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Article

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Cross-prefecture expansion of regional banks in Japan and its effects on lending-based income

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Abstract: This paper examines whether Japanese regional banks entering the banking market in other prefectures, including neighboring prefectures, can increase their lending-based income. To stimulate local economies and support local small- and medium-sized enterprises, the current Japanese Government's policies for regional banks require these banks to engage in region-based relationship banking practices. In this study, three lending-based income measures were used as dependent variables, and estimation was made using panel data from Japanese regional banks. As a result, it was determined that regional banks that enter markets in other prefectures experience positive effects in all three lending-based income measures. Moreover, it was determined that regional banks whose headquarters are located in non-urban areas derive greater benefit from their loan businesses upon entry into other prefectures, including neighboring prefectures, where economic activity is more vibrant than regional banks whose headquarters are located in urban areas.

Subjects: Economics, Finance, Business & Industry; Banking; Business, Management and Accounting

Keywords: regional banks; non-urban regional banks; region-based relationship banking; entries into other prefectures; lending-based income

JEL classification: G21

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ABOUT THE AUTHOR

Kazumine Kondo is a professor of the Faculty of Economics at the Aichi Gakuin University, Japan and a PhD in Economics at the Nagoya University, Japan. He is working on the empirical analysis of the Japanese financial system and is particularly interested in structures of regional financial markets and the behavior patterns of financial institutions. It is important for regional financial institutions to activate regional economies. To achieve this goal, regional financial institutions should support regional SMEs eagerly. However, almost all the regional banks enter other prefectures. Why do they want to enter other prefectures? This is the motivation for this study. This study is important to reconsider the future of regional financial institutions and regional finance.

PUBLIC INTEREST STATEMENT

Although Japanese regional financial institutions are required to practice region-based relationship banking through the government, almost all the Japanese regional banks have expanded their branch networks into the prefectures that did not comprise their headquarters. This study clarifies the reason for Japanese regional banks to enter other prefectures.

It was demonstrated that regional banks that have more branches in other prefectures succeed in gaining more lending-based income. In addition, it was revealed that regional banks whose headquarters are located in non-urban areas can benefit more by entering other prefectures, where economic activity is more vibrant. Hence, regional banks whose headquarters are located in prefectures with weaker economic activity cannot earn much lending-based income in their home prefectures; thus, they have an incentive to enter other prefectures, where economic activity is more vibrant than their home prefectures and additional lending opportunities exist.

1. Introduction

Japanese financial institutions are largely classified into city banks, which operate throughout the country and internationally, and regional financial institutions, which operate in particular regions and have deep connections to those areas. The latter are composed of first- and second-tier regional banks, which are both publicly listed and unlisted corporations, and cooperative financial institutions such as credit associations and credit cooperatives, which operate as non-profit organizations and are established mainly to offer financial services to members and associates living in particular areas or employed in certain occupations.

Since 2003, the Japanese Government has required regional financial institutions, including both regional banks and cooperative financial institutions, to practice region-based relationship banking. Relationship banking is a business model based on lending formulas, which considers not only the hard financial data in the statements of borrower firms but also soft information, which accumulates through a long-term business relationship between the financial institutions and the borrower. The Japanese Government probably believes this model to be appropriate for regional financial institutions since these institutions have a history of operating in relatively limited geographical areas; thus, they are in a better position to establish close relationships with regional small- and medium-sized enterprises (SMEs). As specified in the "New Action Program concerning enhancement of Relationship Banking Functions",[1] the government expects regional financial institutions to take the lead over the larger banks in stimulating regional economies by servicing local SMEs. In Japan, because differences in the economic conditions among regions have recently increased, regional financial institutions are now expected to support regional firms and industries and improve this situation, mainly through financing local SMEs.[2]

However, among regional financial institutions, many regional banks expand their branch networks and provide financial services and loans in prefectures where their headquarters are not located.[3] The regional banks are stock corporations; thus, they actively seek profits through the expansion of their branch networks. However, if these regional banks focus only on profitability, expectations regarding their promotion of local economies might not be met.[4]

