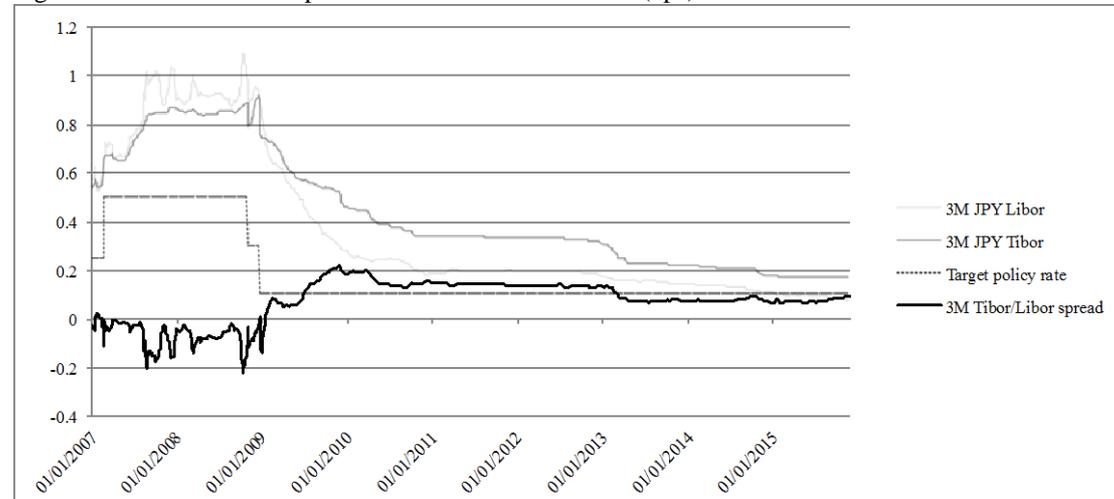


Sources: Bloomberg, authors' own calculations. Notes: USD = 3M Libor – 3M OIS, JPY = 3M Libor – 3M Tonar, GBP = 3M Libor – 3M Sonia, EUR = 3M Euribor – 3M Eonia.

Moreover, whereas the Eurozone sovereign debt crisis prompted renewed fears in the international money markets, the yen market seemed completely immune. Indeed, the Tibor-Libor spread (as an indicator for the 'old' Japan Premium) now turned *negative* (see Figure 4). Counterparty risk increased as banks became reluctant to lend to each other. This suggested that non-Japanese banks found it more difficult to fund

themselves than their Japanese counterparts – resulting in a ‘reverse’ Japan premium and a perception of Japan as a relative ‘safe haven’.

Figure 4: 3M Tibor/Libor spread 01.01.2007 - 25.11.2015 (bps)

