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Efficiency of Banks in a Foreign–Controlled, Small Financial Sector: The Case of Fiji

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Abstract

Motivated by the Sharma and Gounder (2012b) finding that deposits may play a key role in enhancing bank credit to private sector in the Pacific, this study investigates a pertinent gap in the literature—the *efficiency* of banks in the region in converting deposits into credit. Data limitations restrict our investigation to Fiji only but provide additional insights on bank efficiency studies—that of banks in a foreign–controlled, small financial sector. DEA technique is used to measure the efficiency of all five banks over the 2000–2010 period. On one hand banks remain highly profitable and well capitalised but on the other they may be relatively inefficient in converting mobilised deposits into private sector credit. Moreover, the overall efficiencies may have deteriorated over time. Policy implications emerge, including requiring banks to become more efficient producers of credit. In light of the structural and operational similarities of financial sectors across the Pacific, the results of this study and policy implications are likely to apply to the rest of the Pacific.

Keywords: bank efficiency, DEA, small financial system, Fiji

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1. Introduction

A recent study by Sharma and Gounder (2012b) finds that, in the case of six South Pacific economies, deposits might importantly determine the level of a country's bank facilitated private sector credit and thus the level of economic growth and development. That is, an increase the deposit base is likely to lead to an increase in bank credit to the private sector; the relationship is significant at 1%. Thus, it might be useful, as the authors suggest, to develop policies and strategies to boost deposit funding of banks in the region, including paying greater attention to issues relating to accessibility, affordability and eligibility.

In addition, it appears equally important to understand how efficient banks in the region have been in converting mobilised deposits into credit or loans; i.e. while more deposits may lead to more loans, the question also is: how efficiently are banks able to convert the deposits into loans. If banks have been efficient in their "intermediation" role then the focus may primarily be on policies to boost banks' deposit base; if, however, banks have not been efficient in this role then in addition to developing policies to enhance deposit mobilisation, banks would need to be encouraged or even required to become more efficient producers of loans. It appears also useful, at the same time, to examine how efficient banks have been as "producers" of deposits as a service to customers. Accordingly, the questions are: how efficient have banks been in their "intermediation" and "production" roles?

The demonstrated ability of banks in the South Pacific to withstand the impact of the otherwise ruinous GFC and other internal shocks such as coup d'états, suggests that the region's banks may, in addition to being highly profitable (PFTAC, 2011), be relatively efficient as well. Research on the efficiency of banks in the region, however, appears scant. This study endeavours to fill that gap. In fact, it appears that the stock of knowledge on banking/financial institution efficiency covering the less developed economies is generally rather scant; thus this study fills that gap as well. Lack of relevant and time series data, however, limits our analysis to only Fiji, which has been used previously as a good representative of the region (e.g. Sharma and Gounder, 2012a). As outlined below, Fiji makes an interesting study for other reasons as well.

Despite its small size, Fiji's financial system has undergone a number of reforms similar to that in more developed economies. For example, in the 1980s and 1990s, government control over interest rates and credit allocation were gradually removed. During this period, prudential regulation was also strengthened, including a major revision of the banking act and adoption of a number of policies such as the BIS proposed capital adequacy, liquidity, large exposure and asset quality frameworks. Reforms have continued in 2000s. Such reforms are likely to have improved the efficiency of financial institutions.

At the same time, however, the banking sector in Fiji is foreign-controlled; all five banks are branches of foreign banks—some have been operating in the country for over a 100 years. Moreover, the sector has become increasingly concentrated over time; a number of acquisitions have resulted in a less competitive financial sector. The banking sector has also been consistently highly profitable (PFTAC, 2011) and a recent study finds that market power may be a key determinant of the high profitability (Sharma and Gounder, 2011). Further, market power appears to allow banks to readily pass on to their clients the interest cost of raising deposit liabilities as well as other cost of operations, a situation which may not be helpful in motivating institutions to improve their efficiency levels. Lack of scientific research and empirical evidence may also not have helped in institutions becoming more efficient.

