The inconsistent effect of foreign exchange earnings on economic development of Fiji: the strategies and long run relationship through vector error correction modelling

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Abstract: Foreign aid, foreign direct investment (FDI), exports and remittances result critical for the economic growth of countries that are geographically isolated from the rest of the world and located at disaster prone areas such as Fiji. The research proposes these variables might have a different impact in emerging economies, based on the current social, economic and political context of the recipient country. This implies that prior to allocating scarce resources, each country's framework should have been analysed to maximise their potential impact. For this study, we applied Johansen cointegration and vector error correction model (VECM) on time series data over the period of 1979–2017. The results reveal that the variables under study have a positive impact on the economic growth of Fiji. Furthermore, the combined effect of foreign aid and FDI provides synergies, increasing its positive effects. We recommend Fiji authorities to implement appropriate government policies that prioritise exports, foreign aid, FDI and remittances in the expressed order, in order to foster sustainable economic growth. We also present a policy framework through the integration of results of our study.

Keywords: economic growth; foreign aid; foreign direct investment; FDI; inconsistencies; remittances; exports; Pacific case; time series; Fiji.

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1 Introduction

Fiji faces several economic challenges arising from its small size, limited natural resources, and distance from major markets (The World Bank Group, 2016). Fiji, similar to other Pacific small island developing states (Pacific SIDS), has been dependent on foreign exchange receipts to stabilise its balance of payments. The major contributors to Fiji's foreign exchange earnings can include export receipts, personal remittances, foreign aid receipts, and foreign direct investment (FDI). Studies also examined the relationship between major foreign exchange receipts and economic growth in developed (Lee and Brahmasrene, 2013) and developing countries (Rapetti et al., 2012; Ahmad et al., 2012; Kumar, 2010a, 2010b; Mishi and Kapingura, 2013). The present study applies specifically to developing economies. A few studies were noted for Pacific SIDS, including Fiji. Qasenivalu (2008) and Narayan (2004) studied the impact of exports on Fiji's economic growth. The present study applies specifically to developing economies such as Fiji.

On the impact of foreign aid on Fiji, the study conducted by Chen and Singh (2014) using an endogenous production framework concluded that foreign aid had a positive impact on GDP growth. Conversely, Mallik (2008), using a cointegration approach, reported a consistent negative impact of foreign aid on economic growth in African

countries, while Rao et al. (2007) observed that foreign aid has a negligible impact on economic growth. Similar inconsistent results on the relationship between foreign aid and economic growth are found in the literature for different countries and regions along the last 50 years. These conflicting results proposed a further inquiry in the present research. Each country specific context and time frame might affect the impact of foreign aid on economic growth (Oprsal et al., 2016).

For the purpose of this study, foreign aid is limited to the net official development assistance and net official aid received by Fiji. Personal remittances include personal transfers in cash or in kind. Exports include goods and services. Finally, FDI includes equity capital, reinvested earnings, and other capital. Studies found in the literature also individually examined the relationship between the economic growth and foreign exchange earnings flowing from foreign official aid, personal remittances, exports and FDI.

This study focuses on the impact of foreign exchange earnings coming from foreign official aid, personal remittances, FDI and exports of goods and services on Fiji's GDP, and its potential synergies over the period of 1979–2017. It is hypothesised that, based on previous research, all four have a positive impact on Fiji's GDP. Foreign aid represents a special case in the study, due to the inconsistencies found in the literature review. However, to the best of our understanding, we have not found any study that has examined the combined effect of remittances, FDI, exports and foreign aid on economic growth over the period of 1979–2017 through the current method employed in this study. Thus, the research question for this study is:

What are the effects of foreign exchange earnings from exports, personal remittances, FDI and foreign aid on Fiji's GDP and its economic growth?

The subsequent sections of this study are as follows: Section 2 reviews the literature that addresses the key relevant studies that examine the impact of foreign aid, personal remittances, FDI and exports on economic growth. This section also puts forth the major hypotheses and the conceptual framework. Section 3 outlines the methodology adopted to address this study followed by results. Section 4 focuses on the discussion and policy implications of the findings. Finally, the last section concludes the study along with limitations and presents tentative recommendations.

2 Literature review

2.1 Impact of foreign aid and FDI on the economic growth

The impact of foreign official aid on economic growth remains a controversial topic with numerous studies showing positive, negligible as well as negative impacts. The classic study by Griffin and Enos (1970) was conducted on 27 countries and established a negative relationship between growth and foreign aid. The technique used was simple correlation on panel data. Boone (1996), using simple linear regression, found no significant relationship between economic growth and foreign aid. Whereas, Lensink and White (2001) as well as Easterly (2003) results indicate that foreign aid might not be an effective factor to scale economic growth. Rao et al. (2007) were able to find a positive but negligible impact of foreign aid on country's growth, while Ekanayake and Chatrna (2010) reported mixed results, with positive and negative impacts, depending on the region studied. They studied the panel data of 85 countries from the year 1980 to 2007

and examined foreign aid effects on the economic growth. Countries studied were located in Asia, Africa, Latin America and the Caribbean. The results from this study were mixed. The only region that demonstrated a positive and significant impact of foreign aid on economic growth was Africa. The authors attributed the positive impact of foreign aid in the African region to the fact that it was the largest recipient. In terms of income levels, the study showed that foreign aid had a negative impact on low to medium income countries, whereas the low-income countries showed a positive impact.

