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Models of Financial Cooperatives:  
Evidence from Japanese Shinkin  
Banks**

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# Social Capital and the Business Models of Financial Cooperatives: Evidence from Japanese Shinkin Banks<sup>x</sup>

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## Abstract

We investigate the link between social capital and business model choice of financial cooperatives (Shinkin banks) in Japan. We identify two forms of business model, which concentrate on the issuance of loans funded by deposits (*traditional*) and the investment and management of large investment portfolios (*new*). *Traditional* business models are more likely to emerge in geographic areas (prefectures) with higher levels of social capital. These findings are robust after controlling for bank- and prefecture-level characteristics (such as unemployment, population, income) that may influence bank business model choice. We repeat our analysis for a sample of shareholder-oriented (regional) banks, but fail to establish any relationship between social capital and this organisational form. Overall, our findings suggest that financial cooperatives in high social capital areas are more likely to adhere to a traditional model of financial intermediation focused on lending which promotes community and economic development.

**Keywords:** Business models; Financial Intermediation; Japanese Banking; Social Capital, Stakeholder-orientation

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# **Social Capital and the Business Models of Financial Cooperatives: Evidence from Japanese Shinkin Banks**

## **1. Introduction**

In this paper, we investigate the link between social capital and the business model choice of financial cooperatives. The concept of social capital has received much attention in the field of sociology and economics. Following the work of Coleman (1988), Putnam (1993, 1995, 2000) and Glaeser et al. (2000) researchers have aimed to uncover the benefits of social capital for the welfare of individuals and societies.<sup>1</sup> According to Putnam, social capital accumulates through civic engagement and trust, and represents itself in the form of cooperative, economically productive networks.<sup>2</sup> Prior evidence suggests that social capital and societal trust play an important role in explaining the efficiency of institutions (Durlauf and Fafchamps 2005), health and well-being (Petrou and Kupek, 2003; Algan and Cahuc, 2014), innovation (Landry et al., 2002; Hauser et al., 2007) and economic growth (Knack, 2000; Zak and Knack, 2001).

Prior research has also linked the importance of social capital to the vitality of financial markets and financial and non-financial institutions. Following the seminal study of Guiso et al. (2004), researchers have investigated whether social capital limits opportunistic behaviour arising from ex ante (adverse selection) and ex post (moral hazard) information asymmetries inherent in financial (loan, insurance and investment) contracts (Kim et al. 2014; Hasan et al. 2017). Social capital has also been shown to be important for the viability of stakeholder-oriented banks. For example, Ostergaard et al. (2015) suggest that social capital is linked to the sustainability of non-profit mutual banks

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<sup>1</sup> Portes (1998) provides a detailed overview of early literature.

<sup>2</sup> There is no common definition of social capital (see Adler and Kwon (2002) for a detailed discussion). In this paper, we follow the definition provided by the OECD (2007) and understand social capital as the “networks together with shared norms, values and understandings that facilitate co-operation within or among groups.”

in Norway. These stakeholder banks are less profitable, but allocate more surplus to charity. In a recent contribution, De Vaan et al (2019) show that social capital can inhibit entrepreneurship (founding rates of new firms) at the early stages of industry evolution. However, once industries become established and information social capital can enhance entrepreneurship via information sharing and collective action.

In this paper, we extend prior literature to investigate the extent to which social capital is important for the choice of business model pursued by financial cooperatives. Putnam (1993) argues that social capital contributes toward the vitality of more efficient institutions that are more responsive to the needs of the community. Masciarelli (2011) and Laursen et al., (2012a, b) contend that social capital plays an important role in the strategic evolution of firms by allowing the identification of opportunities, and the formulation and execution of operational and strategic decisions. Based on these insights, we hypothesize that the business model strategy pursued by financial cooperatives depends crucially upon the level of civic engagement (social capital) prevalent in their respective local region.

As a setting we focus on Japanese financial cooperatives in Japan; so-called Shinkin banks. Shinkin banks '*... dedicate themselves to providing high-quality services to local residents, as financial institutions that are deeply rooted in their respective regions, and contribute to regional development*' (Central Shinkin Bank, 2018, p.20). Strict regulation of permissive activities, low interest rate environment and increased competition have threatened the viability of the locally focused stakeholder business model of Shinkin banks. Beginning in the early 2000s, business activities of financial cooperatives in Japan and elsewhere has shifted away from those that are primarily focused on lending and local economic development toward the investment and management of securities

(Murai and Schnabl 2017). The link between social capital and business model of financial cooperatives flows from the stakeholder-orientation inherent within this organisational form, and from the observation that the activities carried out by financial cooperatives are not all alike.<sup>3</sup> Financial cooperatives are non-profit organisations that ascribe cooperative principles and aim to contribute to enabling the development of their local communities (ICA, 2019).<sup>4</sup> Essentially, financial cooperatives are financial institutions where multiple stakeholders (shareholders, customers, employees, local communities and government) act collectively to achieve financial and social objectives. The organizational objective may be characterized as creating value for all stakeholders and not merely shareholders (NEF, 2014; Kim and McKillop, 2019; McKillop et al, 2020). Consequently, financial cooperatives are likely to choose a business model and adapt their respective business activities in order to exploit comparative advantages arising from managerial skill, market opportunities and resource access. Social capital, as a key resource for collective action may be exploited as a comparative advantage by financial cooperatives, and thus potentially impacts the business model choice of cooperatives.

In this paper, we investigate whether social capital plays an important role in the business model pursued by Shinkin banks. Our investigation proceeds in two stages. In stage one, we identify the types of business model pursued by Shinkin banks. In order to do so we adopt an approach proposed by Roengpitya et al. (2017) and undertake a cluster

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<sup>3</sup> Goddard et al (2017) and Kim and McKillop (2019) provide a detailed overview of ownership forms in banking. Evidence suggests that more diverse financial systems (in terms of size and ownership form) are more resilient in the face of changing conditions over the business cycle (Ayadi et al, 2010).