Most previous studies that investigated the determinants of bank branch expansions revealed that banks are more likely to enter regional markets with higher income levels (Berger, Bonime, Goldberg, & White, 2004; Feinberg, 2008, 2009; Keeton, 2000; Kondo & Harimaya, 2014; Seelig & Critchfield, 2003). Thus, the primary motivation for this observed inter-regional expansion of regional banks is to seek profits unavailable in the regions where they are headquartered. These profits are derived from larger, high-performing firms, where lending opportunities are greater and the risks are lower. However, it is unclear whether the banks following this strategy actually increase their lending-based income.

Models that test structure–conduct–performance (SCP) and efficient structure (ES) hypotheses are often used to analyze the determinants of bank performance (Al-Muharrami & Matthews, 2009; Berger, 1995; Clarke, Davies, & Waterson, 1984; Evanoff & Fortier, 1988; Garza-Garcia, 2012; Goddard, McKillop, & Wilson, 2008; Hahn, 2008; Lloyd-Williams & Molyneux, 1994; Molyneux & Forbes, 1995; Naceur & Goai, 2001; Pilloff & Rhoades, 2002; Shaffer & Srinivasan, 2002; Smirlock, 1985; Tu & Chen, 2000).[5] The present study empirically investigates whether entering other prefectures (regions where a bank's headquarters are not located) has a positive effect on their lending-based income using a specific framework designed to test the SCP and ES hypotheses. We attempt to clarify the motivations of regional banks to expand their branch networks into other prefectures, despite government requirements for region-based relationship banking practices. We also consider whether these behaviors are actually economically appropriate for their businesses.

This paper is organized as follows: in Section 2, previous studies that have analyzed the effects of bank branch expansion on bank performance are reviewed; Section 3 discusses the analytical method and data sources; in Section 4, the empirical results are interpreted and summarized, with conclusions provided in the final section.

2. Literature review

We will first review previous studies that tested the effects of bank branch expansion and management area extension on bank performance.[6]

Chong (1991) analyzed the effects of US interstate banking on bank profitability and risk exposure using an event study methodology. He concluded that interstate banking benefits small and medium banks in terms of increased profitability; however, this increase is associated with significantly increased exposure to market risk for medium and large banks. Rivard and Thomas (1997) investigated performance differences between large bank holding companies operating subsidiaries in other regions and bank holding companies operating in a single region. They determined that the former experiences higher profitability, and both volatility risk and insolvency risk are less for the former. Seale (2004) considered the relationship between the number of bank branches and the average of several financial ratios, and reported that extensive branch networks are associated with higher non-interest income, lower interest and non-interest expenses, and higher ROE, especially among community banks. Zou, Miller, and Malamud (2011) examined the effects of deregulation of bank branching activity on bank performance across regions and demonstrated that profits and the net-interest-margin ratios of banks with more branches are higher.

Although the above-mentioned studies demonstrated that branch expansions positively influence bank performance, Hirtle (2007) tested whether the branch network size has positive effects on bank profitability and found no systematic correlation. In addition, he investigated the relationship between branch network size and branch performance, showing that banks with mid-sized branch networks may be at a competitive disadvantage compared with banks that have small- and large-sized branch networks. Hirtle and Stiroh (2007) estimated the equation that tests the effect of branch numbers per assets on bank profitability and determined that the former negatively influences the latter. Therefore, we cannot exactly assert that banks with larger numbers of branches in their network can expect improved performance. The present study clarifies whether having a larger number of network branches improves the lending performance of Japanese regional banks operating in other prefectures.

Previous studies have tested the effects of the deregulation of bank branching on bank performance.[7] Nippani and Green (2002) analyzed the impact of the Riegle–Neal Interstate Banking and Branching Efficiency Act (IBBEA) on performance in the US banking industry by comparing the banks' performances in pre- and post-IBBEA periods. They demonstrated that performance improved in the post-IBBEA period; however, when controlled for real GDP and prime rate, no significant effects of IBBEA were observed. Zou et al. (2011) demonstrated that the effects of this deregulation of interstate bank branching on bank performance differ according to bank size.

