"Financial Risk and Crisis Management after
the Global Financial Crisis" Series No.3 (12/2015)

Shocks in Japanese Corporate Bond Market during the Global Financial Crisis[1]

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[1] This document is an English translation of the original Japanese, which appears in the Dec. 2015 edition of The Japan Economic Research Institute Monthly Report, published by The Japan Economic Research Institute.

1. Introduction[2]

This paper seeks to investigate the financing behaviors of Japanese firms during the global financial crisis. This crisis, which originated from the burst of the US housing bubble following a manifestation of the subprime loan dilemma, was not limited to American borders; instead, this financial crisis "went global" and exerted enormous influence on European economies as well as those in the rest of the world. While the crisis did have a negative influence on Japan's real economy, primarily in export businesses, the impact on Japan's financial system was not substantial; in fact, Japan's economy was quite unaffected given its financial institutions' lack of securitized product holdings.

This paper explores the kinds of effects exerted by the global financial crisis on Japanese firms and investigates the effects on financing behaviors taken by these firms during the crisis. More specifically, this study sets its focus on Japan's publicly-listed companies, analyzing the corporate bond market. Regarding financial issues in Japan, we are already aware that bank lending was expanded dramatically in light of the dysfunction of the corporate bond and corporate paper markets during the collapse of Lehman Brothers in September 2008 (Bank of Japan, 2010). However, it is currently deemed necessary to conduct a broad set of verifications as to the specific kinds of actions taken by the Japanese corporate world in response to the global financial crisis. This is crucial due to the lack of clarity yielded by, for example, only analyzing aggregated data from the corporate bond market ex post facto; as will be noted in this document, the influence exerted by the crisis on each firm differs greatly depending on the individual firm characteristics.

In academia, a broad range of verification has been conducted on financing activity and other areas pertaining to the effects exerted on the average firm by the failure of the financial sector, particularly in the US. Among them, research conducted by Almeida et al. (2011), Ivashina and Scharfstein (2010), Flannery et al. (2013), and others serve as examples of studies into the

[2] Acknowledgement: Graphical representations in this paper were created with the assistance of Yan Juxin (2nd year doctoral student, Hitotsubashi University Graduate School). This acknowledgement serves to express gratitude for that assistance.

effects of the financial crisis in the US. Almeida et al. (2011) compared firms holding large amounts of long-term debt approaching maturity in 3Q 2007 (and thereafter) with firms characterized similarly, except for their debt holdings. These studies also empirically demonstrated that long-term debt-holding firms were more apt to curtail capital investments. Ivashina and Scharfstein (2010) empirically confirmed that bank lending shrank by as much as 47% in 4Q 2008. Flannery et al. (2013) gave empirical proof that reduced lending in the US banking sector caused by the global financial crisis's negative impacts led to reduced corporate investment.

However, these previous studies have latent endogenous problems (e.g., identifying causal relationships, coefficient estimation bias, and other issues that limit the credibility of verification results) because the financial crisis originated in the US. Conversely, since we may consider Japanese financial institutions and firms as relative bystanders with respect to the global financial crisis and the external crisis they experienced, we may then postulate that Japan's perspective allows for testing causal relationships. According to research by Uchino (2013) on this topic, firms directly exposed to the aforementioned dysfunction of the corporate bond market would react to the crisis by expanding borrowing behavior from banks without decreases in capital investment. Though this paper emulates Uchino's (2013) awareness of the issues at hand, it will add a more medium- to long-term view to this scenario.

The remainder of this paper is structured as follows. Section 2 provides a medium- to long-term overview of the Japanese corporate financing environment, followed by an investigation of the types of effects exerted on Japan's stock markets and the corporate sector by the global financial crisis. Section 3 focuses more sharply on the effects of the global financial crisis on Japan's corporate bond market. Section 4 summarizes the key points in this paper and the issues to be dealt with going forward.

2. Medium- to Long-term Trends in Japan's Corporate Financing Environment

This section will take a somewhat broad perspective on investigating the context behind Japan's corporate financing environment. More specifically, it will seek to provide an overview of Japan's corporate sector as an excess funding sector since the latter half of the 1990s, the evasion of non-performing loan problems for banks (which serve as primary lending organs), overall financial health, the ongoing trend of sluggish loan funding after the financial crisis in Japan, and other contextual trends. Amid the backdrop comprising these trends, this section will then delve into the effects exerted by the global financial upon Japanese firms and the kinds of reactions those firms took in terms of corporate financing.

2.1 From a Medium- to Long-Term Perspective

It is common knowledge that since the financial crisis in Japan in the late 1990s and through the 2000s to the present day, Japan's firm sector has experienced a monumental revolution. Since the 2000s, Japan has seen many regulatory reforms, including changes to governance, the accounting Big Bang, enactment of the Companies Act and the Financial Instruments and Exchange Act, and enactment of a corporate governance code currently under great scrutiny.

Amid the context provided by the aforementioned changes in the economic environment and this chain of regulatory reforms, we may observe quite notably and clearly in Figure 1 that Japan's corporate sector had become a sector of excess funding since around 1998. Japanese corporations continued to have an overall funding excess through the 2000s as well. The scale of that excess shrank greatly during the Izanami Boom[3], but it is clear that it is once again expanding since the global financial crisis. Though it does digress from this paper's topic, we may take away one key impression that government deficits tend to run contrastingly to surpluses in the corporate sector.

