

Social Capital and the Business Models of Financial Cooperatives: Evidence from Japanese Shinkin Banks^x

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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 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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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, 2002) researchers have aimed to uncover the benefits of social capital for the welfare of individuals and societies.¹ According to Putnam, social capital accumulates through civic engagement, and represents itself in the form of cooperative, economically productive networks.² 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 (Fukuyama 1995; 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

¹ Portes (1998) provides a detailed overview of early literature.

² 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, p.103) and understand social capital as the “networks together with shared norms, values and understandings that facilitate co-operation within or among groups.”

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 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, 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 choice 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.³ Financial cooperatives are non-profit organisations that ascribe to cooperative principles and aim to contribute to enabling the development of their local communities (ICA, 2019).⁴ Essentially, financial cooperatives are financial institutions where multiple stakeholders (shareholders, customers, employees, local communities and governments) 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.

Japan provides an ideal setting for our study. Prior evidence suggests that Japanese society exhibits high levels of social capital relative to other societies (Inoguchi

³ Goddard et al (2017) and Kim and McKillop (2019) provide a detailed overview of ownership forms in banking, while McKillop and Wilson (2011) and McKillop et al, (2020) provide detailed discussions of the research evidence pertaining to financial cooperatives. 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).

⁴ 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.

2000). This suggests that this may leave an imprint on institutions and thus allow a link between social capital and Shinkin banks' business model choice to be identified. The prevalence of high levels of social capital in Japan has been attributed to the traditional, conservative and culturally homogenous values shared by Japanese citizens (Freitag 2013). Moreover, the specific form of social capital that has been shown to dominate in the Japanese context also provides a strong rationale for our focus on Japan. Social capital formation in the Japanese context refers to the process of building trust within well-defined, narrow groups and networks through civic engagement (Fukuyama 1995). Because of the restriction of trust towards narrow groups, this type of social capital is referred to as a closed, non-bridging, and binding form of social capital (Inoguchi 2000). This contrasts with social capital formation in the US which is typically described as underlying more generalised forms of trust aiming to extend beyond groups (Yamagashi 1998). Financial cooperatives that build on the concept of a common bond and whose success depends to a certain extent on their members' relational ties and civic engagement are suspected to benefit most from the former type of social capital (Ostergaard et al. 2015; Catturani et al. 2016). We contend that the influence of social capital in the Japanese context might extend beyond benefitting financial cooperatives' performance to the more general concept of strategic decision making and business model choice of financial 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 analysis. Based on four input variables 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 the *traditional* or *new* business model. The results of estimating a simple regression based model suggest that Shinkin banks are more likely to adopt 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, and 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) and 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 is 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 shaping 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; Ayadi et al, 2020). 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. 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. In Section 4, we present and discuss the regression results. Section 5 describes robustness checks including: an 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. Background

2.1 Financial cooperatives

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; Coccoresse 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 interests of these aforementioned 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 model 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 (Coccoresse 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). In order to mitigate loan concentration risks, financial cooperatives typically operate within two- or three-tier structures of varying degrees of integration. At the top of these structures are institutions which offer centralised services such as liquidity and asset management to the constituent member banks. Financial cooperatives can benefit from these centralised services in the form of scale economies, better diversification, and more stable profits (Poli 2019).

2.2 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.⁵ 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 ¥44 billion to ¥5 trillion (equivalent to \$403million to 45 billion (USD)).⁶ 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.

In common with cooperative banking systems in other countries, Shinkin banks operate under a two-tier structure which comprises the Shinkin Central Bank (SCB), the central financial institution for the nationwide Shinkin bank network, and its constituent member banks. Within this two-tier structure, Shinkin banks act as legally independent institutions, and as such are responsible for decisions regarding their respective business model strategy. Shinkin banks are supported by the SCB which acts as a clearinghouse,

⁵ 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).

⁶ Data source: Nikkei NEEDS Financial Quest.

conducts wholesale activities, and engages in capital market activities in managing the investment portfolios of member banks.