More recent studies, using contemporary techniques, support these previous findings. Mallik (2008), using a cointegration approach, reported a clear and consistent negative impact of foreign aid on economic growth in African countries. These countries became dependant over time on foreign aid, hindering their growth. The results of Ekanayake and Chatrna (2010) and Mcmillan (2011) also supported these findings. Tadesse (2011) also using a cointegration approach, found that foreign aid in Ethiopia had a negative impact on the country's growth, as a result of inadequate policies. A cointegration approach used by Hamid (2013) for Egypt also presented the negative impact of foreign aid in fostering economic growth. More recently, Dreher (2015) stated the lack of correlation between foreign aid and economic growth.

On the other hand, Burnside and Dollar (1997) also found a positive impact of foreign aid on economic growth. This was possible, as long as positive economic policies were implemented. It needed to be further studied if economic growth was the result of these policies, as much as foreign aid, or the degree of convergence between the two variables. Burnside and Dollar (2004) supported the critical role of positive economic policies as the key factor for foreign aid to foster growth. A study by Hansen and Tarp (2001) also backed up the findings of Burnside and Dollar's (1997, 2004) stating that the positive impact of foreign aid resulted from investment, rather than consumption.

Moreira (2005), as well as Camelia and Sanjay (2009) also reported that foreign aid had a greater effect on growth in the long run, supporting its positive effect. The study conducted by Fasanya and Onakoya (2012) in Nigeria applying the neoclassical modelling analytical framework likewise found a significant positive impact of foreign aid on economic growth.

In the case of Fiji, the study conducted by Chen and Singh (2014), applied two-stage least squares and three-stage least squares to assess foreign aid's impact on the economy. The results provide evidences that foreign aid reduces poverty and positively affects economic growth by fostering domestic investment, as long as positive macroeconomic policies are implemented. Since the first coup d'état in 1987, the social and political context in Fiji has constantly being changing. The 2000 and 2006 coups, further increased political instability. Therefore, it is essential to understand the current effect of foreign aid within the new context.

In summary, these inconsistent results along the last 50 years open up an academic debate on how regional and local specific circumstances might affect the relationship between foreign aid and economic growth. The hypothesis 1 (H1) tests the impact of foreign aid on the Fijian economic growth.

H1 Foreign aid leads to higher economic growth.

According to Wong et al. (2019) Asian developing economies are significantly increasing their inflows of FDI. FDI fosters economic growth by transferring capital, technology and knowledge to the recipient country (Jahfer and Inoue, 2014; Al Mamun and Sohag, 2015; Chrysostome and Lupto, 2011; Nikensari et al., 2019; Maniak and Milaszewicz, 2008).

Furthermore, as opposed to foreign aid, FDI represents a long-term investment, which implies that it provides a more stable flow of capital along time. According to Nolintha and Yee (2016) FDI might increase income inequality based on the FDI flows, which might lead to inequalities in consumption expenditure. Government policies for FDI allocation can mitigate this effect. Iamsiraroj (2016) indicates FDI provides a positive impact on economic growth within the recipient countries. Makun (2018), corroborates these findings and, in the case of Fiji, the positive impact of FDI on economic growth is noticed in the short, as well as the long run. Therefore, the Hypothesis 2 (H2) tests the role of FDI on the economic growth of Fiji.

H2 Higher FDI leads to higher economic growth in Fiji.

2.2 Impacts of personal remittances

In 2017, total global remittance inflows surpassed $613 billion worldwide (The World Bank Report, 2018). Only five of the last 47 years have experienced a decline in remittances inflows (The World Bank Report, 2018). These five years with negative growth in remittances coincide with the mid 80's and late 90's global crisis. In the case of Fiji, $86 million were received in 2017. This represents an increase of 7.5% from the 2016 (The World Bank Report, 2018). However, from 2001 to 2017, remittances have contributed to foster Fiji's GDP between 4 and 6% every year (The World Bank Report, 2018).

The research on the impact of remittances on economic growth has found mix results (Mishi and Kapingura, 2013). According to Subramanian and Satyanath (2004), "remittances can help improve a country's development prospects, maintain macroeconomic stability, mitigate the impact of adverse shocks, and reduce poverty." In the similar lines, Giuliano and Ruiz-Arranz (2009) found a positive relation between remittances and economic growth in countries with a less developed financial system. In this case, remittances act as a capital allocator contributing to economic growth. Ramirez and Sharma (2008), found similar results. Conversely, Chami et al. (2005) concluded remittances negatively affected the economic growth.