Profitable and efficient institutions may well contribute to systemic stability, however, very high profits together with relative inefficiency may not be desirable for economic growth and development, especially where financial markets are tiny, firms and individuals are intermediary-dependent and the economy constantly struggles with poverty, inequality and growth challenges, such as in the case of Fiji and the rest of the South Pacific (Sharma and Gounder, 2012a). The foregoing situation may in fact retard economic growth and potentially increase poverty and inequality (Beck et. al., 2007).

This study then provides a first insight into the efficiency of banks in a Pacific island context, using deposits as both an input, i.e. to produce loans (intermediation role) and an output, i.e. deposits as a service to customers (production role) and the DEA technique. For comparative analysis, we examine the efficiencies of non-bank deposit institutions in providing similar services in Fiji. Results show that banks in Fiji, especially the big two, may be relatively

inefficient in converting mobilised deposits into private sector credit and/or producing deposits as a service for their clients. Moreover, the overall efficiencies may have deteriorated over time.

The rest of the paper is outlined as follows: section 2 provides a brief background on Fiji's banking sector; section 3 describes the methodology and data; section 4 presents the results; and section 5 concludes with some policy implications.

2. Fiji's banking sector—a brief background

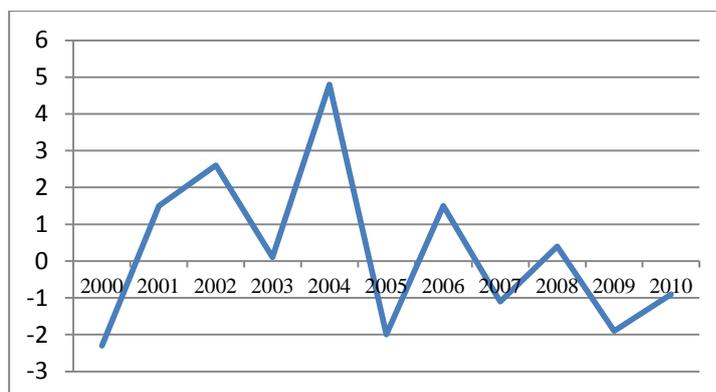
Fiji's banking sector is more or less *the* financial sector; a 30 year old stock market remains very small and relatively illiquid (Sharma and Gounder, 2012a; Sharma and Roca, 2012) and the money market is virtually absent. Moreover, non-bank financial institutions may also be a relatively small part of the financial system—over the 1980–2009 period, of the total private sector credit by financial institutions, the share of banks averaged 90%. Thus, bank facilitated intermediated credit is the major and, largely the only viable formal external financing option in Fiji, i.e. to a great extent, banks are likely to arbitrate who gets credit and who does not.

In fact, it is more likely that two banks—ANZ and WBC—dominate the resource allocation function in Fiji. ANZ (Australia and New Zealand Banking Corporation Ltd) and WBC (Westpac Banking Corporation Limited), both Australian and perhaps the oldest not only in Fiji but across the Pacific, controlled around 70% of total banking assets and 75% of total bank loans over the 1999–2008 period (Sharma and Brimble, 2012). Of the two, ANZ is the larger bank, holding, for example, around 58% of the combined share of loans over the period. The rest of the 30% of banking assets and 25% of the loans were held by the other three banks, also foreign: Bank of Baroda (BOB); Bank of South Pacific Limited (BSP); and Colonial National Bank Limited (CNB).

Despite their relative size, all banks operating in Fiji appear to be highly profitable; returns on assets, for example, commonly exceed international averages; the returns on assets remained high even in periods of major external shocks including the 2007 global financial crisis and the coup d'états of 2000 and 2006. Moreover, banks are well regulated and supervised, adequately capitalised, and not exposed to excessive risks (PFTAC, 2011).

