Tourism-Growth Nexus in the South Pacific Islands: Role of Financial Sector Development as a Contingent Factor An Empirical Study of Fiji: 1980-2014

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An Empirical Study of Fiji: 1980-2014

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Abstract

Tourism in recent years has emerged as the engine of growth in Pacific island countries. In Fiji in particular, it has relegated its traditional sugar exports to third place. Besides the steadily increasing air passenger traffic, there has been a rising trend in cruise ship arrivals. Short visits by cruise ship travelers have become additional sources of income for a host of small scale tourist operators and vendors, most of them being outside the informal sector in around its two major ports. In this context, financial inclusion efforts have assumed greater importance as these incomes in some part can find their way as savings into banks. The role of financial sector development (FSD) has thus become a critical factor in the tourism-growth nexus. This paper finds while the FSD indicator when individually employed, whether as broad money or bank credit to private sector is supportive of the growth nexus, the interaction term is has emerged with a negative sign indicating that FSD does not play a complementary role. The financial sector of Fiji is still shallow, despite considerable progress in financial inclusion efforts, measures towards deepening of FSD depend not on one front of mobilization of savings, but on all round progress in various segments of financial sector.

Keywords: Fiji, Tourism, economic growth, financial sector development, bounds testing

1. Introduction

Fiji has been a leading tourism destination in the South Pacific ever since its international airport, Nadi became the gateway to Pacific islands in the 1960s. Nadi continues to be so for airline connections between passengers flying out of Australia and New Zealand as well as for passengers from North America to other Pacific island countries (PICs). The air traffic has been

mainly catered to by airlines of Australia and New Zealand and by Fiji Airways, formerly known as Air Pacific, which was once owned by major Pacific island nations[2], but now fully owned by Fiji.

Further, Fiji which has been attracting foreign direct investment in tourism sector over last five decades has world-class tourist resorts and hotels owned by well known international hotel and resort chains. Over the years, tourists from North America were wooed by Australian and New Zealand airlines through their offers of discounted holiday fares with additional travel opportunities to other island nations through Fiji, a point for return air connection to Los Angeles North America. This has led to the emergence of Nadi as the hub of air travel to the region and in the process tourism has become a major foreign exchange earner for all PICs, and for Fiji in particular, which has now replaced sugar, the traditional export, as the number one foreign exchange earner.

In addition, the rising popularity of cruise ship travel since 2000 among affluent senior citizens of Europe as well as Australia and New Zealand has proved beneficial for Fiji. Although the cruise travelers do not spend more than a day in Fiji's two ports of call, Suva and Lautoka, they do spend their money on short tours in and around the port towns, enjoying ethnic meals and buying souvenirs and handicrafts. These activities have opened up possibilities of earnings for small time operators, kiosks, vendors, informal and unregistered tourist guides, and makers and sellers of handicrafts. In addition to the cruise ship travelers, young backpackers from Europe and North America looking for cheaper accommodation and inexpensive meals prefer to explore

[2] The 14 Pacific island nations are the members of an intergovernmental organization known as Pacific Islands Forum (PIF) headquartered in Fiji's capital, Suva.

by traveling into the interior, which have no access to banking facilities, mostly inhabited by indigenous communities. Presently, only negligible part of the incomes earned by informal tourist sector seem to get into banks as savings, as a larger proportion gets spent on avoidable excess consumption of imported goods during their trips to urban areas.

Mobilization of savings, which has been given a big boost in recent years by Reserve Bank of Fiji under the United Nations funded special programs on financial inclusion since 2010, has facilitated the growth of the financial sector (Whiteside, 2015). Having seen new avenues for mobilization of funds, commercial banks are for adding to their reserves for providing loans to emerging small enterprises in the informal sector. The financial inclusion efforts are expected to play a major role in improving linkages between tourism and local economies as savings would be recycled as credit to the rural communities (World Bank, 2016)[3] .

There is a pool of studies in finance-growth literature that reveal FSD is one of the most significant catalysts in driving economic growth. Empirical evidence supporting the role of FSD is reported by Jedidia, *et al.* (2014), Samargandi, *et al.* (2014), Adeniyi, *et al.* (2015) and Pradhan, *et al.* (2016). It is now well recognized that FSD is closely associated with producing information on possible productive investments and allocating capital, mobilization and pooling of savings, and diversification of risk management. These functions lead to taking effective saving and investment decisions, and promote technological innovations and finally they facilitate to economic growth (Misati, 2007; Misati and Nyamongo, 2011).

[3] A recent study by World Bank (2016) on tourism calls on PICs to focus on four key strategic areas for utilizing the high potential offered by tourism. They are: (i) improving international transport links to the region; (ii) attracting higher-spending tourists; (iii) improved public sector engagement; and (iv) improving linkages between tourism and local economies. The last area for attention indirectly suggests improvements to FSD.

Past studies on tourism led growth hypothesis, including leading studies by (Narayan *et al*, 2010) and a survey on small island developing states, commissioned by Commonwealth Secretariat and the World Bank (Hampton and Jeyacheya, 2013) did not recognize FSD as a contingent factor. In the context of a dearth of studies on the role of FSD in the tourism and growth nexus and given the importance attached to tourism by governments of PICs, it is crucial to investigate its linkages to economic growth.

The proposed study, therefore, aims to contribute to the existing literature by taking up a case study of Fiji. The choice of Fiji is dictated mainly by the availability of a consistent of database over a longer period of 30 years plus unlike in the case of the other five major PICs including Papua New Guinea (PNG), Samoa, Solomon Islands, Tonga and Vanuatu for an econometric analysis. Further, the study unlike the works of Narayan *et al.* (2010) and Hampton and Jeyacheya (2013) seeks to make the following contributions. Aside from examining the linkages between tourism, FSD and economic growth in Fiji, the study incorporates the effect of cyclones on the linkages of tourism and economic growth. Furthermore, the present study uses generalized method of moments (GMM) technique to deal with potential simultaneity problems in estimations and to provide a richer understanding on the linkages between tourism, FSD, and economic growth. Finally, our study utilizes the data series for a much longer period: 1980 to 2014.

This paper is organized as follows: section 2 gives a brief review of studies on tourism and growth; section 3 reviews trends in Fiji's tourism and FSD; section 4 outlines the modeling and

methodology and presents results. Finally, section 5 is a summary of conclusions with policy implications.

