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Abstract

This paper examines the effects of the ownership forms of banks on local economic growth in Japan. If the cooperative ownership of banks has comparative advantages, the failure of a cooperative bank should be more harmful than that of a commercial bank. The evidence in this paper, however, provokes skepticism to this view, suggesting less efficient operation of cooperative banks in local communities probably due to weak member discipline.

Key words: Banking crisis, Cooperative bank, Bank ownership, Financial development, Local growth, Japan

JEL: E44, G21, O18, P13

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1. Introduction

Since the 1990s, there has been a growing consensus in the literature, that "Schumpeter might be right" (King and Levine, 1993). That is, the development of the financial sector promotes economic growth, for instance, by reducing the disparity between the costs of internal and external funds (Rajan and Zingales, 1998), or by promoting the responsiveness to shocks towards growth opportunities (Fisman and Love, 2004). The literature, including Guiso *et al.* (2002), also shows that local financial development is an important determinant of the economic success of an area even within a single country.

In local financial markets, cooperative banks and their commercial counterparts compete against each other. Commercial banks, in the same way as other commercial enterprises, seek to maximize their profits. Hence, they seek the highest-possible lending rates and the lowest-possible deposits rates. On the other hand, the aim of cooperative banks is the maximization of consumer surplus to the extent of keeping them solvent. The literature, including Fonteyne (2007) and Cuevas and Fisher (2006), points out the comparative advantages of cooperative banks over their commercial counterparts in overcoming the problems that SMEs face in obtaining bank credit. Unlike in commercial banks, in cooperative banks, the borrowers and owners are basically the same people, and there does not seem to be any agency conflict.[1]

[1]However, the following agency conflicts within cooperative banks can be inferred after reviewing the literature: net-borrower versus net saver and owner versus manager. See, for instance, Cuevas and Fischer (2006).

Therefore, cooperative banks seem to present advantages in the provision of financial services by breaking the market failure that leads to credit rationing. In addition, cooperative banks are small and nonprofit institutions in tightly knit local communities, and they may be able to rely on peer pressure to help guarantee loan repayments and to collect information on the quality of borrowers relatively easily.

Furthermore, cooperative banks have another possible advantage in facilitating financial development in a rural area. In a competitive market, commercial banks may have too little incentive to develop a physical and institutional infrastructure that facilitates the smooth operation of financial intermediation (such as a branch network) in a rural area because of the public good nature of the information about the quality of possible customers (Hellmann *et al.*, 1997). That is, if the bank invests but the quality of a local market is poor, it losses its investment. Even if the quality is high, competitive entry despoils its profit immediately.

On the other hand, the cooperative bank, which pursues objectives other than profit maximization, could develop such infrastructure for local financial development at the expense of its own capitalization and profitability. It is also worth noting that in several countries, including Japan, the area of operation for cooperative banks is geographically restricted by law. Therefore, the cooperative bank has no other choice except for cultivating its own geographically restricted area of operation. For these reasons, it may seem plausible that the cooperative bank has comparative advantages over its commercial counterparts in promoting local economic growth by delivering more sophisticated financial services in a rural area.

Nonetheless, the literature also casts doubt on this hypothesis, pointing out that the formal governance mechanisms in cooperative banks appear very weak (e.g. Cuevas and Fischer, 2006; Hesse and Čihák, 2007). The members/depositors of cooperative banks, who have only a fixed-value claim on the bank with the protection of small deposits by the government, may not exert effective oversight over managers. Moreover, in the corporate finance literature based on the standard agency theory, larger shareholders can be expected to take a major role to protect their investment by conducting effective oversight of managers. In a one-person/one-vote arrangement, however, the incentive to vote would be lower for the average member of cooperative banks than for shareholders in commercial banks.[2] This lack of a solution to the agency problem in cooperative banks can lead to less efficient bank operation in local communities. Cooperative banks, as a result, may not play a dominant role in local development.

In this paper, we investigate the effects of the ownership forms of banks on local economic development using the prefecture-industry data during Japan's "lost decade," from the early 1990s to the 2000s. Surprisingly, however, very few formal investigations have been conducted on this issue.[3] This

[2]In fact, Miyamura (2000) reports that 67 percent of the presidents of Shinkin banks, Japanese cooperative banks, had stayed in office for at least ten years or had gotten the post hereditarily during 1979–1999, and that this is probably owing to the weak member discipline in these banks.

[3]Although the effects of the ownership forms of banks on local economic development have not been studied, the local effects of banking crises within a country have been analyzed by, for instance, Gilbert and Kochin (1989), Ashcraft (2005), and Calomiris and Mason (2003).

paper aims to fill this void.