The above more or less briefly describes Fiji’s financial structure—operational in a socio-economic setting described by UNESCAP as a small island developing state, characterised typically as one with on-going growth and development challenges. Indeed, as illustrated by figure 1, growth has been a concern in recent times with equally discouraging forecasts².

Figure 1: GDP growth in Fiji, 2000-2010 (percent)



Source: Fiji Bureau of Statistics (<http://www.statsfiji.gov.fj/index.htm>)

3. Data and methodology

Our sample includes all five banks operating in Fiji in 2010. The banks include: Bank of Baroda (BOB); Bank of South Pacific Limited (BSP); Westpac Banking Corporation Limited (WBC); Australia and New Zealand Banking Corporation Ltd (ANZ); and Colonial National Bank Limited (CNB). Relevant and complete data for these institutions are available on-line for the years 2000–2010 from Reserve Bank of Fiji. We examine the efficiency of these banks longitudinally as well as cross-sectionally. We also compare their efficiencies with the non-bank deposit institutions (NBDIs), namely, Credit Corporation Fiji Limited (CCFL); Merchant Finance Limited (MF); and Home Finance Company Limited (HFC). Among others, such comparison is useful for the following reasons: (i) like banks the NBDIs are licensed to accept public deposits; (ii) the supervisory and regulatory frameworks of NBDIs are equivalent to that of banks; and (iii) the main activities and business models of both the NBDIs and banks are more or less identical, and confined to the domestic market.

² Asian Development Outlook for Fiji 2011, <http://www.adb.org/documents/books/ado/2011/ado2011-fij.pdf> [Accessed: August, 2011].

The efficiency of financial institutions in converting deposits into loans or producing deposits as a service for their customers can be estimated using nonparametric and parametric frontier efficiency models; an institution's relative efficiency is determined by its proximity to the efficient frontier—efficiency increases as the distance falls. Compared to parametric frontier methods such as Stochastic Frontier Approach (SFA), the Data Envelopment Analysis (DEA) inherits the generic characteristics of the nonparametric method; that is, DEA does not impose a particular functional form on the data in determining the most efficient firms, it captures the interplay between various inputs and outputs of different dimensions. This aspect of the DEA is particularly useful for our relatively small sample size. DEA's limitation with respect to ignoring the possibility of random fluctuation in efficiency can be managed via a multiple-model approach. Drawing on these strengths, this paper employs a two-step DEA technique.

Fortunately, there is greater consensus on the classification of inputs and outputs; most researchers agree that inputs include variables such as employees and fixed assets (buildings and equipment) and outputs include loans and other earning assets (securities, balances at central banks, trading accounts). Bank deposits may be taken as an input, output or as proposed recently by Holod and Lewis (2011), as an intermediary product. In our analysis, the inputs include: fixed assets (building and equipment) and number of employees and the outputs include: loans and other earning assets. Our two-step DEA analysis uses deposits first as an input and then as an output. Thus, we examine the efficiency of institutions treating deposits as an input for the production of loans and other earning assets ("intermediation" approach) as well as an output—a service provided by an institution for its customers ("production" approach).

Our interest, however, is mainly in the "intermediation" role since it is the production of more loans that will ultimately lead to more growth and development. See Sealey and Lindley (1977) for a theoretical discussion of both approaches and Holod and Lewis (2011) for a comprehensive review of literature. We are also not able to obtain data on the number of employees; we proxy this by personnel expenses, which is also taken care of by the DEA technique since the model imposes fewer requirements on input/output variables.

Table 1 provides some descriptive statistics for the last year of the analysis period—2010. As the table indicates, in 2010, and for that matter, during other years of the analysis period, ANZ was the largest bank in the industry. In terms of deposits, for example, ANZ’s share was 42% of the market, followed by WBC’s 28%; the smallest bank, BSP’s, share was 2%. Similarly, in terms of loans, ANZ’s share was 47%, WBC’s 29% and BSP’s 2%. The big two—ANZ (branch est. 1880) and WBC (1901)—are Australian banks and have been operating in the country for over a 100 years. These banks are also two of the big four in Australia.