3. Methodology and data

3.1. Methodology

The present study empirically investigates whether entering other prefectures has a positive effect on their lending-based income using a specific framework designed to test the SCP and ES hypotheses, which are often used to analyze the determinants of bank performance. The following model is estimated using panel data obtained for Japanese regional banks from 2005 to 2010.

$$\begin{aligned} Lendingincome_{it} = {} & c_1 + c_2 Concentration_{it} + c_3 Marketshare_{it} + c_4 Asset_{it} + c_5 Capital_{it} \\ & + c_6 Nonperform_{it} + c_7 Outbranch_{it} + c_8 Population_{it} + c_9 Perincome_{it} \end{aligned}$$

Here, subscript *i* refers to bank *i* and subscript *t* refers to year *t*. As mentioned in Section 1, the strongest motivation for regional banks is to exploit more lending opportunities with higher performing firms; as a result, they pursue more lending-based income by entering other prefectures. Thus, we use measures of loan-related income streams as the dependent variable *Lendingincome*. Specifically,

these measures comprise the following: (1) dividing the interest on loans and discounts for each bank by the total assets of each bank to mitigate the bank size differences, which is represented by "*Lendingincome1*," (2) dividing (interest on loans and discounts—interest on deposits) for each bank by the total assets of each bank to mitigate the bank size differences, which is represented by "*Lendingincome2*," and (3) the natural logarithm of (interest on loans and discounts—interest on deposits) for each bank, which is represented by "*Lendingincome3*."

Concentration is a proxy for the competitive environment among financial institutions in regional markets. Both *HHI* and *Top3share* are used as *Concentration*. *HHI* is the Herfindahl–Hirschman Index, which is calculated based on the deposits of regional banks and credit associations whose headquarters are located in the same prefecture as the headquarters of bank *i*. *Top3share* is the proportion of the sum of deposits at the top three financial institutions whose headquarters are located in the same prefecture as the headquarters of bank *i* to the sum of deposits at regional banks and credit associations whose headquarters are located in that prefecture.[8]

Marketshare (%) represents the share of deposits at bank *i* compared with the sum of deposits at regional banks and credit associations whose headquarters are located in the same prefecture as the headquarters of bank *i*. If the coefficient of *Concentration* takes a significantly positive sign, the SCP hypothesis is supported within the context of the Japanese regional lending market. On the other hand, if the coefficient of *Marketshare* takes a significantly positive sign, the ES hypothesis is supported in these markets.

Asset is the asset for each bank and is a proxy for bank size. If larger banks have stronger negotiating power with other firms, they might also have greater capability to negotiate with higher performing firms. If larger banks actually have such an advantage and if this advantage increases their lending-based income, then the coefficient of *Asset* will be positive. *Asset* is converted into a natural logarithm.

Capital (%) represents the capital–asset ratio for each bank and is a proxy for bank soundness. Because regional banks in sound financial positions have more reserves, they may be willing to accept greater risks when lending to firms whose credit risks are higher. In this case, the coefficient of *Capital* will be positive. On the other hand, regional banks whose capital–asset ratios are high might tend to be risk averse; i.e. they prefer to consolidate the benefits of their sound financial position, e.g. in good market conditions, they prefer to obtain money from capital markets and depositors. Thus, it is possible that these banks place a relatively high emphasis on low-risk businesses, such as investing in government bonds and selling investment trusts, than on lending to higher risk SMEs. As a result, these banks might not be able to increase their lending-based income and the coefficient of *Capital* will be negative.

However, there are regional banks that are required to meet the Bank for International Settlement (BIS) standard for capital–asset ratio, while others are required to meet Japan's domestic standards.[9] It is impossible to directly compare these capital–asset ratios as they are calculated differently. Thus, we calculate the capital–asset ratio by dividing capital base by assets.