When viewed from the perspective of Japan's banks, which serve as primary lenders in the economy, we notice in Figure 2 that despite upward trends in account balances, funds on loan have trended downward. We may specifically take away from this data that since 1998, when Japan was in the throes of a financial crisis, the gap between account balances and loans has been continuously expanding, with a temporary jump in loans during the

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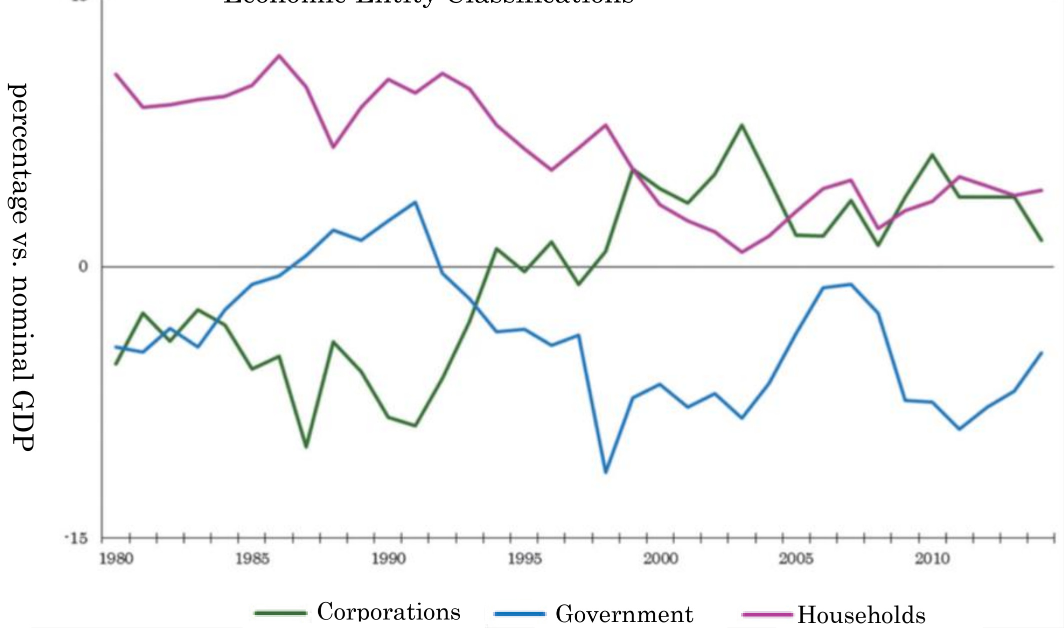
[3] An economic boom that occurred in Japan between 2002 and 2008

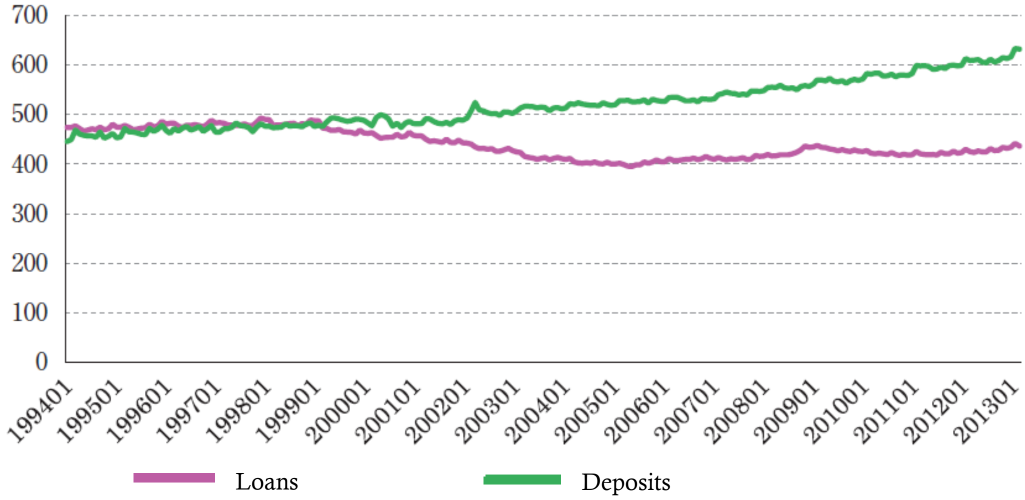
global financial crisis that was, nevertheless, not enough to subvert the long-term expansionary trend. Note that much of this gap corresponds to Japanese government bond purchases.

Figure 1. Trends for Excess/Shortage of Funding for Japan's Three Major Economic Entity Classifications



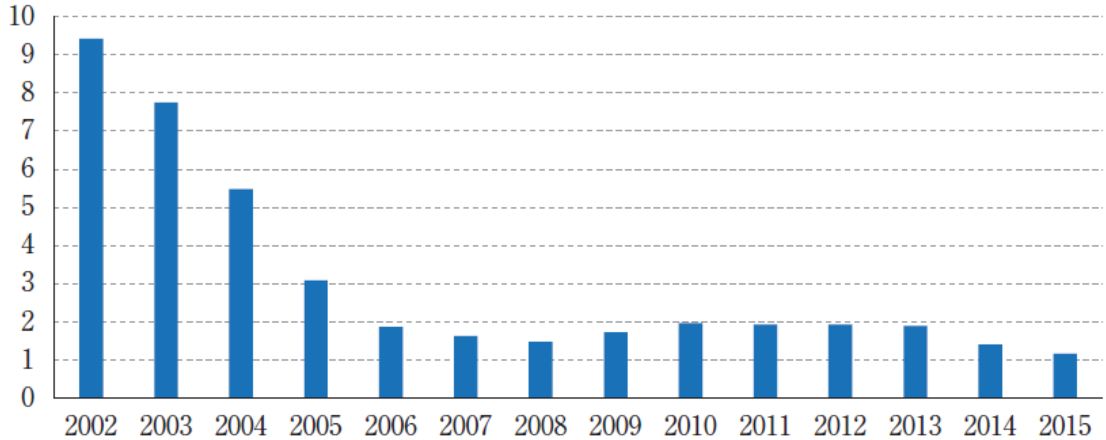
Source: Based on the Bank of Japan's "Statistics on Funding Circulation" and Japan Cabinet Office's "Private Economic Statistics"; Vertical scale: percentage.

