Contribution of Rural Banks to Regional Economic Development: Evidence from the Philippines

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Abstract:
This paper examines the link between banking and economic development at the regional level in the Philippines and focuses on the role played by rural banks on economic activity. A cointegration panel data analysis is applied for the sixteen Philippine regions from 1993 to 2005. When using indicators built at the regional banking industry level, there is no clear-cut evidence of a banking-led economic development. But, we find a consistent positive effect of the presence of rural banks on regional economic development for the intermediate and less developed regions, with a stronger effect for the former, suggesting a threshold effect.

JEL Classification: C23; G21, O16
Keywords: Banking development; Regional economic development; Banking structure; Panel cointegration; Rural banks

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Section 1. Introduction

During the last thirty years, the extent to which a better-developed financial system fosters economic development has been the subject of extensive research. The emergence of the endogenous growth theory shed a new light on the link between financial and economic development. Levine, 2005, identifies five broad functions provided by the financial sector that reduce information, enforcement and transaction costs: (i) production of information on investment projects and capital allocation; (ii) monitoring and effective corporate governance; (iii) trading, diversification and management of risk; (iv) saving mobilization and (v) easing the exchange of goods and services. The way these five functions are supplied by the financial system influences saving rates, investment decisions, technological innovation and hence economic activity. Since King and Levine, 1993a, 1993b, a large number of empirical studies have analyzed the finance-growth nexus for developed as well as developing countries (see Wachtel, 2003, and Demirgüç-Kunt and Levine, 2008, for comprehensive surveys). While empirical studies used different methodologies to explore the finance-growth nexus, they find overall consistent results on the sign of the relationship. Countries with better-developed financial system tend to grow faster. A contentious area of research investigates the causality of this relationship (King and Levine, 1994; Demetriades and Hussein, 1996; Wachtel and Rousseau, 1995). Some researchers assert that it is financial development that fuels growth (King and Levine, 1993a, 1993b; Christopoulos and Tsions, 2004; Demirgüç-Kunt and Levine, 2008) while others, following Robinson, 1952, find that improvements in productivity and economic output would require increased investment and funding (Jung, 1986; Ireland, 1994). Other studies claim that this causality is actually bi-directional (Demetriades and Hussein, 1996).

The mechanisms through which financial and economic development are linked remain also an open question. Berger et al., 2004, and Demirgüç-Kunt and Levine, 2008,
highlight different dimensions of the financial system that could matter. A crucial mechanism is the reduction of financial constraints for firms that heavily rely on external finance. Following Rajan and Zingales, 1998, and Demirgüç-Kunt and Maksimovic, 1998, micro-level as well as industry-level studies show that in better-developed financial system, firms or industries that strongly rely on external finance tend to grow faster. The extent to which institutional characteristics of the banking system could influence access to finance is also a key issue. More precisely, some authors argue that small, regional and locally-owned banks could behave very differently from large, national and non locally-owned banks for a variety of reasons. A superior access to local information, a competitive advantage in the relationship lending segment of the market and a greater commitment to local prosperity could enable them to better monitor and assess risk of local firms. The presence of these banks could then have a specific influence on local development by improving financing opportunities to small and medium size enterprises (Rodriguez-Fuentes, 1998; Collender and Shaffer, 2003; Carbo Valverde and Fernandez, 2004; Burgess and Pande, 2005; Hakenes et al., 2009). This question is of particular interest in countries that have undergone a process of banking consolidation. As reported by DeYoung et al., 2004, United-States experienced a sharp reduction of the number and the market share of local banks during the last two decades. In such a context, concerns have been raised that local banks may not be able to compete with national-wide banks and then to offer specific banking services to local communities in the future (Avery and Samolyck, 2004). In developing countries where economic development is hampered by insufficient and inadequate access to financial services in rural areas, this question is of crucial interest.

2 They mention, among others, the size, efficiency and regulation of the banking system or the laws and regulations that shape the operation of the financial system.
3 Berger et al., 2004, in a cross-country study also highlights such results.
This paper aims to extend the existing literature by conducting a market level analysis in order to assess the impact of the market share of local banks on regional economic development. Our goal is to analyze the relationship between banking and economic development in the Philippines by taking into account the weight of the banking industry dedicated to local financing in rural areas.

We study the case of the sixteen regions of the Philippines. Quite significant disparities in the level of economic and banking development across the sixteen regions raise interesting issues on the finance-growth nexus and the specific influence of local banks. Moreover, as pointed out by Carbo et al., 2007, focusing on a single country enables us to assume that macroeconomic framework and political governance (monetary and exchange rate policies, banking regulation, education and health policies, industrial policy …) are relatively homogeneous across the country.

In the Philippines, the current financial system is considered to be bank-based because of the dominance of banks in the country as evidenced by the limited presence of equity markets as source of finance (Gochoco-Bautista, 1999), and the fact that only the largest corporations are listed in the country’s stock exchange. Hence funding for the majority of businesses in the country is expected to be sourced primarily from banks and not through financial markets (Gochoco-Bautista, 1999; Asian Development Bank, 2007). The formal banking system is composed of three categories of banks: universal and commercial banks, thrift and private development banks, and regional rural and cooperative banks. Although the formal banking system is dominated by commercial banks, rural banks in the Philippines were primarily established to promote and expand the rural economy. They generally cater to small borrowers including farmers, entrepreneurs, market vendors, business owners, wage earners, teachers and cooperatives. From the 1960s to the 1980s, rural banks served as conduits of

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4 Hereafter, we used the term rural banks for rural and cooperative banks.
subsidized loan funds from the government and international donors and were plagued by high default rates, insolvent lending programs, and high operating costs to name a few (Agabin and Daly, 1996). Following the process of financial liberalization that occurs in the Philippine during the last two decades, the government shifts toward a more market-orientated approach credit policy for rural areas. Recent government policies have led to strengthen the place of rural banks by enhancing their role in financing micro-entrepreneurs and poor households because of their potentially deeper market penetration.