Nonperform (%) represents each bank's non-performing loan ratio, which is calculated by dividing risk-managed loans by loans and bills discounted. Because banks whose *Nonperform* is high have more loan receivables that are difficult to collect, these banks might not be able to collect enough interest on loans and bills discounted from these types of loan receivables. If this effect on lending-based income is positive, the coefficient of *Nonperform* will be negative. On the other hand, banks holding more non-performing loans are less risk averse. Thus, the possibility exists that these banks can receive significant risk premiums from their high-risk loan receivables; i.e. high risk yields high return. If this effect on lending-based income is positive, the coefficient of *Nonperform* will be positive.

Outbranch (%) is the ratio of the number of branches located outside the prefecture, where the headquarters of bank *i* is located, to the total number of branches of bank *i*. If regional banks that actively enter other prefectures succeed in increasing their lending-based income, the coefficient of *Outbranch* will take a significantly positive sign. This is an important test in the present paper.

Population is the population size in the prefecture where the headquarters of bank *i* is located and is a proxy for market size. It can be considered that customers' needs for retail loans, such as housing loans, are larger in regional markets that have larger populations. If this effect on lending-based income of regional banks is positive, the coefficient of *Population* will be positive. *Population* is converted into a natural logarithm.

Perincome is the per capita prefectural income in the prefecture where the headquarters of bank *i* is located and is a proxy for the economic vitality and wealth of each prefecture. Because high-performing firms are more active in prefectures where income levels are higher, the funding requirements of firms in these markets are also larger. If this factor contributes to an increase in lending-based income, the coefficient of *Perincome* will be positive.

3.2. Data

Data from the financial statements of individual banks and credit associations were obtained from *Nikkei Needs*. Data absent from *Nikkei Needs* were supplemented by *Analysis of Financial Statements of All Banks*, edited by the Japanese Bankers Association and *Financial Statements of All Credit Associations*, edited by the Consultant of Financial Books Co., Ltd. Data on bank branch numbers that are in the prefectures where the headquarters of each regional bank is located were obtained from the *Financial Map*, edited by the Japan Financial News Co., Ltd, and the total number of branches of each regional bank were obtained from the *Analysis of Financial Statements of All Banks*. Prefectural data are quoted from *Financial Resources of a Nation*, edited by Asahi Shimbun.

The descriptive statistics used in this study are presented in Table 1.

4. Estimation results

4.1. Estimation results for all regional banks

In this section, we discuss the results of the estimation model mentioned in Section 3.1 using panel data from all regional banks. The estimation results are presented in Table 2.

Table 1. Descriptive statistics

	Mean	Median	Maximum	Minimum	Standard deviation	Observations
Lendingincome1	1.506	1.459	2.679	0.482	0.337	656
Lendingincome2	1.337	1.297	2.349	0.417	0.319	656
Lendingincome3	31522.97	25702.00	168562.00	3114.00	24944.04	656
HHI	3648.180	3658.997	7175.260	569.687	1517.209	656
Top3share	81.354	87.215	100.000	26.867	17.592	656
Marketshare	32.641	23.951	84.215	2.070	23.591	656
Asset	2610351	2092965	11693332	183391	2169944	656
Capital	4.695	4.755	8.840	−14.238	1.750	656
Nonperform	4.665	4.194	15.623	1.288	2.035	656
Outbranch	17.228	14.049	58.696	0.000	13.220	656
Population	3138775	1948250	12609912	595331	2889797	656
Perincome	2749.913	2701.000	4820.000	1987.000	481.166	656