Figure 2. Japanese Domestic Banks: Loans vs. Deposits



Source: Based on the Bank of Japan's "Monthly Report on Financial and Economic Statistics"; Vertical scale: trillion yen.

Figure 3. Ratio of non-performing loans vs. Total loans outstanding



Source: Based on the Financial Services Agency's "On Loans Disclosed in Accordance with the Requirements of the Financial Reconstruction Act"; Vertical scale: percentage.

Figure 3 expresses movement over time in the ratio of non-performing loans to the total lending balance. We may first surmise that Japan's financial crisis had not yet abated as of the early 2000s. On the other hand, this ratio did maintain sub-2% levels after 2006, indicating that the financial system had returned to a healthy state. Even a great jump was not observed in this non-performing loan ratio on the occasion of the global financial crisis. In addition, given that holdings of American financial institutions' securitized products—ground zero for the global financial crisis—were extremely thin among Japanese institutions, we may say that Japan's financial system was a healthy one overall.

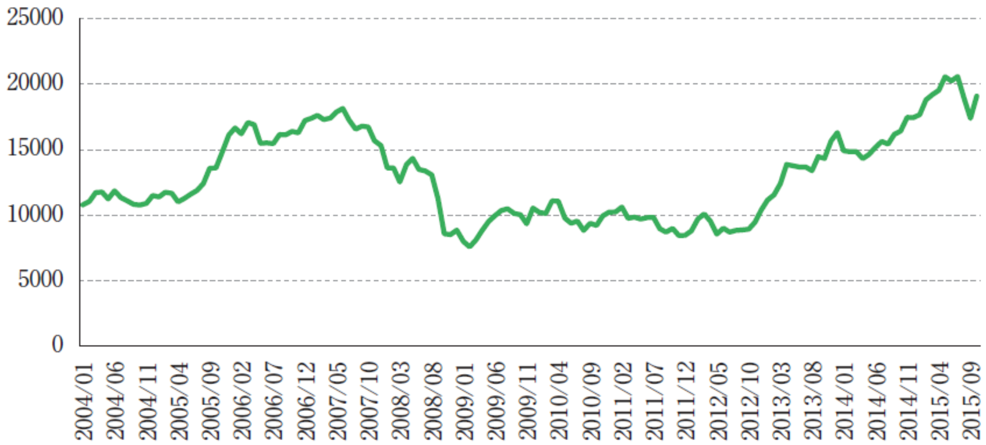
2.2 Trends in Japanese Stock Prices and Company Performance

Under such conditions, we may say that the financial crisis that manifested in the US had ripple effects on the Japanese economy around 2007. This section primarily explores the effects on two areas in Japan: the stock market and the real economy.

Observing the movements in the Nikkei average as portrayed in Figure 4, it is evident that the stock markets saw a major plunge around 2007. As will be observed later, corporate bond spreads in mid-2007 had already manifested signs of the crisis in the US, and the rapid strengthening of the yen had already begun to propagate its ill effects on the Japanese stock market.

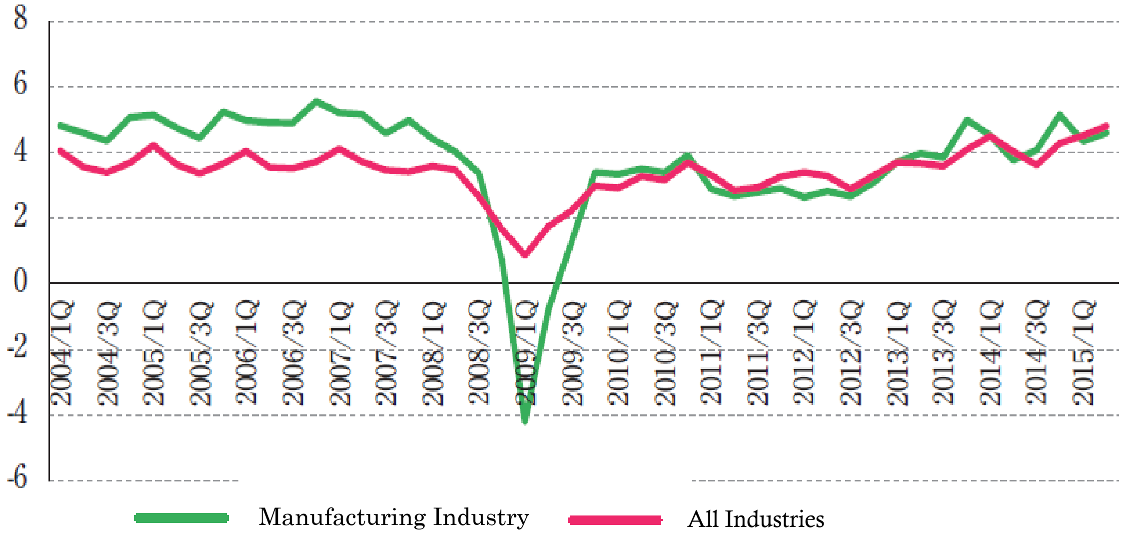
With the yen rising, an immediate downward trend can be seen in the stock market, followed by knock-on effects in the real economy, notably including 2009's drastic decreases in economic indicators caused by factors such as falling export numbers in the manufacturing sector. Figure 5 displays the operating profit on sales for both the manufacturing sector and all industries: although both manifest a major drop in 2009, manufacturers see a particularly marked drop to −4%, revealing clear effects of the global financial crisis.

