RURAL BANKS, RESOURCE ALLOCATION EFFICIENCY AND REGIONAL ECONOMIC PERFORMANCE

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Using panel data for the period 1993 to 2005 from 16 regions of the Philippines, this study investigates whether the resource allocation efficiency of Philippine rural banks resulting from the quantity and quality of banking intermediation activities affects regional economic growth. To explore this relationship, four measures of resource allocation efficiency were alternatively tested employing pooled generalized least squares (EGLS) estimation. The findings suggest that Philippine rural banks need to make allocative adjustments in the areas of branch presence, operational efficiency and credit participation. These results lend support to government efforts to strengthen the rural banking sector and to increase the volume of investments in the regions. Important policy implications of these findings include the need to enhance confidence in the Philippine rural banking system, to encourage savings in regional rural banks, and to ensure efficient transfer of resources from savers to investors.

I. INTRODUCTION

Rural banks are primarily created to play a special role in regional economic development in the Philippines. They generally serve small country-side borrowers and act as conduits of subsidized loans from the government and international donors. In 1952, the government enacted the Rural Banking Act and embarked on a program to enable rural banks to effectively compete with the larger universal and commercial banks and to increase investments in the regions. It also began liberalizing the banking system by lowering compulsory reserve requirements, reducing government interference in credit allocation decisions, encouraging mergers and acquisitions, requiring deposit insurance, and enhancing prudential regulation and supervision of banks. In the 1980s and 1990s, restrictions on interest rates and service fees were removed and the moratorium on new bank openings and branching was lifted to further promote

microfinance and make credit readily available and accessible in the rural areas (Agabin & Daly, 2006; BSP, 2007). Presently, the government continues to support rural banks through the Countryside Financial Institutions Enhancement Program (CFIEP) with waivers of penalties on past due borrowings with the BSP and other supervised credit and special liquidity loans (BSP, 2007).

An inquiry into this special role Philippine rural banks play in regional economic growth will be undertaken in this study. Indeed current literature on microfinance in the Philippines has led to a better understanding of rural banks and their operations, however, there is still a paucity of empirical research to substantiate growing anecdotal evidence of their impact on regional economic performance (Agabin & Daly, 1996). This research thus seeks to contribute to the growing literature on

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financial intermediation and economic growth in the Philippines.

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The paper is organized as follows. Section II presents a brief review of the literature on financial intermediation and economic growth. Section III provides an overview of the rural banking system in the Philippine regions. Section IV discusses the methodology and data description. Section V presents the results of the research and Section VI concludes the paper.

II. FINANCIAL INTERMEDIATION AND ECONOMIC GROWTH

An often explored theory to explain the relationship between financial intermediation and economic growth is financial liberalization. The work of McKinnon (1973) and Shaw (1973) on how interest rates impact on economic growth is based on the assumption that money must be accumulated before productive investments can be initiated. This theory asserts that low interest rates discourage savings, reduce the availability of funds for investment thereby retarding economic growth. Removing restrictions on interest rates is argued to increase interest levels by amplifying the volume of money, thus leading to greater capital formation and productivity.

Existing empirical literature advancing the impact of savings, lending, and economic growth include, among others King and Levine (1993a, 1993b), Bencivenga and Smith (1991), and Beck et al. (2000). A number of research themes are prominent in existing growth literature (see Levine 1997 for a comprehensive review). Some studies concentrate on exploring the channels through which financial development

stimulates economic growth (Calderón & Liu, 2003). Others investigate the causality of the relationship between growth and financial intermediation (Levine, 2004; Demetriades & Hussein, 1996; and Wachtel & Rousseau, 1995) while a number focus on the impact of savings and lending on growth (Demetriades & Luintel, 1997; and Bandiera et al., 2000).

Another frequent subject in the economic growth literature is the resulting resource allocation efficiency ensuing from financial liberalization. According to Bencivenga and Smith (1991), since intermediaries facilitate resource exchange, they affect and determine the allocation of resources in society and hence economic growth. This allocative efficiency is said to aid savers and investors in risk management (Angbazo, 1997), in better identification of long-term investments that are more productive than short-term ventures (Bencivenga & Smith, 1991), in improved investment decisions (Greenwood & Jovanovic, 1990), and in information collection and evaluation of investment

projects (King & Levine, 1993b; and Boyd & Prescott, 1986).