<sup>4</sup> According to the International Cooperative Alliance, a cooperative is defined as a group of people who join together in a common undertaking, in accordance with cooperative principles (ICA, 2019). The ICA lists seven principles that provide guidance for cooperatives when putting cooperative values into practice: 1. Membership is not restricted and voluntary. 2. There is democratic control based on one member, one vote. 3. Interest on share capital is limited. 4. There is equitable distribution of any surplus. 5. Cooperatives devote some part of their surpluses to education and training. 6. Cooperatives cooperate among themselves. 7. Concern for community.

analysis. Based on four input variables (comprising customer loans, securities, customer deposits, debt liabilities) that reflect various strategic choices, we classify financial cooperatives into two distinct business models. Financial cooperatives grouped into the first model engage in traditional financial intermediation placing emphasis on issuance of loans funded by deposits. We refer to this business model strategy as the *traditional* Shinkin business model. The second business model is populated by financial cooperatives, which hold larger securities portfolios that are funded predominantly by deposits. We refer to this as the *new* Shinkin business model. In stage 2, we investigate whether the level of social capital prevalent in a particular geographic area (prefecture) influences whether a Shinkin bank adopts of *traditional* or *new* business model. The results of estimating a simple regression based model suggest that Shinkin banks are more likely to adapt the traditional business model if they are located in regions (prefectures) with a high social capital index. These results remain intact after controlling for various bank characteristics and prefecture-level characteristics that may influence banks' business model, including unemployment, population, income.

The results of our empirical analysis are robust to a battery of additional sensitivity tests. We find a positive link between social capital and the *traditional* business model strategy when we use an instrumental-variable two-stage regression analysis to address endogeneity concerns related to social capital and omitted variables. Our results are also robust when we repeat our empirical analysis using a sample of shareholder-oriented regional banks. This addresses potential concerns that the business models pursued by smaller, regional financial institutions are driven by social capital regardless of their organisational form (shareholder- versus stakeholder-oriented). However, our results indicate that social capital does not affect the business model choice of shareholder-oriented regional banks.

Taken together, the findings of this study suggest that social capital contributes towards financial cooperatives business model choice. Moreover, social capital is positively associated with the *traditional* business model, which is focused on contributing to local economic development via intermediating funds of local savers and borrowers. The results also suggest that financial cooperatives in high social capital areas are more likely to adhere to traditional cooperative principles such as demonstrating concern for the community and working towards their economic development.

These findings enhance the understanding of the influences of social capital on business model choice. As such, we combine and contribute to two streams of literature on social capital and bank business models. First, we contribute to prior literature that examines the links between social capital and economic outcomes. This literature suggests that social capital and other forms of community cohesiveness such as trust and religiosity lead to higher levels of economic growth (Knack and Keefer, 1997; Barro and McCleary, 2003; Guiso, 2004). More recent evidence suggests that social capital is: associated with industry formation (de Vaan et al, 2019); negatively associated with bank risk taking behaviour (Jin et al, 2017); lower costs of funding for non-financial firms (Hasan et al, 2017a); mitigates the impact of negative shocks and uncertainty on bank lending (Galardo et al, 2019); and positively associated with corporate social responsibility (Hasan et al, 2017b; Servaes and Tamayo, 2017; Hoi et al, 2018). The results of our study augment this aforementioned evidence to illustrate the importance of social capital in determining the business models pursued by cooperative financial institutions. Our results suggest that social capital leads to cooperative financial institutions adopting traditional business models of financial intermediation aimed at enhancing the development of local communities.

Second, we contribute to a literature emanating from economics and management, which examines the determinants and evolution of business models (Newman, 1978; Amel and Rhoades, 1988; Teece, 2010; Zott and Amit, 2010; Baden-Fuller et al, 2017). Following the financial crisis (when banks pursuing risky business models incurred huge losses and were bailed out using taxpayer funds), insights from this literature have been used by both academics and policy makers to explore and understand the business models pursued by financial institutions, and the resultant implications for performance and stability (Mergaerts and Vander Venet, 2016; Roengpitya et al, 2017; Ayadi, 2019). We augment this literature to show that the level of social capital is a significant driver of business model choice leading financial institutions to pursue more traditional forms of financial intermediation.

The remainder of the paper is structured as follows. In section 2, we provide an institutional background to the current study and discuss the importance of financial cooperatives and their evolution in Japan. Section 3 presents our research methods and provides a discussion of our measures and the spatial distribution of social capital across Japan. Social capital is shown to be lower in the prefecture surrounding Japan's capital (Tokyo) and in prefectures located in the West relative to other parts of Japan. We also discuss how we describe banks' business models on the basis of a number of input variables pertaining to banking activities and funding strategies that reflect strategic managerial choices. Having derived bank business models we also describe our baseline regression model used to investigate the link between social capital and financial cooperatives' business model choice. Section 4 discuss regression results based on bank business models and social capital. Section 5 describes robustness checks including the identification strategy based on instrumental variable 2-stage regression models and the sensitivity of results to using a sample of commercial banks. We conclude in Section 6.



## **2. Institutional Background**

In many banking industries worldwide, non-profit financial cooperatives are the most numerous financial institutions. Financial cooperatives play a key role in fostering local economic development (Ayadi et al. 2010; Hakenes et al. 2015; Coccorese and Shaffer 2018). Financial cooperatives aim to enhance the welfare of their stakeholders including members, customers, employees, and the local community. The objective of financial cooperatives is to balance different interest of those stakeholders. In practice, this means that financial cooperatives may not pursue profit maximising objectives to the same degree as commercial banks (Llewellyn, 2005; Goddard et al, 2017; McKillop et al, 2020). The ownership structure and local focus of financial cooperatives translates into a number of distinct features that define the business of financial cooperatives (Coelho et al. 2019). Financial cooperatives are typically small in size, and function as community banks that mobilise local savings and lend in the same region (Coccorese and Shaffer 2018). The provision of banking services is often restricted to members, which in turn limits cooperatives' ability to grow. Increasing membership and accumulation of retained earnings represent the two main sources of growth (Coelho et al. 2019). The local focus of operations and small size means that financial cooperatives operate under a restricted geographical scope. This exposes financial cooperatives to concentration risks in loan portfolios but also shields them from outside competition with each other (Coelho et al. 2019).

### *Japanese Financial Cooperatives – Shinkin banks*

The Japanese banking system comprises various types of depository institutions. These range from large-sized, listed commercial banks to micro-sized agricultural

cooperatives.<sup>5</sup> The group of small to medium-sized banks comprises two types of banks: regional banks (commercial) and Shinkin banks (cooperatives). Together, these banks hold around 50% of total assets and over 60% of deposits held by all depository institutions.