Figure 4. Nikkei Close Prices



Source: Based on data from the "Nikkei NEEDS"; Vertical scale: yen.

Figure 5. Ratio of Operating Profits to Sales



Source: Based on the Ministry of Finance's "Corporation Statistics"; Vertical scale: percentage.

3. Effects of the Global Financial Crisis on Japanese Corporate Bond Issues

This section focuses its attention more specifically on the Japanese corporate bond market, making detailed observations on the kinds of effects the global financial crisis had on publicly-listed Japanese firms[4]. Though the effects discussed in this section particularly refer to the temporary dysfunction created after the collapse of Lehman Brothers, the bipolarization of these effects based on firm valuation must also be covered. In short, while firms with relatively high credit risk faced frozen effects (difficulty in bond issuing), those with relatively low credit risk saw lower financing costs and safe haven effects (increased bond issues); thus, two polar opposite effects came into play.

3.1 Effects of the Global Financial Crisis on the Corporate Bond Market

Although the effects on the real market in Japan were pronounced in 2009, especially in the manufacturing sector as mentioned above, we must wonder exactly when and how Japan's financial sector began to be influenced by the crisis. This section seeks to expound on this concept based on research currently being conducted by Kim et al. (2015).

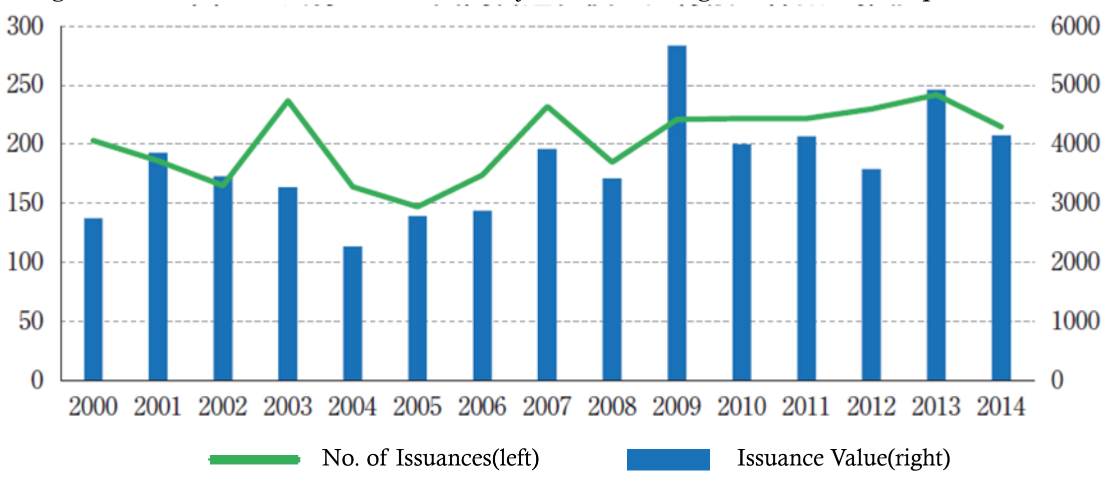
The following represents a deeper investigation into the specific effects exerted on the Japanese corporate bond market. First, Figure 6 shows public issuances of straight domestic corporate bond by the number and value of issuances (this and following graphs exclude the financial industry). The graph shows that the expansionary approach of 2005 and following years saw a reversal in both issuance amounts and volumes in 2008, when the financial crisis occurred. The year 2008 saw approximately ¥500 billion in issuance amounts (13% down versus the previous year) and approximately 50 fewer issuances (20% down versus the previous year). Given that the crisis occurred in September 2008, these data reflect the dysfunction created in the market.

Of particular interest is the following year (2009), when issuance values

[4] Note that since there was only a small market for bonds issued by Japanese firms overseas, the limited ability to issue reduced the ability for that channel to exert effects on Japan during the global financial crisis to negligible levels, and this is said to be an upside to Japanese firms' positions at the time [see Gozzi et al. (2015) and others for more].