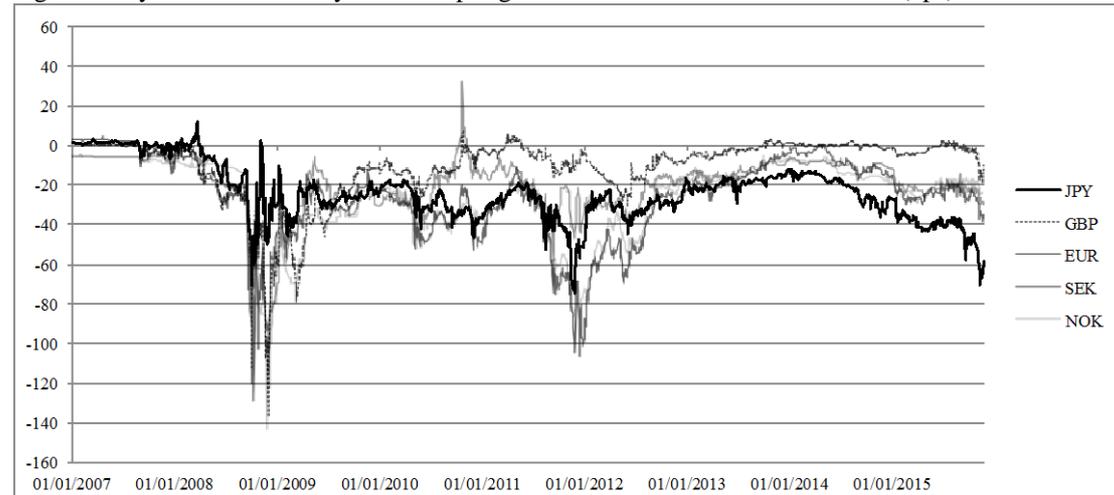


Sources: Datastream, Bloomberg and authors' own calculations

3.2 *The Dollar Premium and the FX Swap Network*

The financial crisis of 2007-08 led to very large, lasting and volatile deviations from the covered interest parity that had hitherto held (with the notable exception of the Japanese banking crisis). This time, however, the markets pointed towards a specific ‘Dollar Premium’ indicating that the relative demand for US dollars rose compared to other currencies. As such, they were showing that the problems in the money markets were not only bank-specific (such as with the ‘Japan Premium’), but also currency-specific (affecting the US dollar more than other currencies). Nonetheless, as with the Libor-OIS and Tibor-Libor spreads, the impact on the Japanese yen market was relatively less severe. As Figure 5 shows, the 1-year cross-currency swap spread, as measured against US dollars, turned negative as soon as the crisis broke out. The differences were generally largest for shorter maturities, up to and including 3 months, and exceptionally so in the aftermath of the Lehman bankruptcy.

Figure 5: 1-year cross currency basis swaps against USD 01.01.2007 - 25.11.2015 (bps)



Source: Bloomberg

Domestic liquidity injections during the early days of the global financial crisis, or like those of the Bank of Japan during the Japanese banking crisis, were not sufficient to dampen demand, since only the Federal Reserve could provide US dollar reserves. Since the demand for dollars was particularly severe for banks outside the US, an international response involving the Federal Reserve was necessary to provide US dollar liquidity - in technical terms to reduce the CIP deviation. This systematic deviation from the CIP therefore led to unprecedented co-ordinated international central bank action, led by the Federal Reserve. Temporary reciprocal currency arrangements in the form of FX swap lines were established with the Federal Reserve in order to channel dollars to banks in other jurisdictions (Baba & Packer, 2009; McGuire & von Peter, 2009). In December 2007, swap lines were set up with the European Central Bank and the Swiss National Bank. The market reaction was relatively muted. After the collapse of Lehman Brothers and a sharp move in the cross currency swap and foreign exchange swap markets, the sizes of the swap lines were increased considerably. Bank of Canada, Bank of England and Bank of Japan were added to the list of central banks with which foreign exchange swap lines were established. Other central banks were added to the network shortly afterwards.

The dollar liquidity swap lines were designed to improve liquidity conditions in dollar and foreign financial markets by providing foreign central banks with the capacity to deliver US dollar funding to institutions in their jurisdictions during times of market stress. The response was positive in the sense that spreads fairly quickly returned

levels prior to the Lehman bankruptcy. However, as the euro sovereign debt crisis gained momentum during the spring of 2010, the global financial crisis entered into a new phase. Risk premia started to widen again, after a long period of narrowing that followed the central banks' injections of vast amounts of liquidity into the banking systems in the aftermath of the Lehman Brothers collapse. In addition, both the foreign exchange swap and the cross-currency swap markets started to indicate serious strains in the interbank lending market for dollars again. European banks had significantly increased their activities in the US since the launch of the euro. These strains reflected difficulties the banks faced in funding those positions. With the European Central Bank unable to offer dollars, and the Federal Reserve unable to lend dollars directly to European banks, dollar swap lines were re-introduced on 9 May 2010 (Kaltenbrunner et al., 2010).

4 Abenomics and the Return of the Japan Premium

4.1 Abenomics

On taking office in December 2012, the newly elected Prime Minister Shinzo Abe introduced a new economic policy framework, in an attempt to combat deflation and to revive the economy. The framework consisted of 'three arrows': aggressive monetary easing, a substantial fiscal stimulus, and structural reform.