Shinkin banks are organised as not-for profit entities. Shinkin banks are smaller in size than regional banks, with assets ranging from ¥44bn to ¥5trillion. The average Shinkin bank is one-seventh the size of the average regional banks. The capital is subscribed by their respective members. The membership of Shinkin banks consists of individuals (local residents) as well as small and medium-sized enterprises. Shinkin banks are supervised by the Financial Services Agency and operate under a special set of banking laws. Shinkin banks are governed by the Shinkin Banking Act, which sets out the rules and regulations for the conduct of business, management and supervision.

Shinkin banks are organised under a two-tier system under which the Shinkin Central Bank provides clearing services and access to capital markets. As of 2016, there were 264 Shinkin banks with approximately 7400 branches throughout Japan. These banks had an aggregate membership of 9.3 million members and deposits of ¥135 trillion (18.5% of the total deposit market in Japan). As shown in Figure 1, during the 2000s, the number of Shinkin banks declined considerably (almost 10 percent). From 2010, this trend stabilised to some extent with the number of Shinkin banks declining at a more moderate rate.

**Insert Figure 1 near here**

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<sup>5</sup> For a full list of other types of banks operating in Japan and an overview of the general structure and evolution of banking in Japan see Teranishi (2005), and Uchida and Udell (2019).

The activities of Shinkin banks have a regional focus and target almost exclusively small- and medium-sized firms. The branch network of Shinkin banks is often confined to the boundaries of the prefecture or city where the head office is situated.<sup>6</sup> Accordingly, their ties to local firms and households are strong with the bulk of lending concentrated on small and medium-size enterprises in the local area. Due to the geographic concentration of their respective asset portfolios, regional and cooperative banks are heavily dependent on prevailing economic conditions of their respective home prefecture (IMF 2017).

By offering an extensive range of services and products to members and non-members, cooperative banks function like commercial banks. Unlike regional banks, Shinkin banks must limit the issuance of loans to their members.<sup>7</sup> However, they are free to accept deposits from non-members leading to a funding structure that is partially independent of membership. In recent years, cooperative banks have been subject to deregulation that led to a substantive reduction in restrictions on permitted activities. For instance, restrictions applied to issuance of loans to non-members has been loosened over time. Investments in trading securities (government bonds) and lending has evolved over time. Shinkin banks have increased investments in trading securities and reduced exposure to loans (Figure 2).

**Insert Figure 2 near here**

Today, the aggregate balance sheet composition of Shinkin banks in 2016 is markedly different to that of a traditional locally focused financial intermediary.

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<sup>6</sup> “On average, 81.1% of regional bank branches locate within the same prefecture of their head office; 95.8% of Shinkin bank branches operate in their home prefecture” Kano and Tsutsui (2003, p.158).

<sup>7</sup> Following an amendment to the Shinkin Banking Act in 1968, Shinkin banks can issue loans to non-member companies if the share to non-member companies falls below 20%.

### **3. Methods and data**

#### *3.1 Data*

We construct our sample using data from various sources. For our measures of bank business models and bank-level controls, we obtain information on the balance sheet and income statement of Shinkin banks from Nikkei NEEDS Financial Quest for the period 2003 to 2016. Nikkei NEEDS Financial Quests also provides detailed information on the composition of bank's loan portfolio by industry and asset class as well as information on the location of banks' headquarters. We link this geocoded dataset with prefecture-level information obtained from the Ministry of Internal Affairs and Communications (MIC). For our measures of social capital (discussed in section 3.2 below), we rely on the Survey of Social Life and Demographics published annually by the MIC as well as on election results from the 44<sup>th</sup> to 47<sup>th</sup> House of Representative General Elections published by the MIC in 2005, 2009, 2012, 2016.

#### *3.2 Measures of social capital*

Measuring social capital presents significant challenges. Given its somewhat abstract and multifaceted nature, there is no clear consensus in the empirical literature as to how social capital should be measured (Dasgupta and Serageldin, 1999; Durlauf, 2002). Instead research have relied on multiple measures to proxy for the level of social capital. Common examples include: membership of associations, societies, and networks; indicators of trust; indicators of collective action; and quality of external governance. Putnam (2000) suggests that social capital can be captured across a variety of measures relating to: community (individual membership and engagement with civic and social organizations); public affairs (engagement with public events and meetings); volunteerism (numbers of voluntary organisations, levels of individual volunteering);

sociability (time spent visiting and socialising with friends); and trust (subjective views of the level of individual trust and honesty). In many cases, the choice of proxy used is closely related to the availability and quality of data available.

Glaeser et al. 2002 contend that societies contribute to the formation of social capital and trust through frequent participation in community activities. Civic engagement plays a key role in Japanese society. Communities are shown to benefit from civic engagement in the form of reduced crime and better protection of community members when natural disasters occur (Yamamura 2009, 2010). Freitag (2003) focuses on the formation of trust in Japanese communities and identifies a positive relationship between active engagement within (educational, labour union, arts, music) associations and trust. Moreover, a high level of confidence in political institutions is also found to impact positively on trust.

Recent studies of social capital formation in Japan (Ramseyer 2015) use the insights from earlier studies to measure social capital by capturing the extent of civic engagement in Japanese communities. In the present study, we utilise two proxies for social capital related to prefecture-level civic engagement. First, the rate of voter turnouts in political elections every four years. This is measured as the ratio of actual to eligible voters in the 44th, 45th, 46th, 47th House of Representative General Elections measured at the prefecture level. Data for missing years for voter turnout (general elections are held every four years) are back-filled using information for the preceding year in cases where data are unavailable. Second is the rate of voluntarism. This is measured as the ratio of individual volunteers (over 15 years old) to total population measured at the prefecture level. We compute these two aforementioned measures of social capital. In addition (and in common with much of a salient literature) we use our two individual measures of social

capital to construct an index of social capital. In order to do so we undertake a principal component analysis Principal Components Analysis (PCA) using voter turnout rates and voluntarism. The resultant index measure of social capital *SOC* is the first principal component derived from the PCA.

**Insert Table 1 near here.**

For ease of visual interpretation of the geographic variation in social capital, we construct a heat map shown in Figure 3. This figure presents the spatial distribution of social capital in 2010 (mid-point in our sample).<sup>8</sup> We rank the social capital variable according to size and use the corresponding quintile ranks to create the map. The lightest (darkest) shade, represents the highest (lowest) rank of social capital. The map shows that social capital is lower in the prefecture surrounding Japan's capital (Tokyo) and in prefectures located in the Western part of Japan.