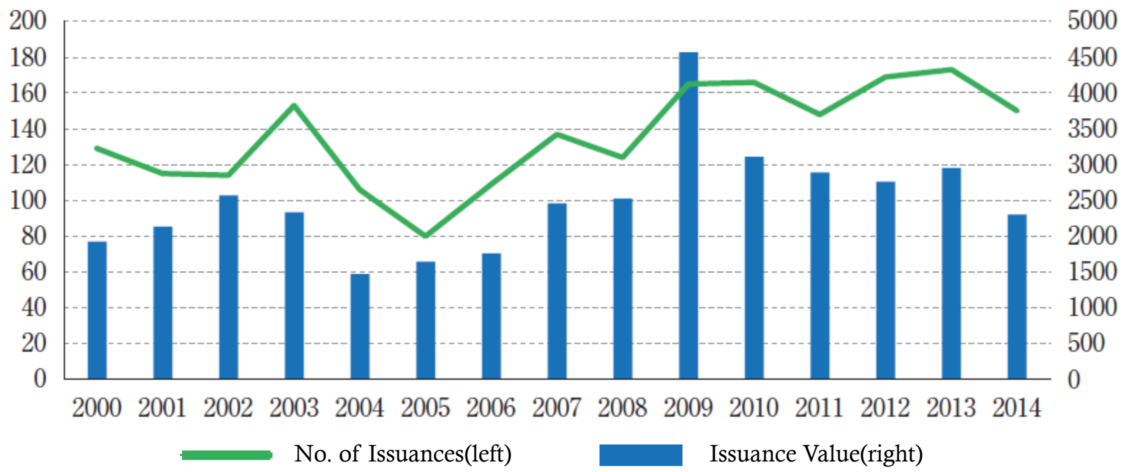
saw greater increases over 2008. As can be seen in the graph, the reaction and rapid recovery from the crisis created quite a "shock" in the market. Though issuance volumes in 2009 had not yet returned to pre-Lehman Brothers Crisis levels observed in 2007, issuance values had increased greatly, approaching nearly ¥6 trillion (60% gain versus the previous year)—its highest since 2000.

Figure 6. Values/Volumes of Publicly-Issued Straight Domestic Corporate Bonds



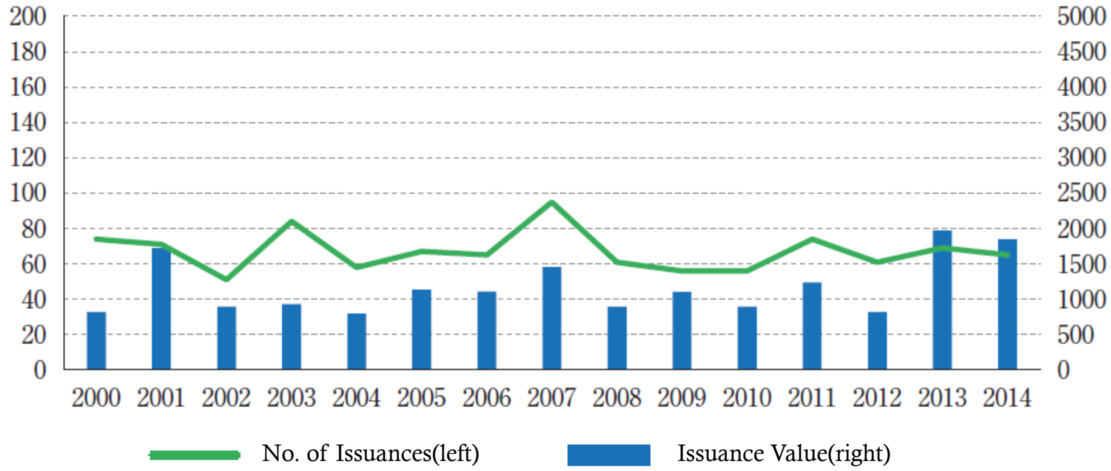
Source: Based on data from the "Nikkei NEEDS"; Vertical scales: number of issuances (left), billions of yen (right).

Figure 7. Values/Volumes of Issuances of Rated Straight Domestic Corporate Bonds



Source: Based on data from the "Nikkei NEEDS"; Vertical scales: number of issuances (left), billions of yen (right).

Figure 8.　Values/Volumes of Issuances of Unrated Straight Domestic Corporate Bonds

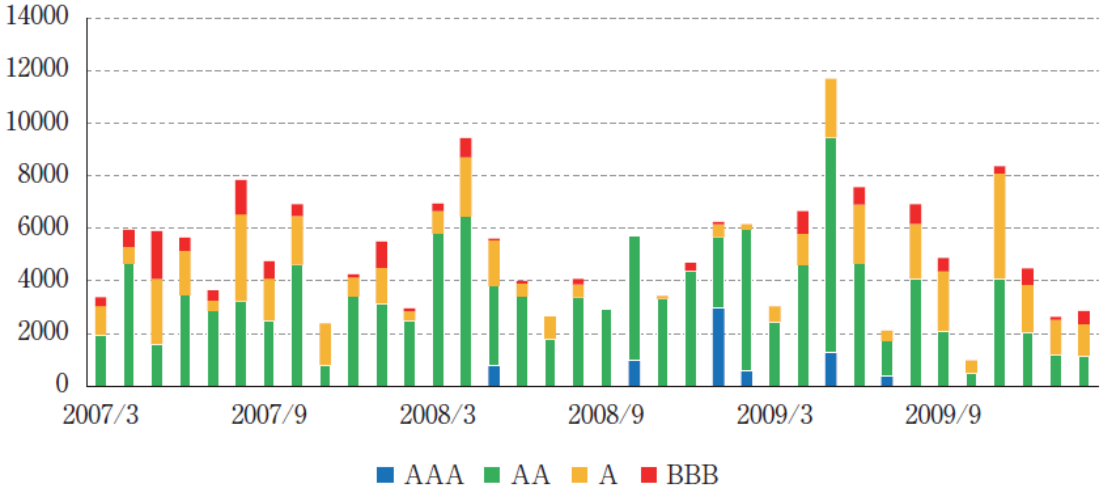


Source: Based on data from the "Nikkei NEEDS"; Vertical scales: number of issuances (left), billions of yen (right).