Table 1: Descriptive statistics (2010)

Variable	ANZ	BOB	WBC	CNB	BSP	Mean	Median	S.D
<i>Inputs</i>								
Fixed assets	27406	3223	18886	23010	750	14655	18886	11983
Number of employees	67577	6545	39846	58133	2486	34917	39846	3485
<i>Input/output</i>								
Deposits	1483849	393771	999065	605162	64624	709294	605162	549977
<i>Outputs</i>								
Loans	1466106	158280	896019	507854	51913	616034	507854	578897
Other earn. assets	146618	220265	49799	34370	16858	93582	49799	86849

Note: ANZ = Australia and New Zealand Banking Corporation Ltd; BOB = Bank of Baroda; BSP = Bank of South Pacific Limited; CNB = Colonial National Bank Limited; and WBC = Westpac Banking Corporation Limited.

4. Empirical results

The results of the DEA analysis are presented in table 2; panel A shows the results when deposits are treated as input (“intermediation” approach) and panel B when deposits are used as output (“production” approach). It may be noted that the panels have been sorted in descending order according to the magnitude of average efficiency index for the 2000–2010 period reported in the last columns of the table so that the more efficient institutions appear first under each approach. The overall technical efficiency estimates represent optimal values based on constant returns to scale (CSR) for each of the 8 financial institutions.

As the table shows, for the period 2000–2010, per the “intermediation” approach, the average efficiency of banks in Fiji was around 62% and that of non-banks was around 71% (panel A); per the “production” approach, the efficiencies were 63% and 71%, respectively (panel B). Whether deposits are used as an input or an output, some general observations are noted: (i) the overall efficiency scores for both groups of institutions are similar (61–63 and 71–71); (ii) while neither group is highly efficient, banks as a group appear to be less efficient than non-banks; and (iii) the best scores for banks were achieved in 2006 and the worst in 2001, with the scores being very close—best scores were 74–76% and the worst 54%.

Table 2: DEA overall technical efficiency scores**Panel A: “Intermediation” approach—deposits as *input***

	BOB	BSP	WBC	ANZ	CNB	Avg: Banks	HFC	MF	CCFL	Avg: NBs
2000	0.773	1.000	0.474	0.424	0.514	0.637	1.000	0.630	1.000	0.877
2001	0.774	0.671	0.492	0.411	0.347	0.539	1.000	0.589	0.526	0.705
2002	0.841	1.000	0.515	0.404	0.459	0.644	0.797	0.574	0.477	0.616
2003	0.780	0.703	0.601	0.393	0.362	0.568	0.910	0.559	0.580	0.683
2004	0.824	0.811	0.709	0.384	0.365	0.619	0.900	0.678	0.577	0.719
2005	0.784	1.000	0.708	0.437	0.406	0.667	1.000	0.646	0.564	0.737
2006	0.828	1.000	0.900	0.491	0.480	0.740	0.950	0.717	0.543	0.737
2007	0.822	0.416	0.840	0.454	0.458	0.598	0.784	0.819	0.511	0.705
2008	0.754	0.646	0.773	0.437	0.429	0.608	0.846	0.879	0.520	0.748
2009	0.773	0.494	0.726	0.516	0.436	0.589	0.770	0.585	0.588	0.648
2010	0.916	0.570	0.564	0.544	0.260	0.571	0.861	0.550	0.562	0.658
Average	0.806	0.755	0.664	0.445	0.411	0.616	0.893	0.657	0.586	0.712