**Insert Figure 3 near here**

### *3.3 Measures of bank business model*

We derive business models on the basis of a number of input variables pertaining to banking activities and funding strategies that reflect strategic managerial choices. Following Roengpitya (2017) we identify clusters (business models) based on four balance sheets items as follows:

1. *Customer loans*. This indicator measures the scale of lending to customers (households and corporate borrowers that are members of the cooperatives). As such this indicator capture Shinkin banks' exposure to more traditional banking activities.

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<sup>8</sup> In order to conserve space, we only produce a heat map for one year in our sample. Other years and maps are available from the authors upon request).

2. *Securities*. This indicator identifies the scale of the portfolio of tradeable securities (bonds, shares, etc.).
3. *Customer deposits*. This indicator measures the share of deposits from customers (non-bank, private) indicating a reliance on more traditional funding sources.
4. *Debt liabilities*. This indicator measures the reliance on market funding. As such, this indicator measures the scale of liabilities that are not attributable to customer deposits and bank liabilities.

In a first stage, we apply Wards' statistical classification algorithm (1963) to our sample of 3908 bank-year observations using all of the four items listed in Table 2.<sup>9</sup> We then use the pseudo F-index by Calinski and Harabasz (1974) to identify the number of clusters.

**Insert Table 2 and Table 3 near here**

The results from the pseudo-F indices presented in Table 3 point to the presence of two distinct clusters, suggesting that Japanese Shinkin banks operate using two business model strategies. Table 4 provides descriptive statistics for the two business models.

**Insert Table 4 near here**

Business Model 1 groups together Shinkin banks that are focused on traditional deposit-loan intermediation. We refer to this as the *traditional* Shinkin bank business model. Customer loans account for 54% and securities for 23%. In contrast, Business Model 2 is populated by Shinkin banks that are investing more in securities including

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<sup>9</sup> Clustering is a statistical technique that is used to group observations (e.g. bank-year pair) into clusters based on a number of distinctive characteristics. Observations share similarities within their assigned cluster but differ across clusters.

government bonds, stock and corporate bonds (30%), and to a lesser extent in loans (45%). We refer to this as the *new* Shinkin bank business model.

On the liability side of the balance sheet, banks pursuing both business models is relatively similar, being funded mostly through customer deposits. Business Model 1 banks are more reliant on market funding than Business Model 2 banks, albeit both at a relatively low level (2% and 1%). Business Model 1 banks generate income more from interest and less from fee and commissions (79% versus 75%; 12% versus 11%). They also demonstrate a higher concentration in their loan and asset portfolios (22% versus 19%; 51% versus 43%).<sup>10</sup> Around half of the Shinkin banks in our sample pursue Business Model 1.

Figure 4 provides a graphical comparison of the commonalities and differences across the two business models. Based on the four balance sheet items (customer loans, securities, customer deposits, debt liabilities) used in the cluster analysis, the figure shows the attributes of the two business models, and the extent to which the two identified business models differ.

**Insert Figure 4 near here**

### *3.4 Empirical model*

We estimate the following model to investigate whether social capital is related to bank business model choice:

$$BM_{i,t} = \beta SOC_{p,t} + \rho X_{i,t} + \gamma Y_{p,t} + \delta_t + \mu_i + \epsilon_{i,t}$$

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<sup>10</sup> The Industry and Asset HHI have a maximum of one when all loans/assets are made to a single industry or comprise the banks' asset portfolio.



Where  $BM_{i,t}$  is a dummy variable equal to 1 if a Shinkin bank adopts the traditional business model, and zero if a bank adopts the new business model.  $SOC_{p,t}$  is the level of social capital within the prefecture in which a given Shinkin bank operates. To control for differences in bank size, regulatory capital and loan growth, we include bank-level controls,  $X_{i,t}$ . To control for differences in economic activity and the size of the prefectures, we include  $Y_{p,t}$  consisting of the proportion of residents that are over 65 years, population, income per capita, and the rate of unemployment (lagged by one period).  $\delta_t$  are time fixed effects and  $\mu_i$  are bank fixed effects. Standard errors are robust to heteroscedasticity and clustered at the bank level to control for within-bank correlation (Arellano 1987).

## 4. Results and discussion

### 4.1. Baseline regression results

We estimate our baseline model using ordinary least squares (OLS) regressions. Table 5 presents the estimated coefficients. Across all models 1 to 4, the dependent variable is the business model, a dummy variable that is one for financial cooperatives that adapt the *traditional* business model and zero for those that adapt the *new* business model as described in Section 3.2.

The estimates show that all three measures of social capital have a significant and positive effect on Shinkin banks' probability of adopting the *traditional* business model. The probability is higher when banks are located in prefectures with a higher level of social capital. The effects are all significant at the 5% level or less in all four model specifications. The findings suggest that social capital is important for the business model choice of financial cooperatives. Of the other explanatory variable included in the

regression, a large prefecture size (population) and high per capital income increase the probability that a Shinkin bank adopts the traditional business model.

**Insert Table 5 near here**

## 5. Sensitivity tests

### 5.1 *Instrumental variables*

To address potential concerns that our estimation in the baseline model is affected by the endogeneity of social capital, we use an instrumental variable 2-stage regression.<sup>11</sup> Following Hasan et al. 2017, our instrument is based on a measure for ethnic homogeneity. We proxy for ethnic homogeneity by using the ratio of the number of foreigners relative to the population in each prefecture. The number of observations drops by more than half as data on the number of foreigners are only available from 2013 onwards. Table 5, column 5 reports the results from the second-stage regression. *Fitted Social Capital* is the predicted value of the social capital variable based on the estimates obtained from the first-stage regression. The coefficient is positive, of similar magnitude, and significant, albeit at a lower significance level. This suggest that endogeneity is unlikely to be a serious issue affecting our baseline regression model.