2. Brief Review of Studies on Tourism and Growth

The study by Hampton and Jeyacheya (2013), while presenting a brief survey on tourism and inclusive growth, reminds us that tourism is not an industry within the United Nations Standard Industrial Classification System, but it is a form of final demand (Benyon *et al.,* 2009). The latter comprises many components, which include accommodation, meals, tours and entertainment such as local cultural shows (Jones, 2010). The youth groups who prefer to undertake more adventurous trips but cannot afford high costs of accommodation often find greater availability of inexpensive boarding and lodging services away from beaches and urban centres. The latter include home stays and inns which have sprung up in PICs, including Fiji to cater to the needs of back-packers. As is well known, PICs face many constraints such as low physical endowments in term of land area and poor quality of soil, often subject to land tenure difficulties which limit the range and possibilities of exports in terms of agricultural commodities, beyond copra and banana and other tropical fruits and vegetables. There is a growing realization that unique combination of sun, surf and sands offers PICs greater scope for earnings from tourism as exportable services[4].

[4] Earnings from tourism were difficult to quantify in the earlier years, which have presented problems not only in presentation for a given SIDS but also in maintain uniformity in standards in terms of reporting for cross country comparison. The reporting procedures from the formal sector comprising hotels and resorts, restaurants and entertainment centers in the vicinity of tourists' stays have been streamlined over the years. Periodical visitor surveys by the Bureaus of statistics and other agencies including the Tourism Councils in SIDs have been able to improve the database.

A study by (Jayaraman *et al*., 2014) has shown that tourism encouraged by both domestic investor friendly and liberal foreign direct investment policies creates additional jobs and generates more incomes. Thus, tourism has a multiplier effect through increasing business activity in both formal and informal sectors and improving the livelihoods of people in agriculture and retail trade. However, it is not yet clear how much of the tourism earnings are actually retained in the country and how much of it is leaked by way of imports from rest of the world, as PICs have to import a variety of consumer goods to meet the consumption needs of the high-ended tourists from advanced countries during their stays.

While foreign trade is part of open economy policies pursued by PICs, the governments in PICs have been focusing their attention on how to strengthen the backward linkages from tourism to agriculture and other support services by shifting emphasis on small family run farms to large, mechanized and irrigated farming. It is expected that commercial farming would ensure high quality consistent supplies to hotels and resorts as well as encouraging domestic processed consumer goods (Chand, 2015).

2.1 Studies on Tourism and Growth nexus

Tourism enables the country earn valuable foreign exchange, which is used for importing capital goods for investing in growth enhancing areas of the economy. Further, as tourism creates additional jobs and incomes, governments strive hard to exploit them by resorting to taxes on consumption of services, aside from airport taxes and hotel taxes. The additional tax revenues are useful to step up public expenditures, aimed at speeding up growth and development in the economies of island nations. There are a large number of empirical studies that are available to

confirm the contribution of tourism to growth. They include individual country studies as well as panel studies, covering as large as possible number of countries, both developed and developing, together with small island nations[5], which confirm the contribution of tourism to growth.

Figini and Vici (2009) have broadly divided the empirical studies in two groups: (i) multiplier approach, where tourism is treated as an exogenous variable, being a component of aggregate demand with an impact of positive nature, when it is given a boost; and (ii) application of trade and endogenous growth theory approach to evaluate the contribution of tourism sector's role. The first group of studies has been criticized as being static and that they do not explain the long run impact of tourism. On the other hand, the second group of studies has now been recognized as more acceptable.

One of the earliest studies by Balaguer and Cantalvella-Jorda (2002) falls into the first group. The two authors employed a double log model with two explanatory variables in their study on Spain for investigating tourism impact on real gross domestic product (RGDP) growth. They used the elasticity estimates of tourism earnings and real exchange rate on RGDP, which were found both positive and significant. The second approach of two sector endogenous growth models, where productivity is a major ingredient, is employed by Lanza and Pigliaru (1995), who argue that if technological progress is higher in the manufacturing sector than in the tourism sector, tourism specialization is growth enhancing only if the change in the terms of trade between tourism and manufacturing goods more than balances the technological gap in the tourism sector.

[5] A competent survey is available in (Seetanah, 2011).

Following the model provided by Lanza and Pigliaru (1995) in their studies on small economies, Candela and Cellini (1997) showed that in small island economies it is easier for the terms of trade offsetting the technology gap, as the opportunity cost of specialization is small. In a subsequent paper, Lanza and Pigliaru (2000) argued that in small island economies, the natural resources endowments-related tourism sector is more dominant than the negligible manufacturing sector and that the tourism dependent country can exploit natural resource endowments to advantage when terms of trade does not balance the technological gap.

Notable country studies on tourism-growth nexus in island countries (Dritsakis 2004, Durbarry 2004, Gunduz and Hatemi 2005, Kim *et al.* 2006, Noriko and Mototosugu 2007) have convincingly shown the existence of a long-run relationship between tourism and economic growth. Besides these country specific studies, there are two important panel studies, one by Narayan *et al. (* 2010) and another by Seetanah (2011).

The panel study of four PICs by Narayan *et al. (*2010) covering Fiji, Papua New Guinea (PNG), Solomon Islands and Tonga over a period of 17 years (1988-2004) employed only two variables namely, real GDP and tourist arrivals. The results established that the linkage ran from tourist arrivals to growth. In his panel study of 19 countries, comprising Fiji and PNG from the Pacific region, Mauritius and Seychelles from the Indian Ocean region and the rest being from the Caribbean covering a 13-year period (1990-2007), Seetanah (2011) unlike Narayan *et al.(*2010) adopted an augmented Solow growth model by including investment in physical capital, in the absence of a consistent times series of capital stock for all 19 countries. This approach is along

the lines of country studies by Durbarry (2004), Eugenio-Martin *et al.(*2004), Levine-Loyaza and Beck (2000), Seetanah (2008) and Temple (2001).

However, the aforementioned studies did not recognize the role of financial sector development (FSD) in the tourism-growth nexus. With the spread of tourism beyond the enclaves of resorts and hotels owned by well-known international chains, thanks to the growing interest shown by the youth in eco-tourism as well as others seeking more adventure by travelling in the interior with less modern facilities of roads and electricity, the informal sector is benefitted by inflows of the foreign dollar. Financial inclusion of the rural families has shown that savings mobilization by banks would be beneficial to the economy as resources so gathered can be recycled as loans to microenterprises catering to tourist needs in the rural areas as well, away from the familiar and more-frequented tourist centres. Growing interest by researchers to view FSD as a contingent factor in the remittances and FDI growth nexus has spread to tourism as well. The present study is a first effort in this regard.

3. Trends in Fiji's tourism and financial sector development

Fiji is one of the leading economies amongst the Pacific island nations, whose key indicators are given in Table 1. Although its population is less than a million and with no major mineral resources it is the only upper middle income island economy with its per capita income at US$ 4,530 unlike PNG, which has the largest land area (452,860 sq.km) with a well diversified export base, covering both mineral and non-mineral exports. Fiji, which is relatively better

endowed with skilled labour resource, has become the leading tourism destination in the Pacific.