Figures 7 and 8 split the bonds applicable in Figure 6 into rated and unrated bonds. Based on Figure 7, we may determine that rated straight domestic corporate bond issuance value trended consistently positive from 2004 to 2009. In other words, it would be a stretch to say that these issuance values alone give us a solid picture of the effects of Lehman Brothers' bankruptcy. We may then note from Figure 6 that the number of bonds issued in 2008 dropped by 20 versus 2007. This means that for each bond issued in 2008, on average, the issuance value had risen versus 2007. Issuances in 2009 were quite interestingly much higher than those seen in 2007, in contrast with those displayed in Figure 6.

To follow up by observing unrated straight domestic corporate bond issuances in Figure 8, the issuance values and volumes in 2008 were both significantly less than in the previous year, clearly indicating the effects of the collapse of Lehman Brothers: values dropped by approximately ¥600 billion, and volumes dropped by approximately 40 issuances. We may also note that while issuance values in 2009 had recovered somewhat compared with those in 2008, the post-2007 trend of decreasing issuance volumes continued to 2010. In short, we may take away from this data that the effects of the global financial crisis on the corporate bond market were notably profound on unrated bonds and the relatively high credit risk-carrying firms that issued them.

Figure 9. Issuance of Japanese Corporate Bonds, by Rating



Source: Based on data from the Japan Securities Dealers Association; Vertical scale: billions of yen.

To further investigate rated straight domestic corporate bonds, Figure 9 divides rated bonds by rating grade on a monthly scale. These data indicate that firms with an A rating or below issued bonds a great deal less. Of particular note here is that BBB issuance values hit zero in the months of October and November following the Lehman Brothers' bankruptcy (frozen effects).

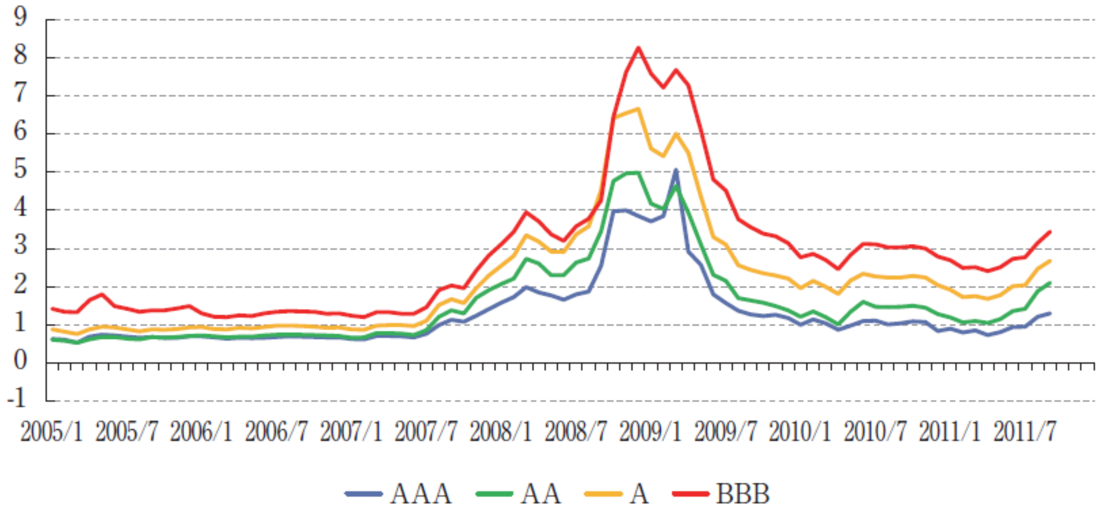
We may conclude, based on the above information, that the effects of the global financial crisis were tantamount to causing a temporary dysfunction in the corporate bond market, affecting relatively high credit risk-carrying firms (including unrated or poorly-rated firms). In other words, the increase in bond-based financing primarily by highly-rated firms, suggesting the effects of the global financial crisis were polarized according to credit risk.

3.2 Characterizing Japanese Corporate Bond Spreads

On that note, why exactly were highly-rated firms increasing their bond issuances? An interesting phenomenon is suggested by the data represented in Figures 10 and 11. Figure 10 displays US corporate bond spreads by rating grade versus government bond. In the US, the epicenter of the global financial crisis, we can see that spreads had already begun to skyrocket as of mid-2007, regardless of bond rating. After the Lehman Brothers' collapse, spreads saw even further leaps, with AAA-rated bonds temporarily pushing past 5% and BBB-rated bonds temporarily exceeding 8%.