### 5.2 *Social capital and commercial banks business model*

In this sensitivity test, we test whether social capital also plays a role in business model choice of banks with a shareholder-oriented organisational form adapt. First, we perform a cluster analysis using a sample of regional commercial banks. We follow our approach as outlined in section 3.2, and apply the Wards' statistical classification algorithm (1963) to our sample of 1372 regional bank-year observations using all of the

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<sup>11</sup> Larcker and Rusticus (2010) provide an extensive discussion of the use of instrumental variables in tacking endogeneity issues in accounting based research settings.

eight items listed in Table 4. We then use the pseudo F-index by Calinski and Harabasz (1974) and identify two distinct business model among regional banks. The first business model groups together those shareholder-oriented banks that exhibit the characteristics of traditional financial intermediaries focusing on taking deposits and lending activities. The second business model groups together banks with a more non-traditional business model strategy that relies on trading in securities and wholesale funding. In a second step, we run our baseline regression using the sample of regional commercial banks. Table 6, Panel B reports the results of our analysis. The coefficient on social capital is statistically not significant. Moreover, it is evident that the likelihood of a commercial bank taking on the business model of a traditional financial intermediary is decreasing in social capital suggesting that social capital is not a strong determinant in commercial banks' choice of business model.

**Insert Table 6 near here**

## **6. Conclusion**

In this paper, we explore the extent to which social capital is important for the choice of business model pursued by financial cooperatives. Based on insights from prior literature emanating from sociology and economics, we contend that the business model pursued by financial cooperatives is likely to depend crucially upon the level of social capital (measured by the level of civic engagement) prevalent in the region where they are located. As a setting, we focus on Japanese financial cooperatives in Japan (so-called Shinkin banks) which are not for profit stakeholder organisations, which provide deposit and lending services to local communities, thus playing a crucial role in local economic development.

The results of our analysis suggest that Shinkin banks pursue two distinct business models, which we characterise as *traditional* and *new*. Shinkin banks pursuing the *traditional* business model engage in traditional financial intermediation placing emphasis on issuance of loans funded by deposits. Those Shinkin banks pursuing the *new* business model hold larger securities portfolios that are funded by deposits. In an extension of this analysis, we find that the type of business model adopted by a particular Shinkin bank depends on the level of social capital prevalent in a particular geographic area (prefecture). Specifically, Shinkin banks are more likely to adapt the traditional business model if they are located in regions (prefectures) with a high social capital index. This suggests that the level of social capital encourages Shinkin banks to adopt a *traditional* business model, which is compatible with contributing to overall local economic development. Overall, the findings of this study provide the first evidence on how social capital influences business model choice. Specifically that social capital leads to cooperative financial institutions adopting traditional business models of financial intermediation aimed at enhancing the development of local communities.

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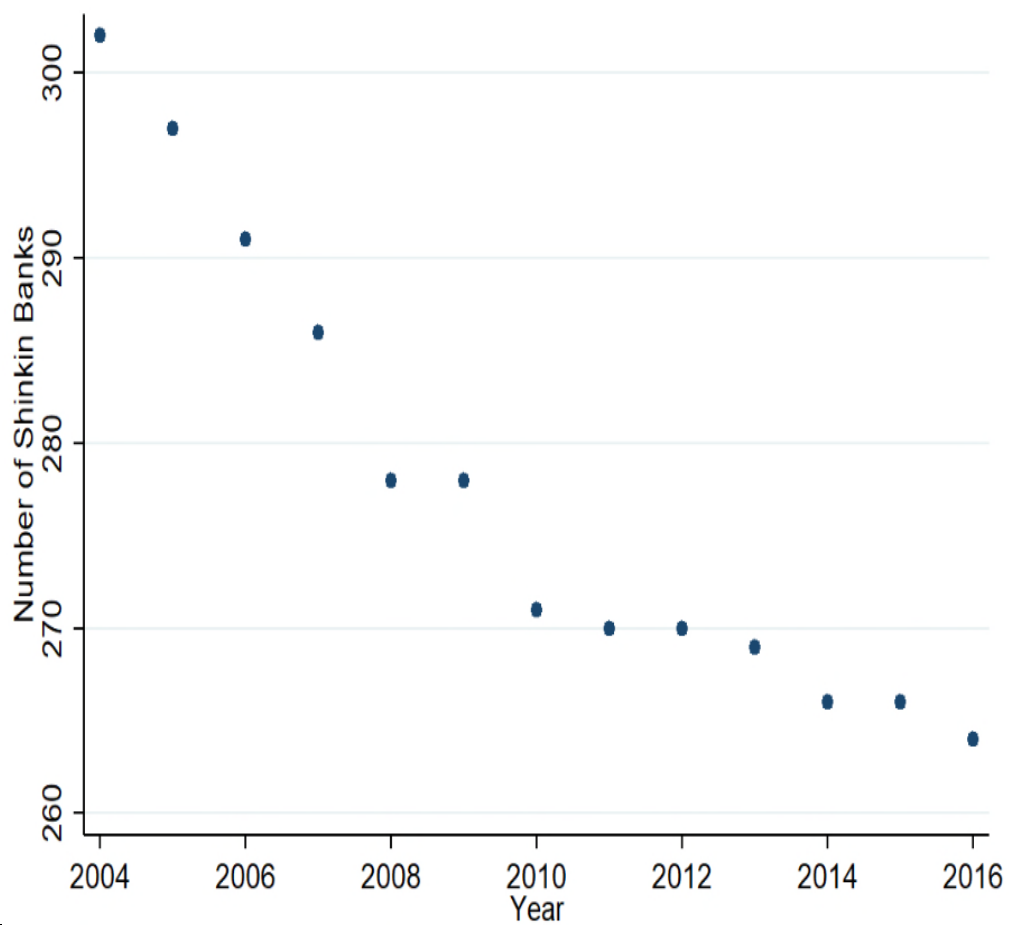