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; equivalent to \$1.2 trillion (USD)). 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

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.⁷ 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.⁸ However, they are free to accept deposits from non-members leading to a funding structure that is partially

⁷ "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)

⁸ 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%.

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 have been loosened over time. Shinkin banks have also 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.

2.3 Social capital in Japan

The literature on social capital formation in Japan has focused in particular on studying the concept of trust and how it is built within groups and networks through civic engagement (Inoguchi 2000). The consensus among scholars is that, in Japanese society, social capital formation is best described as being group- and network-based and that it represents a form of closed, non-bridging and binding form of social capital. For instance, Yamagishi (1998) argues that Japanese people restrict their feelings of trust mainly to groups they know. He contends that being part of a group allows individuals to better assess and minimise the risks that are associated with social interaction, and often elicit a strong sense of obligation among its members. In a similar vein, Fukuyama (1995) points out that Japanese business networks are often characterised by high levels of mutual trust. He argues that the social capital formed within business relationships allows Japanese firms to minimise business risks and enables the efficient mobilisation of resources within the network.

Group- and network-based social capital has been used to explain key characteristics of Japan's society and economy (Inoguchi 2000). Fukuyama (1995)

attributes Japan's economic success after World War II to group-based social capital, arguing that networks of civic engagement allowed the creation of prosperity. In light of the trend towards globalisation, Japan's group-based social capital has come under scrutiny. Inoguchi (2000) argues that it may have contributed to Japan's economic stagnation since the 1990s by hindering interaction and integration with people outside of groups and networks. Freitag (2003) investigates the role of civic engagement within Japanese communities, and identifies a positive relationship between active engagement in (educational, labour union, arts, music) associations and the building of trust among members of the community. He concludes that civic engagement plays a key role in the formation of social capital within Japanese communities. Yamamura (2009, 2010) also finds that communities with a high level of civic engagement benefit in the form of reduced crime, and better protection of community members when natural disasters occur.

2.4 Measuring 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 has relied on multiple measures to proxy for 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 related closely to the availability and quality of data.

In order to capture the extent of civic engagement in Japanese communities, earlier studies have focused on two measures of social capital: voter turnout and volunteering. Voter turnout captures citizens' interest in and engagement with national and local political issues. It reflects the extent to which citizens identify with political parties and put trust in government (Putnam 2000). Volunteering indicates the extent to which people are willing to contribute to community activities by offering services for no financial gain (Putnam 2000). Volunteering reflects the extent to which people engage in altruistic activities and connect with others in their community.

The benefits of using voter turnout and volunteering in the context of social capital formation in Japan are that both variables are generally well documented and have been shown to capture the extent of social capital formation in Japan. For instance, Ikeda and Richey (2005) analyse whether Japanese voter turnouts are a suitable proxy for social capital. The authors find a strong positive relationship between social capital and political participation suggesting that citizens' political engagement in the form of voting contributes to the formation of social capital in Japanese communities. However, Pharr (2000) casts doubts on the suitability of this measure as a stand-alone proxy for social capital. In line with insights from Putnam's research (Putnam 1993a) on social capital formation in the US, she argues that voter turnout may decline when voters lose trust in democratic institutions. Examining voter behaviour in Japan, Pharr finds a negative relationship between confidence in politics and voluntary activity. Inoguchi (2000) concludes that due to the steady rise in voluntary activity in Japan (often in response to

natural disasters such as earthquakes and tsunamis), social capital formation in Japan might best be described through measures that capture civic engagement in the form of volunteering.

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 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 44th to 47th House of Representative General Elections published by the MIC in 2005, 2009, 2012, 2016. networks together with shared norms, values and understandings that facilitate co-operation within or among groups.