A resource allocation process begins when banking intermediaries establish branch offices where they pool and accumulate savings from depositors. Accumulation of deposits increases the fraction of resources a society saves. Hence, the more locations there are, the higher the expected savings to be pooled from individuals and firms, which in turn increases the resources available for lending to investors. Access to financial services by the public through the presence of intermediaries is argued to increase financial development resulting in positive externalities on economic growth (Burgess & Pande, 2003). To ensure sustained accumulation of savings, intermediaries must keep transaction costs low. Intermediation costs are passed on to depositors, and financial intermediaries become active only if the former are willing to bear such cost. When cost of intermediation becomes prohibitive, intermediaries are prevented and discouraged from operating at low levels of income (Bencivenga & Smith, 1998). Intermediaries also decide the levels of savings mobilized to investors. Finally, the amount of loans disbursed determines the depth of the financial system. Financially deep markets provide individuals and firms with access to capital necessary to undertake investment projects that lead to greater capital formation and productivity, which consequently advance economic growth (McKinnon, 1973, and Shaw, 1973).

Bencivenga and Smith (1991) posit that financial intermediaries either exist or they do not. "There is also no concept of them operating more or less efficiently" (Lowe 1992, p. 21). Following Bencivenga and Smith, it is assumed that the resource allocation process is neither static nor linear and saving and lending activities of banking intermediaries, individuals and firms can be made at any stage at varying levels of quantity and quality. Thus this study does not attempt to construct a model for resource allocation efficiency. Rather, the relationship of the resource allocation efficiency or inefficiency, as the case may be, ensuing from the quantity and quality of banking intermediation activities and regional economic growth is explored to assess the role Philippine rural banks play in regional economic development.

III. THE STATE OF REGIONAL RURAL BANKING IN THE PHILIPPINES

The Philippines has seventeen (17) geographic regions served by a financial system composed of formal, semi-formal and informal financial sectors.[1] The formal financial sector is dominated by banks which are comprised of the universal and commercial banks (UKBs) which as of 2005 number around 40 and with 56% of the total bank offices in the country, 83 are thrift and private development banks (TBs) with 17% of national bank office share and 861 are regional rural and cooperative banks (RCBs) with the remaining 27% of banking offices (BSP, 2007). As rural banks in the Philippines are primarily established to expand the rural economy, they generally cater to small borrowers including farmers, entrepreneurs, market vendors, business owners, wage earners, teachers and cooperatives and remain the major source of agricultural credit. It is not surprising that as of 2005 almost 50% of their average net loan portfolio is allocated to the agriculture, forestry and fishery sectors.[2]

Rural bank presence in the regions has been steadily growing in recent years. While South Luzon, Central Luzon, and the Ilocos Region share almost 15% of the 17% of the

country's bank offices, the rest of the thirteen regions are however served by less than 2% of the country's bank offices. This imbalance has raised concerns over the lack of sufficient avenues for robust financial intermediation for the rural poor in the regions of the country. The same apprehension has been put forward in regard to the minimal assets held by the rural banking sector. As of 2005, rural banks own only 2% while UKBs account for 92% and TBs around 7% of the country's banking assets. The largest accumulation of assets over the 13-year period is by the rural banks in South Luzon with a 0.4% share of the rural banking's 2% share in total banking assets. In terms of operating income, RCBs earned less than an average of 0.4% per region and an aggregate of only 4.6% of the national banking system operating income. In contrast, UKBs earned 81.02% of its total operating income in the NCR alone in 2005.

While deposits in all banks have increased during the period 1993-2005, deposit levels in rural banks have remained very low at only 2.7% compared with 88% held in UKBs. UKBs and TBs are clearly preferred over RCBs as depositories despite the higher savings rates offered by the latter. This indicates that depositors have lesser confidence in rural banks relative to their larger and more stable counterparts. The average growth rates of deposit liabilities of rural banks in the regions were, however, generally higher than those of the UKBs signaling that rural banks have been gaining ground in this area. As of 2005, interests on deposits paid out by banks at the national level are as follows: 85.2% by UKBs, 10.7% by TBs and 4.1% by RCBs reflecting the significantly lower levels of deposits in the latter despite having achieved higher growth rates. NCR UKBs paid out 68% of the country's total interest expense. At the regional level, the share of interest expense of UKBs is significantly higher ranging from between 50 to 80%.

Rural banks have filled in the slack left by UKBs that have downscaled their credit exposure since the Asian financial crisis in 1997. However, the share of rural banks in the national net loan portfolio is still deemed insubstantial despite sizeable growth over the same period. Their net loan portfolios in the regions now range from 8% to a high of around 40% but the largest portfolio, for example, held by the Central Luzon, South Luzon and Bicol regions is well below 1% of the national portfolio. Clearly, the bulk of loans are still being extended by the UKBs in the NCR accounting for 80.2% of the national total.