The first arrow, monetary policy regime includes not only unlimited monetary expansion but also the introduction of a 2 % inflation target. In April 2013, the Bank of Japan announced a 2% inflation target to be achieved within a two-year time horizon by means of open-ended asset purchases and a doubling of the country's monetary base. By April 2015, however, it was announced that the Bank of Japan had extended the timeframe to 2016. Even though the 2% target has yet to be met, inflation in Japan picked up by 2014 (The Economist, 2014). As part of the expansionary monetary policy the Bank of Japan is committed to purchasing significant amounts of Japanese governments bonds from the banks in an attempt to increase bank lending. As a result, Japanese banks have greatly reduced their holding

of government bonds. For example, Sumitomo Mitsui Financial Group reduced their government bond holdings from ¥21.5 trillion in March 2014 to ¥9.6 trillion in December the same year (McLannahan, 2014).

The market response to the aggressive quantitative easing undertaken by the Bank of Japan has been remarkably strong. As Figure 6 depicts, the Nikkei 225 stock market index has increased substantially since the start of Abenomics.

Figure 5: Nikkei 225 1.1.2007-25.11.2015



Source: Datastream

Following the financial crisis of 2007-08, the Japanese yen had strengthened significantly against the dollar (see Figure 7), reflecting the perception of Japan as a ‘safe haven’. However, this was reversed with the launch of Abenomics.

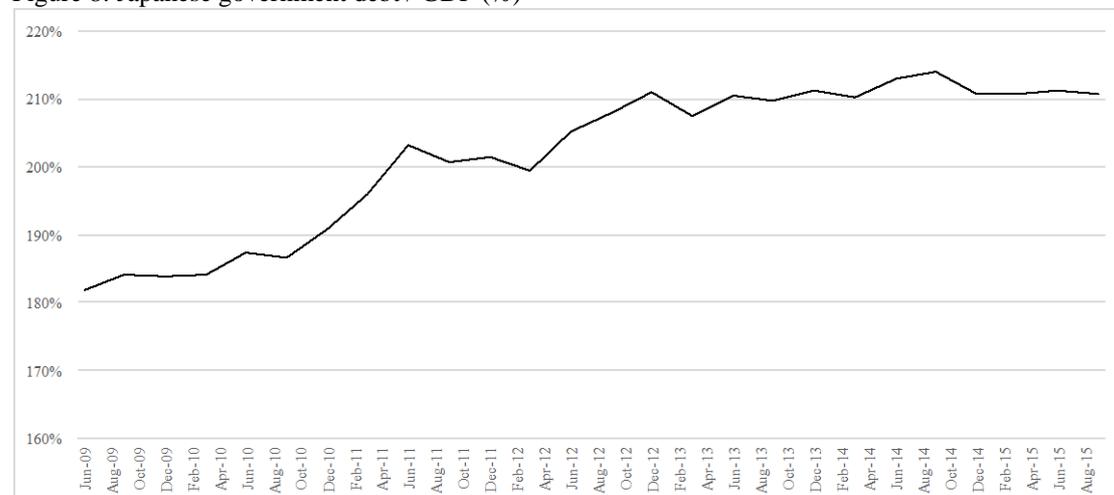
Figure 7: USD/JPY FX Spot rate 1.1.2007-25.11.2015



Source: Datastream

These monetary measures have been used simultaneously with aggressive fiscal spending, the second arrow of the Abenomics policies. In January 2013, the country's prime minister announced a fiscal stimulus package worth a total of ¥10.3 trillion (Nakamoto, 2013). This fiscal package was estimated to create around 600,000 new jobs and increase Japan's GDP by 2%. However, as seen in Figure 8, the ratio of Japanese government debt to GDP has increased substantially in recent years and is among the highest in the world.