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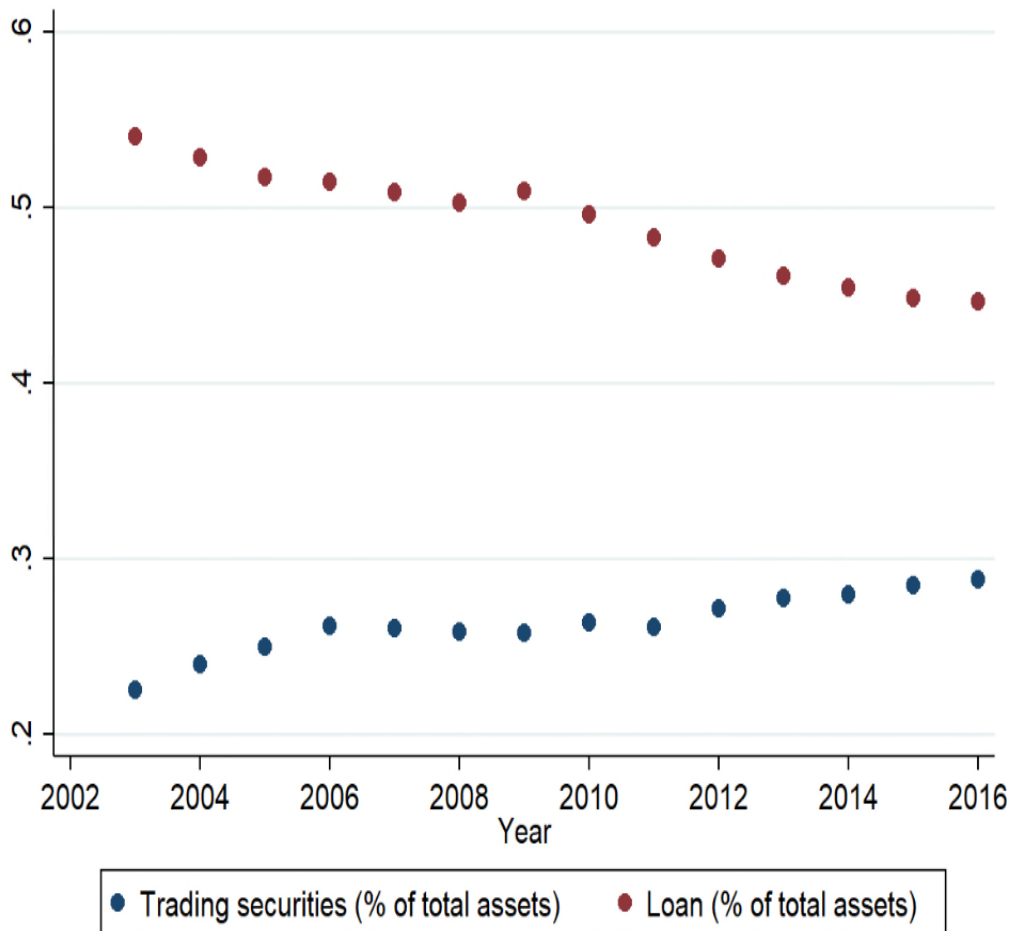
## Tables and Figures

**Figure 1.** Number of Shinkin banks over the period from 2004 to 2016.



Note: This figure traces the number of Shinkin banks over the period 2004 through 2016.

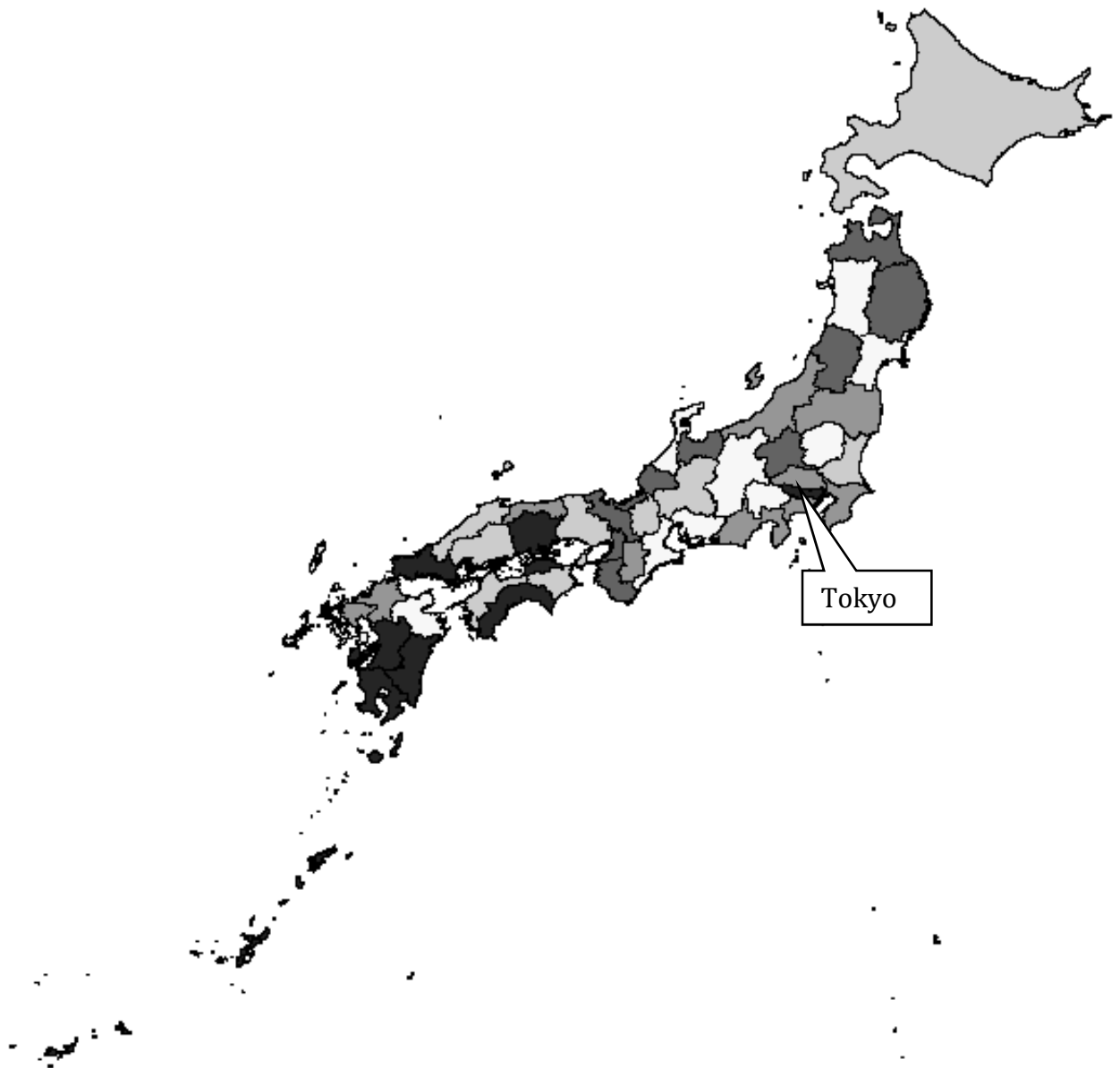
**Figure 2.** Trading securities and loan as a percentage of total assets from 2002-2016.