3.2 Measures of social capital

In the present study, we utilise two commonly used proxies for social capital related to prefecture-level civic engagement (Ramseyer 2015). First is the rate of voter turnout in political elections. This is measured at the prefecture level by determining the

ratio of actual to eligible voters in the 44th, 45th, 46th, 47th House of Representative General Elections. Data for missing years for voter turnout (general elections are held every four years) are back-filled using information for the preceding year. 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).⁹ 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

⁹ In order to conserve space, we only produce a heat map for the year 2010. Other years and maps are available from the authors upon request.

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 of business models based on four balance sheets items. The first item is customer loans (as a share of total assets), which measures the scale of lending to customers (households and corporate borrowers that are members of the cooperatives). As such this indicator captures Shinkin banks' exposure to more traditional banking activities. The second indicator selected from Shinkin banks' assets is securities (as a share of total assets). This identifies the scale of the portfolio of tradeable securities (bonds, shares, etc.). We select the third and fourth indicators from Shinkin banks' liabilities. Specifically, we use customer deposits (as a share of total assets). This measures the share of deposits from customers (non-bank, private), indicating a reliance on more traditional funding sources. Finally, we add debt liabilities (as a share of total assets). 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 other bank liabilities.

In a first stage, we apply Wards' statistical classification algorithm to our sample of 3908 bank-year observations using all of the four items listed in Table 2 (Ward, 1963).¹⁰ 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

¹⁰ 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.

The results from the pseudo-F indices presented in Table 3 point to the presence of two distinct clusters in Shinkin banks' business models. 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 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, the two business models are relatively similar in that funding is mostly sourced through customer deposits. In Business Model 1, banks are slightly 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%).¹¹ Around half of the Shinkin banks in our sample pursue Business Model 1.

Figure 4 compares graphically the commonalities and differences in the two business models. Based on the four balance sheet items used in the cluster analysis, the chart shows the attributes of the two business models and the extent to which the two business models differ.

¹¹ 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.

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:

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

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 measure of the level of social capital in 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, $X_{i,t}$. In addition, we also include a dummy variable to control for the possible effects of mergers on bank business model choice. The dummy variable takes a value of one in the year of the merger and zero otherwise. Given that M&A activity is likely to lead to changes in competitive conditions (Ayadi et al. 2017), we also include the market share of individual Shinkin banks within the prefecture in which they operate. Shinkin banks consolidate typically within the same prefecture suggesting that M&A activity could be a potential driver of business model choice (Hosono et al. 2006). We calculate the market share of an individual bank by dividing a Shinkin bank's total deposits by the total amount of outstanding deposits at the prefecture level.

We also include a number of control variables measured at the prefecture level, $Y_{p,t}$. To control for the size and population density of the prefectures, we include population measured as the natural logarithm of the number of individuals per prefecture. To control for changes in the demand for loans, we include the rate of unemployment (lagged by one period) as well as income per capita. These variables are measured at the prefecture level, and capture any changes in economic conditions that

could impact the demand for loans and deposits in individual prefectures. To capture changes in economic conditions at the national level, we also included time-fixed effects, δ_t . In order to control for demographic trends towards an older population (which may have implications for the demand for loans and deposits in prefectures), we include a prefecture-level variable that measures the number of individuals aged 65 years or over as a share of prefecture population. μ_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

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 adopt the *traditional* business model and zero for those that adopt 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.

Turning to the individual components of our social capital measure, we observe from the results reported in Table 5, Column (3) and (4) that both components, voter turnout and volunteering, are positively linked to banks' business model choice. In line with previous research findings, our results suggest that both components play an important yet individual role for Shinkin banks' business model choice. Banks located in

prefectures with high levels of voter turnout are more likely to adopt the traditional business model. This is also observed for banks located in prefectures with a high level of volunteering activity. This suggests that different forms of civic engagement such as trust (captured by voter turnout) and altruistic behaviour (captured by volunteering) are positively related to banks' adoption of business models that emphasis the loan issuance to members of the cooperatives. In Column (5), we report the results from estimating our model in which both individual components of social capital are included. The estimates and levels of significance remain largely unchanged, indicating that each component indeed captures different aspects of social capital. Overall, our results suggest that civic engagement (regardless of its specific form) strongly relates to Shinkin banks' business model choice. This is in support of previous research findings which find a strong link between social capital and banks' decision on how to raise funds (Ostergaard et al. 2016), where to invest (Hasan et al. 2017a; Jin et al. 2019) and what services to offer to members and the wider community (Ostergaard et al. 2016; Catturani et al. 2016).