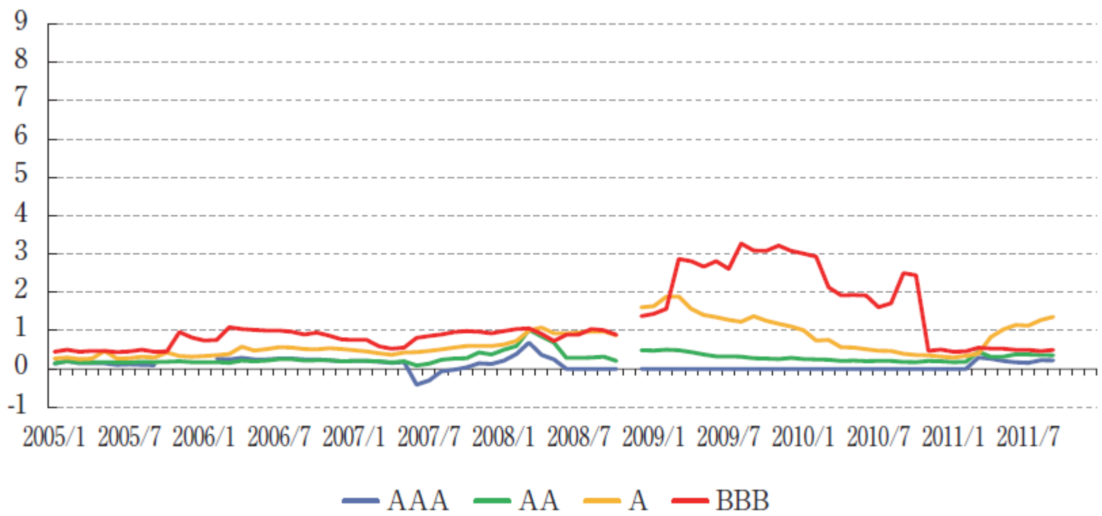
The graph in Figure 11 displays credit spreads for Japanese corporate bonds versus government bond by rating grade. We may notice several points of contrast here against similar data from the US. First, though there is a visible jump in spreads, the severity of that jump is muted compared with that seen in the US. The time periods over which those spreads arose

Figure 10. Spreads of U.S. Corporate Bonds Yields over Government Bonds by Rating



Source: Based on BIS data; Vertical scale: percentage.

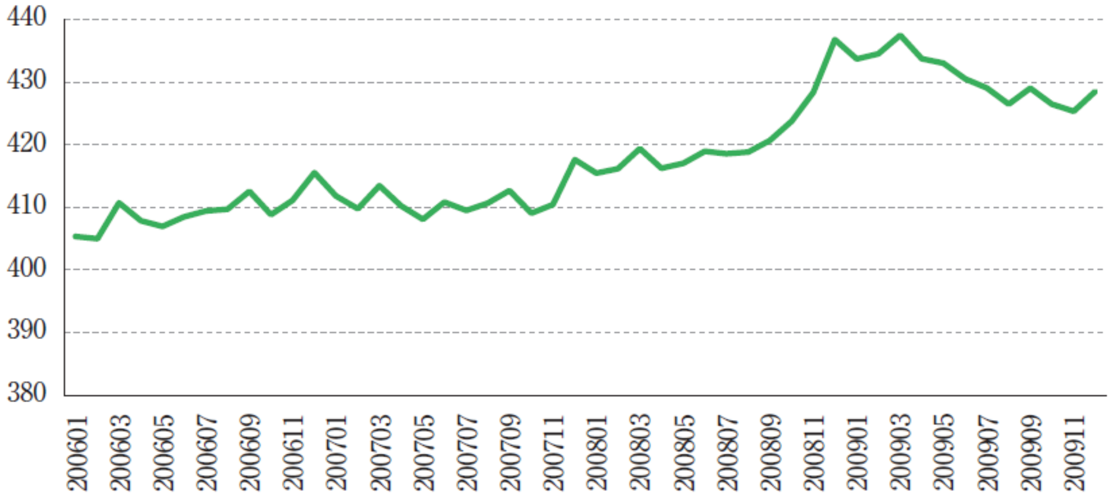
Figure 11. Spreads of Japan Corporate Bonds Yields over Government Bonds, by Rating



Source: Based on BIS data; Vertical scale: percentage.

also differ notably from that in the US: Japanese spreads rose most pointedly in the wake of the collapse of Lehman Brothers. Further, reviewing the structure of these increasing spreads between differently-rated bonds, while spreads did notably increase among the BBB and A ratings, AAA- and AA-rated bonds, in fact, saw lower spreads in 2008 and thereafter, with AAA-rated bonds having nearly zero spread. This bipolar phenomenon, based on bond rating, contrasts against the US' uniform credit spread increases, regardless of bond rating.

Figure 12. Japanese Domestic Bank Total Lending during the Global Financial Crisis



Source: Based on the Bank of Japan's "Monthly Report on Financial and Economic Statistics"; Vertical scale: trillions of yen.

The above implies that highly-rated firms with low credit risk found themselves in an environment more conducive to financing, aided by decreasing interest rates, which suggests they were more proactive in financing through corporate bonds at this time (safe haven effects). Naturally, we may surmise that highly-rated firms were also forced to bond issuing in the face of liquidity issues; however, decreasing financing costs also were at play, making this aforementioned bipolarization a phenomenon inherent to Japan.

Kim et al. (2015) and Yasuda (2014) conducted detailed research into the above points from the perspective of corporate bond maturing. For individual Japanese corporations, published tables of bonds and debentures allow for collecting data on redemption amounts for bonds maturing within a year of these tables being published. This research utilizes regression analysis to investigate how firms finance corporate bond maturity redemption amounts.

Though maturity redemption amounts and repayment schedules are determined at the initial time of financing, Lehman Brothers' bankruptcy represents an unexpected event not previously accounted for in these determinations. To wit, if a firm were to have planned a new bond issuance to cover redemption value, the unexpected bond market dysfunction caused by the crisis could require that firm to finance via some other method to cover the redemption. When verifying this point, we find that a bipolarization phenomenon did, in fact, occur in a nearly uniform fashion.

We may surmise given the above that though the Lehman Brothers' collapse may exist as a single phenomenon and a single concept, the effects of the global financial crisis did vary based on corporate characteristics like credit risk.