[Insert Table 1 here]

Over the last four decades or so, tourism in Fiji has emerged to be the most dominant exchange earner. Table 2 presents a comparative picture of commodity exports and tourism earnings along with three non-debt creating transfers of capital to the country. In 2014, Tourism whose contribution at 16.4% of GDP has replaced sugar, contributing only 2.4% of GDP, which was the traditional export of Fiji, as the major foreign exchange earner.

[Insert Table 2 here]

Substantial foreign direct investment by well known international chains of resorts and hotels and domestic investors who were inspired by FDI to try their hand, have made Fiji popular, attractive and safe tourist destination in the South Pacific for all categories of tourists, most importantly families travelling with children during vacation periods in Australia, New Zealand and North America during Christmas and Easter holiday season. Its close proximity to Australia and New Zealand (ANZ) as well as direct non-stop flights by Fiji Airways from Los Angeles, Seoul and Hong Kong and China, have already contributed to tourism growth. Table 3 presents a comparative picture of tourism's contribution to gross domestic products of major PICs.

[Insert Table 3 here]

Introduction of cruise ship trips for holiday makers as well as trips undertaken by retirees and senior citizens, which were only confined to Vanuatu and New Caledonia in the past since late 1980s and thriving until today, have boosted tourism to new heights. Cruise ships have now included Fiji as a port of call since late 1990s and have increased their trips during last five years or so. Cruise ship travelers arriving in the two ports of Fiji do not spend more than a day. They arrive early hours of the morning and leave around sunset. During this short period, they visit

unique attractions including places of historical interest of colonial heritage in the capital port city, Suva and sugar port city of Lautoka. The data series of cruise ship passenger arrivals, assembled as an independent series from total tourist arrivals, are available only from 1996.

The annual data series of tourist arrivals, both by air and cruise ships are reported for Fiji for the first time since January 2016 by International Monetary Fund (IMF) as part of *International Financial Statistics* in the form of index numbers (Table 4), besides being reported by United Nations World Tourism Organization (UNWTO, 2016). The cruise ship arrivals are given in Table 5.

[Insert Table 4 and 5 here]

According to the latest study by (World Bank, 2016a), the tourism receipts of PICs for 2013, the most recent year for which full data on all PICs are available, amounted to US$1.4 billion. This happens to be a record figure as a record 1.37 million overnight visitors arrived in 2014 across eleven PICs Island countries, with Fiji, PNG, Palau, Samoa and Vanuatu emerging as top five destinations. Two thirds of visitors traveling to PICs are from Australia and New Zealand, while others are mostly from the United States, China, Japan and Europe. The World Bank study (2016) estimates that PICs can gain as much as US$1.8 billion per year from additional revenues and create up to 128,000 additional jobs by 2040.

3.1 Financial Sector Development

Fiji's financial sector consists of six commercial banks, five of which are foreign-owned and one domestically owned; four credit institutions; two life insurance companies, seven general

insurance companies; and two unit trusts. As of 31st March 2015, the size of Fiji's financial system stood at F$17.4 billion. In terms of percentages, in 2015 the banking sector held the majority of the total assets at around 54% of the financial sector, followed by the state owned Fiji National Provident Funds (FNPF) and the insurance sector at 34%, other credit institutions making up the rest. The banking sector recorded the highest growth at 17%, due to the entry of one domestic bank into the sector, followed by the FNPF at 7% (Reserve Bank of Fiji, 2015 and 2016).

Fiji's banks remain liquid, with liquid assets-to-total assets at 18%. Despite some pressures on margins reflecting increased competition, banks remain highly profitable with a return on equity at 25.6%. The capital adequacy ratio stood at 13.7% at end-2013, above the minimum prudential requirement of 12% (Reserve Bank of Fiji, 2015). As regards coverage by banks in 2014, six banks have had in all 72 branches, four agencies and 100 agent banking centres. Fiji's level of access to a formal bank account, though it compares well to middle income countries, is low when compared to upper-middle income countries, surveyed as part of the World Bank's Global Financial Index (Globe Findex) Database of World Bank (2016b) and Whiteside (2015).

The financial inclusion efforts began in late 2009 with the setting up of National Financial Inclusion Taskforce in 2010 to promote greater and easier access to financial services along with the necessary knowledge and skills to best utilize them. The commitment was to reach 150,000 unbanked or underserved Fijians by the year 2014. One of the objectives was incorporating financial education into the Fijian schools' curriculum.

[Insert Table 6 here]

About 60% of adults have a bank account while 27% are completely excluded from any type of financial service (Table 6). Financial inclusion is lower in the Eastern and Western Divisions than in the Central Division of Fiji. It is also lower among indigenous Fijians known than among Indians. It is also among young adults (aged between 15–20 years); and among agricultural and casual workers (Reserve Bank of Fiji, 2015). Nationally speaking, about 71% of adults saved some money during the previous year, compared with 63% of adults in upper middle-income countries. However, out of the 71% of adults who saved in the past year, only 38% saved with a formal financial institution and 9% with saving clubs. Additionally, 27% of the respondents have retirement savings; but these were found to be more with urban dwellers. Moreover, use of credit in Fiji is at 32%, which is lower in comparison to upper-middle income countries at 38%. Those in the informal sector use shop credit, hire-purchases and borrowing from family and friends more than those who are banked (Whiteside, 2015).

4. Modeling, methodology and results

Our objective is to undertake an econometric analysis of the impact of tourism on growth in Fiji. The study aims to incorporate the role played by financial sector in the growth process. An increasing part of tourism earnings of small time tourist operators and taxi drivers and other supporting service providers such as farmers supplying local vegetables to restaurants away from main resorts providing ethnic meals and entertainers and baby sitters for tourists' children are now finding their way into saving accounts opened in banks serving the tourist centres unlike in the past.

4.1 Model

Our choice of the model stems from the Cobb-Douglas production function and is along the lines employed by Luintel *et al.* (2008) and Rao *et al.* (2008) with constant returns and Hicks – neutral technical progress.

$$y_t = A_t k_t^{\alpha} \qquad 0 < \alpha < 1 \qquad (1)$$

Where

y = per capita output;

A= stock of technology;

k = capital stock per capita;

Since our objective is to study the impact of tourism (tourism arrivals, TA represented by index) along with the emerging role of FSD on per capita output (y), we introduce a variable for representing FSD as a percent of GDP (*fsd*). The proxy indicators for *fsd*, included in this study

are: broad money as percent of GDP (*BM*) and credit to private sector by banks as percent of GDP (*PSC*). The ratio of broad money GDP is the most commonly used indicator of FSD (Calderon and Liu 2003; King and Levine, 1993). A higher *BM* indicates a higher degree of monetization of the economy; and if the financial sector grows faster than GDP, *BM* increases over time. The other indicator *PSC* represents the financial resources mobilized by banks that are channeled to private sector, representing financial deepening.