Similar to other related studies, however, the issue of causality arises and so does the need for conducting irrefutable tests of the hypothesis. Since bank failures were coincident with economic downturns during the lost decade in Japan, how can one identify the direction of causality? To deal with the causality issue, we adopt the method developed by Rajan and Zingales (1998) (henceforth RZ). RZ argue that better-developed financial sectors help overcome the market frictions that drive a wedge between the prices of external and internal finance. If their assertion is true, more-bank-dependent industries should suffer disproportionately more from local banking crises than less-bank-dependent industries, and the failure of cooperative banks should affect local economic growth more severely than that of commercial banks. This provides solid evidence on the comparative advantages of the cooperative ownership of banks in promoting local development in the debate over the direction of causality.

2. Data and Methodology

Following RZ and others,[4] we estimate the following model

$$\begin{aligned}(\text{Value added growth})_{i,j} = Constant &+ \sum_i \alpha_i (\text{Prefecture specific effects})_i \\ &+ \sum_j \beta_j (\text{Industry specific effects})_j \\ &+ \gamma (\text{Bank dependence})_{i,j} \\ &\quad \times (\text{Commercial bank failures})_i \\ &+ \delta (\text{Bank dependence})_{i,j} \\ &\quad \times (\text{Cooperative bank failures})_i \\ &+ \varphi (\text{Value added share})_{i,j} + \epsilon_{i,j},\end{aligned}$$

where the dependent variable is the average annual growth rate of value added in manufacturing sector j and prefecture i over the period 1992–2001, $(\text{Bank dependence})_{i,j}$ is the bank dependence index of industry j in prefecture i, $(\text{Commercial bank failures})_i$ is the index of the severity of the failures of regional and second-tier regional banks, $(\text{Cooperative bank failures})_i$ is the index of the severity of the failures of Shinkin banks and credit cooperatives, $(\text{Value added share})_{i,j}$ is the share of industry j in total value added

[4] The RZ methodology has also been used in a variety of related problems, for instance, to examine the role played by the concentration of the banking sector on firms with access to capital (Cetorelli and Gambera, 2001), the linkages between financial development and international trade pattern (Beck, 2002, 2003), bank competition and firm creation (Bonaccorsi di Patti and Dell'Ariccia, 2004), and the real effect of banking crises on short-term economic fluctuation (Dell'Ariccia *et al.*, 2008).

in manufacturing in prefecture i in 1992, and $\epsilon_{i,j}$ is the disturbance term.[5]

Our main interest here is the coefficient of the interaction terms γ and δ. If more-bank-dependent sectors suffer from a relatively lower level of growth during the banking crises, then γ and δ would be negative. On the other hand, these coefficients would be zero, if the banking crises merely reflect local economic weakness.

The most disaggregated comprehensive data on value added is at the prefecture-industry level: data at the firm level is typically limited to large listed firms, and this limited data may not be sufficient because banking crises would have relatively stronger negative effects on SMEs than large listed firms. Note that any price index does not affect the differences in the growth rate across sectors or prefectures, which is what matters to the tests in this paper; the industry- and the prefecture-specific effects are controlled by the two sets of dummy variables stated below.

Two sets of fixed effects should control for most of the shocks that affect firm performance, for instance, the local level of financial development,[6] the geographical location of prefectures, the technical features of industries, aggregate prefecture- or industry-specific shocks, etc.

To measure the severity of local banking crises for each prefecture, we construct a new variable that is defined as the sum of the loan amounts granted to the local customers by the banks that failed during the period

[5]Japan Standard Industry Classification (JSIC) was drastically revised in 2002; thus, continuous data for the following years is not available.

[6]RZ show, by using the cross-country evidence, that financial development disproportionately boosts the growth of industries that are naturally heavy users of external finance.

FY 1992–FY 2001 with respect to the ownership forms of the local bank—commercial banks (regional and second-tier regional banks) and cooperative banks (Shinkin banks and credit cooperatives)—as a share of the prefecture's total in 1992.[7] This variable reflects the existence of bank failures and the relative size of the failed banks in a local bank loan market. The number of failed local banks during FY 1992–FY 2001 is shown in Table 1.

The corporate finance literature generally mentions that small enterprises are more dependent on domestic bank finance than are large firms since the latter can raise capital through domestic securities markets or international capital markets. Thus, other factors being equal, sectors dominated by small firms should be more severely affected by local bank failures. Following Dell'Ariccia *et al.* (2008), we define bank dependence as the log of the average number of employees per establishment but with the sign reversed. Since this bank-dependence index varies with both prefectures and industries, it has an advantage over the original RZ index, which is defined as the fraction of capital expenditure not financed with internal funds for U.S. firms and, therefore, assumed to be stable across space and varying only with industries.

Following RZ and others, we also include industry j's share in prefecture i of the total value added in manufacturing in 1992 to account for "convergence" effects, that is, the tendency of larger industries to experience slower growth. Note that the initial level of value added, for instance, is controlled by the two sets of dummy variables. For more details on the data, see appendix A.

[7] In the analysis, we regard Hokkaido Takushoku Bank, which was formally grouped with a city bank but had a large market share in Hokkaido, as a regional bank in Hokkaido.