3.3 Dysfunction in the Corporate Bond Market and Increased Bank Lending

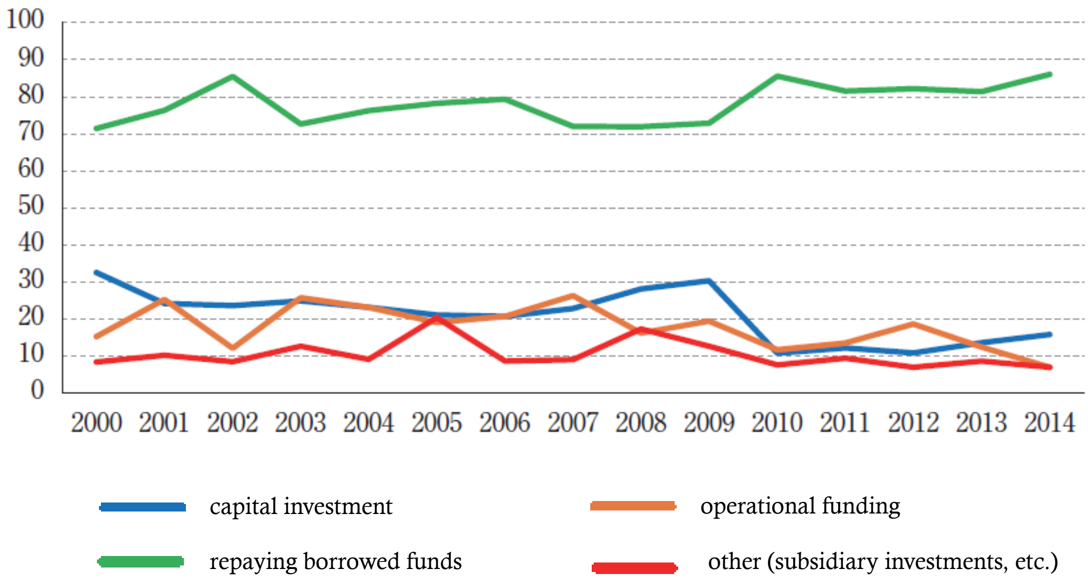
As observed previously, firms affected by the temporary dysfunction of the corporate bond market caused by Lehman Brothers' bankruptcy shifted their financing methods toward borrowing from banks as per the Bank of Japan (2010). As noted in Figure 2, though there was a downward trend in total lending amounts, lending did increase during the global financial crisis. Figure 12 displays similar lending data as in Figure 2 but on a shorter-term scale. This smaller scale clearly indicates a major jump of slightly less than ¥20 trillion in bank lending after the crisis, from approximately ¥420 trillion to ¥440 trillion. These points have been rigorously verified even as far as the individual corporation level in academia, as can be observed in the research of Uchino (2013), Kim et al. (2015), and others.

Given the above points, it is feasible that we may assign some degree of value to the functioning of positive, indirect aspects of the financial system during the global financial crisis.

3.4 Effects on Corporate Use of Bond Issues

To conclude, let us observe the purposes for corporate bond issuances were used. Figure 13 shows the proportion of corporate bond funding uses. Though care is needed given that the multiple responses provided do not result in a perfect 100% total, we may say that these data are useful in coming to terms with the overall picture of bond issuance-related funding uses. The greatest proportion comes from repayment of borrowed funds. The majority of issuance cases were meant to cover bond redemptions, bank loans, or other borrowed funds. Of particular interest is the fact that capital investment continued its upward trend through to 2009 despite the financial crisis. We

Figure 13. Usage of Funds Raised by Public Straight Corporate Bonds



Source: Based on data from the “Nikkei NEEDS”; Vertical scale: percentage.

may also note that highly-rated firms’ bond issuances and shifts to bank lending helped avoid reductions in capital expenditures. On the other hand, the year 2010 and thereafter saw firmly low levels; that is, the effects of the global financial crisis may have only begun to reverberate in the Japanese market at a later date. As an interesting side note, the “Other (subsidiary investments, etc.)” section arose when the crisis occurred. This suggests that firms issued bonds to prop up their subsidiaries, which is an area meriting further study.

4. Conclusion

This paper first takes a slightly broad view of Japan’s corporate financing environment, observing the following trends: (1) Japan’s corporate sector was one of excess funding in the late 1990s and thereafter, and (2) banks, as major lenders, were able to shrug off non-performing loan problems and keep the funding market healthy, although (3) there continues to be a sluggish lending trend since Japan's financial crisis.

In addition, the paper more specifically highlights Japan's corporate bond market and investigates, in detail, the effects that the global financial crisis had on Japanese publicly-listed companies. These include the bipolar phenomenon of the following: (4) the Lehman Brothers' collapse caused a temporary dysfunction in the market, with major frozen effects (difficulty in bond issuing) for firms with relatively high credit risk, whereas (5) safe haven effects (increased bond issues) benefitted firms with relatively low credit risk. Further, this paper observed that (6) firms facing difficulty with financing filled that gap with bank loans, making effects on overall capital investment not so clearly visible. The above suggests that the corporate bond and bank lending markets play complementary roles against one another—not pitting direct finance against indirect—which implies the joint usefulness of having both routes available for creation of a healthy, functioning market.

As mentioned in the previous section, clarification on the usage for funding subsidiaries is an extremely interesting topic meriting further exploration. This is particularly poignant for mergers and acquisitions (M&A) and other areas due to the rise of consolidated group management seen since the 2000s after the accounting Big Bang and its combination with the enactment of the Companies Act.

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