In addition to *fsd* as a variable, we also introduce an interaction term: the product of *T*A and *fsd* alternately as*: TA.BM* or *TA.PSC.* The interaction term captures the role of tourism earnings on economic growth using the financial sector transmission mechanism. The role would be one of substitution or complementary relationship. If tourism earnings by small time operators such as kiosk owners, handicraft sellers, informal and unauthorized part-time guides or taxi drivers, enable them to undertake further investment in their current ventures towards expanding their scale of operation or undertaking any new higher return yielding projects overcoming their current credit constraints, we have the substitutability hypothesis. On the other hand, the complementarity hypothesis is built on the notion that tourism and FSD would support each other when banks get encouraged to mobilize resources and motivated to step up their lending to tourism sector. The ensuing higher level of competition between them enables further channeling of tourism earnings in the tourism industry.

Additionally, two policy variables are added. One is the real exchange rate index (*REER),* with nominal exchange rate being defined as units of Fiji dollar per unit of US dollar; and the other is *OPEN*, (sum of exports and imports as percent of GDP). The REER which is the product of

nominal effective exchange rate index as reported by International Monetary Fund (2016) and ratio of foreign price index to domestic price index would reflect the inflationary impact or otherwise of expansionary of fiscal and monetary policies and *vice versa,* which are pursued by the authorities from time to time. The other policy variable, *OPEN* would represent the degree of liberalized policies pursued by government in regard to exports and imports.

Since Fiji along with other island countries in the South Pacific region is exposed to the threat of natural disasters including cyclones each year, we include a dummy variable for capturing the impact of cyclone. The dummy variable assumes the value of unity for the years which experienced one or more cyclones and zero for other years. Further, we also include another dummy variable for capturing the adverse effects of military coup on tourist arrivals and economic growth. The dummy variable takes the value of unity for years which witnessed a coup and zero for other years. It is therefore plausible to assume that:

$$A_t = f(TA_t, fsd_t, TA_t.fsd_t, REER_t, OPEN_t) \qquad (2)$$

where,

TA = index number representing tourist arrivals;

fsd =BM or PSC; and

TA.fsd = interaction term.

REER = real exchange rate index and

OPEN = ratio of trade to GDP

We enter *TA, fsd, TA.fsd* as shift variables into the production function, noting capital per capita as the fundamental and conditioning variable explaining output per capita.

The Cobb-Douglas production model is modified as:

$$A_t = A_0 e^{gT} TA_t^{\beta} fsd_t^{\lambda} (TA_t . fsd_t)^{\gamma} REER_t^{\delta} OPEN_t^{\theta} \quad (3)$$

$$y_t = (A_0 e^{gT} TA_t^{\beta} fsd_t^{\lambda} (TA_t . fsd_t)^{\gamma} REER_t^{\delta} OPEN_t^{\theta}) k_t^{\alpha} \quad (4)$$

For the purpose of econometric estimation, the above model can be written as:

$$Ly_t = \alpha_0 + \alpha_1 Lk_t + \alpha_2 LTA_t + \alpha_3 Lfsd_t + \alpha_4 LTA.Lfsd_t + \alpha_5 LREER_t + \alpha_6 LOPEN_t + \sum \beta_m dum_{mt} + e_t \quad (5)$$

where

Ly_t = natural logarithm of real gross domestic product per capita (in US dollars in 2005 prices);

Lk_t = natural logarithm of real capital stock per capita (in US dollars in 2005 prices);

LTA_t = natural logarithm of TA as percent of GDP;

Lfsd= natural logarithm of FSD indicators, either BM or PSC

$LREER_t$ = natural logarithm of real exchange rate;

$LOPEN_t$ = natural logarithm of openness [(X+M)/GDP];

dum_{mt} is a vector of dummy variables (dum_{1t}, and dum_{2t}) to capture effects of three coups in 1987, 2000 and 2006 and annual cyclones;

e_t is the random error term.

The hypotheses to be tested are: (i) *Lk* is directly associated with *Ly*; (ii) *LTA* positively influences *Ly*; (iii) *Lfsd* is positively connected with *Ly;*(iv) *LREER* is positively associated with *Ly;* (v) *LOPEN* is positively associated with *Ly;* (vi) the dummy variable for coup is negatively associated with *Ly;* (vii) dummy variable for cyclone is negatively associated *with Ly*.

On the other hand, there cannot be any *a priori* conclusion about the interaction term, *LTA.Lfsd* . If the interaction term turns out with a positive sign and happens to be significant as well, it would mean that the growth effects of tourism earnings are enhanced in a deeper financial system, by playing a supporting and complementary role to growth process. On the other hand, if the interaction term emerges with a negative sign and found significant as well, it would indicate that FSD is shallow and hence tourism earnings act as substitute. If the interaction term is negative and not significant, the two are independent of each other.

4.2 Data

The period included in this study is from 1980 to 2014. We utilize the data series of capital stock of Fiji in constant prices released from Penn Tables (Federal Reserve Bank, 2014). All the other data series are sourced from World Development Indicators (World Bank, 2016c). Table 7 presents summary statistics of variables used in the analysis.

[Insert Table 7 here]

4.3 Methodology

Since the number of observations is not large enough, we resort to the autoregressive distributed lag (ARDL) procedure, developed by (Pesaran *et al*, 2001). Although bounds testing does not require unit root tests to ensure the variables employed are integrated of the same order, we conduct unit root tests and make certain that the results obtained are robust. The existence of a long run relationship between the variables is examined from the bounds test.

The ARDL bounds testing model is a general dynamic specification, which applies lags of the dependent variable and the lagged and contemporaneous values of the explanatory variables, through which short-run impacts can be directly assessed and long-run relationship indirectly estimated[6].

An ARDL model of Equation (6) is constructed as follows:

$$\Delta Ly_t = \alpha_0 + \beta_0 Ly_{t-1} + \beta_1 Lk_{t-1} + \beta_2 LTA_{t-1} + \beta_3 Lfsd_{t-1} + \beta_4 LTA^* Lfsd_{t-1} + \beta_5 LREER_{t-1} + \beta_6 LOPEN_{t-1} + \sum_{i=1}^{p} \beta_{0i} \Delta Ly_{t-i} + \sum_{i=0}^{p} \beta_{1i} \Delta Lk_{t-i} + \sum_{i=0}^{p} \beta_{2i} \Delta LTA_{t-i} + \sum_{i=0}^{p} \beta_{3i} \Delta Lfsd_{t-i} + \sum_{i=0}^{p} \beta_{4i} \Delta LTA^* Lfsd_{t-i} + \sum_{i=0}^{p} \beta_{5i} \Delta LREER_{t-i} + \sum_{i=0}^{p} \beta_{6i} \Delta LOPEN_{t-i} + \mu_t \quad (6)$$

The bounds test is tested by using equation (6). For simplicity, the dummy variables which are included in the analysis for capturing the effects of coup and cyclones are not shown in the

[6] The use of this technique is also based on its advantages over the conventional cointegration procedure. See, for example, (Pesaran *et al*, 2001), (Narayan and Smyth, 2005), (Akinlo, 2006), among others for the advantages and applications of ARDL.