3. Results

Table 2 provides the results. For specifications (1) and (2), the point estimates of the interaction terms predict that the failure of the cooperative bank affects local growth more severely than that of the commercial bank. These results are also true for specifications (3) and (4), wherein the prefecture dummy is replaced by the wide regional dummy.[8] However, none of these results are statistically significant. The results provoke skepticism to the comparative advantages of the cooperative ownership of banks over their commercial ownership in promoting local economic growth.

4. Conclusion

This paper examines the effects of the ownership forms of banks on local economic growth using the prefecture-industry level data during Japan's "lost decade." If the cooperative ownership of the bank has comparative advantages over its commercial ownership in promoting local economic growth, the failure of the cooperative bank would be more harmful in comparison to that of the commercial bank. The evidence in this paper, however, provokes skepticism to this view, suggesting less efficient operation of cooperative banks in local communities probably due to weak member discipline.

A. Data issues

[8] In the analysis, Japan is divided into fourteen regions: Hokkaido, Kita & Minami Tohoku, Kita & Minami Kanto, Koshinetsu, Hokuriku, Chukyo, Kansai, Chugoku, Shikoku, Kita & Minami Kyushu, and Okinawa.

Variable	Description	Source
Value added growth	Average annual growth rate of value added in manufacturing at the 2-digit JSIC level (22 industries) (in percentage terms)	Author's calculations based on the Census of Manufactures, Ministry of Economy, Trade and Industry (METI)
Bank dependence	Log of the average number of employees per establishment at the 2-digit JSIC level with the sign reversed	Author's calculations based on the Census of Manufactures, METI
Commercial bank failure	Ratio of the sum of loans granted to the local customers by the failed first-tier and second-tier regional banks during FY 1992–FY 2001 to the prefecture's total in 1992 (including Hokkaido Takushoku Bank) (in percentage terms)	Author's calculations based on *Nikkin Shiryo Nenpo* published by the Japan Financial News Co., Ltd., the DICJ's website, and *Kin'yu Map* (various years) published by the Financial Journal Co., Ltd.
Cooperative bank failure	Ratio of the sum of loans by the failed cooperative banks and credit cooperatives during FY 1992–FY 2001 to the prefecture's total in 1992 (in percentage terms)	Author's calculations based on *Nikkin Shiryo Nenpo*, the DICJ's website, *Kin'yu Map* (various years), and the financial statements of the Shinkin banks and credit cooperatives
Value added share	Industry's share of value added in manufacturing at the 2-digit JSIC level (22 industries) in the prefecture's total in 1992 (in percentage terms)	Author's calculations based on the Census of Manufactures, METI

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Table 1: Number of failed local banks during FY 1992–FY 2001

	Regional banks	
Year	Tier I	Tier II
1992	0	0
1993	0	0
1994	0	0
1995	0	1
1996	0	2
1997	0	2
1998	0	0
1999	0	5
2000	0	0
2001	0	1
2002	0	1
Total	0	12

	Cooperative banks	
Year	Shinkin banks	Credit cooperatives
1992	1	0
1993	1	1
1994	0	2
1995	0	5
1996	1	3
1997	0	7
1998	0	32
1999	4	28
2000	5	13
2001	9	36
2002	4	6
Total	25	133

Sources: Japan Financial News Co., Ltd., *Nikkin Shiryo Nempo*, and Deposit Insurance Corporation of Japan's website (`http://www.dic.go.jp/english/index.html`).

Table 2: Results of regression

Regression of (value added growth)$_{i,j}$ on

	(1)		(2)		(3)		(4)	
	Coef	p value	Coef	p value	Coef	p value	Coef	p value
(Bank dependence)$_{i,j}$								
×(Joint-stock bank failures)$_i$	−0.058	0.080			−0.070	0.042		
	(0.033)				(0.034)			
(Bank dependence)$_{i,j}$								
×(Cooperative bank failures)$_i$			−0.065	0.268			−0.094	0.133
			(0.059)				(0.062)	
(Joint-stock bank failures)$_i$					−0.194	0.090		
					(0.114)			
(Cooperative bank failures)$_i$							−0.403	0.025
							(0.179)	
$SHARE92_{i,j}$	−0.145	0.000	−0.149	0.000	−0.144	0.000	−0.150	0.000
	(0.030)		(0.030)		(0.029)		(0.029)	
Prefecture Dummies	Yes		Yes		No		No	
Region Dummies	No		No		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
obs	932		932		932		932	
adj R^2	0.393		0.392		0.359		0.362	

Notes: Dependent variable is the average annual growth rate of value added in the manufacturing sector during 1992–2001. Regressions are estimated with OLS. White robust standard errors, which have been corrected for heteroskedasticity, appear in round brackets. Regressions are estimated excluding 2% of the outliers on either tail of the dependent variable.