Foreign banks, profits, market power and efficiency in PICs: some evidence from Fiji

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Abstract

Studies on bank profitability vis-à-vis market power and efficiency span a number of years, many countries, regions and methods. Yet, the experiences of the Pacific's small states—where foreign banks are widespread and bank profits relatively high—are still not known, leaving policy makers ill–informed regarding relevant policy development. Ironically, it is here that these relationships need to be more appropriately understood so that the much desired finance–led growth aspirations may be more effectively achieved. This study fills a huge gap in literature by providing fresh evidence on the issue of market power and efficiency vis-à-vis bank profitability in a Pacific island context. Two market power hypotheses—the Structure–Conduct–Performance (SCP) and the Relative–Market–Power (RMP) hypotheses together with two measures of the Efficient–Structure (ES)—X– and scale efficiencies are estimated. The non–parametric DEA technique is used to estimate efficiency scores for banks in Fiji over the 2000–2010 period and the dynamic GMM to estimate the relationships between market power and efficiency vis–à–vis profitability. Results show that the RMP and ES theories might hold but not the SCP. Profits appear to persist over time. Policy implications are considerable including that any suggestions to limit further mergers and acquisitions of banks in the region may have to be properly debated.

Keywords: Fiji, bank profitability, market power, efficiency, profit persistence, DEA, GMM

JEL Classifications: D20, D40, G21, L11

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I. **Introduction**

Located North to North–East of Australia, the Pacific island countries (PICs) include Fiji, Papua New Guinea, Solomon Islands, Vanuatu, Tonga, Samoa, and Kiribati. These 'countries with special needs' have small markets, fragile natural environments, and limited opportunities for the private sector. Some are constantly challenged by extreme poverty, structural economic weaknesses, lack of capacity to grow, and acute susceptibility to external shocks. The World Bank classifies PICs as 'lower middle income' to 'low income' countries.

Against this background, findings such as the IMF's that bank profits in these countries are relatively high is concerning (PFTAC, 2011). High profits may be market power or efficiency driven. If market power driven, high cost of borrowing, credit rationing and compromised banking services, among others, are likely (Chortareas et al., 2011). Importantly, these experiences might retard economic growth (Beck et. al., 2007), aggravating thus the socio–economic conditions—especially since the finance–led growth policies and aspirations in these economies are bank–dominated; capital markets are either very small and inactive or non–existent. However, if profits are efficiency driven, implications of market power effects may be discarded.

While studies on bank profitability vis-à-vis market power and efficiency span many years, countries, regions and methods, the experiences of the PICs remain unknown. The region's banking history dates back to at least 1870s, prominently feature foreign banks with regulatory practices equivalent to the developed world's, yet policy makers remain ill–informed with respect to the costs and benefits of further mergers and takeovers. Unfortunately, due to differences in the regulatory and economic environment, findings of other countries or regions may not apply to the PICs.

This study thus fills a huge gap in the bank profitability vis-à-vis market power and efficiency literature. It is also the first to examine persistence of bank profits in a Pacific Island context. We examine two market power hypotheses: the Structure–Conduct–Performance (SCP) and the Relative–Market–Power (RMP) hypotheses together with two measures of the Efficient–Structure (ES) hypothesis—X– and scale efficiencies. Due to data reliability and availability constraints, the study focuses on Fiji. However, given the high level of structural and performance comparability across the region (PFTAC, 2011), findings are likely to apply to other PICs.

Results show that the RMP and ES theories might hold but not the SCP. Moreover, bank capital and liquidity are negatively correlated with profit levels and credit risk is positively correlated. Profits also appear to persist over time. Policy implications are considerable including that any suggestions to limit further mergers and acquisitions in Fiji, and possibly elsewhere in the region, may have to be properly debated. These insights make policy makers better informed on the issue of bank profitability vis-à-vis market power and efficiency.

The rest of the paper is organized as follows: section II discuses the IMF findings; section III briefly reviews trends in the structure and profitability of banks in Fiji; section IV reviews the relevant literature; section V discusses data and methodology; section VI discusses the X– and scale efficiency results; section VII discusses the empirical results; and section VIII concludes with some policy implications.

II. IMF Findings

The IMF report covers six PICs: Solomon Islands, Fiji, Tonga, Samoa, Vanuatu and Papua New Guinea. Table 1 provides a summary of main findings; panel A shows average pre–tax return on assets (ROA), panel B shows the highest individual ROA. Over the 2006–2009 period, ratios for PICs were consistently the highest. For example, in 2006, the PIC ratio of 5.2% was 1.7 times more than the next highest in the sample, that of Sub–Saharan Africa.