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. We observe a negative and statistically significant coefficient on the unemployment rate in the estimates suggesting that Shinkin banks are less likely to choose the traditional business model, which concentrates on the issuance of loans, when economic conditions are unfavourable. Our estimates reported in Table 5 Column 3 also show a statistically significant relationship between the 65+ variable (measuring the share of people exceeding 65 years old) and Shinkin banks' choice to take on the traditional business model suggesting that demographic factors impacting on loan activity might play a role in Shinkin banks' business model choice.

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.¹² Following Hasan et al. 2017a, 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 suggests 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. First, we perform a cluster analysis using a sample of regional commercial banks. We follow our approach as outlined in Section 3.3, and apply the Wards' statistical classification algorithm (1963) to our sample of 1372 regional bank-year observations using all of the 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

¹² Larcker and Rusticus (2010) provide an extensive discussion of the use of instrumental variables in tackling endogeneity issues in accounting-based research settings.

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 non-traditional business model strategy that relies relatively more 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 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 financial cooperatives in Japan (so-called Shinkin banks) which play a crucial role as non-profit stakeholder organisations in the development of the local economy through the provision of financial services to local communities.

Against the backdrop of a persistent low interest rate environment, a trend towards financial digitalisation, as well as an increase in regulatory restrictions following the 2007 financial crisis, Shinkin banks' conventional business model has increasingly

come under pressure and has given rise to the emergence of alternative business models. The results of our analysis suggest that Shinkin banks pursue two distinct business models over the period from 2003 to 2016. We characterise them 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. 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. Specifically, Shinkin banks are more likely to adopt the traditional business model if they are located in regions with a high social capital index. This suggests that social capital may facilitate the maintenance of the conventional business model, which places relationships to local communities at the centre of its mission. High levels of civic engagement may empower financial cooperatives to express stronger commitments to the local community, facilitate better cultivation of relationships with local businesses, and thereby allow effective functioning of a conventional intermediary role. As such, our findings are in support of the more general notion that social capital contributes to the effective functioning of financial intermediation by mitigating frictions that arise from moral hazard and adverse selection (Guiso et al. 2004). Our findings also reconcile with Japan specific evidence that high levels of social capital result in better compliance of firms with their legal mandates and lowers propensity of loan defaults (Ramseyer 2015).

Overall, the findings of this study provide the first evidence of a link between social capital and the business model choice of cooperative financial institutions. In recent years,

the number of cooperative financial institutions operating in the market has continued to decline, drawing attention to the viability of their business models and raising questions about their relevance more generally (Uchida et al. 2008; Poli 2019). Against this backdrop, our study has wider implications for policy making concerned with identifying paths that prove effective in ensuring longer-term sustainability of financial cooperatives and their business models. To preserve the diversity of cooperative financial institutions, it may be essential that communities invest more in social capital enhancing projects. An erosion of social capital may mean that cooperative financial institutions' business model which places relationships at the centre of its mission comes under pressure, resulting in a further shift away from the stakeholder centric business model that historically defined the cooperative financial sector.

