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Bank dependence and financial constraints on investment: Evidence from the corporate bond market paralysis in Japan

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ABSTRACT

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This paper investigates whether firms are able to substitute bank loans for public debt when the latter become less available to firms. To do so, this paper utilizes the 2008 financial crisis and its impact on Japanese markets as a natural experiment. Because the Japanese banking sector remained functional while the corporate bond markets were paralyzed, the data from Japan during this period provide us with an ideal environment to examine this hypothesis. I specifically examined whether firms with large holdings of corporate bonds maturing in FY2008 were financially constrained, by comparing the changes in their capital investment expenditures and borrowing conditions with those of bank-dependent firms. The main empirical results indicate that (1) firms with large holdings of corporate bonds maturing in FY2008 did not reduce investment expenditures; (2) instead, they exhibited higher increments in bank loans; and (3) firms that maintained relatively close bank-firm relationships had greater access to bank loans with low borrowing costs. These findings demonstrate that Japanese firms were able to substitute bank loans for public debt during the crisis and imply that the Japanese banking sector worked efficiently to replace public debt markets during the crisis. *J. Japanese Int. Economies* 29 (2013) 74–97. Faculty of Economics, Daito Bunka University, Japan.

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1. Introduction

The recent global financial crisis severely damaged almost every economy, and economists need to urgently shed light on the causes of the crisis as well as potential remedies. The crisis also provides us with the opportunity to investigate the causal links between financial shocks and the real economy, which are usually difficult to identify. By utilizing this crisis and its impact on Japanese markets as a natural experiment, this paper primarily aims to investigate if firms are able to substitute bank loans for public debts (such as commercial papers and corporate bonds) when the markets for public debt experience adverse shocks. Because the Japanese banking system remained quite functional even as the commercial paper and corporate bond markets froze after the collapse of Lehman Brothers, data from Japanese markets provide us with an ideal environment to examine this question in isolation from bank-side factors. Concretely, this paper examines whether firms with a large amount of bonds maturing during the crisis face financial constraints, by comparing their changes in terms of investments and borrowing conditions for bank loans with those of bank-dependent firms. Because we can expect heterogeneity in the extent of bank dependency even among bond-issuing firms, the data also enable us to investigate how existing bank-firm relationships affect the availability of bank loans to firms.

In the existing literature on corporate finance and the bank-lending channel of monetary policy, many empirical studies have focused on the substitutability between bank loans and public debt when the availability of bank loans becomes limited. For example, [Kashyap et al. \(1994\)](#) and [Chava and Purnanandam \(2011\)](#) find that bank loans and public debt are imperfectly substitutable by demonstrating that firms without access to public debt markets reduce their investments during periods of tight monetary policy and banking crises. These findings imply that asymmetric information between firms and investors limits the ability of firms to switch from bank loans to public debt.

However, little is known regarding the opposite situation, that is, the question of whether bank loans are substitutable for public debt. Following the literature on bank-firm relationships, such as [Chan et al. \(1986\)](#) and [Petersen and Rajan \(1995\)](#), it is predicted that banks are not willing to meet the sudden demand for loans from public-debt-dependent firms because banks have not accumulated enough information on such client firms through transactions.¹ Certainly, [Hoshi et al. \(1990\)](#) demonstrate that the Japanese firms that tried to be less dependent on banks during the 1980s were financially constrained relative to firms that maintained close relationships with their banks. That is, if firms reduce bank dependency, their access to bank loans will be limited, making information asymmetries between firms and banks more severe.

The empirical findings provided by [Hoshi et al. \(1990\)](#) imply that bank loans may not be substitutable for public debt. In a sense, their findings can be regarded to relate to the costs of disintermediation. Following the discussions of [Holmström and Tirole \(1998\)](#), who analyze the role of indirect finance, the advantage of private (or bank loans) over public debt is related to its ability to provide firms with insurance against liquidity shocks. Especially in Japan, it has been suggested that one of the advantages of the main bank system is that firms are supplied with implicit insurance so that they can be rescued by their main banks if exposed to liquidity shocks ([Osano and Tsutsui, 1985](#); [Sheard, 1989](#)). Therefore, the loss of such functions in the course of financial liberalization can result in public debt market shocks more easily propagating into the real economy.²

Despite its importance, the methodology of [Hoshi et al. \(1990, 1991\)](#), which measures the extent of financial constraints by the sensitivities of cash flows in reduced-form investment functions, has been

¹ [Boot \(2000\)](#) points out the possibility that banks reduce their relationship-specific investments in environments in which their client firms might switch to other banks or to the financial markets. This is because anticipated shorter relationships with their clients inhibit the reusability of information and therefore diminish the value of information.

² Before the 1980s, Japanese firms were highly dependent on bank loans, and the bank-centered financial system (called the main bank system) was considered to mitigate the problem of asymmetric information between firms and banks. However, firms have incentives to reduce their dependency on their banks because close bank-firm relationships can cause hold-ups through an information monopoly ([Sharpe, 1990](#); [Rajan, 1992](#); [Houston and James, 1996](#); [Weinstein and Yafeh, 1998](#); [Pinkowitz and Williamson, 2001](#)). After the financial liberalization in the 1980s, the structure of corporate finance in Japan certainly changed dramatically and a number of firms began issuing bonds ([Shirasu and Xu, 2007](#)).

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