ARDL model. Furthermore, the bounds test equation (6) is repeated by using other explanatory variables as dependent variable towards finding out the number of cointegrating vectors.

There are two steps in the ARDL bound testing approach. First, we estimate Equation (6) by ordinary least squares techniques. Second, the existence of a long-run relationship can be traced by imposing a restriction on all estimated coefficients of lagged level variables equal to zero. Hence, bounds test is based on the F-statistics (Wald statistics) with the null hypothesis of no cointegration (H_0: $\beta_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$) against its alternative hypothesis of a long-run cointegration relationship (H_1: $\beta_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$).

Since the F-statistics used for this test have a nonstandard distribution, Pesaran *et al*. (2001) have generated two different sets of critical values for given significance levels. The first set assumes that all variable are integrated of order zero, *I(0)*, and the second set assumes all variables are integrated of order one, *I(1)*. If the computed F-statistic is greater than the upper critical bounds value, then the null hypothesis is rejected. In contrast, if the computed F-statistic is smaller than lower critical bounds value, it indicates no long-run relationship between variables. If the computed F-statistic lies between lower and upper bounds values, then the test becomes inconclusive. To enhance the robustness of results, the computed F-statistic is also compared with the critical values provided in (Narayan, 2005) which consider the properties of small sample size.

After checking whether the relationship flowed only in one direction and that it was from the explanatory variables to the dependent variable by an error correction model by applying

Granger-causality approach, we went beyond Ordinary Least Square (OLS) and adopted Generalized Method of Moments (GMM) for removing any endogeneity bias.

4.4 Results and interpretation

[Insert Table 8 here]

From Table 8, all variables are not stationary at level but they are stationary at first difference. Hence, there is no evidence that the variables are integrated at second order. This fulfills the requirement to use the bounds test to test the cointegration relationship between the variables in the long run.

[Insert Table 9 here]

Since we have 2 indicators for FSD, namely *LBM* and *LPSC*, we conduct the bounds test in two sets. The results obtained from Table 9 confirm that there is only one cointegration equation after ensuring that the linkage is in only one direction and the relationship runs only from the explanatory variables to dependent variable *Ly*. In other words, the variables are cointegrated in the long run when *Ly* is the dependent variable.

Having confirmed the existence of a long-run relationship between the variables from the bounds tests, we resort to the GMM estimation procedure for eliminating any bias due to potential endogeneity problem in explanatory variables. The long run equation was arrived at by using instrumental variables estimators. Instrumental variables employed in the estimation procedure include the differenced ones of the level of explanatory variables and the differenced ones of lagged explanatory variables.

While estimating the GMM equations, we found the dummy variable for cyclone emerged with significance. Hence, the non-significant dummy variable for coup was dropped and the two long run equations, one with *BM* and the other with *PSC* were estimated. They are the following.

$$\begin{aligned} Ly = {} & 0.339Lk^{*} + 0.840LTA^{**} + 0.784LBM^{*} - 0.201LTA.LBM^{**} + 0.141LREER^{*} \\ & (2.098) \quad (2.406) \qquad (2.086) \qquad (-2.229) \qquad (1.847) \\ & + 0.128OPEN^{**} - 0.017D2^{**} - 4.198 \\ & (2.337) \qquad (-3.452) \quad (-1.553) \end{aligned} \tag{7}$$

Adj. R^2 = 0.9169 *S.E. of Regression = 0.0281* *Sargan test p-value = 0.6672*

Notes: The figures in brackets denote calculated t values. *, ** and *** denote the significance level at 10%, 5% and 1%, respectively.

$$\begin{aligned} Ly = {} & 0.299Lk^{***} + 0.918LTA^{***} + 0.959LPSC^{***} - 0.230LTA.LPSC^{***} + 0.218LREER^{**} \\ & (3.314) \qquad (3.095) \qquad (2.965) \qquad (-2.929) \qquad (2.828) \\ & + 0.155OPEN^{*} - 0.022D2^{***} - 4.189 \\ & (2.077) \qquad (-4.015) \qquad (-2.886) \end{aligned} \tag{8}$$

Adj. R^2 = 0.9398 *S.E. of Regression = 0.0299* *Sargan test p-value = 0.7598*

Notes: The figures in brackets denote calculated t values. *, ** and *** denote the significance level at 10%, 5% and 1%, respectively.

In both equations, all the parametric coefficients are statistically significant. The coefficients of *LTA*, the fsd indicators, either *LBM* or *LPSC*, and *LREER* have also the expected positive signs, confirming that they are positively associated with the dependent variable, *Ly*. The sign of the interaction term in the two equations is found significant and negative, indicating the financial sector does not play a complementary role to tourism earnings as an engine of growth. In other words, financial sector development has yet to reach a threshold level.

The magnitude of the coefficient of *Lk* is around 0.30, denoting the capital share. This is consistent with the stylized value of one third in the growth accounting exercises for developing countries, as indicated in various studies (Bosworth and Collins, 2005, Rao *et al*, 2008, Rao and Takirua, 2010).

The results confirm that an increase by 1% in tourist arrivals would lead to 0.84% and 0.92% increase in per capita GDP for the equations either with *BM* or *PSC*. Besides, per capita GDP will increase by 0.78% and 0.96% when *BM* or *PSC* increases by 1%. An increase by 1% percent in REER index would raise per capita GDP by 0.14% and 0.22% in the two equations. For openness, the elasticity from both equations (7) and (8) is similar, which is 0.13% and 0.15%.

From equation (7) and (8), it is possible to determine the threshold level for BM and PSC. We use the differential of the *Ly* with respect to *LTA* and interactive term of *LTA.LBM* and equate its first order derivative to zero in order to determine the threshold value of broad money supply as a percentage of GDP for TA to contribute to economic growth. We calculate the threshold level of broad money supply as shown below:

$$\Delta(Ly)\big/\Delta(LTA) = -0.84 - 0.20LBM = 0$$

The threshold value for BM money is determined as 0.84/0.20 = 4.20, which is natural logarithm of BM. The threshold value of the FSD indicator is determined as percentage of *GDP*. The

exponential value of the natural logarithm, 4.26 is 66.7. This is the percentage of broad money supply, which would be the required threshold level.