Figure 8: Japanese government debt / GDP (%)



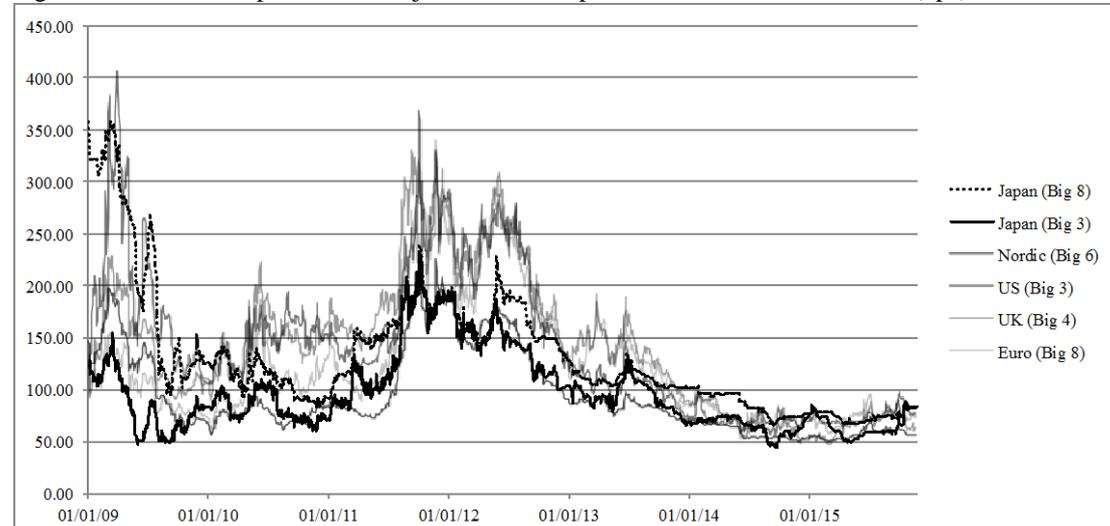
Sources: Cabinet Office and Ministry of Finance.

The high level of government debt resulted in a downgrade of Japan by Moody's from Aa3 to A1 in December 2014. Moody's (2014a) expressed concerns over the ability of the Japanese government to 'to achieve his goals amid tensions inherent in promoting growth while, as the same time, reversing the rising debt trajectory'. Moreover, the credit rating agency expressed concerns over the ability of Abe's government to enhance economic growth through structural reforms. Finally, Moody's stressed the uncertainty of Japan's ability to sustain high levels of government debt in the light of Bank of Japan's 2% inflation target. Moody's argued that such levels might increase government bond yields and hence increase the borrowing cost of the Japanese government. This would not only affect the government's ability to reduce its debt, but also its ability to meet the fiscal deficit targets. On 2 December 2014, the day after Japan's credit rating was downgraded, Moody's cut the credit rating of Bank of Tokyo Mitsubishi UFJ, Mitsubishi UFJ

Trust, Banking and Sumitomo Mitsui Banking, Shizuoka Bank and Chugoku Bank by one notch to A1 due to high levels of government debt and an unstable economic outlook. Thus, the downgrade was not linked to the banks *per se* but in line with ‘[...] Moody’s view that in Japan the capacity of the government to support banks is best measured by its own debt rating of A1’ (Moody’s, 2014b).

During the financial crisis of 2007-08, it became apparent that the Japanese banking sector was in considerably better shape than that of the US or indeed the major European countries. This was not only reflected in the Libor-OIS or the cross-currency basis swap spreads, but also in bank CDS spreads. As can be seen in Figure 9, which depicts CDS spreads of Japanese and major banks, financial market participants perceived the ‘Big 3’ Japanese banks relatively creditworthy in recent years in the aftermath of the crisis. Only the large Nordic banks (having also experienced and revived from a severe banking crisis in recent times) were regarded as equally safe.

Figure 9: Median of Japanese and major bank CDS spreads 01.01.2009-25.11.2015 (bps)