Table 1. Return on assets: PICs and others, 2006–2009

Panel A: *Average ROAs (%)*

	2006	2007	2008	2009
PICs	5.2	4.9	4.0	2.8
Australia	1.5	1.4	0.7	0.9
New Zealand	1.7	1.6	1.3	…
Latin America	2.2	2.1	1.9	1.9
Sub-Saharan Africa	3	2.5	3.3	…
Mid East & Central Asia	2.2	2.1	1.4	…
Emerging Europe	1.6	1.7	1.3	0.3

Panel B: *Individual High ROAs (%)*

PICs	7.7	8.6	10.5	9.3
Latin America	3.5	3.1	3.5	5.5
Sub–Saharan Africa	5.8	3.9	4.2	…
Mid East & Central Asia	4	3.4	3.2	…
Emerging Europe	3.4	3.9	3.5	1.6

Note: … indicates data not available
Source: PFTAC, (2011)

Compared to Australia, the home country of the largest banks in the region, the PIC ratio was around 3.5 times more. In 2009, the average ROAs across countries and regions appear to have declined compared to 2006 ratios; however, the PIC ratio was still the highest—3 times more than Australia's. Similarly, available data shows that banks in the Pacific had the highest individual ROA—as high as 10.5% in 2008 and 9.3% in 2009—far more than the ratios of other regions—for example, only 3.5% and 1.6%, respectively, in Emerging Europe.

Incidentally, bank profits appear to remain high in the region despite governments' good intentions to liberalize banking systems, via improved competition and efficiency. However, banking sectors continue to be limited to three to four banks, raising the question: does market power indeed influence high bank profits in the PICs? We investigate this issue later, but first, some background on Fiji's banking sector.

III. Fiji's Banking Sector: Structure and Profitability, 2000–2010

Structure

As is common in the region, Fiji's banking sector is more or less *the* financial sector. Banks are subject to international, BIS regulatory standards and are relatively advanced technologically—services include telephone and internet banking. Fiji has always been attractive to foreign banks and while foreign interest prevails, the sector has consistently been limited to four to five banks in its 140 year history.

Acquisitions have been common, mainly by two of the oldest (Table 2). Fiji's pioneer bank was acquired by the Bank of New Zealand (BNZ) after only three years of operations. BNZ in turn was acquired by the Australia and New Zealand Banking Group (ANZ) in 1990—acquisitions have kept the sector historically concentrated (Fig. 1). The Herfindahl–Hirschman Index (HHI) averaged around 3030 in the 2000–2010 period, suggesting high level of market concentration—generally, a HHI of more than 2500 indicates high concentration. This is confirmed by the concentration index (CI)—the share of the three largest banks relative to the total industry; over the same period, Fiji's CI averaged 88%. By comparison, the average CR was 60% in Australia, 90% in New Zealand, 61% in the Philippines, and 45% in Thailand.

Table 2. Bank acquisitions in Fiji, 1873–2012

Currently operating	1st Entry	Country of ownership/ incorporation	Acquisitions	Comment
Australia and New Zealand Bank (ANZ)	1952	Australia	Bank of New Zealand (BNZ) (1876–1990) Citibank (1970–78) Barclays Bank International (1972–85) Bank of Hawaii (1993–2001	BNZ entered the market by taking over Fiji's pioneer bank, FBCT (1873–76)
Westpac Banking Corporation (WBC)	1901	Australia	HSBC (1986–88)	Previously, Bank of NSW
Bank of Baroda	1961	India	None	
Bank South Pacific	2009	Papua New Guinea	Habib Bank Ltd (HBL) (1991–2006) Colonial National Bank (CNB)	HBL was a Pakistani bank. CNB had entered the market by acquiring 51% shares in Fiji's only local bank, National Bank of Fiji in 1999, and the rest of the 49% in 2006.

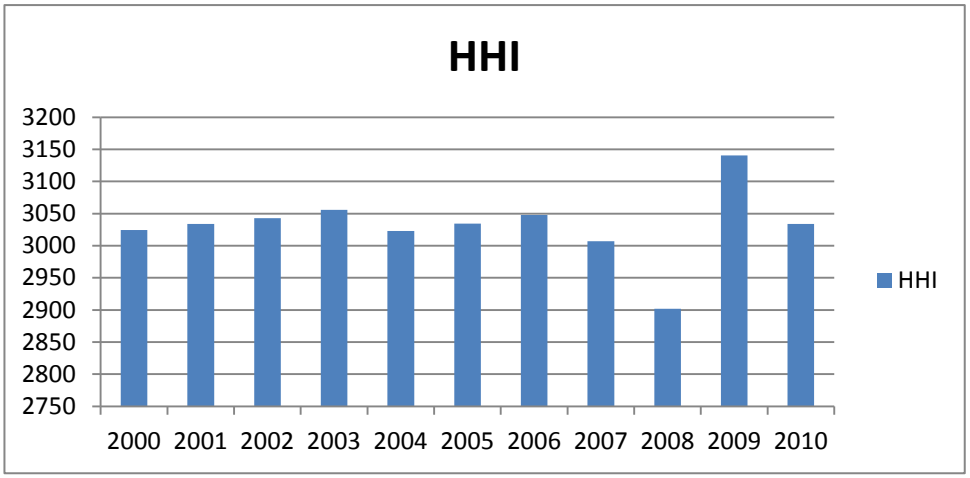

Fig. 1. Concentration index (HHI) of Fiji's banking industry, 2000–2010

Profitability and risks

We use ROA, due to data limitations, which is illustrated in Fig. 2, where, 'FJ' denotes Fiji operations. Over the 2000–2010 period, there was a marked difference between the ROAs of Fiji and global operations. Take the case of WBC for instance: the gap is significant and huge.