Table 2. Estimation results for all regional banks

	Lendingincome1		*Lendingincome2*		*Lendingincome3*	
	Coefficient	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
	(*t*-value)	**(*t*-value)**	**(*t*-value)**	**(*t*-value)**	**(*t*-value)**	**(*t*-value)**
Constant	7.676 (1.083)	4.896 (0.664)	−17.734*** (−2.665)	−20.009*** (−2.895)	−19.697*** (−4.094)	−21.546*** (−4.312)
HHI	0.000** (2.396)		0.000* (1.797)		0.000* (1.952)	
Top3share		0.006** (2.041)		0.005* (1.696)		0.004* (1.887)
Marketshare	−0.001 (−0.564)	−0.001 (−0.268)	0.003 (1.310)	0.004 (1.544)	0.002 (1.172)	0.002 (1.426)
Asset	−0.762*** (−12.903)	−0.766*** (−12.913)	−0.870*** (−15.690)	−0.873*** (−15.707)	0.132*** (3.289)	0.129*** (3.217)
Capital	−0.019*** (−4.482)	−0.019*** (−4.495)	0.012*** (3.076)	0.012*** (3.072)	0.008*** (2.593)	0.008*** (2.593)
Nonperform	0.007** (2.090)	0.006* (1.941)	0.037*** (12.550)	0.036*** (12.499)	0.023*** (10.736)	0.023*** (10.671)
Outbranch	0.017*** (5.339)	0.017*** (5.133)	0.010*** (3.285)	0.010*** (3.117)	0.010*** (4.438)	0.009*** (4.240)
Population	0.269 (0.554)	0.449 (0.894)	2.081*** (4.566)	2.227*** (4.733)	1.848*** (5.607)	1.967*** (5.781)
Perincome	0.000*** (4.569)	0.000*** (4.390)	0.000*** (5.701)	0.000*** (5.588)	0.000*** (5.159)	0.000*** (5.032)
Observations	656	656	656	656	656	656
χ^2 statistics	76.733***	65.798***	123.562***	118.149***	238.243***	233.997***
Selected model	Fixed effect model	Fixed effect model	Fixed effect model	Fixed effect model	Fixed effect model	Fixed effect model
Adjusted-R^2	0.929	0.929	0.930	0.930	0.994	0.994

*Significance at the 10% level.

**Significance at the 5% level.

***Significance at the 1% level.

First, both the coefficients of *HHI* and *Top3share* take significantly positive signs at the 5% level in the estimation results whose dependent variable is *Lendingincome1*, i.e. the ones dividing interest on loans and discounts for each bank by the total assets of each bank. Thus, regional banks whose headquarters are located in prefectures where competition among financial institutions is not severe generate higher interest on loans and discounts. Hence, there is a possibility that regional banks, whose headquarters are located in prefectures where oligopolistic tendencies are stronger, can set higher lending interest rates and increase their income from loans and discounts.

The coefficients of *Asset* take significantly negative signs at the 1% level in both results; thus, larger regional banks cannot gain interest on loans and discounts relative to their sizes, i.e. the per unit interest on loans and discounts is not necessarily larger, although these banks might have relatively strong negotiating power with other firms. On the other hand, smaller regional banks pursue loan sales more aggressively to supplement their management weaknesses compared with larger regional banks. Therefore, they can increase the interest on loans and discounts relative to their sizes, i.e. the per unit interest on loans and discounts is larger.

The coefficients of *Capital* are negative and significant at the 1% level for both results. Regional banks that are financially sound are also likely to be risk averse in lending. Therefore, they are more likely to concentrate on low-risk behaviors rather than on loan sales to maintain their financial stability. Thus, these banks cannot seek premium interest on loans and discounts. In addition, when we consider that the coefficients of *Nonperform* are positive and significant at the 5 and 10% levels in both results, it seems that regional banks that engage in riskier lending behaviors and hold a relatively high number of non-performing loans increase their lending-based income by charging additional risk premiums. Considering the signs of the coefficients of *Capital* and *Nonperform*, regional banks engaged in high-risk lending behaviors can receive higher returns from their loan businesses; thus, the idea of "high-risk, high-return" is supported in the Japanese regional banking sector.

The coefficients of *Perincome* take significantly positive signs at the 1% level in both cases. Businesses are more active and the funding requirements of firms are larger in prefectures whose income levels are higher. Thus, regional banks that have headquarters in those prefectures can increase the interest charged on loans and discounts. Hence, the interest charged on loans and discounts by regional banks is strongly affected by the economic performance of the prefecture where their headquarters are located, which is consistent with expectations.