Note: This figure traces the evolution in the relative importance of lending and securities trading for Shinkin banks over the period 2002 through 2016. The investment and lending activities are measured by the ratio of trading securities to assets and the ratio of loans to total assets respectively.

**Figure 3.** Spatial distribution of social capital in Japan

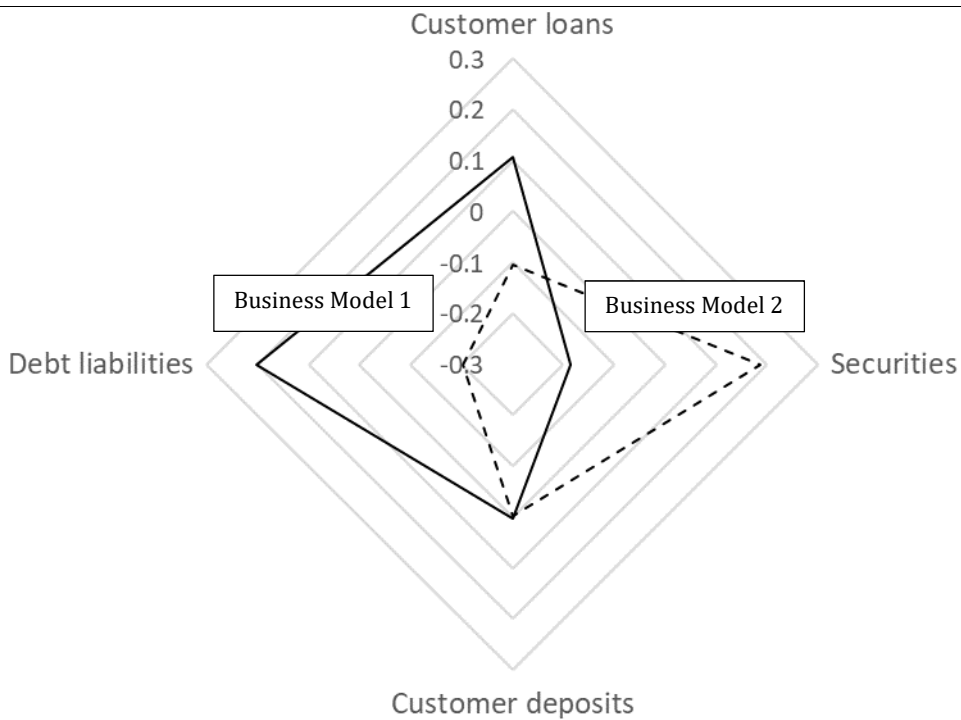
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This Figure presents the spatial distribution for the quintile rank of the social capital measure SOC in the 47 prefectures (Japan) in 2010. Prefectures with social capital measures in a higher quintile are displayed with a lighter shade. Prefectures with social capital measures in a lower quintile are displayed in a darker shade.

**Figure 4.** Shinkin bank business models



	Business Model 1	Business Model 2	Mean
Customer loans	54%	44%	49%
Securities	22%	32%	27%
Customer deposits	93%	92%	92%
Debt liabilities	2%	1%	2%

This Figure depicts attributes of Business Model 1 (solid line) and Business Model 2 (dotted line) based on the standard deviations from the sample mean. Business Model 1 and 2 exhibit commonalities in attributes such as net interest income and customer deposits (standard deviation is zero or close to zero). Business Model 1 and 2 differ considerably with regard to customer loans, securities, and debt liabilities (all scaled by total assets). All other attributes are defined in Section 3.3.

**Table 1.** Descriptive statistics of prefecture-level social capital variables

	<b>Principal Component (mean)</b>	<b>Volunteering (mean)</b>	<b>Voter participation (mean)</b>	<b>Obs.</b>
Hokkaido	-0.7	24.5	46.1	354
Aomori	-0.9	23.7	44.4	75
Iwate	0.7	32.3	46.8	131
Miyagi	0.2	30.5	41.3	101
Akita	-0.1	27.9	46.2	63
Yamagata	0.9	33.3	49.0	108
Fukushima	0.1	29.3	42.6	154
Ibaraki	-0.3	26.6	46.0	64
Tochigi	-0.4	26.7	43.6	105
Gunma	0.3	30.3	45.0	136
Saitama	-0.6	24.7	45.3	70
Chiba	-0.6	25.0	46.7	112
Tokyo	-0.8	23.1	48.9	384
Kanagawa	-0.7	24.4	46.9	140
Niigata	-0.7	24.4	46.0	168
Toyama	0.4	30.8	44.4	151
Ishikawa	0.6	32.0	46.9	83
Fukui	0.9	33.5	46.8	97
Yamanashi	0.6	32.3	44.5	42
Nagano	0.8	33.3	45.7	112
Gifu	0.9	33.1	47.2	135
Shizuoka	0.2	29.6	46.8	233
Aichi	-0.7	24.2	44.9	252
Mie	-0.2	27.3	46.3	112
Shiga	1.2	35.0	47.9	65
Kyoto	-0.7	24.3	45.6	56
Osaka	-1.3	21.0	46.0	199
Hyogo	-0.3	26.8	46.1	182
Nara	0.2	29.0	47.7	59
Wakayama	-0.5	25.6	45.8	51
Tottori	1.0	34.4	46.0	56
Shimane	1.3	35.0	49.9	74
Okayama	0.4	31.7	41.4	140
Hiroshima	0.0	28.7	43.7	89
Yamaguchi	0.4	30.3	49.7	101
Tokushima	-0.5	26.2	42.0	56
Kagawa	-0.3	27.1	41.8	56
Ehime	-0.2	28.1	41.7	88
Kochi	-0.8	25.0	37.6	56
Fukuoka	-0.2	27.6	43.2	175
Saga	0.9	33.6	44.7	84
Nagasaki	-0.1	27.9	44.9	63
Kumamoto	0.4	31.8	39.6	84
Oita	0.5	30.9	48.2	72
Miyazaki	0.2	30.2	42.5	101
Kagoshima	0.9	34.4	42.2	70
Okinawa	-1.3	22.3	37.2	56

Note: This Table shows the mean of the social capital variables (as described in Section 3.1) over the sample period 2003-2016 by prefecture. Principal component is the first principal component for the variables Number of volunteers and Number of voters. Number of volunteers is the ratio of volunteers (over 15 years) per population measured at the prefecture level. Number of voters is ratio of voters in the 44th, 45th, 46th, 47th House of Representative General Elections per number of eligible voters measured at the prefecture level.