Panel B: “Production” approach—deposits as *output*

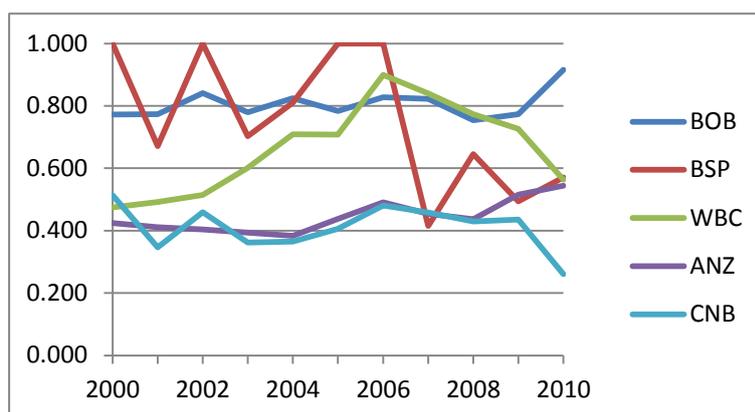
	WBC	BSP	BOB	ANZ	CNB	Avg: Banks	HFC	MF	CCFL	Avg: NBs
2000	0.553	1.000	0.527	0.439	0.599	0.624	1.000	0.631	1.000	0.877
2001	0.596	0.887	0.484	0.407	0.332	0.541	1.000	0.625	0.566	0.730
2002	0.606	1.000	0.525	0.403	0.309	0.569	0.651	0.607	0.515	0.591
2003	0.731	0.575	0.707	0.421	0.339	0.555	0.889	0.545	0.627	0.687
2004	0.856	0.701	0.646	0.432	0.378	0.603	0.897	0.712	0.622	0.744
2005	0.831	1.000	0.704	0.519	0.480	0.707	0.793	0.683	0.595	0.690
2006	0.995	1.000	0.718	0.556	0.544	0.763	0.853	0.755	0.555	0.721
2007	0.972	0.310	0.791	0.520	0.530	0.625	0.813	0.852	0.524	0.730
2008	0.875	0.695	0.780	0.491	0.523	0.673	0.823	0.799	0.511	0.711
2009	0.819	0.489	0.840	0.586	0.489	0.645	0.757	0.576	0.595	0.643
2010	0.647	0.626	1.000	0.604	0.257	0.627	0.878	0.606	0.585	0.690
Average	0.771	0.753	0.702	0.489	0.434	0.630	0.850	0.672	0.609	0.710

Note: the banks include: BOB (Bank of Baroda); BSP (Bank of South Pacific Limited); WBC (Westpac Banking Corporation Limited); ANZ (Australia and New Zealand Banking Corporation Ltd); and CNB (Colonial National Bank) Limited). The non-bank deposit institutions include: HFC (Home Finance Company Limited); MF (Merchant Finance Limited); and CCFL (Credit Corporation Fiji Limited). Panels sorted in descending order according to the magnitude of average efficiency index so that the more efficient institutions appear first under each approach.

Deposits as “input”

The 62% efficiency score for banks under the intermediation approach (deposits as input) indicates that the sector could have used 38% less inputs to produce the same level of outputs or produced 38% more outputs with the same level of inputs. In the period under investigation, the best average overall efficiency appears to be achieved in 2006—74% and the worst in 2001—54%. Across the banks, Bank of Baroda (BOB) appears to have the highest overall efficiency score—81%.

Figure 2: Efficiency scores of banks in Fiji, 2000-2010 - "intermediation" approach



Note: BOB= Bank of Baroda; BSP = Bank of South Pacific Limited; WBC = Westpac Banking Corporation Limited; ANZ = Australia and New Zealand Banking Corporation Ltd; and CNB= Colonial National Bank Limited

As further illustrated by figure 2, BOB may have consistently been the most efficient bank over the 2000–2010 period. However, BOB could have produced, on average 19% more outputs with the same level of inputs. Moreover, BOB’s overall average is lower than HFC’s (Home Finance Company), a non-bank deposit institution. To its credit though, in 2010, BOB’s efficiency score was trending towards 100%; at 92%, the score was also the highest across all types of deposit taking institutions. It should be kept in mind as well that BOB is a relatively small bank; about a quarter the size of the largest—ANZ.