The macroeconomic impacts of remittances have been disregarded, because when they are received by workers, it is usually used for consumption and therefore, have little or no effect on investment (Fayissa, 2008). The author studied the aggregate impact of remittances on economic growth using an unbalanced panel data spanning from 1980 to 2004 for 37 African countries. The key findings from this study propose that remittances tend to boost growth in countries where financial systems are less developed. It is believed that remittances provide an alternative way to finance investments and assist in overcoming liquidity constraints. The study also found that for African countries there was an increase in the GDP per capita income, for each unit increase in remittances. In Fiji, migrants might want to invest their savings in small businesses, the real estate sector or other assets in their own country because of the better knowledge of the local market (Stahl and Arnold, 1986). From 2008 to 2015, there has been a steady increase in remittances inflows to Fiji (The World Bank Report, 2018). However, in 2016 there was a sharp decrease in remittances inflows to Fiji. According to the The World Bank Group (2017), this decline was due to oil prices coming down and the slow economic growth in the traditional countries where Fijians migrate. Chen and Jayaraman (2016) focused on the interaction between remittances and growth in Fiji. They found a positive relation

between the two variables. More recently, Makun (2018) also supported these findings for Fiji. Thus, the Hypothesis 3 (H3) tests the impact of personal remittances on the economic growth.

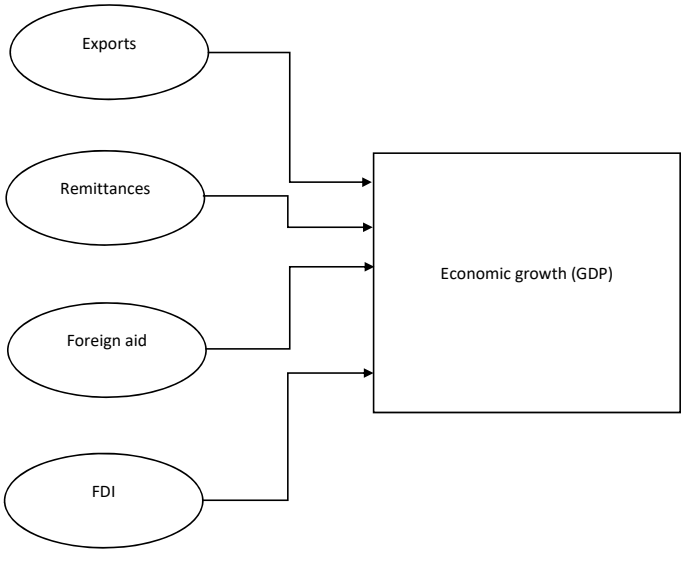
H3 Higher remittances positively affects the economic growth of Fiji.

2.3 Impacts of exports

For Pacific SIDS, one of the key sources of foreign exchange earnings is the export of goods and services. These earnings allow the creation of employment and reduce the deficit on the balance of payments. Studies have been conducted on the subject, utilising a variety of data and methodologies, focusing on different regions. Dritsaki and Stiakakis (2014), Shahbaz et al. (2013), Tekin (2012) and Berg and Schmidt (1994) conclude that a growth in exports is linked to an increase in economic growth, thereby implying a positive relationship between economic growth and the growth of the export sector. Similarly, Crespo-Cuaresma and Wörz (2003), Srinivasan and Bhagwati (2001) and Greenaway et al. (1999a, 1999b) address the importance of export structures and conclude that countries that focus on exporting intermediate and raw goods suffer a more negative impact due to changes in the international market compared to countries who focus on exporting manufactured goods. Narayan et al. (2008) studied the evolution of import-export ratios for Fiji and projected that imports will exceed exports at least until 2020. These systemic trade balance deficits might have a negative impact on economic growth in the long run. This trade deficit is further aggravated by the fact that Fiji is an export hub for the entire region, thus, from the total export of Fiji, one third originates from imported goods that are re-exported to other Pacific countries (Workman, 2018). Therefore, the Hypothesis 4 (H4) tests the role of exports on the economic growth of Fiji. Figure 1 presents the conceptual framework and model design.

H4 Higher exports lead to higher economic growth in Fiji.

Figure 1 Design of the study



2.4 Contribution of this study to the literature

The main contribution of this article arises from the inconsistent results found in the literature review on the impact of the variables under study on economic growth. These conflicting results, along with the findings of the present study are analysed in the discussion section. The fact that each country has a distinctive social, political and economic context that evolves over time, has direct implications on the way policy should be implemented in order to prioritise the allocation of scarce resources.