Regional rural banks also charge significantly higher loan transaction costs. Their implicit lending rates, derived by dividing total interest income by net loan portfolio are significantly greater than those of UKBs. UKBs, nevertheless, obtained 85.5% of national total interest income in 2005, 10.1% by TBs and only 4.5% by the RCBs. 80.57% of this was earned by UKBs in the NCR alone. Except for the Cagayan Valley and Central Luzon regions, regional interest income for RCBs was well below 1% of the national interest income. Rural banks also earn significantly higher interest margins[3] than TBs and UKBs raising concerns over the high cost of financial intermediation of rural banks whose clients comprise small borrowers and giving the perception that the rural poor unnecessarily bear the burden of rural bank credit.

Intermediation or savings mobilization in the regions has also decreased substantially in the period under study. The rate of savings mobilization derived by dividing net loan portfolio by the deposit liabilities fell significantly after the 1997 financial crisis. UKB savings mobilization has plummeted by an average of more than 50% from 1993 levels. Over the 13 year period, only TBs in Eastern Visayas and RCBs and TBs in Northern Mindanao posted positive growth levels. Intermediation is crucial because it is primarily through the process of allocating

savings for lending that banks perform their intermediation role, particularly in identifying and selecting productive investments that drive economic growth.

The volume of loans extended by banks in the regions relative to the regions' gross domestic regional product has also decreased in recent years. This credit participation ratio gives an approximation of the volume of intermediation in the regions, particularly the availability of funds to potential investors.

Only the NCR has significantly higher levels of credit participation by an average of more than 300% over the 13 year period. Volume of loans is seen to be increasing for all regions from 1993 up to 1997 but stagnating thereafter to barely above 1997 levels for all regions. Only the Socsargen, CARAGA and the NCR regions continued to provide funds to the private sector at pre-crisis levels. The regional TBs and RCBs, however, have posted the highest growth from 1993 levels.

IV. METHODOLOGY AND DATA DESCRIPTION

The estimation model employed in this study derives from the proposition that it is the financial system that pools money and channels them into investments through its intermediation function and the resulting allocation efficiency achieved from such intermediation contributes positively to economic growth (Bencivenga & Smith, 1991). The estimation procedure involves two steps. The existence of unit roots is first tested using the Levin, Lin and Chu (LLC) test for pooled data, followed by the estimation of the data using pooled estimated generalized least squares (EGLS). Regional bank and economic time series data from 1993-2005 for 16 cross-sections representing the regions in the Philippines are pooled and segregated into the three sectors of the Philippine banking system, UKBs, TBs and RCBs. The data estimation adjusts for white period standard errors & co-variance and computes both fixed and cross-section effects and is weighted to take into account regional variances. The basic model that can be estimated using a pool object as follows:

$$Y_{it} = \alpha + X_{it}' \qquad \beta_{it} + \delta_i + \gamma_t + \epsilon_{it}$$

where Y_{it} is the dependent variable proxied by the nominal per capita gross domestic product or economic output as a measure of economic performance, and X_{it} is a vector of

regional financial development (allocative efficiency) and macro-economic regressors, and ϵ_{it} are the error terms for $I = 1, 2...., M$ cross-sectional units observed for dated periods $t = 1,2...T$. The α parameter represents the overall constant in the model, while the δ_i and γ_t represent cross-section and period specific effects respectively. The cross-section fixed effects δ_i's consist of other economic, socio-cultural, technological, political, environmental and other idiosyncrasies of each region not captured by the current model while the γ_t's account for the changes in economic output across time.

The present financial system in the Philippines is considered to be bank-based because of the dominance of banks in the country, of the limited presence of equity markets in the regions, and the fact that only the largest corporations are listed in the country's stock exchanges. Hence funding for the majority of businesses in the country is expected to be sourced primarily from banks and not through financial markets. The use of bank-based financial proxies is therefore appropriate for this study. While keeping the model as simple as possible, multiple indicators of financial intermediation rather than a single measure to make effective comparisons between the dynamics and intermediation activities of rural banks relative to universal and

commercial banks and thrift banks is used. The study relies heavily on data obtained from *Bangko Sentral ng Pilipinas, the* *National Statistics Office* and the *National Statistical Coordination Board*.