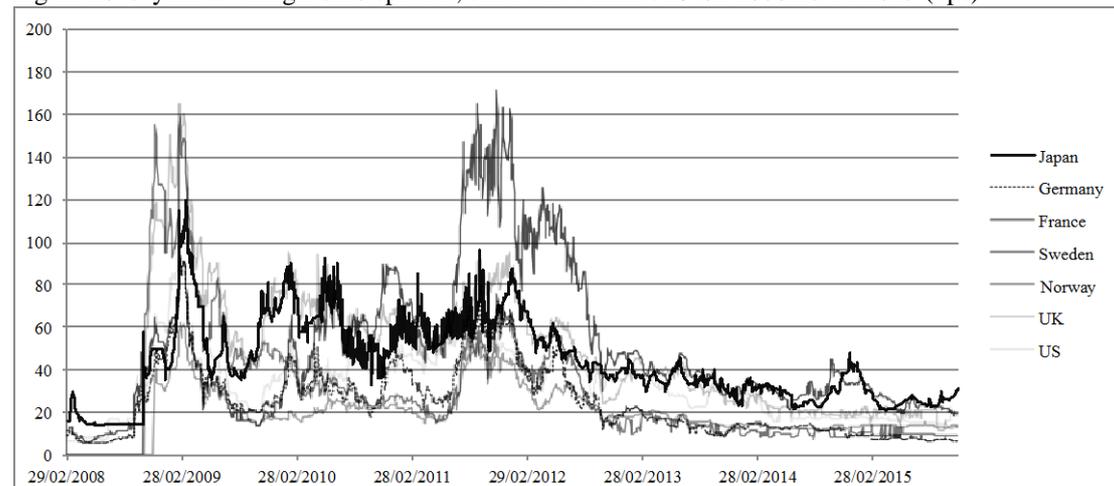


Sources: Datastream, Bloomberg and authors’ calculations. Notes: Japan (Big 8): Aozora Bank, BTM UFJ, Mizuho Bank, Norinchukin Bank, Resona Bank, Shinsei Bank, Sumitomo Mitsui Banking Corp., Sumitomo Mitsui Trust Bank; Japan (Big 3): BTM UFJ, Mizuho Bank, Sumitomo Mitsui Banking Corp.; Nordic (Big 6): DNB, Nordea, SEB, Svenska Handelsbanken, Swedbank and Den Danske Bank; US (Big 3): Bank of America, Citi and JP Morgan Chase; UK (Big 4): Barclays, HSBC, Lloyds Bank, RBS; Euro (Big 8): BNP, Commerzbank, Crédit Agricole, Deutsche Bank, ING, Société Générale, UBS.

The extraordinary monetary policy measures introduced by central banks across the globe resulted in a significant fall in CDS spreads during 2009. Perceived

probabilities of default continued to fall until the advent of the Eurozone crisis in 2010, when the trend reversed sharply. This development is also reflected in sovereign CDS spreads (Figure 10), showing that Japan has been as creditworthy despite very large, and increasing, government debt/GDP-ratio. Moody's downgrade of Japan and of the large Japanese banks in late 2014, or the anticipation of it, caused a sharp, but only temporary, rise in CDS spreads.

Figure 10: 5-year sovereign CDS spreads, selected countries 29.02.2008-25.11.2015 (bps)



Source: Datastream

4.2 *The Return of the Japan Premium in the Cross-Currency Swap Markets*

As indicated earlier Japanese borrowers, and the Japanese banking sector, were perceived as relatively ‘safe’ during the early period of the financial crisis of 2007-08, and its aftermath. The Japanese yen soared, the Tibor-Libor spreads turned negative and the Libor-OIS spread widening was moderate in comparison to other major currencies. A relatively healthy bank funding position seemed to be consistent with the CDS spreads of the large Japanese banks, which, with the notable exception around Moody's downgrade in late 2014, managed to outperform the majority of its peers abroad.

However, even though Japan could be portrayed as a safe haven during this episode, a more worrying picture begins to emerge following the launch of Abenomics. Whereas

the CDS spreads of Japan and of the large Japanese banks recovered fairly quickly in early 2015, another key indicator has begun to deviate much more sharply: the cross-currency basis swap spread. Looking at Figure 5, we can see that the premium paid to access US dollar funding via Japanese yen has increased at an alarming rate since mid-2014 and is now at the same level as during the height of the Eurozone sovereign debt crisis. An important difference, however, is that Japan has become the outlier. This time, the risk originates neither from the US nor the Eurozone - but from Japan itself.