The threshold level for private sector credit is determined along the following lines:

$$\Delta(Ly)/\Delta(LTA) = -0.92 - 0.23LPSC = 0$$

The threshold value for private sector credit is determined as 0.92/0.23 =4.0 which is natural logarithm of PSC. The exponential value of the natural logarithm, 4.0 is 54.60. This is the percentage of PSC that would be the required threshold level.

Since the two interaction terms have negative signs which are significant, marginal output effects of TA and FSD indicator are respectively reduced by their interaction. Our finding seems to imply that TA has compensated for the inefficiency of the financial system in Fiji, thereby becoming one of the funding sources for productive investments.

5. Conclusions and policy recommendations

Tourism has now become the engine of growth for PICs, as traditional commodity exports such as sugar for Fiji, and tropical fruits and vegetables and copra in smaller PICs , barring PNG, have declined in importance. With rising popularity of cruise ship travel as well as increasing ecotourism associated with youth groups travelling in the interior parts of islands, small scale tourist operators, and owners of handicraft kiosks and food stalls in around the sea port towns and rural communities now have greater access to tourist dollars directly coming into their

hands. Financial inclusion efforts aiming at mobilizing the savings in the rural communities for recycling them as credit to microenterprises are now given greater boost by governments as part of intensifying FSD.

Past studies on tourism in PICs did not take into consideration the influence of FSD, as a contingent factor in the tourism and growth nexus. This study on Fiji, as a case study, specifically focuses on FSD through an econometric analysis. The study adopted a Solow model in which the basic Cobb-Douglas production function is augmented with shift variables together with the two basic conditioning variables, namely capital and labour. By resorting to bounds testing procedure for examining the existence of any cointegration, two long run equations are estimated one with broad money (BM) and another with credit to private sector (PSC), as indicators of FSD. Further, an interaction term is added to determine whether FSD plays a complementary role or acts as a substitute.

The study findings confirm that tourism plays a positive role. So too is the FSD indicator when individually employed, whether BM or PSC. However, the interaction term, BM with TA or PSC with TA has emerged with a negative sign indicating that FSD does not play a complementary role. The marginal impact of tourism on growth is decreasing with level of FSD. This implies tourism has compensated for the inefficiency of the financial systems in Fiji, thereby becoming one of the funding sources for productive investments. Threshold levels or pre-conditional requirements of FSD calculated are: 66.7% for BM; and 54.6% for PSC.

The policy implications are clear. The financial sector of Fiji is still shallow, despite considerable progress in financial inclusion efforts since the 2010 initiatives. Although financial inclusion efforts have pushed up the financialization of savings in terms of rise in the ratio of savings and time deposits to GDP, measures towards deepening of the financial development depend not on one front of mobilization of savings, but on an all round progress in various segments of financial sector.

These segments, aside from banking system, include capital markets, market capitalization, bond market and derivatives. Fiji has a long way to go, but progress is possible with the current initiatives given greater boost in several directions.

References

Adeniyi, O., Oyinlola, A., Omisakin, O. and Egwaikhide, F.O. (2015). Financial development and economic growth in Nigeria: Evidence from threshold modeling. *Economic Analysis and Policy*, vol. 47, pp. 11-21.

Akinlo, A. (2006). The stability of money demand in Nigeria: An autoregressive distributed lag approach. *Journal of Policy Modeling*, vol. 28, No. 4, pp. 445-452.

Balaguer, J., and Cantavella-Jordá, M. (2002). Tourism as a long-run economic growth factor: The Spanish case. *Applied Economics*, vol 34., No. 7, pp. 877-884.

Benyon, M., Jones, C., and Munday, M. (2009). The Embeddedness of Tourism-related Activity: A Regional Analysis of Sectoral Linkages. *Urban Studies*, vol. 46, No. 10, pp. 2123-2141.

Bosworth, B., and Collins, S.M. (2008). Accounting for growth: comparing China and India. *Journal of Economic Perspectives*, vol. 22, No. 1, pp. 45-66.

Calderon, C. and Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics*, vol. 72, pp. 321-334.

Candela, G., and Cellini, R. (1997). Countries' size, consumers' preferences and specialisation in tourism: A note. *Rivista Internazionale di Scienze Economiche e Commerciali*, vol. 44, pp. 451–457.

Chand, S. (2015). Fiji: policies for growth, *School of Economics Working Paper,* No 4. School of Economics, The University of the South Pacific, Suva.

Dritsakis, N. (2004). Tourism as a long-run economic growth factor: An empirical investigation for Greece using causality analysis. *Tourism Economics*, vol. 10, No. 3, pp. 305-316.

Durbarry, R. (2004). Tourism and economic growth: The case of Mauritius. *Tourism Economics*, vol. 10, No. 4, pp. 389-401.

Eugenio-Martın, J. L., Morales, N. M., and Scarpa, R. (2004). Tourism and economic growth in Latin American countries: A Panel Data approach. *FEEM Working Paper*, No. 26. (Available from http://ideas.repec.org/p/fem/femwpa/ 2004.26.html).

Federal Reserve Bank. (2014). Capital Stock of Fiji at Constant National Prices. (accessed on December 10, 2015).

Figini, P., and Vici, L. (2009). Tourism and growth in a cross-section of countries. *RCEA Working Papers*, The Rimini Centre for Economic Analysis.

Gunduz, L., and Hatemi, J.A. (2005). Is the tourism-led growth hypothesis valid for Turkey? *Applied Economics Letters*, vol. 12, pp. 499–504.

Hampton, M.P, and Jeyacheya, J. (2013). *Tourism and Inclusive Growth in Small Island Developing States*, Commonwealth Secretariat, London.

International Monetary Fund (IMF) (2016). *International Financial Statistics, January 2016*, Washington, D.C.: IMF.

Jayaraman,T.K., Chen, H., and Bhatt, M. (2014). Research note: Contribution of Foreign Direct investment to the Tourism Sector in Fiji: an Empirical Study. *Tourism Economics*, vol. 20, No. 6, pp. 1357-1362.

Jedidia, K.B., Boujelbène, T. and Helali, K. (2014). Financial development and economic growth: New evidence from Tunisia. *Journal of Policy Modeling*, vol. 36, No. 5, pp. 883-898.

Jones, S. (2010). The Economic Contribution of Tourism in Mozambique: insights from a Social Accounting Matrix. *Development South Africa*, vol. 27, No. 5, pp. 679-696.

Kim, H. J., Chen, M., and Jan, S. (2006). Tourism expansion and economic development: The case of Taiwan. *Tourism Management*, vol. 27, pp. 925–933.

King, R.G. and Levine, R. (1993). Finance, entrepreneurship and growth. *Journal of Monetary Economics*, vol. 32, pp. 30-71.

Lanza, A., and Pigliaru, F. (2000). Why are Tourism Countries Small and Fast-Growing? *Tourism and Sustainable Economic Development*, pp. 57-69.