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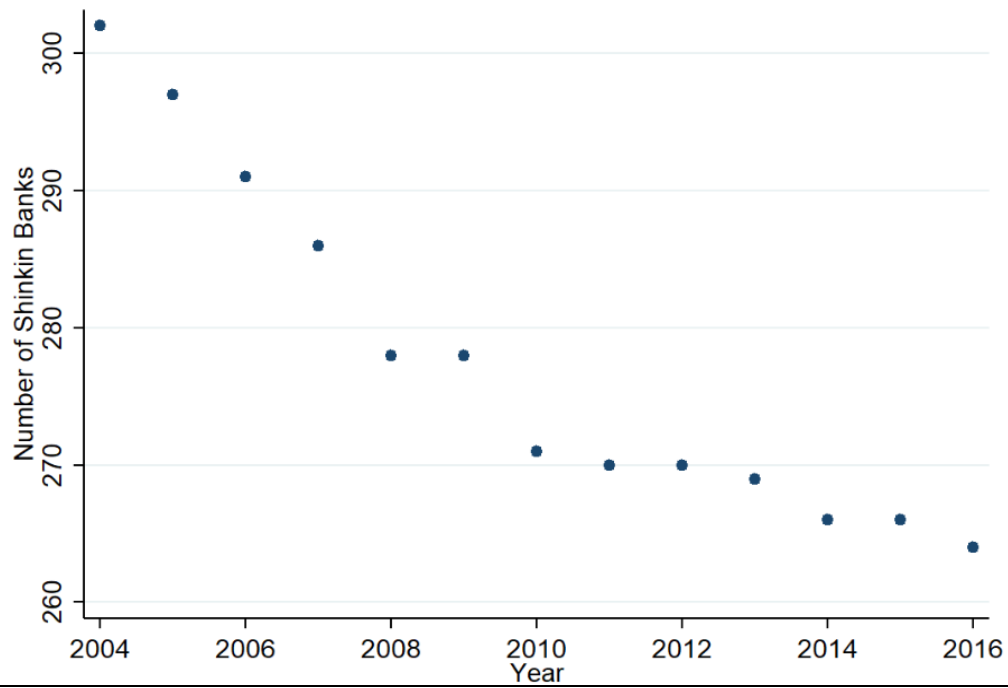
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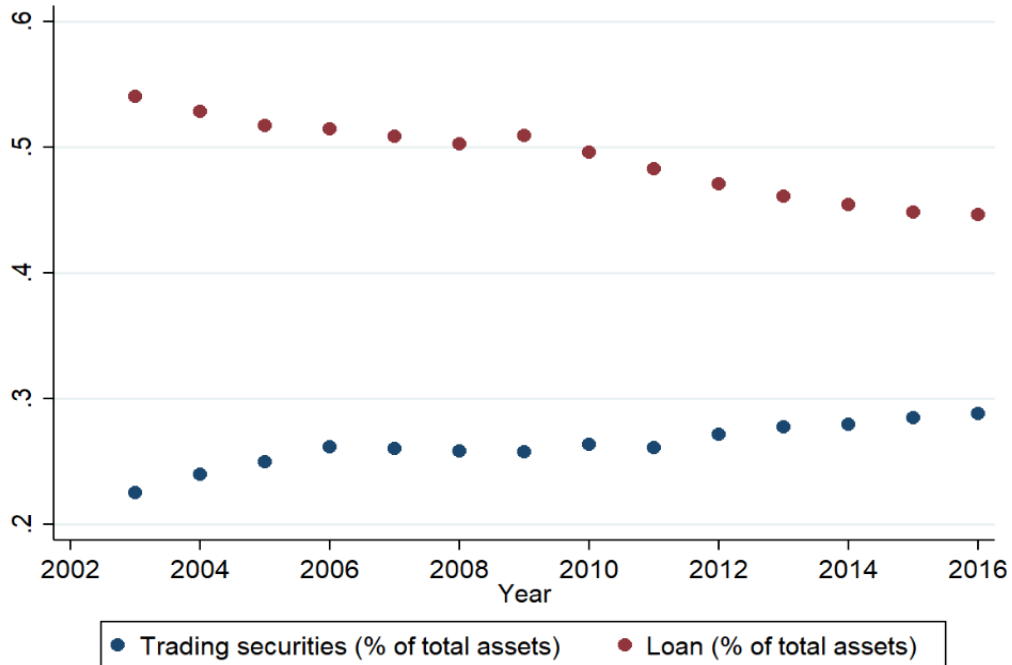
Tables and Figures