The coefficients of *Outbranch*, which is the variable of most interest to this study, take significantly positive signs at the 1% level in both cases. Previous studies, presented in Section 1, concluded that banks actively enter regions whose income levels are high. Therefore, regional banks that expand into other prefectures, particularly those with higher income levels, can increase their earnings from interest on loans and discounts, as they exploit new lending opportunities to high-performing firms in those markets.

Second, we examine the estimation results whose dependent variable is *Lendingincome2* (i.e. the ones dividing [interest on loans and discounts—interest on deposits] for each bank by the total assets of each bank), and those whose dependent variable is *Lendingincome3* (i.e. the natural logarithm of [interest on loans and discounts—interest on deposits] of each bank) to determine the effects of regional bank entries into other prefectures on lending-based income, from the aspect of interest-based profit margins.

Moreover, all the coefficients of *HHI* and *Top3share* take significantly positive signs at the 10% level in these estimations. Thus, regional banks whose headquarters are located in prefectures where oligopolistic tendencies are stronger can increase their loan business profitability.

The coefficients of *Asset* in the results of *Lendingincome3* are positive and significant at the 1% level. When we consider the amount of money itself, larger regional banks gain larger profits, which is an expected result.

On the other hand, the coefficients of *Asset* in the results of *Lendingincome2* take significantly negative signs at the 1% level, as do the coefficients of *Asset* in the results of *Lendingincome1*. Thus, larger regional banks cannot necessarily achieve higher returns corresponding to their sizes, i.e. per unit returns, even when measured by interest-based profit margins. In other words, smaller regional banks can actively exploit these new lending opportunities and generate higher per unit returns (i.e. relative to their size).

The coefficients of *Capital* are positive and significant at the 1% level in all estimations, which is different from the cases of *Lendingincome1*. In general, regional banks that are financially sound (i.e. present a lower investment risk) can still attract depositors, while offering lower deposit interest rates. In addition, sound regional banks can procure money from capital markets under good terms, which these banks can use aggressively as funding sources. The positive effects of *Capital* on profit margins from interest might reflect these behaviors.

The coefficients of *Population* and *Perincome* take significantly positive signs at the 1% level in all cases. Thus, regional banks that have headquarters in prefectures where market sizes are larger and economic activities are more vibrant, i.e. markets where funding requirements by high-performing firms and households are larger, can expect to gain larger interest-based profit margins.

The coefficients of *Outbranch* take significantly positive signs at the 1% level in all estimations, as in those of *Lendingincome1*. Therefore, the entry of regional banks into other prefectures has positive effects on their lending-based income not only from interest on loans and discounts but also in terms of interest-based profit margins. These results lead to the conclusion that regional banks can expect to achieve their aims to increase lending-based revenue streams by entering the markets of other prefectures.

4.2. Estimation results for non-urban regional banks

Regional banks whose headquarters are located in non-urban areas can possibly realize greater economic returns by entering other prefectures than those realized by regional banks whose headquarters are located in cities. The former might be able to generate more lending-based income by entering prefectures where economic activity and wealth is greater. In the following section, we analyze whether non-urban regional banks can actually achieve positive effects by entering the markets of other prefectures.

For this analysis, the regional banks whose headquarters are located in Hokkaido, Miyagi Prefecture, Tokyo Metropolis, Aichi Prefecture, Osaka Prefecture, and Fukuoka Prefecture are excluded from the sample and estimates because the seat of the prefectural government in these prefectures are Japanese main cities.[10] The estimation results are presented in Table 3.

First, with the exception of *Outbranch*, the coefficients for the variables are nearly the same as those presented in Table 2, although with some exceptions.