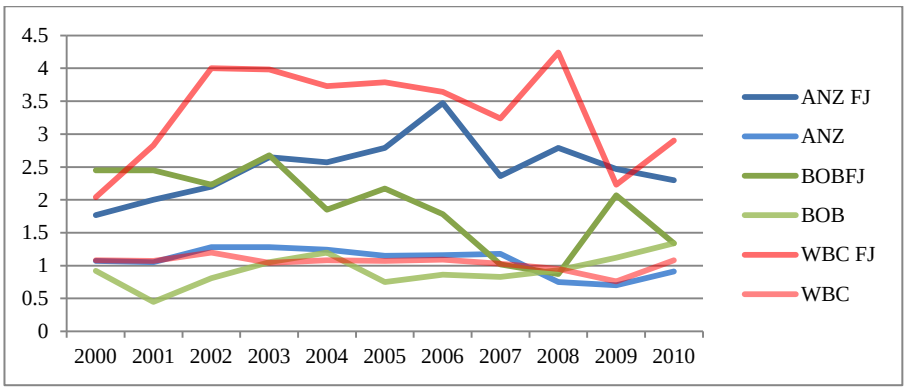

Fig. 2. Return on Assets (%)—Fiji versus overseas operations, 2000–2010

Data source: http://www.reservebank.gov.fj

While highly profitable, banks are not exposed to very high levels of risks (**PFTAC, 2011**). Take capital risk for instance, as **Fig. 3** shows, the ratios have consistently been above the 8% minimum, indicating low risk. Moreover, the ratios have been rising in the 2007–2010 period—a period of otherwise increasing worldwide economic and financial uncertainty.

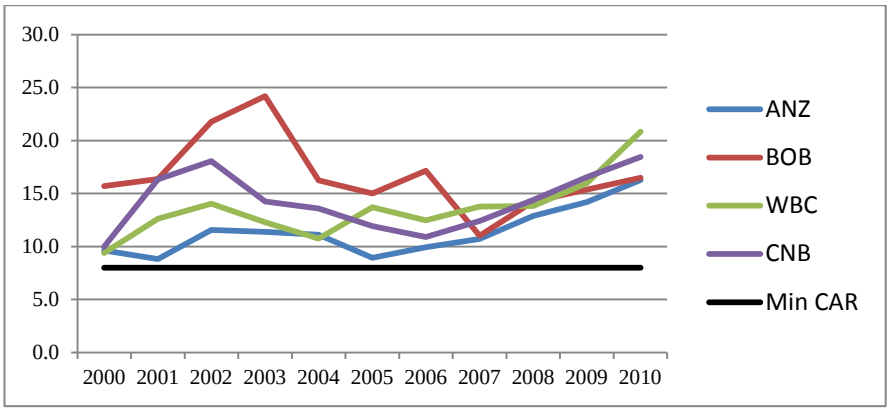

Fig. 3. Capital adequacy ratios of banks in Fiji

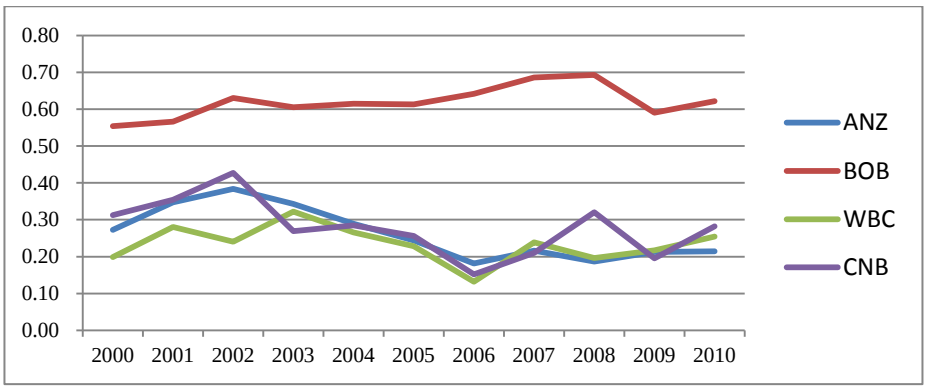

Fig. 4. Liquidity risk of banks, 2000–2010

Banks also appear to have ample liquid assets relative to total (**Fig. 4**). Credit risk, measured by the ratio of general reserves for credit losses to gross loans, also appears low (**Fig. 5**); the generally low and downward trending patterns suggest banks are not expecting high levels of unexpected loans losses in the future.