**Table 2.** Business model indicators

Variable	Obs	Mean	Std. Dev.	Min	Max
Customer loans	3,908	0.49	0.08	0.36	0.73
Securities	3,908	0.26	0.09	0.10	0.41
Customer deposits	3,908	0.92	0.02	0.85	0.95
Market funding	3,908	0.02	0.01	0.01	0.08

Note: This Table provides descriptive statistics for the four balance sheet items used to identify clusters of Shinkin banks pursuing a particular business models.

**Table 3.** Pseudo-F indices for clustering configurations for Shinkin banks

Number of clusters	Pseudo-F index	Number of clusters	Pseudo-F index
1	-	6	476.52
2	873.03	7	441.99
3	697.77	8	414.76
4	595.63	9	390.53
5	521.79	10	376

Note: This table presents the Pseudo-F index, which provides an estimate of the between-cluster variance divided by within-cluster variance. The number of distinct clusters is indicated by the maximum value of the Pseudo-F index.

**Table 4.** Descriptive statistics by bank business model

Variable	Business Model 1			Business Model 2		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Customer loans	2,004	0.54	0.08	1904.00	0.45	0.06
Securities	2,004	0.23	0.08	1904.00	0.30	0.08
Customer deposits	2,004	0.92	0.02	1904.00	0.93	0.02
Market funding	2,004	0.02	0.01	1904.00	0.01	0.01
Net interest income	2,004	0.79	0.05	1904.00	0.75	0.06
Commission/ fee income	2,004	0.12	0.03	1904.00	0.11	0.03
Industry HHI	2,004	0.22	0.03	1904.00	0.19	0.02
Asset HHI	2,004	0.51	0.06	1904.00	0.43	0.06

Note: This Table provides descriptive statistics for the two derived business models. Business Models 1 is referred to *traditional*, while Business Models 2 is referred to as *new*.

**Table 5. Regression results**

	(1)	(2)	(3)	(4)
Social Capital	0.146*** (0.0115)	0.106*** (0.0395)		
Voter Participation			0.0103*** (0.00278)	
Volunteering				0.0212*** (0.00696)
Unemployment rate		-0.0105 (0.0246)	-0.0206 (0.025)	-0.0118 (0.0246)
Population over 65years		0.0275 (0.0235)	-0.0256 (0.0234)	0.03 (0.0234)
Per capita income		0.705*** (0.228)	0.712*** (0.227)	0.691*** (0.228)
Population		1.300*** (0.450)	1.509*** (0.466)	1.546*** (0.45)
Bank size		-0.0533 (0.102)	-0.0454 (0.101)	-0.053 (0.102)
Bank capital		0.0003 (0.0041)	0.000 (0.00407)	0.000332 (0.0041)
Time effects	NO	YES	YES	YES
Bank fixed effects	NO	YES	YES	YES
Number of observations	3908	3908	3908	3908

This Table presents the results of a regression-based analysis that investigates the importance of social capital for business model choice.

The estimated equation is:  $BM_{i,t} = \beta SOC_{p,t} + \rho X_{i,t} + \gamma Y_{p,t} + \delta_t + \mu_i + \epsilon_{i,t}$ .

Columns 1 to 4 report the results for the OLS regression that use business model choice as the dependent variable.

Social Capital is the first principal component for the variables Voter Participation and Volunteering. Voter Participation is the number of voters per number of eligible voters. Volunteering is the fraction of prefecture population over 15 years that participate in volunteering activities. Remaining variables are defined in Appendix A.

Robust standard errors clustered at the firm level are reported in parentheses.

\*\*\*, \*\*, \*, indicate significance at the 1%, 5%, and 10% level respectively.



**Table 6.** Sensitivity checks

<b>Panel A. Instrumental variable</b>	
Fitted Social Capital	0.0599* (0.0327)
Control Variables	YES
Time effects	YES
Bank fixed effects	YES
Number of observations	1065
<b>Panel B. Social capital and commercial banks' business model</b>	
Social Capital	-0.0111 (0.0543)
Control Variables	YES
Time effects	YES
Bank fixed effects	YES
Number of observations	1372

In this table, Panel A reports the result from the 2SLS estimation with the business model choice as the dependent variable. *Fitted Social Capital* is the predicted value of the social capital variable based on the estimates obtained from the first-stage regression. Control variables are the same as in the baseline regression. For variable definitions see Appendix A. Time and bank fixed effects are included.

Panel B reports the results from the baseline regression using a sample of commercial regional banks. The dependent variable is the business model choice. Robust standard errors clustered at the firm level are reported in parentheses. \*\*\*, \*\*, \*, indicate significance at the 1%, 5%, and 10% level respectively.

## Appendix A. Variable definitions

Variable	Definition
<i>Bank level</i>	
Business model (BM)	Dummy variable indicating whether a given Shinkin banks adapts the <i>traditional</i> business model (equal to one, otherwise zero), defined in Section 3.2
Size	Logarithm of bank assets
Capital	Tier 1 capital to risk weighted assets
<i>Prefecture level</i>	
Social capital (SOC)	The first principal component of the PCA as described in detail in Section 4.1
Volunteering	Fraction of prefecture population over 15years that participate in volunteering activities.
Voters participation	Fraction of voters relative to number of eligible voters that participated in the 44 <sup>th</sup> ,45 <sup>th</sup> ,46 <sup>th</sup> ,47 <sup>th</sup> House of Representative General Elections. Backfilled for missing years using last available data.
Population	Natural logarithm of the number of inhabitants of a prefecture
Population over 65 years	Natural logarithm of the number of inhabitants over 65years of a prefecture
Income	Income per capita in 10.000 JPY, backfilled for missing years using last available data.
Unemployment rate	Fraction of prefecture population that is unemployed in a given year. Backfilled for missing years using last available data.



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