The coefficients of *Outbranch* in all estimations, i.e. the cases whose dependent variables are *Lendingincome1*, *Lendingincome2*, and *Lendingincome3*, take significantly positive signs at the 1% level. Among these, regional banks whose headquarters are located in prefectures whose seats of the prefectural government are not main cities can expect to generate higher lending-based income by entering other prefectures, especially those with vibrant economic activity. Furthermore, the magnitudes of the coefficients of *Outbranch* in all estimations are larger than those in Table 2, where the sample included all regional banks. In general, regional banks that have headquarters in economically vibrant urban areas can expect higher lending-based income by placing more emphasis on loan businesses in their home prefectures than those in other prefectures. Moreover, these banks should expect smaller increase in lending-based income from non-urban areas. On the other hand, the lending-based income for regional banks whose headquarters are not in urban areas, which is the sample used in this analysis, will be improved by entering other prefectures, including neighboring urban

Table 3. Estimation results for non-urban regional banks

	Lendingincome1		***Lendingincome2***		***Lendingincome3***	
	Coefficient	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**	**Coefficient**
	(*t*-value)	**(*t*-value)**	**(*t*-value)**	**(*t*-value)**	**(*t*-value)**	**(*t*-value)**
Constant	5.183 (0.672)	2.054 (0.257)	−41.801*** (−5.811)	−44.684*** (−6.027)	−37.356*** (−7.235)	−39.674*** (−7.459)
HHI	0.000** (2.260)		0.000 (1.039)		0.000 (1.203)	
Top3share		0.006* (1.864)		0.005* (1.685)		0.004* (1.893)
Marketshare	−0.003 (−1.090)	−0.002 (−0.816)	0.002 (1.003)	0.003 (1.164)	0.001 (0.742)	0.002 (0.924)
Asset	−0.849*** (−13.935)	−0.851*** (−13.926)	−0.878*** (−15.439)	−0.881*** (−15.517)	0.088** (2.152)	0.085** (2.084)
Capital	−0.019*** (−4.348)	−0.019*** (−4.398)	0.007* (1.779)	0.007* (1.826)	0.004 (1.300)	0.004 (1.348)
Nonperform	0.005* (1.666)	0.005 (1.510)	0.034*** (11.103)	0.034*** (11.157)	0.020*** (9.024)	0.020*** (9.059)
Outbranch	0.022*** (6.559)	0.022*** (6.323)	0.014*** (4.518)	0.013*** (4.247)	0.013*** (5.682)	0.012*** (5.376)
Population	0.537 (0.998)	0.745 (1.346)	3.832*** (7.620)	4.017*** (7.800)	3.177*** (8.804)	3.326*** (9.003)
Perincome	0.000** (2.452)	0.000** (2.208)	0.000 (0.305)	0.000 (0.206)	0.000 (−0.274)	0.000 (−0.397)
Observations	533	533	533	533	533	533
χ^2 statistics	90.098***	81.994***	125.372***	127.394***	252.133***	256.719***
Selected model	Fixed effect model	Fixed effect model	Fixed effect model	Fixed effect model	Fixed effect model	Fixed effect model
Adjusted-R^2	0.930	0.930	0.936	0.936	0.994	0.994

*Significance at the 10% level.

**Significance at the 5% level.

***Significance at the 1% level.

areas, and selling loans there rather than selling loans only in their home prefectures. Hence, the differences between the magnitudes of the coefficients of *Outbranch* in Table 2 and those in Table 3 reflect the different situations of non-urban regional banks compared with urban regional banks.

5. Conclusion

Although Japanese regional financial institutions are required to practice region-based relationship banking, many regional banks enter prefectures where their headquarters are not located. This requirement stems from the government's recognizing that regional banks are suitable for stimulating regional economies and facilitating SME funding. Therefore, this study investigates whether the entry of regional banks into other prefectures generates positive financial effects.

Because the main purpose of regional banks to enter other prefectures is to expand their lending base, the effects of the ratio of branches in other prefectures of regional banks on their lending-based income are analyzed. Specifically, three lending-based income measures were used as dependent variables and an estimation was performed. All the estimations revealed that regional banks that positively enter other prefectures can increase their lending-based income. In addition, the proxy variables for regional characteristics, such as per capita prefectural income, also influence lending-based income. Therefore, market circumstances of prefectures, where headquarters of each regional bank is located, are important factors in determining their lending-based income.