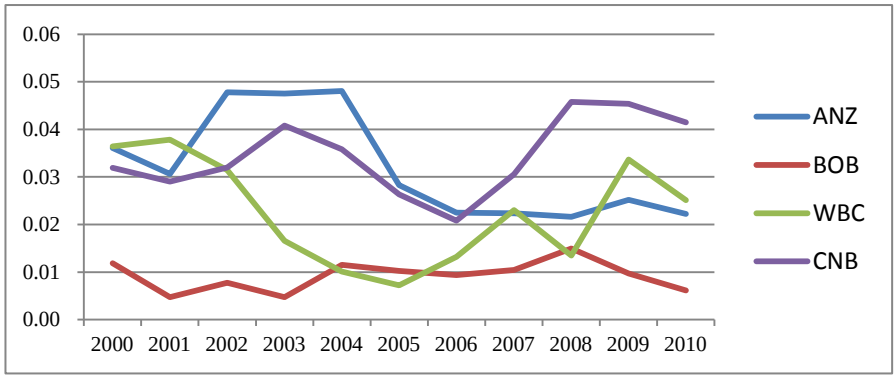

Fig. 5. Credit risk of banks, 2000–2010

Overall, Fiji's banking sector appears highly concentrated, a possible reason for high profitability; however, high profitability may also be due to improved efficiencies. The next section reviews the literature on the possible profitability vis–à–vis market power and efficiency associations, followed by an investigation of the situation in Fiji.

IV. **Literature Review**

The SCP (Structure–Conduct–Performance) hypothesis proposes that markets characterized by a few firms will practice pricing behaviours for maximising profits via collusion, price leadership or other tacit price arrangements (Bain, 1951). The RMP (Relative Market Power) theory asserts that supernormal profits will be earned only by firms with large market shares and well differentiated products (Shepherd, 1982). Studies find evidence of the collusion hypothesis of the SCP paradigm (Goddard et al., 2001), observed by higher lending rates, lower deposit rates and higher charges.

However, profitability may also be efficiency driven via greater technical efficiencies—the ESX (X–efficiency) hypothesis; and/or improved production efficiencies—the ESS (scale–efficiency) hypothesis. Greater efficiency may increase both profit levels and market share, resulting in spurious relationships, implying that market power and efficiency tests be conducted simultaneously to ascertain the relative impact of each on profitability (Claeys and Vennet, 2009). A positive relationship between size and/or concentration vis–à–vis profitability might indicate limiting further M&As, however, M&As may not be limited if the ES hypotheses are proven.

The profitability vis–à–vis market power and efficiency evidence appears inconclusive. Moreover, most studies have tended to focus on developed countries, particularly the US and more recently, the EU; the PICs have been largely ignored. A review of literature shows that over half of the studies support the SCP hypothesis (Gilbert, 1984). More recent support come from Lloyd–Williams and Molyneux (1994) in the case of Spanish banks; Molyneux and Forbes (1995) in the case of European banks and Berger and Hannan, (1997) in the case of US banks. However, efficiency may also contribute to higher profits. For example, in the case of European banks, Goldberg and Rai (1996)

find support for the ESX hypothesis in countries with low concentration ratios with the impact of RMP evident otherwise.

Persistence of profit

Empirical evidence on profit persistence in banking appears limited and results appear to be influenced by structure. A study on the US banking sector finds profit persistence to be temporary, not permanent (Levonian, 1993). Further, profit persistence may depend on the performance distribution of a bank and may strongly be related to impediments to competition, regulatory policies and macroeconomic variables (Berger et al., 2000). In the case of European countries, Goddard et al., (2004) find profit persistence to be greater for mutual banks compared to commercial banks. The authors also find that strong regulatory practices may contribute to greater profit persistence. In the case of Italian banks, profit persistence is observed in concentrated markets with high profit ownership (Agosttino et al., 2005). In the case of Turkish banks, Bektas (2007) finds no evidence of profit persistence. In the case of Greece, profits might persist but only moderately and might converge to long–run equilibrium. To the best of our knowledge, there is no existing study on profit persistence in the case of the PICs.

V. Data and Methodology

Data

The data is mainly from the Reserve Bank of Fiji. At the time of investigation, available relevant data was only for the period 2000–2010, i.e. eleven years. With five banks in Fiji, the dataset might appear limited. However, it was sufficient to investigate efficiency of banks using the DEA (Data Envelopment analysis) technique; DEA does work well with small sample sizes (Moffat and Valadkhani, 2011). The dataset was also sufficient for a dynamic GMM (Generalized Method of Moments) analysis used in

this study. Other studies that have used relatively small sample size include Gounder and Sharma (2012), Bergendahl and Lindblom (2008), Havrylchyk (2006), Pasiouras (2007), and Ataullah et al. (2004)

Data envelopment analysis (DEA)

We propose to do two things: (i) compute the two efficiency estimators—ESX (X–efficiency) and ESS (scale efficiency); and (ii) subsequently, test the influence of both ESX and ESS, together with market power and other control variables on bank profitability in Fiji. Efficiency estimators are computed using the nonparametric DEA technique introduced by Charnes et al. (1978).

Input/output specifications

The input/output mix may vary, particularly with respect to treatment of 'deposits'—the intermediation' approach treats deposits as an input, 'production' approach as an output, with some suggesting it be used as intermediary product (Holod and Lewis, 2011). We use deposits as inputs, influenced by the Berger and Humphrey (1997) argument that this approach may be 'superior for evaluating the importance of frontier efficiency to the profitability of the financial institution, since minimization of total costs, not just production costs, is needed to maximize profits' (p. 197). Table 3 presents the descriptive statistics of the inputs and outputs, averaged for the 2000–2010 period.