Interestingly also, BOB is not as technically advanced as some other banks operating in Fiji, including ANZ and WBC—the two dominant Australian banks, which together control up to 70–75% of total bank deposits and loans. ANZ, on the other hand, despite its superior technology, appears to be among the least efficient banks; its overall score of 45% was almost half of BOB’s (81%). In fact, ANZ appears to consistently be one of the least efficient deposit taking institutions over the 2000–2010 period (figure 2). In fact, excluding CNB (Colonial National Bank), which was taken over by BSP (Bank South Pacific) in 2011, ANZ’s average overall efficiency is the lowest in the sector and remained so even in 2010, which incidentally happens to be the bank’s best score in the period. However, at only 54% in 2010, the indication is that it could have produced 46% more outputs with the same level of inputs. While WBC’s overall average appears better than ANZ’s, after peaking at 90% in 2006, its scores have been rapidly declining, with 56% recorded for 2010. Thus, WBC’s performance is also not very encouraging.

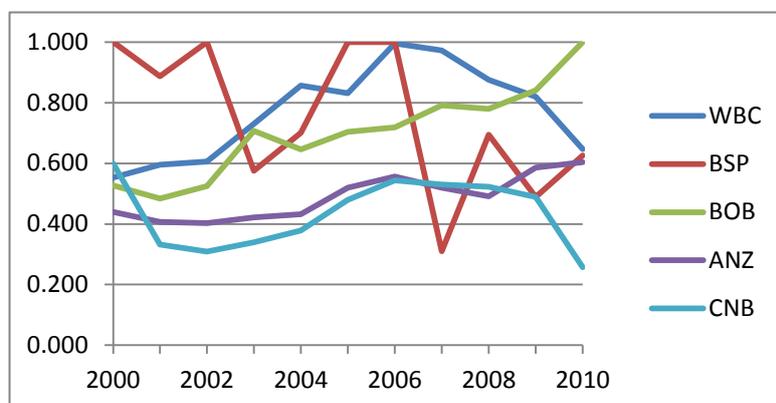
Deposits as “output”

Overall, banks don’t appear to have done much better as producers of deposits as well; the average overall efficiency score is but only slightly better—63%. Again, the best average overall efficiency appears to be achieved in 2006—76% and the worst in 2001—54%. Under the production approach, in the period under investigation, on average, WBC appears to have done better than the other banks. However, after reaching a peak of almost 100% in 2006, WBC’s scores appear to be trending down and was about the same as BSP and ANZ by 2010 (figure 3), i.e. WBC’s efficiency in producing deposits as a service for its clients appears to have been falling in recent years. With respect to the largest bank in the industry—ANZ—the position does not change; it remains among the least efficient banks in the industry in producing deposits as a service for its clients. Again, ANZ’s best score in the period is for 2010 but at 60% it is 40% less efficient compared to BOB.

While BOB has moved to third place based on overall average scores, as figure 3 shows, its efficiency score has steadily improved over the years and was 100% in 2010, by far the best in the industry. Thus, using either approach, it appears that BOB’s performance may be the best across banks in Fiji. If the emerging trends are anything to go by, it would be one of the smaller banks that might be operating most efficiently in Fiji. Interestingly, BSP appears to retain the overall second best position under both approaches. However, as figures 2 and 3

show, BSP's efficiency scores fell sharply in 2007 under both approaches, to be the lowest across banks in that year. The scores improved in the following year but remained quiet low in 2010—63%; moreover, BSP's trend appears to be most volatile across banks.