To assess the specific influence of rural banks on economic development, we conduct an empirical investigation over the period 1993-2005 using an original set of regional banking data.

The sixteen Philippine regions are ranked in three groups depending on average economic development (developed regions, intermediate developed regions and less developed regions). Rank-order correlation tests provide us some first interesting results. Whereas a negative and significant correlation between economic development and rural bank presence is obtained while considering all the sixteen regions together, an opposite result is found when only considering the less developed regions.

Building on the works of Christopoulos and Tsionas, 2004, and Apergis et al., 2007, which take into account the integration properties of the data, a panel cointegration analysis is conducted. Our econometric specification enables, on the one hand, to address the heterogeneity of economic development and banking coverage of the regions and, on the other hand, to efficiently utilize the limited regional data available presently as annual banking regional data do not exist prior 1993. This specification also provides some insights on the causality between economic and banking development. If the estimations do not show the existence of a strong relationship between regional banking and economic development in

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5 For example, removing of interest rate restrictions or easing of new banks and branches opening.
the Philippines, the findings highlight a positive effect of the presence of rural banks on economic development.

The remainder of the paper is organized as follows. Section 2 briefly describes regional characteristics of the Philippines. Section 3 presents our research design and results. Section 4 concludes the paper.

Section 2. Discrepancy in the regional economic and banking development in the Philippines

2.1 Data description

This paper uses an original dataset made of regional banking data in order to analyze specifically how differences in economic development might be explained by disparities in the banking system at the regional level, underlying the role of rural banks. The macroeconomic regional data are from the Philippine National Statistics Office and National Statistical Coordination Board. Bank regional data comes from the Central Bank of the Philippines (Bangko Sentral ng Pilipinas). The period of our study is from 1993 to 2005. The dataset could not start prior to 1993 as the organization of the regions in the Philippines was different. An originality of this paper is that we used regional level banking data for the three types of banks (commercial banks, thrift banks and rural banks). The Central Bank aggregates data per bank branch office to a regional level. For thrift and rural banks which operate mainly at a regional level, this information is publicly available. However regional data for commercial banks, which operate at a national level, are not publicly available and are directly provided by the Central Bank of the Philippines.

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6 The sample includes the Asian crisis but we did not exclude it as we aim to study a long term relationship between banking and economic development.
2.2 Regional economic development

The Philippines is divided into seventeen geographic regions. For this study however, we refer to only sixteen regions, having integrated Region 4-A, Calabarzon and Region 4-B, Mimaropa (Region 4 was divided into two separate jurisdictions only in 2002). The per capita real gross regional domestic product (PC_RGRDP) is used as a measure of the regional economic structure and ranking of the regions depending on its variable has remained relatively constant over the period covered by this study. In view of the heterogeneity of the stages of economic development, we classify the regions into three groups: less-economically developed, intermediate developed and developed regions. Table 1 presents the real per capita gross regional product of the regions. The National Capital Region (NCR) is the most economically developed region and the Autonomous Region in Muslim Mindanao (ARMM) has the lowest per capita regional GDP among the regions in the country.

Based on simple statistical analyses of the above data, we identify the less-economically developed regions to be the following: Ilocos, Cagayan Valley, Bicol, Eastern Visayas region, Zamboanga Peninsula, the Autonomous Region in Muslim Mindanao (ARMM) and Caraga. These regions are basically agriculture intensive with lower levels of industrialization. Their regional contribution to the Philippine GDP as of 2005 is below 2.9% whereas their inhabitants account for 26.4% of the Philippine population.

The developed regions, NCR, Cordillera Administrative Region (CAR), and Northern Mindanao are those with a strong service sector coupled with a vibrant industrial sector characterized by a large number of business establishments. CAR is classified as developed in view of the presence of the province of Benguet in the region, which is highly developed and which greatly improves the ranking of the region despite the significantly poorer economic performance of the other provinces in the region. Central Visayas (with Cebu province) and
Davao (with Davao del Sur province) regions, despite being more highly urbanized than Northern Mindanao and the CAR, were not classified in this group in view of the lower ranking of their per capita GDRP levels as of 2005.

The intermediate economically-developed regions are comprised of those regions that were not classified as developed or as less developed and include Central Luzon, South Luzon, Western Visayas, Central Visayas, Davao and Socksargen.

[Insert Table 1]

2.3 Regional banking structure

Table 2 presents descriptive statistics for some banking indicators at the regional level. Two measures of the regional banking activity are provided: total deposits and total net loans. To measure banking development (BD), four different measures are used: three measures of financial depth (the share of total net loans over nominal regional gross domestic product (Loans), the share of total deposits over regional gross domestic product (Deposits), the number of banking offices per capita (Banking office density)) and one measure of local intermediation (total net loans over total deposits (Intermediation)). Recent studies (Berger et al., 2004; Hasan et al., 2007) suggest using quality-based indicator instead of quantity-based to measure financial development. Unfortunately, the individual bank data required to construct such measures are available only for few commercial banks but not for rural banks in the Philippines. Finally, two measures of rural banks presence are computed: the share of net loans granted by rural banks per region over total net loans granted per region (RB Loan share), and the share of total resources of rural banks per region over total resources for all banks per region (RB Resource share). To measure the impact of rural banks on the economic development we will focus on loans variables as the purpose of the rural financial market as
defined by policy reforms in the late 1980s is to provide credit access to small borrowers (Llanto, 2005). We will consider the four following groups of regions: “All regions”, “Developed regions”, “Intermediate regions” and “Less developed regions”. But, given the macroeconomic specificities of the NCR region, we will also study the group “All regions except NCR” to appreciate its possible impact.

Three main results can be highlighted.

First, considering either the group “All regions” or the group “All regions except NCR” allows us to show the predominance of the NCR region in terms of banking development.

Second, the three different groups of regions are characterized by a great heterogeneity of banking development. As an example, the mean value of the share of total net loans over nominal regional gross domestic product (Loans) ranges from 0.69 to 0.10 when considering respectively the group “Developed regions” and the group “Less developed regions”. Whatever the measure used (intermediation, deposits and banking office density), we still find heterogeneity through Philippine regions and they show that the wealthiest regions have greater banking development.