The DEA analysis produces two categories of scores: (i) CRS (constant returns to scale); and (ii) VRS (variable returns to scale), where the VRS scores represent ESX estimates and CRS/VRS gives the estimates for scale efficiency (ESS). When ESS = 1, a bank is efficient under both CRS and VRS, when ESS < 1, the bank is not scale efficient.

Table 3. Input/output descriptive statistics, average 2000–2010 (in FJDm)

	FA	DEP	EMP	LON	OEA
ANZ	27272	1045253	51995	893671	129419
BOB	3175	265739	6080	99662	152647
WBV	14478	713154	23474	625473	31841
CNB	8837	416645	24582	346177	38918
BSP	386	36407	1517	25962	10049
Mean	10829	495439	21529	398189	72575
SD	10669	393502	19878	363159	63922
Min	386	36407	1517	25962	10049
Max	27272	1045253	51995	893671	152647

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. FA = fixed assets; DEP = deposits; EMP = employee expenses, a proxy for number of employees; LON = loans; and OEA = other earning assets

Generalised method of moments

To estimate the influence of EES and ESX together with market power and other control variables, we employ a dynamic model—the Generalized Method of Moments (GMM) and panel data. GMM accounts for the dynamic process in bank profitability and is designed to handle autoregressive properties in the dependent variable when lagged values are introduced as explanatory variables. In addition, GMM allows the use of instrumental variables which produces more precise and accurate estimators.

The regression estimates are based on the following equation:

$$\pi_{it} = \alpha_{it} + \beta_1\pi_{i,\,t-1} + \beta_2 HHI_t + \beta_3 MS_{it} + \beta_4 LR_{it} + \beta_5 CR_{it} + \beta_6 CAP_{it} + \beta_7 ESX_{it} + \beta_8 ESS_{it} + \beta_9 INF_t + \beta_{10} GDP_t + \beta_{11} COUP_t + \mu_i + \varepsilon_{it} \quad (4)$$

where,

π is a measure of bank profitability;

α is the constant term;

π_{t-1} is a measure of profit persistence;

HHI is the Herfindahl–Hirschman Index, a measure of the SCP hypothesis;

MS is market size, a measure of the RMP hypothesis

LR is liquidity risk—liquid assets to total assets;

CR is credit risk—general loss reserves to gross loans;

CAP is capital risk—capital to total risk adjusted asset;

ESX is X or technical efficiency;

ESS is scale efficiency;

INF is the annual inflation rate;

GDP is the annual Gross Domestic Product;

COUP is a dummy variable, equals one in 2000 and 2007, zero otherwise

μ is unobserved bank–specific time invariant effect; and

ε is a disturbance effect independent across banks.

In the equation, π is a measure of bank profitability; we use both ROA and ROE. π_{t-1} is the lagged ROA or ROE and measures the persistence of profits i.e. the extent to which a bank remains in the same profit distribution. In the absence of market power, abnormal profits are likely to be competed away very quickly. The coefficient of the variable (β_2), indicates the speed at which profits might adjust to long run equilibrium (Athanassoglou et al, 2005). Profits persist if the value of the coefficient lies between 0 and 1; a value closer to 0 indicates a high speed of adjustment and that the industry is highly competitive, a value closer to 1 indicates a very low speed, suggesting that the industry might be uncompetitive.

HHI is the Herfindahl–Hirschman Index, a measure of the degree of market concentration (in terms of assets); a positive relationship will indicate acceptance of the SCP hypothesis. *MS* is the market share of each bank in terms of assets and a positive sign would indicate acceptance of the RMP hypothesis. *CR* is a measure of credit risk and a negative sign is expected since non–performing loans are costly to banks. *LR* is a measure of liquidity risk and a negative sign is expected since greater levels of liquid

assets imply lower levels of interest earning assets. *CAP* is a measure of capital risk and a positive sign is expected since greater capital levels might reduce funding costs of borrowing, among others. ESX and ESS are measures of X and scale efficiencies, respectively; positive relationships would support the ES hypothesis. Turning to the macroeconomic variables, *INF* is the annual inflation rate and the expected sign is negative. *GDP* is a measure of growth and the expected sign is positive. *COUP* is a dummy variable, measuring the consequences of the two coup d'états the country has experienced in the sampling period and the expected sign is negative. The two coups (2000 and 2007) negatively impacted GDP in these years; it would be interesting to see how they may have affected bank profits.

VI. X– and Scale–Efficiency Results

Overall, X–efficiency scores are better than Scale; over the sampling period, the industry averages were 85.4% and 71.9%, respectively (Table 4). The difference appears to be more obvious among larger banks. For example, the largest bank, ANZ, had an average technical efficiency score 88.6% but an average scale efficiency score of only 50.2%. Comparatively, the smallest bank, Bank SP scores were 84.8% and 88.7%, respectively.