Figure 3: Efficiency scores of banks in Fiji, 2000-2010 - "production" approach



Our findings are similar to the findings of Moffat and Valadkhani (2011) in the case of 10 major financial institutions over the 2002–2006 period in Botswana, a developing economy in the African region. Per the “intermediation” approach, the overall efficiency of banks in Fiji was 62%; the score in Botswana was 67%. Per the “production” approach, the score in both Fiji and Botswana was 63%. More interestingly, in both countries, BOB is consistently one of the more efficient institutions. However, as in the case of Botswana, the efficiency scores for Fiji banks are well below the world mean of 86% found by Berger and Humphrey (1997), indicating that banks in Fiji, particularly the big two, need to utilise their resources more efficiently in producing loans.

5. Conclusion and some policy implications

Motivated by the Sharma and Gounder (2012b) finding that deposits may play a key role in enhancing bank credit to private sector in the Pacific, this study investigates a pertinent gap in the literature—the *efficiency* of banks in the region in converting deposits into credit. Data limitations restrict our investigation to Fiji only but provide additional insights on bank efficiency studies—that of banks in a foreign-controlled, small financial sector. The study employs the DEA technique to measure the efficiency of the country's all five banks over the 2000–2010 period. Comparative analysis is made with three non-bank deposit institutions.

Banks in Fiji, as elsewhere in the Pacific, are virtually *the* drivers of the country's finance-led growth; markets are thin and non-banks very small. While banks remain highly profitable and well capitalised, results of this study show that they—especially the big two—which control around 70% of the total bank deposits and 75% of loans—may be relatively inefficient in converting mobilised deposits into credit. Moreover, the overall efficiencies may have deteriorated over time. Thus, in addition to the Sharma and Gounder (2012b) suggestion to boost deposit findings of banks so that private sector credit might increase, leading in turn to increased economic growth, there appears to be a need to encourage, even require banks to also become more efficient producers of credit. There may even be a case for designing policies and strategies for enhancing competition in Fiji's financial sector. In light of the structural and operational similarities of financial sectors across the Pacific, the results of this study and policy implications are likely to apply to the rest of the Pacific.

References

- Beck, T., A. Demirgüç-Kunt and M. Peria, 2007, 'Banking Services For Everyone? Barriers to Bank Access and Use around the World', *World Bank Economic Review* 22, 397–430.
- Berger, A.N., and Humphrey, D.B., 1997. Efficiency of financial institutions: international survey and directions for future research. *European Journal of Operational Research* 98, 175–212.
- Holod, D. and Lewis, H. F., 2011. Resolving the deposit dilemma: A new DEA bank efficiency model. *Journal of Banking and Finance* 35, 2801–2810.
- Moffat, B. D. and A. Valadkhani, 2011. Efficiency of Botswana's financial institutions: a data envelopment analysis, *Applied Economics Letters*, 18, 697–702.
- PFTAC (Pacific financial Technical Assistance Centre), 2011. Interest Rates and Bank Profitability in the South Pacific [on line] <http://www.pftac.org/Handbooks/Governors%20Paper.pdf> [Accessed: November, 2011].
- Sealey, C.W., Lindley, J.T., 1977. Inputs, outputs and a theory of production and cost at depository financial institutions. *Journal of Finance* 32, 1251–1266.
- Sharma, P. and E. Roca, 2012. It is Time to Re-examine the role of stock markets in developing economies!, *Journal of Asia-Pacific Business*, 13(3), forthcoming.
- Sharma, P. and M. Brimble, 2012. Sustainable Development in the Small States of the South Pacific: Toward a Corporate Social Responsibility for International Banks, *Fijian Studies*, forthcoming.
- Sharma, P. and N. Gounder, 2012a. Obstacles to Bank Financing of Micro and Small Enterprises: Empirical Evidence from the Pacific with Some Policy Implications, *Asia Pacific Development Journal*, forthcoming.

Sharma, P. and N. Gounder, 2012b. Determinants of bank private sector credit in small open economies: the case of six South Pacific countries, Discussion Papers in Finance, 2012–13, Griffith University.

Sharma, P. and N. Gounder, 2011. Profitability determinants of deposit institutions in small financial systems: the case of Fiji, Discussion Papers in Finance, 2012–06, Griffith University.