Table 1
Definition of Variables

Variable	Definition
PCNGDRP	Per capita nominal gross domestic regional product (GDRP)
PBO	Percentage share of bank offices
NIM	Net interest margin
INTERMEDIATION	Net loan portfolio/deposit liabilities
CREDIT	Net loan portfolio to the private sector as a percentage of GDRP
GDCF	Nominal gross domestic capital formation in durables, breeding stocks and orchards
DR	Dependency ratio
HIR	Headline inflation rate

Table 1 presents the variables used in this study. The dependent variable is the nominal per capita gross domestic regional product. To test the finance and economic growth relationship, four resource allocation efficiency indicators are alternately tested. The first control variable is a proxy for bank presence. PBO represents the share of bank offices for each bank type per region. This measure indicates the ability of banks, through their branch offices, to accumulate and pool savings from individuals and firms. The next indicator is the net interest margin (NIM) which is computed by dividing net interest income by total assets. NIM proxies for bank efficiency borrowing from the dealership model first used by Ho and Saunders (1981). According to Demirguc-Kunt and Huizinga (2000), a lower NIM is an indicator of the efficiency of the banking system in performing its financial intermediation role. The third indicator is intermediation (INTERMEDIATION) which

is commonly used in descriptive studies on savings mobilization and is the value of the loan portfolio divided by deposit liabilities (Agabin & Daly, 1996). This ratio estimates the proportion of the volume of loans from pooled savings in banks. The final measure is fairly traditional, CREDIT, which is value of the domestic credit extended by banks over nominal gross domestic regional product (Levine, 1994; and Aziz & Duenwald, 2002), and an approximation of availability of funds from the banking system to potential investors. Except for the NIM proxy, it is expected, in line with existing literature, that the three other indicators should be positively related to economic growth. Following standard practice in growth research, economic factors such as inflation (HIR), dependency ratio (DR) or the percentage of unemployed persons over population that rely on economic development generated by employed persons, and gross domestic capital formation (GDCF) are also used as

control variables. The coefficients of these variables are expected to be negative for inflation and dependency ratio and positive for gross domestic capital formation.

V. DISCUSSION

The results of the unit root tests are presented in Table 2. Except in the case of nominal per capita gross regional domestic product, intermediation and credit participation of universal and commercial banks and the gross capital domestic formation, the variables are stationary in levels. In view of this, the first difference of these variables is used in the data estimation.

Table 2
Pool Unit Root Test – Levin, Lin & Chu

	t- Statistic	Probability
PCNGDRP*	-7.75831	0.0000000
NIM (RCB)	-6.21314	0.0000000
NIM (TB)	-4.61693	0.0000000
NIM (UKB)	-4.42359	0.0000049
Intermediation (RCB)	-3.84697	0.0000598
Intermediation (TB)	-9.65191	0.0000000
Intermediation (UKB) *	-7.95597	0.0000000
PBO (RCB)	-2.61238	0.0044957
PBO (TB)	-5.00894	0.0000003
PBO (UKB)	-8.48687	0.0000000
Credit (RCB)	-2.86573	0.0020803
Credit (TB)	-3.62004	0.0001473
Credit (UKB) *	-6.89755	0.0000000
GDCF*	-12.6919	0.0000000
DR	-9.28823	0.0000000
HIR	-8.4071	0.0000000

* PCNGDRP, Intermediation and Credit of UKBs and GDCF are stationary at first difference.

Table 3
Regression Results

	Coefficient	t-Statistic
Percentage of bank offices (PBO)		
Intercept	16.74421000	3.4146489***
PBO (RCB)	-7.18422100	1.5375050
PBO (TB)	-4.20950500	0.7547450
PBO (UKB)	4.61800400	2.4288450**
△GDCF	0.00001760	0.4752750
DR	-21.7246000	2.8682420***
HIR	-0.07331400	1.1571680
Net interest margin (NIM)		
Intercept	23.11774000	3.52140400***
NIM (RCB)	4.70265200	0.28828600
NIM (TB)	-3.01521300	-0.46536500
NIM (UKB)	-7.89489700	-0.87230200
△GDCF	0.00022800	4.76133400***
DR	-37.67897000	-3.65909900***
HIR	0.16308700	3.17918900***
Intermediation (Intermediation)		
Intercept	26.38486000	6.34940700***
Intermediation (RCB)	2.02659300	6.73961300***
Intermediation (TB)	-0.54755400	-1.11682300
△Intermediation (UKB)	0.46762400	0.33380000
△ GDCF	0.00021700	3.82100600***
DR	-45.43193000	-7.04528900***
HIR	0.11912800	2.37701100**
Credit Participation (CREDIT)		
Intercept	17.25650000	3.88638500***
Credit (RCB)	-63.79702000	-5.43139000***
Credit (TB)	-13.22612000	-1.66577300*
△Credit (UKB)	-17.38507000	-1.86297600*
△GDCF	0.00003180	0.75123000
DR	-22.71725000	-3.13271500**
HIR	-0.02534700	-0.33657500

(***), (**) and (*) indicate significance at the 1%, 5% and 10% levels respectively.