Table 4: X–and scale efficiency scores of banks in Fiji, 2000–2010
Panel A: X–efficiency (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Mean
ANZ	88.27	85.18	84.26	83.30	83.37	77.61	91.25	90.25	95.11	95.59	100.00	88.56
BOB	91.14	91.18	100.00	93.69	98.98	94.30	100.00	100.00	93.74	95.38	100.00	96.22
WBC	67.73	64.84	71.72	71.19	80.31	86.57	100.00	100.00	100.00	99.28	88.24	84.53
CNB	58.07	44.74	59.86	61.65	65.25	71.54	84.82	87.84	100.00	95.65	71.89	72.85
BSP	100.00	94.65	100.00	93.94	100.00	100.00	100.00	66.24	65.09	55.33	58.54	84.89
Mean	81.04	76.12	83.17	80.75	85.58	86.00	95.22	88.87	90.79	88.25	83.73	85.41

Panel B: Scale efficiency (%)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Mean
ANZ	48.06	48.25	47.89	47.21	46.02	56.33	53.81	50.32	45.92	53.93	54.42	50.20
BOB	84.78	84.84	84.07	83.22	83.30	83.10	82.76	82.24	80.41	81.10	91.56	83.76
WBC	70.02	75.83	71.77	84.44	88.30	81.73	89.97	84.03	77.29	73.17	63.90	78.22
CNB	88.47	77.55	76.63	58.78	55.90	56.78	56.61	52.10	42.94	45.56	36.19	58.87
BSP	100.00	70.86	100.00	74.86	81.05	100.00	100.00	62.73	99.20	89.22	97.40	88.67
Mean	78.27	71.47	76.07	69.70	70.92	75.59	76.63	66.29	69.15	68.60	68.69	71.94

Our results are consistent with several efficiency studies on Australian banks, which are parent banks of three of the five banks in Fiji (e.g. Shamsuddin and Xiang 2012, Kirkwood and Nahm 2006, Sturm and Williams 2004). On one hand, a large bank may take advantage of superior technology and management skills, and economies of scale and/or scope. On the other hand, the large bank may also take advantage of the premiums of being too–big–to–fail. In addition, the market power of the large bank may incur inefficiencies because of the shelter hypothesis (Leibenstein, 1966). In the case of banks in Australia, Sturm and Williams (2004) find that scale inefficiency dominated technical inefficiency over the period 1988–2001, especially for the big four.[1] The authors interpret this as a strategy used by the big four to discourage entry of foreign banks following deregulation. The X– and Scale–efficiencies of the five banks are illustrated in Figs 6 and 7, respectively.

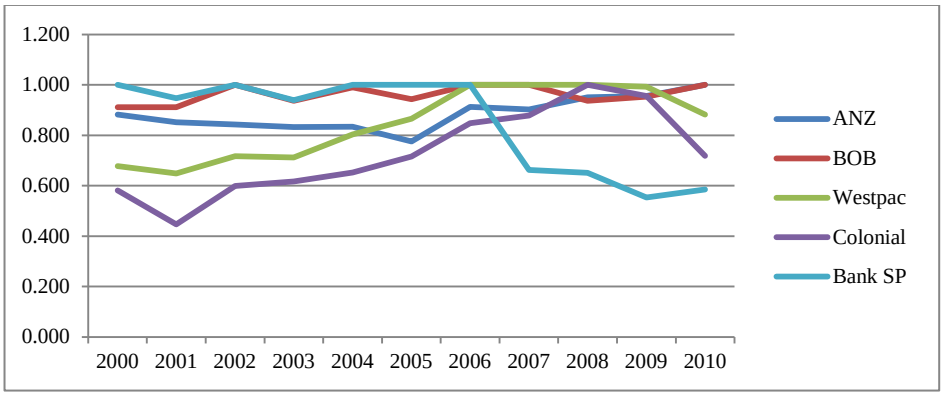

Fig. 6. X–efficiency of banks in Fiji, 2000–2010.

[1] National Australia Bank Limited (NAB), Commonwealth Bank of Australia (CBA), Australia and New Zealand Banking Group Limited(ANZ), and Westpac Banking Corporation Limited (WBC).

X–efficiency

As Fig. 6 shows, in terms of technical efficiency, BOB appears to be the overall best performing bank; its average score over the 2000–2010 period was 96.2%, clearly the highest. Importantly, BOB's good performance appears to be consistent for the entire sampling period. Occasionally, BOB's score reached 100% (four times, including in 2010). Of the two larger banks, ANZ appears to be second ranked in technical efficiency; its average over the period was 88.6%, and it reached 100% in 2010.

The other large bank, Westpac, does not appear to have performed very well compared to others. Ranked fourth, Westpac's average was 84.5% over the 2000–2010 period. Interestingly, however, Westpac reached 100% three times (2006–2008), rising steadily from 67.7% in 2000, peaking in 2006. Post–2008, the trend has been declining and was 88.2% in 2010. Technically, at least, Westpac would be expected to perform better.