The third result is related to the presence of rural banks. Whatever the measure used (RB Loan share, RB Resource share or RB office density), the presence of rural banks is higher on average in the less developed regions than in the intermediate developed regions, itself higher than in the developed regions. 21.22 % of the total average amount of loans are granted by rural banks in the less developed regions against 13.46 % in the intermediate regions and 0.37 % in the developed regions.
To analyze more precisely rural bank presence, Table 3 and Table 4 provide information respectively on the market share of the different types of banks (commercial banks, thrift banks and rural banks) at the national level and of the rural bank market share at the regional level.

The formal banking sector is dominated by commercial banks, which over the 1993-2005 period represent 56.8% of the total number of bank offices in the Philippines. The thrift banks represent 17.8% of the total number of bank offices and the remaining 25.37% of the total banking offices operating in the country are regional rural and cooperative banks.

[Insert Table 3]

Commercial banks remain the major source of funding with an average credit market share of 89% and 73% when considering respectively the group “All regions” and the group “All regions except NCR”. However, at the national level, rural bank, on average, account for 37.60% of the total number of banking office and granted 14.44% of the total amount of loans, when excluding the NCR over the 1993-2005 period. Moreover, since 1998, Figure 1 shows a decline of the loan market share of commercial banks (from 77% to 65%) and thrift banks (12.60% to 11%) and, at the same time, an increase of the loan market share of the rural banks (from 11% to 24%).

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7 In this paper, we do not aim to study the semi-formal and informal financial sectors. For a presentation of the financial system in the Philippines, see Dauner Gardiol, Helms and Deshpande, 2005. For a detailed study of rural finance, see Llanto, 2005.
Table 4 provides information on the evolution of RB market shares between 1993 and 2005, and shows heterogeneity across regions. We can first notice that whatever the region considered, RB increase their market share with regard to their resources and the loans they grant. The analysis of the evolution of RB office density is less straightforward. Their presence has been strengthened through the period. Indeed they were legally allowed to increase the number of their branches provided that they develop their microfinance activities (see Dauner Garniol et al., 2005). But this indicator is altered by the growth of the population which varies among the regions.

In order to analyze the heterogeneity in the banking structure and in the regional economic development stressed in tables 2, 3 and 4, rank order correlation tests are conducted.
2.4 Rank order correlation tests

As a preliminary step of our empirical investigation that aims to assess the link between economic and banking development and the role played by rural banks, we test for correlation between selected banking and economic development indicators. These tests are performed using five samples of regions: “All regions”, “All regions except NCR”, “Developed regions”, “Intermediate developed regions”, and “Less developed regions”. Table 5 presents the results of our correlation analysis for our five sub-samples of regions using Spearman rank-order tests. The null hypothesis is the absence of rank-order correlation between the two variables.

[Insert Table 5]

Three main results are obtained from the rank order tests. First, a positive and significant correlation between economic development and financial depth at the regional level is obtained when financial depth is measured by banking office density and deposits for four of the five samples. This result is consistent with the existing empirical literature on the finance growth nexus. The correlation obtained is stronger for the sub-sample “Developed regions” than for the sub-samples “Intermediate developed regions” and “Less developed regions”. When the Loans variable is used as an indicator of financial depth, the correlation is also significant for the economically developed regions but not for the intermediate and less economically developed regions. When banking development is measured as the ratio of total net loans to total deposits (Intermediation), we find a positive and significant correlation for two sub-samples, “All regions” and “Developed regions”.


Second, rank order tests show different results for the sub-sample “All regions except NCR”. A positive and significant correlation is obtained between economic and banking development only when the bank office density is used as a measure of financial depth.

Third, the most interesting result with regard to our issue is related to the role of rural banks on regional economic activity. A negative and significant correlation is obtained between economic development and rural banks presence for the samples “All regions”, “All regions except NCR” and “Developed regions”. On the contrary, a positive and significant correlation is obtained between the variables PC_RGDRP and the market share of rural banks which means that the higher is the market share of rural banks, the higher is the regional economic development.

Section 3. Empirical framework and estimation results

3.1 Panel data unit root tests

The lack of agreement on the impact of financial development on economic growth (its existence, level or sign) is argued to arise primarily from the estimation techniques used to assess this relationship (times series, panel data, see Apergis et al., 2007). According to Apergis et al., 2007, the cross-sectional estimation methodology misses (i) to address the issue of integration and cointegration properties of the data, and (ii) to examine the direction of causality between economic and financial development. In estimating panel data, Apergis et al., 2007, point out that using instrumental variables and GMM dynamic panel estimators alone to account for potential biases induced by simultaneity of regressors, omitted variables and/or unobserved country-specific effects on the finance-growth nexus may be insufficient. The integration properties of the data should be considered.

Following this methodology and in order to explore the relationship between banking development, economic development and the effect of rural banks, we first conduct panel unit
root tests on the dataset. We used the Im, Pesaran and Shin t-test\(^8\). Results are presented in Table 6.

Panel unit root tests support the hypothesis of a unit root for most variables in level. However the null hypothesis is rejected with the IPS test for bank office density at the 1% level. In first difference, unit root tests show that all variables are stationary.

3.1 Long run cointegration analysis

As a second step, we conduct panel cointegration tests. To test for the presence of a long run relationship between banking and economic development, we use the methodology suggested by Pedroni, 1999, and Pedroni, 2004. This procedure is based on Engle-Granger, 1987, two-step cointegration tests. Pedroni proposed eleven statistics that allow for heterogeneous intercepts and trend coefficients across cross sections. Two alternatives classes of statistics are tested: the first one is based on the within dimension of the panel while the second one is based on the between dimension of the panel. According to Pedroni, 2004, for very small value of T (time dimension) and a limited number of individuals, the Phillips-Peron (PP) statistic performs relatively better than the others. Therefore we rely on this statistic to test the null hypothesis of no cointegration.