Lanza, A., and Pigliaru, F. (1995). Specialization in Tourism: The Case of a Small Open Economy. *Sustainable Tourism Development.* Aldershot: Avebury, pp. 91-103.

Levine, R., Loayza, N., and Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, vol. 46, pp. 31–77.

Luintel, K., Khan, M., Arestis, P., and Theodoridis. K. (2008). Financial Structure and economic growth. *Journal of Development Economics*, vol. 86, No. 10, pp. 181-200.

MacKinnon, J. (1996). Numerical distribution functions for unit root and cointegration tests. *Journal of Applied Econometrics*, vol. 11, No. 6, pp. 601-618.

Misati, R. N. (2007). Liberalization, Stock Market Development and Investment Efficiency in Africa. *International Review of Business Research Papers*, vol. 3, pp. 183-191.

Misati, R. N., and Nyamongo, E. (2011). Financial development and private investment in Sub-Saharan Africa. *Journal of Economics and Business*, vol. 63, No. 2, pp. 139-151.

Narayan, P. K., Narayan, S., Prasad, A., and Prasad, B. C. (2010). Tourism and Economic Growth: A Panel Data Analysis for Pacific Island Countries. *Tourism Economics*, vol. 16, No. 1, pp.169-183.

Narayan, P.K. (2005). The Saving and Investment Nexus for China: Evidence from Cointegration Tests. *Applied Economics*, vol. 37, pp. 1979–1990.

Narayan, P. and Smyth, R. (2005). Electricity consumption, employment and real income in Australia evidence from multivariate Granger causality tests. *Energy Policy*, vol. 33, No. 9, pp. 1109-1116.

Ng, S., and Perron, P. (2001). Lag Length Selection and the Construction of Unit Root Tests with Good Size and Power. *Econometrica*, vol. 69, No. 6, pp. 1519-1554.

Noriko, I., and Mototsugu, F. (2007). Impacts of tourism and fiscal expenditure to remote islands: the case of the Amami islands in Japan. *Applied Economics Letter*, vol. 14, pp. 661–666.

Pesaran, H., Shin, Y., and Smith, R. (2001). Bound testing approaches to the analysis of level Relationships. *Journal of Applied Econometrics*, vol. 16, pp. 289–326.

Pradhan, R.P., Arvin, M.B. and Hall, J.H. (2016). Economic growth, development of telecommunications infrastructure, and financial development in Asia, 1991–2012. *The Quarterly Review of Economics and Finance*, vol. 59, pp. 25-38.

Rao, B., Singh, T.A., Singh, R., and Vadlamannati, K.C. (2008). Financial developments and the rate of growth of output: An alternative approach. *MPAR Paper No. 8605,*Available at: http://mpra.ub.uni-muenchen.de/8605/ , Accessed on 28 June 2016.

Rao, B. and Takirua, T.B. (2010). The Effects of Exports. Aid and Remittances output: The Case of Kiribati. *Applied Economics*, vol. 42, pp. 1387-1396.

RBF (Reserve Bank of Fiji) (2016a). March 2016 '*Quarterly review'*, Reserve Bank of Fiji, Suva.

RBF (Reserve Bank of Fiji) (2015b). December 2015 '*Quarterly review'*, Reserve Bank of Fiji, Suva.

Samargandi, N., Fidrmuc, J. and Ghosh, S. (2014). Financial development and economic growth in an oil-rich economy: The case of Saudi Arabia. *Economic Modelling*, vol. 43, pp. 267-278.

Seetanah, B. (2011). Assessing the dynamic economic impact of tourism for island economies. *Annals of Tourism Research*, vol. 38, No. 1, pp. 291-308.

Seetanah, B. (2008). Transport and economic performance. The case of Mauritius. *Journal of Transport Economics and Policy*, vol. 42, No. 2, pp. 1–13.

Temple, J. R. W. (2001). Generalizations that aren't? Evidence on education and growth. *European Economic Review*, vol. 45, No. 4–6, pp. 905–918.

UNWTO (2016). *World Tourism Organization Statistics*. Madrid, Spain.

Whiteside, B. (2015). *Financial Inclusion Developments and Challenges in Fiji*. Keynote address of the Governor of Reserve Bank of Fiji at the National Financial Inclusion Strategy Workshop, Suva, 13 November 2015, Available at: http://www.bis.org/review/r/15117d.htm, Accessed on Dec 3, 2015.

World Bank (2016a). *Pacific Possible: Tourism*, The World Bank, Washington, D.C.

World Bank (2016b). *Global Financial Development Report 2015-2016: Long-Term Finance*, Washington, D.C.:World Bank

World Bank (2016c). 'Word Development Indicators', Available at: http://data.worldbank.org/data-catalog/world-development-indicators, Accessed on 28 May 2016.

Table 1. Fiji: Selected Key Indicators

Land Area (sq.km)	18,270
Population in '000 (2015)	892
Per Capita GNI (US$) (2015))	4,530
Aid Per Capita in US$ (2010-14)	105
Aid as percentage of GDP (2010-14)	2.6
Human Development Ranking (2014)	90/188
Annual Average Growth Rate (%) (2010-14)	3.7
Annual Average Inflation (%) (2010-14)	3.3
Overall Budget Balance (% of GDP)(2010-14)	-2.4
Current Account Balance (% of GDP) (2010-14)	-5.7

Source: WDI (2015)

Table 2. Fiji's Major Sources of foreign earnings (as percentage of GDP)

	1996-00	2001-05	2006-10	2011	2012	2013	2014
Sugar	7.6	5.1	3.3	1.7	2.5	1.8	2.4
Gold	2.3	1.7	0.9	2.1	1.9	1.3	1.1
Garments	8.2	5.3	1.7	1.4	1.3	1.4	1.2
Fish	1.8	1.9	2.4	1.5	0.8	1.2	0.9
Lumber	1.3	0.9	0.9	0.9	1.0	1.1	1.1
Molasses	0.4	0.2	0.3	0.4	0.2	0.2	0.2
Coconut Oil	0.2	0.1	0.1	0.1	0.1	0.0	0.1
Others	4.7	6.0	6.7	7.0	6.9	6.2	6.1
Total	26.5	21.3	16.3	15.1	14.7	13.3	12.9
Services							
Tourism Earnings	18.1	21.4	24.1	25.3	24.9	23.1	-
Unrequited Transfers							
Aid	1.9	2.0	1.8	2.1	2.7	2.2	2.0
Remittances	1.6	5.6	5.2	4.0	5.0	5.0	N/A
Capital Flows							
Foreign Direct Investment	2.9	4.2	10.5	11.0	9.8	6.7	6.6

Source: RBF Quarterly, UNWTO, WDI.