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



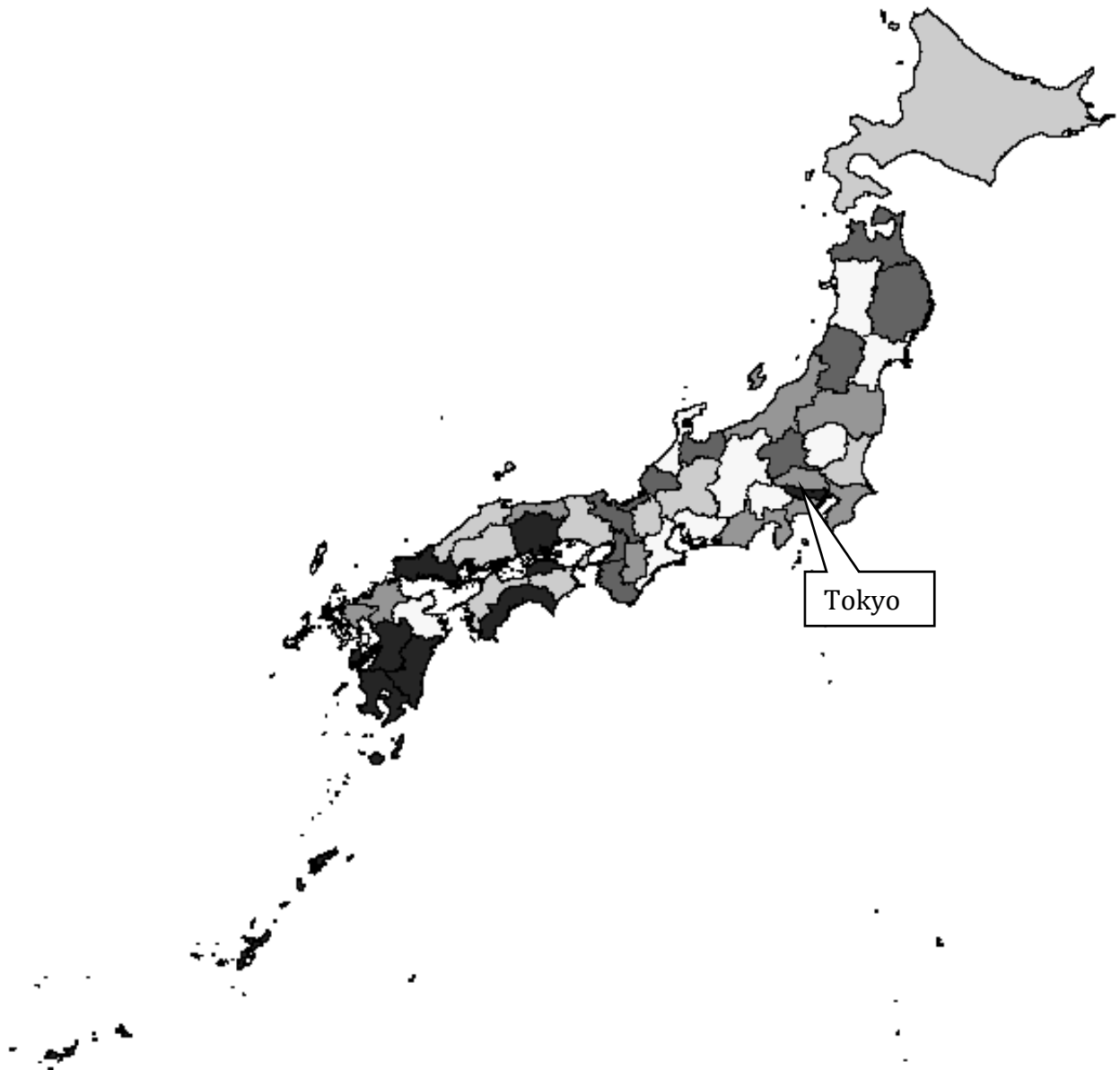
Note: This figure traces the number of Shinkin banks over the period 2004 through 2016. Data source: Nikkei NEEDS Financial Quest.