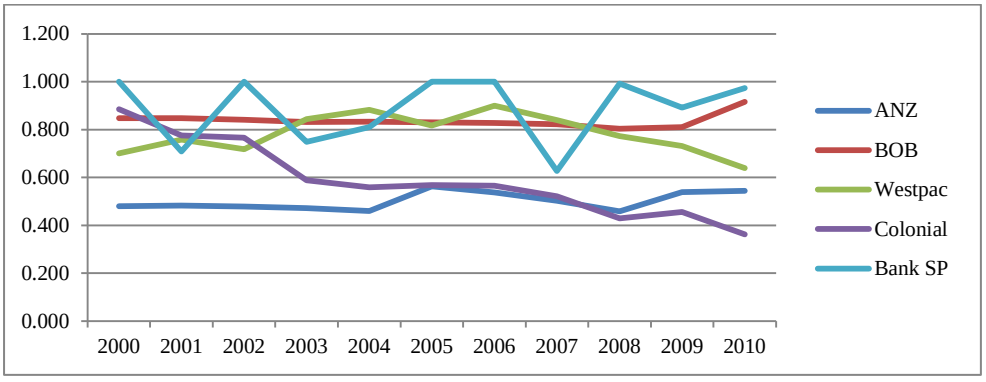

Fig. 7. Scale–efficiency of banks in Fiji, 2000–2010.

Scale–efficiency

The Scale–efficiency scores are generally lower than the technical efficiency scores, especially for the larger banks. Over the sampling period, the two large banks, ANZ and WBC, appear to be operating under decreasing returns to scale (DRS); the three

smaller banks appear to be operating under increasing returns to scale (IRS) or constant returns to scale (CRS). The best performer was again BOB, which showed stable and high scale efficiency (fig. 7). BOB's average score was 83.8%, lower than its own X–efficiency average score and also ranked second this time. The leader of the pack this time was BSP, the smallest and newest bank in the country; its average score was 88.7%. However, BSP appears to have had a rather volatile experience, including, some noticeable dips, such as in 2007 to 61.7% from 100% in the previous year. Overall, though, the smaller banks (BOB and BSP) appear to be more production–efficient compared to the larger banks (ANZ and Westpac).

ANZ's average was 50.2%, clearly the lowest in the industry; its highest was 54.4% (2010) and lowest 46.0% (2005); i.e., ANZ's production efficiency level appears to be only around half of the optimum level. In 2010, ANZ appears to have been about 77% less efficient than BSP and 67% less than BOB. Westpac's performance was better than ANZ's; its average score was 78.2% but still much lower than BSP's or BOB's. Moreover, Westpac had not reached its full capacity in the sampling period, its production efficiency appears to have peaked in 2006 (90%) but the trend has been steadily declining thereafter to rest at 63.9% in 2010.

VII. **GMM Results**

GMM regression results are provided in table 5. ROA is the dependent variable in Models 1 and 2 and ROE in Models 3 and 4. The Hansen test shows no evidence of over identifying restrictions as the *p* value of *J* statistics is not significant in any model. The diagnostics also indicate that a negative first order autocorrelation AR (1) is present. However, second order autocorrelation is rejected as indicated by the non–significant *p* values for AR(2) errors, implying that the estimates are consistent.

The lagged dependent variable is positive and significant in all models, indicating that profits are likely to persist over time. However, the coefficient range of 0.45 to 0.65 indicates that the market may not as uncompetitive as perceived. Moreover, *HHI* is not significant in any model thus the SCP hypothesis may be rejected. On the other hand, *MS* is positive and significant in two cases when COUP is controlled for, indicating that the RMP hypothesis may be accepted. Thus, banks with greater market share may be able to obtain higher profits. Higher profits also appear to be influenced by efficiencies. However, the influence appears to be affected by the measure of profitability used.

Table 5: GMM estimates of market power and efficiency vis–à–vis profitability

Column	**Model 1**	**Model 2**	**Model 3**	**Model 4**
L.DEP	0.5304**	0.4590***	0.6564**	0.5359***
	(0.2019)	(0.1400)	(0.2342)	(0.0646)
HHI	0.1254	0.1195	-3.0158	0.2585
	(0.1728)	(0.1455)	(0.3369)	(4.5942)
MS	0.0132	0.0166*	1.8332	1.8155***
	(0.0102)	(0.0082)	(1.2790)	(0.3994)
ESX	0.0175	0.0192**	-0.4667**	-0.2811
	(0.0107)	(0.0073)	(0.2033)	(0.2065)
SSE	0.0161*	0.0177**	-0.2087	-0.2056
	(0.0081)	(0.0067)	(0.2267)	(0.2043)
CR	0.0137	0.0110	1.2382**	0.8929*
	(0.0192)	(0.0169)	(0.5288)	(0.4404)
CAP	-0.0002**	-0.0003**	-0.0024	-0.0050**
	(0.0001)	(0.0001)	(0.0025)	(0.0016)
LR	-0.0136*	-0.0136**	-0.2481	-0.0442
	(0.0071)	(0.0056)	(0.2830)	(0.2963)
GDP	0.0007	0.0002	-0.0042	-0.0062**
	(0.0005)	(0.0004)	(0.0084)	(0.0024)
INF	-0.0001	-0.0001	-0.0006	0.0003
	(0.0001)	(0.0001)	(0.0014)	(0.8320)
COUP		-0.0051		-0.0703
		(0.0031)		(0.0538)
AR(1)	-0.4863**	-0.3722**	-0.5574*	-0.3561**
	(0.2088)	(0.1633)	(0.2853)	(0.1388)
AR(2)	-0.2695	-0.0770	-0.2495	-0.0360
	(0.2265)	(0.1995)	(0.2189)	(0.0998)
Adjusted R–squared	0.5800	0.5700	0.7334	0.7420
S.E. of regression	1.1100	1.1260	0.0726	0.0714
J–statistic	10.100	9.7400	4.7653	4.0600
	[0.3400]	[0.3716]	[0.8542]	[0.9074]

Note: Standard errors are in parenthesis below the coefficient estimates; p–values are in brackets. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively.