To establish whether there is a difference in the effects of entering other prefectures on lending-based income between regional banks that have headquarters in prefectures whose seats of prefectural government are main cities and regional banks that have headquarters around those prefectures, an estimation using a sample of the latter regional banks was also performed. As a result, it was demonstrated that compared with the former regional banks, the latter can realize higher effects on lending-based income by entering other prefectures. The former regional banks gain more lending-based income by placing a greater emphasis on loan businesses in their home prefectures than in other prefectures. In contrast, the latter regional banks can increase their lending-based income by entering other prefectures, including neighboring urban areas, and actively selling loans there than by selling loans only in their home prefectures.

Thus, the results obtained demonstrate that the entry of regional banks into other prefectures influences their lending-based income positively. Hence, regional banks whose headquarters are located in prefectures where economic activity is less cannot generate sufficient lending-based income in their home prefectures; thus, they have an incentive to enter other prefectures, where economic activity is more vibrant and additional lending opportunities are present. However, when we consider that regional banks are key to region-based relationship banking, it is possible that overextension by these banks into other prefectures might bring undesirable effects on the developments of regional firms and industries. Therefore, regional banks should adopt branch expansion strategies such that a balance exists between their roles as regional financial institutions and their commercial imperative to seek additional lending-based revenue.

In addition, the Bank of Japan reported that the ratio of loans outside financial institutions' home regions and the ratio of operating profits (ROA) from core business to total assets do not have a statistically significant correlation in the Financial System Report (April 2014).[11] We also estimated using ROA, which is calculated by dividing current term net profit by total assets and by dividing ordinary profit by total assets, and ROE, which is calculated by dividing current term net profit by total net assets and by dividing ordinary profit by total net assets, as dependent variables. As a result, the ratio of branches in other prefectures to the total number of branches does not have significant effects on them in most cases. Thus, regional banks should remember that they can increase lending-based income, but cannot improve their profitability on the whole, i.e. ROA and ROE, when they decide to extend their branch networks to other prefectures.

For future study, retardation of regional economies and decreased funding of SMEs because of entries of regional banks into other prefectures should be investigated. Moreover, when doing this analysis, those regional banks that have headquarters in non-urban areas should be studied because they will possibly have greater incentive to enter other prefectures.

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Notes

1. It is called the "New Action Program" in brief and was devised by Financial Services Agency in 2005.
2. Burgess and Pande (2005) analyzed whether branch expansion into rural unbanked areas reduces rural poverty in India and determined that opening branches in rural unbanked areas is associated with poverty reduction. Thus, financial functions performed by banks in poorer regional markets are important for improving the local economic situation.
3. Felici and Pagnini (2008) investigated the determinants of entry into other markets by Italian banks and demonstrated that, due to the advancing information and communication technology, banks are able to open branches in distant markets. Similarly, Japanese regional banks can also enter other regions more easily.
4. Alamá and Tortosa-Ausina (2012) analyzed bank branching patterns during the post-deregulation period and showed that some communities experienced financial exclusion. Thus, the same could occur in Japanese regional markets if many regional banks over-extend their branch networks into other prefectures.
5. The studies that only tested the SCP hypothesis are also included.
6. Rasiah (2010) surveyed previous studies that tested the determinants of bank profitability and presented a few studies that used variables on bank branches as independent variables.
7. In Japan, restrictions on bank branching were completely abolished in 1997.
8. Berger and Hannan (1989), Tokle and Tokle (2000), and Wu and Shen (2011) used a three-firm concentration ratio as the market concentration measure.
9. The domestic standard is applied to financial institutions that operate only in Japan.
10. These are, respectively, Sapporo City, Sendai City, Shinjuku Ward, Nagoya City, Osaka City, and Fukuoka City.
11. See https://www.boj.or.jp/en/research/brp/fsr/fsr140423.htm/

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