Figure 2. Trading securities and loan as a percentage of total assets from 2003-2016.



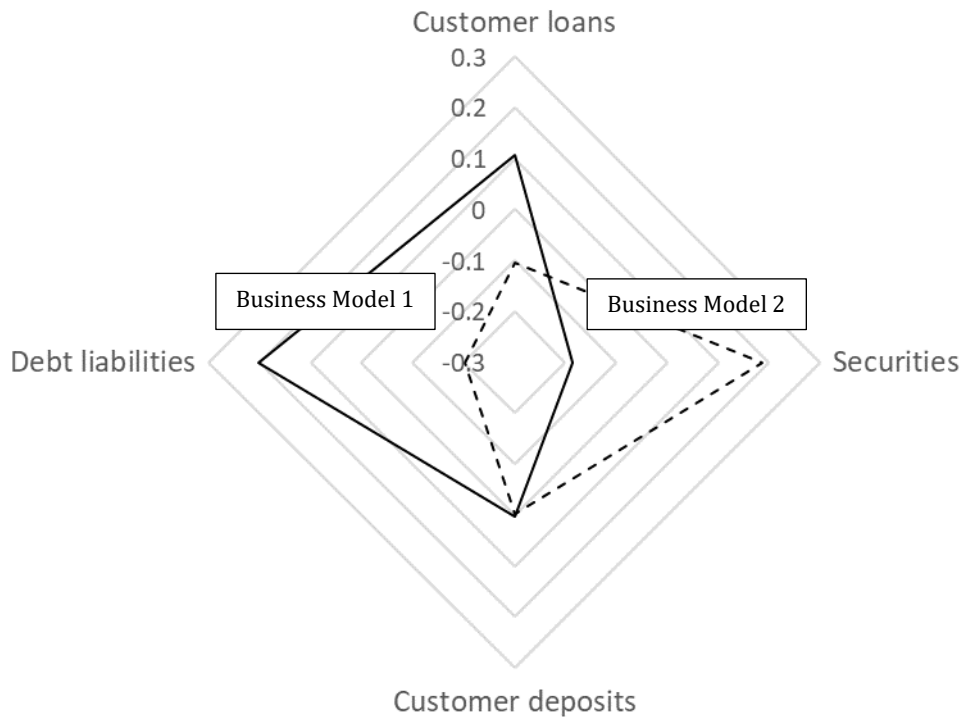
Note: This figure traces the evolution in the relative importance of lending and securities trading for Shinkin banks over the period 2003 through 2016. The investment and lending activities are measured by the ratio of trading securities to assets and the ratio of loans to total assets respectively. Data source: Nikkei NEEDS Financial Quest.

Figure 3. Spatial distribution of social capital in Japan



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 attributes are scaled by total assets and defined in Section 3.3.

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

	Principal Component (mean)	Volunteering (mean)	Voter participation (mean)	Obs.
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 3.2) 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 business models. All items are scaled by total assets.

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

Number of clusters	Pseudo-F index
1	-
2	873.03
3	697.77
4	595.63
5	521.79
6	476.52
7	441.99
8	414.76
9	390.53
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 statisticsPanel A | *Bank level* (by business model)

	Business Model 1			Business Model 2		
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Customer loans	2,004	0.54	0.08	1,904	0.45	0.06
Securities	2,004	0.23	0.08	1,904	0.30	0.08
Customer deposits	2,004	0.92	0.02	1,904	0.93	0.02
Market funding	2,004	0.02	0.01	1,904	0.01	0.01
Size	2,004	12.59	1.04	1,904	12.45	0.86
Capital	2,004	11.42	3.86	1,904	14.84	6.26
Market share	2,004	0.04	0.06	1,904	0.06	0.07
M&A	2,004	0.01	0.10	1,904	0.01	0.08