Since the direction of the relationship between economic and banking regional development is not clear, we perform cointegration tests on the two following models:

\(^8\) The IPS test is based on individual ADF regressions and assumes a separate unit roots between the cross-sections units.
\[ \text{PC}_{\text{RGDRP}t} = \alpha + \beta \text{BD}_t + \gamma \text{RBMS}_t + \varepsilon_t \] 

(1)

\[ \text{BD}_t = \alpha + \beta \text{PC}_{\text{RGDRP}t} + \gamma \text{RBMS}_t + \varepsilon_t \] 

(2)

where PC_{RGDRP} is per capita real gross regional domestic product, BD is a measure of banking development and RBMS a measure of rural bank market share. According to Christopoulos and Tsionas, 2004, the results of the cointegration analysis undertaken on the two models will give us an insight on the long-run causality between our two variables banking development and regional development.

In equation (1), cointegration tests are performed using as explanatory variables (i) alternatively one of the three I(1) measure for banking development\(^9\), and (ii) alternatively one of the two I(1) measures for rural banks market share (RB Loan share or RB Resource share).

In equation (2), cointegration tests are performed using as the explained variable alternatively one of the three I(1) measures for banking development (FD) and as explanatory variables (i) the per capita real gross regional domestic product (PC_RGDRP) and (ii) alternatively one of the two I(1) measures for rural banks market share (RB Loan share or RB Resource share). Test results for equation (1) and equation (2) are respectively shown in tables A1 and A2, Annex I.

When per capita real gross regional domestic product is used as the dependent variable (equation (1)), the null hypothesis of no cointegration is rejected for the whole sample and for the sub-samples “Intermediate developed regions” and “Less developed regions”. Therefore results show that in the long run regional banking development affects regional economic

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\(^9\) Loans, Deposits or Local intermediation variables. The bank office density variable is I(0). The statistic presented is the Phillips-Perron group statistic.
development. However, when banking development is used as the dependent variable (equation (2)), the null hypothesis is only rejected once for all samples when deposits are used to build the financial depth measure\textsuperscript{10}, and in this case the equation might reflect a money demand based on transactions motive. Overall the results shows that the long run relationship between economic and banking regional development is from banking development to economic development, and is even unidirectional if we do not consider deposits as the most appropriate proxy of financial depth in order to assess the impact of the banking system on economic activity\textsuperscript{11}. Therefore the analysis of the relationship between economic development, banking development and the role of rural banks will be focused on equation (1) for the four sub-samples “All regions”, “All regions except NCR”, “Intermediate developed regions” and “Less developed regions”.

The estimation of the long run relationship is performed using alternatively three different estimators: ordinary least squares (OLS), fully-modified least squares (FMOLS) initially proposed by Phillips and Hansen, 1990, and the dynamic least squares (DOLS) of Saikkonen, 1991, and Stock and Watson, 1993. We first use on our panel data set the OLS estimator. But, as underlined by Kao and Chiang, 2000, this estimator suffers from an non-negligible bias in finite samples. We then use the FMOLS estimator as suggested by Pedroni (1996) which performs better than the OLS estimator for small samples as in our case. Moreover, as shown in Pedroni (2000), the FMOLS methodology addresses the problem of endogeneity of the regressors. Kao and Chiang, 2000, find from Monte-Carlo simulations that the DOLS estimator over-performs the FMOLS and OLS estimators in estimating

\textsuperscript{10}The null hypothesis is also rejected for the economically developed regions when financial depth is proxied using loans.

\textsuperscript{11}In order to analyze properly the causality, we would need to distinguish the short and long run causation. To do so, we need to build the error correction model and then to study the first difference lagged variables which would provide evidence on the direction of the short run causation while the significance of the error correction term provide evidence of the long run causation (Canning and Pedroni, 2008; Narayan et al., 2008). Unfortunately, we do not have enough time observations for such an analysis.
cointegrated panel regressions, therefore, we also present results using the DOLS methodology.

Table 7 displays the long run relationship between economic, banking development and the presence of rural banks for the four sub-samples of regions for which the Pedroni test is conclusive.

[Insert Table 7]

The results lead to two main outcomes.

First, we can not clearly identify a consistent impact of our banking development variables on regional economic development. Depending on the proxies, the samples and the methodologies, the coefficient of the banking development variable can be either positive or negative, and either significant or not. While analyzing the impact of banking development on economic development, OLS estimations show opposite results depending on the proxy retained. Financial depth when measured as the ratio of total net loans on the nominal regional gross domestic product (Loans variable) has a negative impact on economic development for the samples “All regions” and “Less developed regions” and not significant for the two other samples. The literature has often pointed out that variables such as loans have an ambiguous status. They are good measure of the size of the financial sector and could also well predict banking crisis. Indeed we might explained our result by a strong decrease in the level of loans granted by commercial banks following the Asian crisis, whereas the economic activity recovered more rapidly (Podpiera and Singh, 2007). This negative link between financial depth and economic development when data set includes 1997-1998 Asian crisis is in line with the finding of Rousseau and Wachtel, 2005. Unfortunately, given the availability of the
data, it was not possible to work on a period excluding the Asian crisis. The role of commercial banks is of main importance for the country because of their strong presence especially in the wealthy regions. This negative link holds for three out of the four samples if we use the Local intermediation variable instead of the Loans variable. However, when we use the ratio of total deposits on the nominal regional gross domestic product (Deposits variable), we find a positive and significant impact of financial depth on economic development for three out of the four samples. Using the FMOLS estimation procedure leads mainly to the same overall explanation of the results even if the results don’t tally for each sample and if the significance of the coefficients is stronger for the Local intermediation variable and than for the Loans variable. However if we consider the coefficients obtained with the DOLS methodology, the link between banking development and economic development collapses. This finding of the sensitivity of our results to the econometric methodology used has been highlighted by a number of studies such as Favara, 2003, and Dufrénot et al., 2007, and is often explained by the difficulty to specify correctly the origin of non-stationary variables. An answer could be the use of common factor models such as the PANIC methodology (Panel Analysis of Non-stationarity in Idiosyncratic and Common Components) proposed by Bai and Ng, 2004. Unfortunately, the sample does not able us to use this technique as it requires a large time and individual dimension panels.