Table 3. Pacific Island countries: Contribution of Tourism (percent of GDP)

Year	Fiji	PNG	Samoa	Solomon Islands	Tonga	Vanuatu
1995-99 (Ave)	18.4	0.3	15.1	2.3	5.5	22.5
2000-04 (Ave)	20.0	0.1	15.5	1.0	4.3	25.4
2005-09 (Ave)	23.6	0.1	17.7	5.3	5.3	28.8
2010	26.3	0.0	18.7	7.6	7.3	34.5
2011	25.3	0.0	17.6	7.4	6.8	31.4
2012	24.9	0.0	18.4	6.4	9.6	34.3
2013	23.1	0.0	17.1	6.7	10.4	39.2
2014	-	0.0	18.1	5.5	-	34.8

Source: UNWTO (2016)

Table 4. Tourists Arrival

Averages	**Fiji ('000)**	**PNG ('000)**	**Samoa ('000)**	**Solomon Is.('000)**	**Tonga ('000)**	**Vanuatu ('000)**
1995-99	520.0	60.6	74.4	12.9	34.4	88.0
2000-04	461.0	56.2	91.0	5.8	45.6	102.4
2005-09	580.3	97.2	113.8	13.8	63.7	173.8
2010	692.0	140.0	122.0	20.5	65.0	237.7
2011	734.0	158.0	121.0	22.9	68.4	248.9
2012	741.0	168.0	126.0	23.9	57.1	321.0
2013	768.0	174.0	116.0	24.4	56.7	357.0
2014	781.0	182.0	120.4	20.1	NA	329.0

Source: UNWTO (2016)

Table 5. Number of cruise passengers for Fiji.

Year	cruise passengers
Avg.1996-2000	14200
Avg.2001-2005	8800
Avg.2006-2011	45200
2012	80000
2013	110000
2014	88000

Source: UNWTO (2016)

Table 6. Fiji : Key Financial Inclusion Indicators						
	2010	**2011**	**2012**	**2013**	**2014**	**2015**
Access: Demographic [1]						
Number of cash-in and cash-out points per 10,000 adults	6.7	8.1	10.6	9.46	16.38	21.78
Number of Bank Branches per 10,000 adults	1	1.04	0.99	1.05	1.16	1.17
Number of ATMs per 10,000 adults	3.4	3.5	3.71	4.23	4.58	4.74
Number of EFTPOS per 1000 adults	31.4	48.45	59.76	80.2	87.74	93.16
Access: Geographic						
Number of cash-in and cash-out access points per 1000 sq.km	22.22	26.87	35.47	133.1	139.1	N/A
Number of Bank Branches per 1000 sq.km	3.45	3.45	3.28	3.51	3.89	N/A
Number of ATMs per 1000 sq.km	11.06	11.6	12.37	14.18	15.38	N/A
Number of EFTPOS per 1000 sq.km	103.8	160.8	199.2	268.6	294.9	N/A
Number of Agents per 1000 km	18.77	23.43	32.18	129.6	135.2	N/A
Usage [2]						
Number of regulated deposit accounts per 10,000 adults	10,341	10,998	10,801	11,830	13,007	13,702
Number of regulated credit accounts per 10,000 adults	1381	1,407	1,442	1,601	1,724	2,022
Number of insurance policy accounts per 10,000 adults	4, 385	4,495	4,620	4,963	5,352	6,278
Number of National Provident Fund Accounts per 10,000 adults	5,905	6,073	6,123	6,232	6,436	6,549

Source: Reserve Bank of Fiji (RBF) (2015)

[1] Access refers to the ability for households and firms to use financial products and services

[2] Adults refer to the population that are 15 years and above

Table 7. Variables employed in the study

Period/Year	Per capita GDP (constant US$)	Capital stock per capita (constant US$)	TA index	BM (% of GDP)	PSC (% of GDP)	REER (FJ$/US$) (Index)	OPENN [(X+M)/GDP] (%)
1980-89 (ave)	2721	7936	34	45.2	24.8	157.5	95.9
1990-99 (ave)	3054	8468	51	52.1	36.0	119.7	118.3
2000-04(ave)	3438	9364	63	49.0	37.9	109.5	128.5
2005-09(ave)	3637	10325	87	66.7	61.5	113.8	117.3
2010	3622	10861	100	67.6	62.7	100.0	121.7
2011	3688	11059	107	69.5	60.0	103.4	128.2
2012	3726	12100	105	69.8	60.6	106.6	128.9

Source: Capital stock from the Federal Reserve (2015); TA index series is from IMF(2016); and other data series from World Bank (2015)

Table 8. Unit Root Test Results

Variables	ADF Test		Ng and Perron Test, MZa	
	Level (constant with trend)	1st Difference (constant without trend)	Level (constant with trend)	1st Difference (constant without trend)
Ly	-2.29	-7.46**	-8.40	-15.83**
Lk	0.31	-4.16**	-0.40	-13.11**
LTA	-2.65	-7.83**	-15.21	-17.90**
LBM	-2.96	-5.20**	-3.94	-16.33**
LPSC	-1.81	-5.66**	-5.79	-16.05**
LTA.LBM	-2.02	-7.52**	-7.45	-15.55**
LTA.LPSC	-2.32	-4.31**	-11.90	-15.42**
LREER	-1.58	-4.14**	-4.79	-14.53**
LOPEN	-2.55	-5.98**	-9.57	-16.42**

Note: The critical values for ADF test are based on Mackinnon (1996). The optimal lag is selected on the basis of Akaike Information Criterion (AIC). The Ng and Perron critical value is based on Ng and Perron (2001), and the optimal lag is selected based on Spectral GLS-detrended AR based on SIC. The null hypothesis of the test is: a series has a unit root. The asterisk ** denotes the rejection of the null hypothesis at the 5% level of significance.

Table 9. Results of Bounds Test for Cointegration

Dependent variable	Computed F-statistic
Ly	7.47***
Lk	1.70
LTA	1.38
LBM	1.74
LTA.LBM	1.87
LREER	1.79
LOPEN	1.91

Dependent variable	Computed F-statistic
Ly	9.94***
Lk	2.75
LTA	1.95
LPSC	1.01
LTA.LPSC	1.57
LREER	1.41
LOPEN	1.88

Critical value	Pesaran et al. (2001)[a]		Narayan (2005)[b]	
	Lower bound	Upper bound	Lower bound	Upper bound
1%	3.15	4.43	4.016	5.797
5%	2.45	3.61	2.864	4.324
10%	2.12	3.23	2.387	3.671

Note:
[a] Critical values are obtained from Pesaran et al. (2001), Table CI(iii) Case III: Unrestricted intercept and no trend, p. 300.
[b] Critical values are obtained from Narayan (2005), Table case III: unrestricted intercept and no trend, p. 10.
*, ** and *** indicate significance at 10%, 5% and 1% levels, respectively.