Table 3 above summarizes the regression results. The positive effect of bank presence on economic growth is confirmed only for commercial banks. The result indicates a need for rural banks to further intensify their presence in the regions. With regard to bank efficiency, the expected positive relationship is not evident in the three types of banks. This implies that Philippine banks, including rural banks need to significantly improve operational and administrative efficiency. Rural banks in particular may need to merge and consolidate with other banks to exploit economies of scale and scope, upscale

operations in the regions to stimulate savings, or to offer financial products responsive to the needs of the pertinent regional economy served by these banks. Low levels of deposits and higher net incomes from higher transaction costs on lower volume of intermediation for rural banks and negative interest margins from higher interest paid on unallocated savings vis-à-vis interest income from loans for UKBs, may be crucial drivers of this inefficiency. The NIM results also signal that banks may have become discouraged from operating at low levels of income in the regions (Bencivenga & Smith, 1998), thus the concentration of lending and saving activities in the National Capital Region.

The positive intermediation result is confirmed only for rural banks, in line with numerous studies finding that channeling savings into lending can promote economic growth (Demetriades & Luintel, 1997). This may reflect the rural banks' superior capability to identify and select relevant productive investments and to monitor individual and firm borrowers allowing them to manage greater default risk than universal and commercial banks (King & Levine, 1993b; and Boyd & Prescott, 1986). This positive relationship also implies the need to encourage savings in rural banks to increase the volume of money infused into the local economy and to direct the flow of investments to the Philippine regions.

For credit participation, the results are negative for all types of banks. The negative relationship can be explained partly by the sizable decrease in lending levels by the UKBs in recent years. While the opposite may be the case for rural banks which have very high intermediation levels, the lower levels of deposits underscore the insufficiency of capital available for investments in the regions. The quantity of funds allocated to the regions by the banking system must be increased in order to spur regional economic activity. These results confirm numerous economic growth studies that financial depth is an important driver of growth and that the quantity or volume of funding is as important as the quality of intermediation (Levine, 1997).

The cross-section fixed effects results, which are not reported in this study, show that the National Capital Region has the largest coefficient relative to the other regions confirming the very high levels of economic activity and financial intermediation in the region. It is also not surprising that the Autonomous Region of Muslim Mindanao has the lowest fixed effect coefficient in view of the quality and quantity of intermediation taking place in that region. The time effects coefficients on the other hand largely confirm the Asian financial crisis in 1997-1998 and its subsequent impact on economic growth in the Philippines up to 2001 and also the economic recovery that took place thereafter.

VI. CONCLUSION

The nexus between resource allocation efficiency of Philippine rural banks resulting from the quantity and quality of banking intermediation activities and regional economic growth is examined in this paper. The empirical results suggest that Philippine rural banks require allocative adjustments in the areas of branch presence, operational efficiency and credit participation. Several conclusions can be drawn from these findings. First, there is a need to enhance confidence in the Philippine rural banking system to exploit regional presence. Second, rural bank operational and administrative efficiency need to account for high transaction costs and interest rates. Third, the

positive influence of regional rural bank intermediation is clearly offset by the lower levels of financial development of this sector. Finally, low rural banking credit participation must be addressed by encouraging savings accumulation in the regions.

Methodological limitations primarily due to unavailability of data must be taken into account. First, financial intermediation data is limited to the formal banking sector. There are other financial intermediaries, particularly the equity and informal financial institutions, operating in the country. Second, relevant macroeconomic variables, such as governance, conflict, infrastructure, education, environment and poverty, were omitted from the model. As institutional settings are crucial in financial liberalization research, both sets of data have obvious intuitive and empirical implications on model specification and should be included in future research in this area.

NOTES

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[1] For this study, we refer to only 16 regions as Region 4-A Calabarzon and Region 4-B, Mimaropa were integrated only in 2002.

[2] This figure was derived from data on rural bank net loan portfolio for the period 2000-2005 provided by the BSP.

[3] Net interest margin is derived by dividing net interest income over total assets. Lower interest margins are deemed to reflect higher banking efficiency (Demirguc-Kunt & Huizinga, 2000).

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