Second, a very interesting finding is the positive and always significant except once impact of the presence of rural banks on economic development whatever the proxies, the samples and the methodologies used. We show for all samples studied that rural bank presence affects positively the economic activity even for the sample “All regions” for which we obtained a negative relationship from Spearman rank-order tests\textsuperscript{12}. The results are robust to the econometric estimators used: OLS, FMOLS and DOLS estimation procedures give

\textsuperscript{12} We remind the reader that the “Developed regions” sub-sample is not included because we do not find a cointegration relationship between the variables.
mostly the same results. However in the case of the sample “All regions”, using the FMOLS estimators we find an abnormal high value for the coefficient of the rural bank variable whatever the proxy used for banking development. This result could be explained by specificities of the National Capital Region (where the presence of rural banks is negligible) as we do no longer find such coefficient for the sample “All regions except NCR”. Results also show that the impact of rural banks on economic development for the intermediate developed regions is usually stronger than for the less developed regions and than the average effect of rural banks on economic development. It might suggest that a threshold exists. Threshold effects are also found in the literature of cross-countries growth finance nexus, built on country ranking using ex-ante economic or financial development criteria (see Dermirgüç-Kunt and Levine, 2008). In particular, Rioja and Valev, 2004, show in their study where the Philippines are classified as a low-income country, the existence of a threshold effect of financial development on economic development. Under the threshold, finance affects economic development mainly through capital accumulation. Above, economic development is enhanced not only by capital accumulation but also through productivity growth. Thus this positive impact of financial development is all the more important that the country has a high level of per capita GDP. This work show that in a low-income country where overall the link finance-growth is weaker, a minimum of economic development is required for an effective impact of financial institutions dedicated to low-income households and microentrepreneurs. Therefore we underline the existence of a poverty trap. In other words, a minimum level of economic development should be required for the influence of rural banks on economic activity to be more effective.

To check for the robustness of the results, we also estimate the long run equilibrium using the total resources market share of rural banks as a proxy of rural bank presence. The results found are mainly the same while a little less significant (See Annex II).
Section 4. Conclusion

This paper aims to contribute to the finance/growth literature by analyzing the specific effect of local banks on regional economic performance. More precisely it focuses on the influence of rural banks, which are mainly dedicated to foster expansion of rural areas, on economic development in the sixteen regions of the Philippines. The regional market analysis undertaken in this paper relies on regional balance sheet data for the three types of Philippine banks even those from nationwide banks which are usually confidential information\textsuperscript{13}.

When examining the relationship between banking and economic development using indicators built at the regional banking industry level, there is no clear-cut evidence of a banking-led economic development. But, if we focus on the specific effect of rural banks presence, a positive impact is found on economic development for the intermediate and less developed regions, with a stronger impact for intermediate regions. This result might indicate the existence of threshold effect that is a minimum level of yield per capita required for rural banks’ influence to be more effective.

The Philippines experience shows that the presence of rural banks which have an expertise in financing micro-entrepreneurs and poor households should be supported in order to stimulate economic activity especially in the rural areas of developing countries. The results suggest a comparative advantage of rural banking in building a closer relationship in the lending segment of the market favoring therefore the financing of projects that commercial banks would not have done. Further research using individual bank data could consist in analyzing the threshold effect and in explaining the comparative advantage by assessing the characteristics of costumers and the efficiency of rural banks.

\textsuperscript{13} This information was obtained here thanks to the courtesy of the Central Bank of the Philippines.
References


Annex I

[Insert Table A1 and Table A2]

Annex II

[Insert Table A3]
Table 1. Per Capita Real Gross Regional Domestic Product: Summary statistics and ranking indicators (1993-2005)

<table>
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<tr>
<th>Developed regions</th>
<th>1993</th>
<th>1993 Rank</th>
<th>2005</th>
<th>2005 Rank</th>
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<tr>
<td>NCR</td>
<td>879</td>
<td>1</td>
<td>1452</td>
<td>1</td>
</tr>
<tr>
<td>Northern Mindanao</td>
<td>516</td>
<td>2</td>
<td>619</td>
<td>2</td>
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<td>CAR</td>
<td>373</td>
<td>3</td>
<td>585</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Intermediate developed regions</th>
<th>1993</th>
<th>1993 Rank</th>
<th>2005</th>
<th>2005 Rank</th>
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<td>Socksargen</td>
<td>293</td>
<td>8</td>
<td>481</td>
<td>4</td>
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<td>Central Visayas</td>
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<td>432</td>
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<td>418</td>
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<th>2005 Rank</th>
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<th>Mean excluding NCR</th>
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<th>Median</th>
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<th>Median excluding NCR</th>
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<td>410</td>
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Source: National Statistical Coordination Board; *Caraga figure corresponds to 1997. Real gross regional domestic product is expressed in thousands of pesos at 1990 prices.
Table 2. Descriptive statistics (Average value of the variables over the 1993-2005 period)

<table>
<thead>
<tr>
<th></th>
<th>Total deposits*</th>
<th>Total net loans*</th>
<th>Intermediation</th>
<th>PC_RGRDP</th>
<th>Deposits</th>
<th>Loans</th>
<th>Banking office density</th>
<th>RB Resource share</th>
<th>RB Loan share</th>
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<td>15,989</td>
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<td>53,29%</td>
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<td>0,22</td>
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<td>0,04</td>
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<td>0,02</td>
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<td>23,57%</td>
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<td>0,23</td>
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<td>0,05</td>
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<td>21,22%</td>
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<td>0,02</td>
<td>0,06</td>
<td>0,07</td>
<td>0,13</td>
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<td>0,05</td>
<td>0,08</td>
<td>0,10</td>
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<td>0,06</td>
<td>1,55%</td>
<td>2,34%</td>
<td>35,31%</td>
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</tbody>
</table>
| Standard deviation | 34,985         | 13,634           | 0,15           | 0,11     | 0,08     | 0,047 | 0,02                   | 0,05             | 0,07          | 0,13             

