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Bankruptcies of small firms and lending relationship

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ABSTRACT

This paper empirically investigates the role played by relatively small banks in the Japanese local credit market. We test the hypothesis that small banks enhance the recovery rate from the financial distress and reduce the bankruptcy ratio of small firms. Empirical evidence suggests that small banks specialize more in relationship loans to small firms. However, this expertise is limited to the loans to unincorporated firms or those with a very small number of employees.

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1. Introduction

There exist many studies addressing the problem of how the lending relationship affects the efficiency of the credit market. The past empirical analyses have examined the effects of the lending relationship on the availability of funds, loan interest rates, likelihood of loan approval, and other contractual terms. In particular, lending relationship attracts much concern of some economists and policymakers because small firms have many difficulties in obtaining funds from public capital markets.

Japanese banks find themselves in an increasingly competitive environment of rapidly progressing financial globalization and deregulation where boundaries, typically geographic ones, are gradually becoming less significant. There have been multiple rounds of consolidation among the financial institutions of the world. Further in Japan, the total number of financial institutions has decreased from 890 to 595 (by 33%) during the last decade.¹

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¹ As is well known, there are several types of financial institutions in Japan: the largest type are city banks that operate all over Japan, the second-largest type are regional banks that operate in smaller regions (typically in one or a few prefectures), the third-largest type are *shinkin* banks that operate in even smaller regions (typically in a few cities and other municipalities within a prefecture). There also exist other cooperative institutions. From 1999 to 2009, the number of city banks decreased from 9 to 6, that of regional banks from 124 to 106, and that of *shinkin* banks from 386 to 272.

It is an academic and political issue how such large waves of consolidation affect the efficiency of the credit market in the Japanese banking industry as well as in the US.

Thus, it is important for us to understand whether or not small banks provide relationship loans, the effect of these loans on the economic activity of small businesses, and the way in which this effect realizes. Some of the past empirical findings are as follows: (i) the lending relationship increases the availability of financing for small businesses (Petersen and Rajan, 1994), (ii) the lenders are more likely to finance credit-constrained firms in a more concentrated market (Petersen and Rajan, 1995), (iii) the loan rates decrease with the distance between the firm and the lending bank (Degryse and Ongena, 2005), (iv) the firms choose multiple banks if the probability of terminating the relationship is higher (Detragiache et al., 2000), and (v) the large banks are less willing to lend to informationally difficult credits (Berger et al., 2005).²

This paper addresses two questions from the viewpoint of Boot and Thakor (2000). The first question deals with the sectors that small banks specialize in, and the second deals with the issue of whether or not lending relationship affects the bankruptcy rate of borrowers. This paper explores the idea that small banks are

² Boot (2000), Elyasiani and Goldberg (2004), and Berger and Udell (2006) are useful reviews of this literature.

relationship lenders to small firms in the sense that they have greater expertise in relationship loans than larger banks.

As Berger et al. (2005) argue, small banks might be at a comparative advantage in making loans based on soft information and hence, larger banks are more apt to lend to larger firms that have better accounting records. Since a firm that borrows from a larger bank is more prone to repay its trade credit late, it is suggested that these firms are more credit constrained. The empirical implication of Berger et al. (2005) is that small banks may play the role of alleviating the credit constraints of small firms.

This paper goes one step further to investigate whether or not small banks play the role of reducing the bankruptcy rate or enhancing the recovery probability of distressed small businesses.³ The previous theoretical studies mention the possibility that the success probability of a firm's investment project depends on the loan contract type: relationship loan or transaction loan. For example, Diamond (1991) argues that bank monitoring increases the success probability by preventing intermediate borrowers from taking risky projects. Sharpe (1990) argues that the success probability of a good borrower is higher for inside banks because they have access to more precise information than outside lenders. Holmstrom and Tirole (1997) argue that bank monitoring mitigates the moral hazard incentive of entrepreneurs and indirectly enhances the success probability.

This paper emphasizes the role of the organizational structure of small banks as analyzed in Stein (2002). Large hierarchical banks are at a comparative disadvantage when information about an investment project is soft. Since small banks have a decentralized organizational structure, their loan manager has a higher research effort incentive and as such, the net expected output increases. The role of soft information is realistically illustrated in Berger et al. (2005, p. 239):

“For example, consider a loan officer trying to decide whether or not to extend credit to a small start-up company that does not have audited accounting statements. The best the loan officer may be able to do is to spend time with the company president in an effort to determine whether she is honest, prudent, and hard-working—i.e., the classic candidate for a “character loan.” However, given that this information is soft and cannot be verifiably documented in a report that the loan officer can pass onto his superiors, the model predicts that his incentives to produce high-quality information are weak when he works inside a large bank.”