Paradoxically, this premium has its roots in the much earlier Japanese banking crisis. After more than a decade of repeated failures, insolvency and financial weakness, Japanese banks not only seemed to have recovered, but were also trying to regain their position at an *international* level. The situation had changed in favour of the Japanese banks, which were once heavily criticised for their structure and took considerable blame for the economic stagnation the country experienced during late 1990s and early 2000s. Most of the criticism came from commentators in Western developed countries, urging the Japanese authorities to change the regulatory framework and promote inventiveness (Montgomery & Takahashi, 2011).

In the financial crisis of 2007-08, it became apparent that the US banking sector, together with banking systems in other advanced economies had become too complex in the years preceding the crisis. At the heart of such complexity was financial innovation. By contrast, in the aftermath of the US crisis, Japan seemed to have not been affected by the events happening in the Western economies precisely because financial innovation and complex financial instruments never quite took off in the more traditional approach of the Japanese banking sector. When certain US banks faced major difficulties, it was the Japanese banks that came to the rescue. For example, in January 2008 Mizuho Financial Group invested \$1.2 billion in purchasing 18% in preferred shares in Merrill Lynch (Montgomery & Takahashi 2011; Taniguchi & Sato, 2011). In September 2008, Mitsubishi UFJ Financial Group purchased a fifth of Morgan Stanley in a \$9 billion deal (Story & Sorkin, 2008). In the same month, Nomura Holding Inc., Japan's biggest brokerage firm, announced the purchase of Lehman Brother's equities and investment banking operations in Europe and Middle East (Slater, 2008). In 2011, *The Economist* (2011) labelled the strong position of

Japanese banks as being ‘back from the dead’. The article emphasised that not only the country’s three main banks, Mitsubishi UFJ, Sumitomo Mitsui and Mizuho, are amongst the top 30 largest banks in the world by assets, but also how these banks used the crisis in their favour by expanding internationally in the US, Europe and Asia. For instance, in 2013, Mitsubishi UFJ acquired a controlling stake in Thailand’s Bank of Ayudhya for ¥560 billion (Lewis, 2015). Mizuho, as well the buying of a stake in Merrill Lynch in 2008 and a 15% stake in the Vietnamese Vietcombank in 2011, acquired \$3 billion worth of loans from RBS in 2015 (Inagaki, 2015). During the summer of 2015, it was further reported that Japanese banks, mainly the country’s three leading banks, continue their search and eagerness to expand overseas (Lewis, 2015).

Consequently, the international position of Japanese banks in recent years is also reflected in their leading international lending position. Japanese banks cross-border lending market share rose from 8% in 2007 to 13% in the first quarter of 2013, followed by the US and German banks accounting for 12% and 11% respectively (BIS, 2013). In 2015 Japanese banks remained at the top with foreign claims amounting to a total of \$3.5 trillion, as of March 2015. That is above UK’s total foreign claim amounting the \$3.2 trillion (BIS, 2015). For the ‘Big 3’ banks, the ratio of overseas to total loans increased from 15% in 2009 to 26% in 2013. With a loan-to-deposit ratio of around 1.3 overseas, the banks have become perceived to be increasingly vulnerable to currency and liability mismatches (IMF, 2015). As Lam (2013) notes, policies to revive growth and exit the deflationary era, coupled with the uncertainty with regards to the development of the currency and bond market, encouraged large Japanese banks to take more risk and to diversify abroad⁵. The Bank of Japan’s monetary policies gave Japanese banks the liquidity to finance that expansion abroad. But this could only be done by converting that liquidity into the US dollars required for that expansion abroad. Problematically, the substantially weaker yen, associated with Abenomics, has served to worsen the already weak international

⁵ Charles Goodhart has suggested to us that expansion abroad is not unique to Japanese banks – see for example, the final paragraph of section 3. However, as these figures show, Japanese banks have been expanding abroad on a larger scale and at a faster rate than banks in other countries. The monetisation of Japanese banks’ domestic assets that is envisaged under the first ‘arrow’ of Abenomics clearly indicates that Japanese banks will retain their leading role cross-border lending and acquisition of assets.

funding positions of the large Japanese banks – prompting the return of the Japan Premium.