Loans: total net loans/nominal regional gross domestic product, Deposits: total deposits/regional gross domestic product, Banking office density: number of banking offices per capita, Intermediation: total net loans/total deposits, RB Loan share: net loans of rural banks per region/total net loans per region, RB Resource share: total resources of rural banks per region/total resources per region. * In millions of pesos. Source: Bangko Sentral ng Pilipinas, National Statistical Coordination Board.
<table>
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<th>Rural Banks</th>
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<td>17.81 %</td>
<td>25.37 %</td>
</tr>
<tr>
<td></td>
<td>45.45 %</td>
<td>16.96 %</td>
<td>37.60 %</td>
</tr>
<tr>
<td>Total resources</td>
<td>90.67 %</td>
<td>7.77 %</td>
<td>1.55 %</td>
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<td></td>
<td>79.07 %</td>
<td>12.05 %</td>
<td>8.88 %</td>
</tr>
<tr>
<td>Total net loans</td>
<td>89.13 %</td>
<td>8.52 %</td>
<td>2.34 %</td>
</tr>
<tr>
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<td>73.12 %</td>
<td>12.44 %</td>
<td>14.44 %</td>
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Numbers in italics are the market share computed for the group “All regions except NCR”, Source: Bangko Sentral ng Pilipinas
Table 4. Rural banks market share per region

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<th></th>
<th></th>
<th></th>
<th>2005</th>
<th></th>
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<tr>
<td></td>
<td>RB resource</td>
<td>Rank</td>
<td>RB loan</td>
<td>Rank</td>
<td>RB office</td>
<td>Rank</td>
<td>RB resource</td>
<td>Rank</td>
<td>RB loan</td>
<td>Rank</td>
</tr>
<tr>
<td></td>
<td>share(^1)</td>
<td></td>
<td>share(^2)</td>
<td></td>
<td>density(^3)</td>
<td></td>
<td>share(^1)</td>
<td></td>
<td>share(^2)</td>
<td></td>
</tr>
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<td>DEVELOPED REGIONS</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>NCR</td>
<td>0.05%</td>
<td>16</td>
<td>0.07%</td>
<td>16</td>
<td>1.21%</td>
<td>16</td>
<td>0.21%</td>
<td>16</td>
<td>0.53%</td>
<td>16</td>
</tr>
<tr>
<td>Northern Mindanao</td>
<td>4.92%</td>
<td>11</td>
<td>5.96%</td>
<td>14</td>
<td>31.38%</td>
<td>13</td>
<td>10.37%</td>
<td>7</td>
<td>18.29%</td>
<td>11</td>
</tr>
<tr>
<td>CAR</td>
<td>4.01%</td>
<td>12</td>
<td>14.08%</td>
<td>4</td>
<td>40%</td>
<td>7</td>
<td>7.94%</td>
<td>10</td>
<td>34.94%</td>
<td>5</td>
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<td></td>
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<td></td>
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</tr>
<tr>
<td>Socksargen</td>
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<td>12.72%</td>
<td>6</td>
<td>41.54%</td>
<td>6</td>
<td>10.01%</td>
<td>8</td>
<td>20.34%</td>
<td>10</td>
</tr>
<tr>
<td>Central Visayas</td>
<td>3.92%</td>
<td>13</td>
<td>4.88%</td>
<td>15</td>
<td>31.46%</td>
<td>12</td>
<td>5.20%</td>
<td>15</td>
<td>8.82%</td>
<td>15</td>
</tr>
<tr>
<td>South Luzon</td>
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<td>2</td>
<td>18.01%</td>
<td>2</td>
<td>38.55%</td>
<td>8</td>
<td>13.50%</td>
<td>5</td>
<td>37.74%</td>
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<tr>
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<td>8.06%</td>
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<td>37.06%</td>
<td>9</td>
<td>6.43%</td>
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<td>32.77%</td>
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<td>14.30%</td>
<td>4</td>
<td>26.59%</td>
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<td>13</td>
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<td>14</td>
<td>8.97%</td>
<td>9</td>
<td>15.37%</td>
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<td></td>
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</tr>
<tr>
<td>Zamboanga</td>
<td>2.87%</td>
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<td>6.98%</td>
<td>11</td>
<td>24.39%</td>
<td>15</td>
<td>7.08%</td>
<td>12</td>
<td>22.87%</td>
<td>9</td>
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<tr>
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</tr>
<tr>
<td>Eastern Visayas</td>
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<td>12.45%</td>
<td>8</td>
<td>42.71%</td>
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<td>7.40%</td>
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<td>16.66%</td>
<td>13</td>
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<td>13.21%</td>
<td>6</td>
<td>38.16%</td>
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<td>53.03%</td>
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<td>2</td>
<td>30.90%</td>
<td>6</td>
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<td>47.94%</td>
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<td>ARMM</td>
<td>2.62%</td>
<td>15</td>
<td>6.75%</td>
<td>12</td>
<td>36.96%</td>
<td>10</td>
<td>6.11%</td>
<td>14</td>
<td>25.56%</td>
<td>8</td>
</tr>
</tbody>
</table>

\(^1\) Share of total resources of rural banks over total resources of all types of banks; \(^2\) Share of net loans granted by rural banks over total net loans granted; \(^3\) Number bank offices for of rural banks over total number of bank offices; \(^4\) CARAGA figure corresponds to 1996. Source: Bangko Sentral ng Pilipinas.
Table 5. Correlation Analysis: Spearman rank-order with PC_RGRDP as referent variable