This paper regards *shinkin* banks (abbreviated hereafter as SBs) as such small banks that have a more decentralized organizational structure and regional banks (abbreviated hereafter as RBs) as larger banks that have a more hierarchical structure.⁴ SBs are not only typically smaller than regional banks, but also their operating region is geographically restricted to a small area and their borrowers are legally restricted to small and medium firms.⁵

³ Dahiya et al. (2003) note that the recovery rate on defaulted debt is likely to be fairly high for bank loans. See footnote 2 on page 376 of Dahiya et al. (2003). Grunert and Weber (2009) conclude that borrowers with an intense client relationship with the bank exhibit a higher recovery rate after default. In an extreme case, small banks might play the role of preventing small firms in distress from bankruptcies or postponing their bankruptcies by financial support. A classical example in Japan is given in Hoshi et al. (1990).

⁴ Of course, since regional banks are smaller than major city banks, both *shinkin* banks and regional banks are often considered to be relationship lenders in Japan.

⁵ In addition, *shinkin* bank is a non-profit cooperative. It is important to take care of generalizing this paper's results to typical markets because the activities of non-profit cooperative banks (or credit unions) are relatively small in some countries. For example, according to Goddard et al. (2008, p. 1837), credit unions of the US have \$668 billion assets (8% of total bank assets). Hackethal (2004, p. 74) reports that German credit cooperatives have 12% of total bank assets. As appeared later in Table 1, *shinkin* banks have 108 trillion yen of deposits, which is only 14% of total deposits. We go back again later to this problem.

Small decentralized banks are at a comparative advantage when they must rely heavily on soft information. Following Boot and Thakor (2000), we define a relationship loan as a loan that permits the bank to use its expertise, which we call sector specialization, to improve the borrower's expected payoff. We consider two-bank, two-sector model where the relationship loans of one bank add more value to the borrower in a specific sector. In particular, we argue that it might be possible to enhance the borrower's quality, i.e., the success probability of investment projects by unincorporated firms or firms with small capital, small debt obligations, and a small number of employees that have no verifiable accounting information.

Although Japanese banks have to disclose the total amount of loans to bankrupt firms and non-performing loans, they are not expected to provide the detailed information: how many borrowers went bankrupt, what is the proportion of bankrupt borrowers in each sector, what is the proportion of small firms in the bankrupt firms, etc. Thus, there has not been any empirical study investigating the bankruptcy ratio of specific type of borrowers because the data on the bankruptcy ratios of specific type of borrowers by bank is unavailable. This paper uses the bankruptcy ratios of specific borrowers by prefecture that are publicly disclosed by the administrative agency affiliated with the Small and Medium Enterprise Agency in Japan. Since the activity of small banks varies across prefectures, it is tempting to examine how correlated the activities of small banks are with the default rate of the specific borrowers in each prefecture. If small banks behave differently from relatively large banks, their performance must have significant influences on the aggregate bankruptcy ratios of the specific borrowers within a prefecture.

As is well known, Japanese small banks have maintained a higher non-performing loans ratio than large banks ever since the non-performing loans problem emerged and the financial crisis. However, the ratio of loans to bankrupt firms was not much higher. I found supportive evidence for the hypothesis that small banks reduce the bankruptcy of small, in particular, unincorporated, firms in the local market by maintaining a larger amount of non-performing loans (except loans to bankrupt borrowers). The repayment of these loans is delayed during times of distress, but the banks are more likely to recover these loans later. This suggests that small decentralized banks might specialize more in relationship lending to small firms than larger banks.

In the remainder of this paper, I start by explaining how one type of banks specializes in a specific sector of the regional economy, and by predicting the relationship between the bankruptcy ratio in this sector and the amount of non-performing loans of banks that are at a comparative advantage in this sector. I also explain how we can test the hypothesis without knowing the bankruptcy ratio of each sector by bank.

In Section 3, after briefly describing the presence of small banks and small firms in Japan, I present the main estimation results of the panel data model including the time invariant variables. I found evidence that the more the aggregate non-performing loans ratio of small banks exceeds that of the larger banks in a prefecture, the lower is the prefectural bankruptcy ratio of unincorporated firms becomes. I tried to find similar influences on the bankruptcy ratio of other sectors: firms with relatively small capital, small debt obligations, and a small number of employees. However, a similar result is obtained only for firms with less than five employees.

Section 4 provides an extended econometric analysis on the aftermath of such behavior of small banks. Using the dynamic panel data model, we show that such behavior of small banks does not lead to a surge in the bankruptcy ratio in the subsequent years. An explanation about the related literature appears in Section 5. Since no past empirical literature analyzes the influences of the lending relationship on the bankruptcy ratio, this paper fills the

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