5 Concluding Discussion

There are a numbers of indicators of risk in the Japanese banking system. Currently, these indicators do not tell a consistent story. The Libor-OIS spread and the Tibor-Libor spread suggest that credit and liquidity risks are largely absent. Bank and sovereign CDS spreads, increasingly used by central banks to assess creditworthiness, highlight the sensitivity of perceived risks to downgrades by rating agencies (such as Moody's in 2014). They also serve to remind us of the connectedness between government and bank debt. However, the full risks of Abenomics are not showing up, because, rather than attributing the risk to monetary policy, it is seen as a problem of fiscal policy.

This paper has, through the lens of money market risk premia, illustrated how the Japanese banking crisis emerged and was solved through government intervention. It has also shown how these measures, to some degree, managed to protect the Japanese banking system from the global financial turmoil in 2007-08 and the subsequent European sovereign debt crisis. Financial market variables, such as Tibor-Libor, Libor-OIS and CDS spreads, indicated that the Japanese banking sector was able to take advantage of being associated with less credit and liquidity risk – prompting suggestions of Japan as a 'safe haven'. With the exception of vastly divergent government debt/GDP levels, parallels can therefore be drawn to the experience of the Nordic countries, which also experienced severe banking crises in the 1990s and, through government intervention, managed to turn investors' perceptions around.

The paper has also pointed to an important paradox, namely how this process has encouraged Japanese banks to expand abroad, become dependent on foreign currency funding and therefor increasingly exposed to maturity and currency mismatches. Policies linked to Abenomics, most notably the ultra-loose monetary policy and the weak Japanese yen, have increased the vulnerabilities of the large banks and resulted

in a return of the Japan Premium as expressed in the cross-currency swap markets. However, the situation in 2015 differs from the two crises in three important respects.

First, interbank deposits have largely been replaced by FX swaps as a short-term funding vehicle for banks during the last two decades. As a consequence, previous signals pointing towards specific Japan Premia, such as the Tibor/Libor spread or the Libor-OIS spread, might remain relatively immune during times of stress - something that was already pointed out by Ito & Harada (2004). Moreover, as has already been well documented following the recent Libor and Tibor manipulation controversies, interbank lending for maturities beyond one week is virtually non-existent and thus unlikely to serve as a robust indicator for the functioning of the first stage of the monetary transmission mechanism in any case.

Second, although the emergence of a CDS market has provided market participants and policy makers with another tool in assessing perceived creditworthiness, its usefulness in measuring the actual risk in the banking sector is far less clear. To put it simply, CDS spreads can be used to calculate the probability of default of a particular institution as determined by market participants (rather than, say, credit rating agencies). They do not, however, provide an insight into a particular bank's *actual* ability to borrow - or the cost of doing so.

Third, whereas we argue that the FX and cross-currency swap markets provide a better insight into potential bank funding issues than the indicators above as they represent actually traded prices involving banks themselves, the institutional framework has changed dramatically since the 1990s. Whereas the USD/JPY CIP deviation returned to normality as a result of intervention by Japanese authorities following the domestic banking crisis, the establishment of the FX swap network with the Federal Reserve two decades later (to which the Bank of Japan belongs) now sets a theoretical cap on the Dollar Premium - or indeed the Japan Premium. When the network was created, only two countries with major international financial centres had sufficiently large FX reserves to serve their banks without the need to draw on FX swap lines: the United States and Japan (Allen & Moesnner, 2010). The ability, and determination, to act as a market maker of last resort in the FX swap market has therefore highlighted the importance of the Federal Reserve with its control over the

world's reserve currency (Kaltenbrunner et al., 2010), giving the Federal Reserve an ability to act opportunistically with regards to its future, whereas the Bank of Japan is dependent on its FX reserve to be able to do so. Consequently, the Japan Premium in the cross-currency swap markets represents more than just a failure of arbitrage between Tokyo and London. It represents a judgement on the dangers inherent in the drive by Japanese banks for assets abroad because of the difficulties in obtaining domestic assets at an adequate yield funded in Japan. Those dangers have been exacerbated by the policies of Abenomics, holding yields on Japanese securities low and depreciating the Japanese yen. In its latest form, the widening of the USD/JPY cross-currency swap spread as a result of diverging economic policies therefore illuminates the imbalances and contradictions inherent in the FX swap network.

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