<table>
<thead>
<tr>
<th></th>
<th>All regions</th>
<th>All regions except NCR</th>
<th>Developed regions</th>
<th>Intermediate developed regions</th>
<th>Less developed regions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Banking Development (BD)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Loans</td>
<td>0.233***</td>
<td>0.066</td>
<td>0.841***</td>
<td>-0.824</td>
<td>0.043</td>
</tr>
<tr>
<td>- Deposits</td>
<td>0.244***</td>
<td>0.072</td>
<td>0.884***</td>
<td>0.247**</td>
<td>0.246**</td>
</tr>
<tr>
<td>- Banking office density</td>
<td>0.652***</td>
<td>0.576***</td>
<td>0.948***</td>
<td>0.314***</td>
<td>0.358***</td>
</tr>
<tr>
<td><strong>Local intermediation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Intermediation</td>
<td>0.181***</td>
<td>0.011</td>
<td>0.485***</td>
<td>-0.397***</td>
<td>0.110</td>
</tr>
<tr>
<td><strong>Rural banks market share (RBMS)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- RB Loan share</td>
<td>-0.261***</td>
<td>-0.103</td>
<td>-0.489***</td>
<td>0.297***</td>
<td>0.284***</td>
</tr>
<tr>
<td>- RB Resource share</td>
<td>-0.380***</td>
<td>-0.134*</td>
<td>-0.653***</td>
<td>0.080</td>
<td>0.313***</td>
</tr>
</tbody>
</table>

Boldface values denote a significant presence of a rank-order correlation. (***) and (*) signify rejection of the null hypothesis of absence of rank-order correlation at the 1%, 5% and 10% levels respectively.

Table 6. Im, Pesaran and Shin (IPS) panel unit root tests

<table>
<thead>
<tr>
<th></th>
<th>Variable in level</th>
<th>Variable in first difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PC_RGDRP</strong></td>
<td>2.77</td>
<td><strong>-3.86</strong>*</td>
</tr>
<tr>
<td><strong>Banking development (BD)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial depth</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Loans</td>
<td>0.25</td>
<td><strong>-2.75</strong>*</td>
</tr>
<tr>
<td>- Deposits</td>
<td>-1.48</td>
<td><strong>-3.11</strong>*</td>
</tr>
<tr>
<td>- Banking office density</td>
<td></td>
<td><strong>-2.83</strong>*</td>
</tr>
<tr>
<td><strong>Local intermediation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Intermediation</td>
<td>0.91</td>
<td><strong>-2.67</strong>*</td>
</tr>
<tr>
<td><strong>Rural banks market share (RBMS)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- RB Loan share</td>
<td>6.37</td>
<td><strong>-2.04</strong>*</td>
</tr>
<tr>
<td>- RB Resource share</td>
<td>1.93</td>
<td><strong>-2.69</strong>*</td>
</tr>
</tbody>
</table>

(***) and (*) signify rejection of the null hypothesis of presence of unit root at the 1%, 5% and 10% levels respectively.
Table 7. Long run relationship between economic development, banking development (BD) and the role of rural banks (RB) using OLS, DOLS and FMOLS estimators

<table>
<thead>
<tr>
<th></th>
<th>Financial depth: Loans</th>
<th>Financial depth: Deposits</th>
<th>Local intermediation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS  FMOLS  DOLS</td>
<td>OLS  FMOLS  DOLS</td>
<td>OLS  FMOLS  DOLS</td>
</tr>
<tr>
<td><strong>All regions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLS:</td>
<td>-0.20*** -0.02 0.01</td>
<td>-0.06 0.12 -0.18*</td>
<td>-0.06* -0.04** -0.01</td>
</tr>
<tr>
<td>FMOLS:</td>
<td></td>
<td>0.28*** 8.55*** 0.53***</td>
<td>0.14* 7.30*** 0.25**</td>
</tr>
<tr>
<td>DOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB:</td>
<td>0.18*** 8.18*** 0.30***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLS:</td>
<td></td>
<td>0.28*** 8.55*** 0.53***</td>
<td>0.14* 7.30*** 0.25**</td>
</tr>
<tr>
<td>FMOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>All regions except NCR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLS:</td>
<td>-0.05 -0.21* 0.01</td>
<td>0.17* 0.12 0.03</td>
<td>-0.04* -0.02** -0.08</td>
</tr>
<tr>
<td>FMOLS:</td>
<td></td>
<td>0.22*** 0.32*** 0.44***</td>
<td>0.18*** 0.23*** 0.20**</td>
</tr>
<tr>
<td>DOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB:</td>
<td>0.23*** 0.31*** 0.33***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLS:</td>
<td></td>
<td>0.22*** 0.32*** 0.44***</td>
<td>0.18*** 0.23*** 0.20**</td>
</tr>
<tr>
<td>FMOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Intermediate developed regions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLS:</td>
<td>-0.02 -0.56* -0.01</td>
<td>0.25* 0.30*** 0.34**</td>
<td>-0.05 -0.62*** -0.25**</td>
</tr>
<tr>
<td>FMOLS:</td>
<td></td>
<td>0.32*** 0.43*** 0.52***</td>
<td>0.27** 1.35*** -0.016</td>
</tr>
<tr>
<td>DOLS:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RB:</td>
<td>0.40*** 0.40*** 0.41***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OLS:</td>
<td>0.10* -0.04*** 0.10</td>
<td></td>
<td>-0.05*** -0.03 -0.03</td>
</tr>
<tr>
<td>FMOLS:</td>
<td>0.09*** 0.11*** 0.10**</td>
<td></td>
<td>0.05* 0.09*** 0.11**</td>
</tr>
<tr>
<td>DOLS:</td>
<td>0.05* 0.09*** 0.11**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(***), (**) and (*) indicate significance at the 1%, 5% and 10% levels respectively. The role of rural banks is measured by the variable RB Loan share.
Table A1. Pedroni panel cointegration test