SSE has a positive and significant effect in ROA models, but the effect is not significant in ROE models. Interestingly, ESX has a positive and significant effect in the ROA model where COUP is controlled but has a negative and significant effect in the ROE model where COUP is not controlled. The discrepancy in the results of the two models may lie in the gearing issue, since ROE is significantly affected by financial leverage. Given the fact that banks are highly levered, this discrepancy may imply that ROA might be a more appropriate measure of profitability. Since both ESX and SSE are significant in two cases, the ES hypothesis might be accepted.

With respect to the remaining bank–specific variables, *CR* is positive and significant in two cases, indicating that banks with more risky assets may be more profitable. It can also imply that perceptions about higher losses from credit are likely to encourage management to be more mindful of profit levels, resulting in profits actually increasing during these times. *CAP* is negative and significant in all four models, indicating that more capital may not necessarily lead to higher profit levels. LR is also negative and significant in two cases, indicating that higher levels of liquid assets are likely to result in lower profit levels. These results are similar to previous studies on Fiji (Gounder and Sharma, 2012). The macro–economic factors do not show any significance whatsoever, indicating that profitability of banks in Fiji may not be affected by the macro–economic environment.

VIII. **Conclusion and Some Policy Implications**

An appropriate understanding of the simultaneous effects of market power and efficiency on profits in a Pacific island context appears imperative for policy development. Two market power hypotheses—the Structure–Conduct–Performance (SCP) and the Relative–Market–Power (RMP) hypotheses together with two measures

of the Efficient–Structure (ES)—X– and scale efficiencies are estimated. The study uses non–parametric DEA technique to estimate efficiency scores for banks in Fiji over the 2000–2010 period and the dynamic GMM to estimate the relationships.

Results show that bank profitability might be influenced by relative market share (RMP theory) and efficiencies (SE theory) but not market structure (SCP theory). Profits also seem to persist over time although the coefficients indicate that the industry may not be as uncompetitive as might appear. Other influential bank–specific variables are capital and liquid assets—both negatively associated, and credit risk—positively associated. The macro–economic variables appear to have little effect on profits.

From a policy perspective, any suggestions of limiting further mergers and acquisitions to discourage further market concentration may need to properly debated—market concentration may not influence bank profitability. While market share might influence profits, banks with greater market share need not necessarily be pricing their products above competitive levels. Both ROA and ROE profitability measures focus on net income, comprised of interest as well as non–interest income. Interest income is closely monitored by the regulator, including interest spread regulations since 2010, and price information is well advertised. Thus, pricing above competitive levels may not be an effective strategy for banks. Accordingly, any suggestion that market power might be a major source of high bank profitability in Fiji may not be valid. Similarly, any suggestion that market power might be a cause of any high cost of borrowing, credit rationing and/or compromised banking services might also not be valid.

If finance matters for growth, poverty etc. and if banks can remain highly profitable without expanding their loans portfolios, then significant further finance–led macro–

economic benefits may not appear too promising. Moreover, the finding that profits may have partly been due to improved efficiencies makes it challenging to require banks to become substantially more efficient.

In view of the foregoing, encouraging banks to supply more credit might have to be accomplished via strategies other than limiting market concentration and/or substantially improved efficiencies, especially in light of emerging new regulations relating to interest spreads, mandatory lending, etc. In addition to maintaining a 4% interest spread, banks are required to lend a specified proportion of their mobilized deposits to micro and small enterprises (from 2010), and agriculture and renewable energy sectors (from 2013), which the banks are happy to comply with. Moreover, Fiji's banking system remains sound and stable; global financial and economic crises have not had much effect on stability and soundness. There is no guarantee that a less concentrated market or enhanced efficiency will foster Fiji's economic growth via increased demand and supply of credit. However, there is a chance that a less concentrated market might have adverse consequences for stability and soundness.

Given that the structure of banking and financial systems across the Pacific island countries is greatly comparable, the results and policy implications of this study are likely to apply to other regional economies as well. Future research may investigate the importance of various interest and non–interest components of income for bank profitability in Fiji and across the region; it appears that non–interest income might be an important source. Research may also look at other options for enhancing finance–led growth in the region and employ techniques other than DEA to estimate banking efficiency, which might better explain the efficiency–profitability relationship. In the meantime, the insights of this study make policy makers in Fiji and possibly elsewhere

in the Pacific much better informed with respect to the important issue of bank profitability vis-à-vis market power and efficiency.

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