Panel B | *Prefecture level*

	Obs	Mean	Std. Dev.	Min	Max
Social capital (PC)	658	0.00	1.06	-2.06	2.21
Voter turnout	685	28.67	4.10	19.7	39.1
Volunteering	658	44.22	23.69	3.33	75.8
Unemployment rate	658	5.69	1.44	2.9	11.9
Population over 65 years	658	24.25	3.98	12.8	34.7
Per capital income	658	7.90	0.14	7.59	8.59
Population	658	14.48	0.74	13.26	16.38

Panel A provides descriptive statistics for the two identified business models. Business Models 1 is referred to as *traditional*, while Business Models 2 is referred to as *new*. Panel B provides descriptive statistics for the social capital measures; principal component (PC), voter turnout, and volunteering. Variables are defined in Appendix A.

Table 5. Baseline regression results

	(1)	(2)	(3)	(4)	(5)
Social Capital	0.146*** (0.0115)	0.111*** (0.0387)			
Voter Participation			0.00169*** (0.000292)		0.00445* (0.00248)
Volunteering				0.0184*** (0.00700)	0.0175** (0.00688)
Unemployment rate		-0.0448* (0.0387)	-0.0259*** (0.00794)	-0.0474* (0.0245)	-0.0444* (0.0244)
Pop. over 65 years		0.0310 (0.0222)	-0.0283*** (0.00516)	0.0338 (0.0222)	0.0299 (0.0219)
Per capita income		0.682*** (0.214)	0.687*** (0.173)	0.677*** (0.214)	0.686*** (0.214)
Population		1.247*** (0.435)	1.619*** (0.407)	1.496*** (0.434)	1.185*** (0.443)
Bank size		-0.119 (0.0994)	-0.121 (0.0954)	-0.118 (0.0989)	-0.111 (0.0968)
Bank capital		0.000375 (0.00402)	-0.00183 (0.00401)	0.000325 (0.00402)	0.000336 (0.00402)
Market share		0.327 (0.647)	-0.326 (0.562)	0.311 (0.652)	0.318 (0.642)
Merger		0.0101 (0.0387)	0.0234 (0.0417)	0.00775 (0.0390)	0.0105 (0.0389)
Time effects	NO	YES	YES	YES	YES
Bank fixed effects	NO	YES	YES	YES	YES
Number of obs.	3908	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. 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

Panel A. Instrumental variable	
Fitted Social Capital	0.0573* (0.0319)
Control Variables	YES
Time effects	YES
Bank fixed effects	YES
Number of observations	1065
Panel B. Social capital and commercial banks' business model	
Social Capital	-0.0111 (0.0543)
Control Variables	YES
Time effects	YES
Bank fixed effects	YES
Number of observations	1372

Panel A reports the result from a 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>	
Customer loans	Loans to households and corporate borrowers that are members of the Shinkin banks, as a share of total assets
Securities	Tradable securities (bonds, shares, etc.) as a share of total assets
Customer deposits	Deposits as a share of total assets
Debt liabilities	Debt as a share of total assets
Business model (BM)	Dummy variable indicating whether a given Shinkin bank adopts the <i>traditional</i> business model (equal to one, otherwise zero), defined in Section 3.3
Size	Natural logarithm of bank assets
Capital	Tier-1 capital to risk weighted assets
Market share	Deposits (reported by individual Shinkin banks) as a share of total outstanding deposits (reported by individual prefectures). Prefecture level deposits are the total amount of deposits held in the prefecture. Data are retrieved from e-Stat, the Japan Government statistics portal site, series #C04601).
M&A	Dummy variable indicating whether a Shinkin bank engages in merger and acquisition activity (equal to one, otherwise zero)
<i>Prefecture level</i>	
Social capital (SOC)	The first principal component of the PCA as described in Section 3.2
Volunteering	Fraction of prefecture population over 15 years that participate in volunteering activities
Voters participation	Fraction of voters relative to number of eligible voters that participated in the 44 th , 45 th , 46 th , and 47 th 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 65 years 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