**Dependent variable:** PC\_RGDRP

<table>
<thead>
<tr>
<th>Rural bank market share</th>
<th>RB Loan share</th>
<th>RB Resource share</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All regions</strong>  (N₁ = 204 ; N₂ = 16)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial depth (Loans)</td>
<td>-3.80***</td>
<td>-2.10**</td>
</tr>
<tr>
<td>Financial depth (Deposits)</td>
<td>-5.98***</td>
<td>-3.22***</td>
</tr>
<tr>
<td>Local intermediation</td>
<td>-3.53***</td>
<td>-2.96***</td>
</tr>
</tbody>
</table>

| **All regions except NCR**  (N₁ = 195 ; N₂ = 15) | | |
| Financial depth (Loans) | -4.24*** | -2.23** |
| Financial depth (Deposits) | -6.41*** | -3.45*** |
| Local intermediation | -3.86*** | -3.19*** |

| **Economically developed regions**  (N₁ = 39 ; N₂ = 3) | | |
| Financial depth (Loans) | 0.61 | 1.24 |
| Financial depth (Deposits) | 0.83 | 1.08 |
| Local intermediation | 1.33 | 1.30 |

| **Intermediate developed regions**  (N₁ = 78 ; N₂ = 6) | | |
| Financial depth (Loans) | -4.25*** | -0.41 |
| Financial depth (Deposits) | -7.48*** | -1.76 |
| Local intermediation | -3.45*** | -0.34 |

| **Less developed regions**  (N₁ = 91 ; N₂ = 7) | | |
| Financial depth (Loans) | -2.61*** | -3.77*** |
| Financial depth (Deposits) | -2.66*** | -3.95*** |
| Local intermediation | -3.43*** | -5.12*** |
Table A2. Pedroni panel cointegration test

<table>
<thead>
<tr>
<th>Dependent variable: Loans</th>
<th>Rural bank market share</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RB Loan share</td>
<td>RB Resource share</td>
</tr>
<tr>
<td><strong>All regions (N1 = 204 ; N2 = 16)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>-0.34</td>
<td>-0.48</td>
</tr>
<tr>
<td><strong>All regions except NCR (N1 = 195 ; N2 = 15)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>-0.47</td>
<td>-0.57</td>
</tr>
<tr>
<td><strong>Economically developed regions (N1 = 39 ; N2 = 3)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td><strong>-1.47</strong>*</td>
<td><strong>-1.95</strong>**</td>
</tr>
<tr>
<td><strong>Intermediate developed regions (N1 = 78 ; N2 = 6)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>0.37</td>
<td>0.66</td>
</tr>
<tr>
<td><strong>Less developed regions (N1 = 91 ; N2 = 7)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>0.28</td>
<td>0.19</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable: Deposits</th>
<th>Rural bank market share</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RB Loan share</td>
<td>RB Resource share</td>
</tr>
<tr>
<td><strong>All regions (N1 = 204 ; N2 = 16)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td><strong>-7.67</strong>*</td>
<td><strong>-5.81</strong>*</td>
</tr>
<tr>
<td><strong>All regions except NCR (N1 = 195 ; N2 = 15)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td><strong>-8.00</strong>*</td>
<td><strong>-6.17</strong>*</td>
</tr>
<tr>
<td><strong>Economically developed regions (N1 = 39 ; N2 = 3)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td><strong>-3.80</strong>*</td>
<td><strong>-4.19</strong>*</td>
</tr>
<tr>
<td><strong>Intermediate developed regions (N1 = 78 ; N2 = 6)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td><strong>-3.13</strong>*</td>
<td><strong>-3.76</strong>*</td>
</tr>
<tr>
<td><strong>Less developed regions (N1 = 91 ; N2 = 7)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td><strong>-4.07</strong>*</td>
<td><strong>-1.63</strong>*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dependent variable: Intermediation</th>
<th>Rural bank market share</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RB Loan share</td>
<td>RB Resource share</td>
</tr>
<tr>
<td><strong>All regions (N1 = 204 ; N2 = 16)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>0.84</td>
<td>0.62</td>
</tr>
<tr>
<td><strong>All regions except NCR (N1 = 195 ; N2 = 15)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>-0.88</td>
<td>-0.70</td>
</tr>
<tr>
<td><strong>Economically developed regions (N1 = 39 ; N2 = 3)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>-0.58</td>
<td>-0.84</td>
</tr>
<tr>
<td><strong>Intermediate developed regions (N1 = 78 ; N2 = 6)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>1.68</td>
<td>1.28</td>
</tr>
<tr>
<td><strong>Less developed regions (N1 = 91 ; N2 = 7)</strong></td>
<td>Output per capita (PC_RGDRP)</td>
<td>0.30</td>
<td>0.50</td>
</tr>
</tbody>
</table>

(***), (**) and (*) signify rejection of the null hypothesis of absence of long run relationship at the 1%, 5% and 10% levels respectively. N1 and N2 are respectively the number of observations and the number of cross-section units.
Table A3. Long run relationship between economic development, banking development (BD) and the role of rural banks (RB)\(^1\) using OLS, DOLS and FMOLS estimators

<table>
<thead>
<tr>
<th></th>
<th>Financial depth: Loans</th>
<th>Financial depth: Deposits</th>
<th>Local intermediation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>FMOLS</td>
<td>DOLS</td>
</tr>
<tr>
<td><strong>All regions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>-0.24***</td>
<td>-0.14***</td>
<td>-0.28***</td>
</tr>
<tr>
<td>RB</td>
<td>0.187</td>
<td>25.34***</td>
<td>0.35***</td>
</tr>
<tr>
<td><strong>All regions except NCR</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>-0.21***</td>
<td>-0.16***</td>
<td>-0.29***</td>
</tr>
<tr>
<td>RB</td>
<td>0.19*</td>
<td>1.31***</td>
<td>0.31***</td>
</tr>
<tr>
<td><strong>Intermediate developed regions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>-0.19</td>
<td>-0.11***</td>
<td>-0.54***</td>
</tr>
<tr>
<td>RB</td>
<td>0.45</td>
<td>0.08***</td>
<td>0.40**</td>
</tr>
<tr>
<td><strong>Less developed regions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>-0.23***</td>
<td>-0.23***</td>
<td>-0.22***</td>
</tr>
<tr>
<td>RB</td>
<td>0.11***</td>
<td>0.50***</td>
<td>0.10</td>
</tr>
</tbody>
</table>

(***) , (**) and (*) indicate significance at the 1%, 5% and 10% levels respectively. \(^1\) The role of rural banks is measured by the variable RB resource share.