The second contribution of this article consist of the combined study of remittances, export, FDI, and foreign aid. Previous studies addressed these variables and their impact on economic growth individually or in combination with other variables. The convergent effect of foreign aid and FDI also explains the effects of other explanatory variables (exports and remittances) on the economic growth.

The third contribution is based on the methodology employed. Previous articles used two and three stage least square, OLS, panel data and other time series modelling methods, whereas this study modelled the results through Johansen cointegration and vector error correction model (VECM) with a time frame of 1979 to 2017 that has not been studied previously in the context of Fiji.

3 Methodology and results

In this study, the time series dataset of Fiji over the period 1979–2017 was obtained from The World Bank. For the economic growth, we have used the GDP as our dependent variable. Explanatory variables followed by the literature review used for modelling are:

1 exports value of goods and services

2 personal remittances received

3 net official development assistance and official aid received

4 FDI.

With the data mentioned in the above section, the following two econometric models address our research question.

$$\mathrm{Yt(GDP)} = \mathrm{c} + (\mathrm{c1})\ \mathrm{Exp} + (\mathrm{c2})\ \mathrm{FA} + (\mathrm{c3})\ \mathrm{FDI} + (\mathrm{c4})\ \mathrm{Rem} + \mu \quad (1)$$

$$\mathrm{Yt(GDP)} = \mathrm{c} + (\mathrm{c1})\ \mathrm{Exp} + (\mathrm{c2})\ \mathrm{FA} * \mathrm{FDI} + (\mathrm{c3})\ \mathrm{Rem} + \mu \quad (2)$$

where GDP is a natural log of GDP, Exp is a natural log of export of goods and services, RMT refers to natural log of personal remittances received, FA represents foreign aid which is natural log of net official development assistance and official aid received, and ln FDI is a natural log of FDI. Further, c represents constant; c1, c2, c3, etc., refers to coefficient of the variables used in the model and t in Yt represents time series from quarter 1 of 1979 to quarter 4 of 2017.

To reduce the effect of variables with large quantitative values, the logarithmic function was applied. A similar approach was also followed by Sisodia et al. (2016) and Sisodia and Soares (2015). For the variables, we observed the unit roots through

augmented Dickey Fuller and Phiilips-Perron method. We have applied the first difference across all the variable to compute results for our model.

Time series econometric represents one of the key methods found in the economics literature. Our data represents observations at regular frequency from 1979–2017. Therefore, time series analysis was the most appropriate method to address our research question. However, the series used is very long (beginning from 1979) and may incorporate sequence of events/trends, such as political instability, coups, and natural disasters that were witnessed in Fiji.

To incorporate the multivariate time series, literature suggests the usage of different methodologies, such as vector auto regressive model (Shahbaz et al., 2013), auto regressive distributed lags (Fareed et al., 2018), and VECM (Dike, 2018). The modelling through ordinary least square may suffer biases and the probability of error could be high. It was deemed that variables (when operated together) may suffer errors, and we decided to compute the data with VECM.

The study applies the quadratic match sum method to transform the annual data from 1979 to 2017 to quarterly data. By using this method, a seasonality issue present in the annual data can be eliminated. We preferred this method as it increases the sample size, and has suitable procedure of operation (Cheng et al., 2012). Further, we transformed the series to their logarithmic values applied first difference. We eliminated the negative values by further transforming the series. In each variable, a minimum negative value was identified, and that value in absolute form was added to entire series. Thus, all the negative values were transformed. The correlation test matrix present in Table 1 confirms that the combination of series used for data modelling does not suffer correlation. The LM test also suggests the non-rejection of null hypothesis at probability values higher that 0.05 (signifies the non-presence of serial correlation). Further, it is assumed that data is normal, and heteroscedasticity test confirms the non-rejection of null hypothesis, thus, there was no heteroscedasticity found in the data.

Table 1 Correlation results at 1st difference

	GDPQ	*EXPINQ*	*FDIQ*	*FAQ*	*REMITQ*
GDPQ	1				
EXPINQ	0.170711	1			
FDIQ	0.015054	0.014579	1		
FAQ	0.172113	0.016921	0.225075	1	
REMITQ	–0.14485	0.018047	0.02774	0.113297	1

We also performed the unit root test at level and the first difference. At the level, the null hypothesis was not rejected. However, at first difference, the null hypotheses for all the variables were rejected at 5% significance (see Table 2). We conducted the test though the augmented Dickey-Fuller and Phillips-Perron unit root method. For the generation of results of unit root test, we used the arbitrary lag value of 4.

With standard VAR model using the arbitrary lag of 4, we generated the VAR results and computed the optimal lags through lag length criteria. In the lag selection criteria, we had the option to choose optimal lag as indicated by the asterisk (*) in lag 6 of AIC, lag 2 of SC and lag 2 of HQ. We decided to choose the lag 6 on the basis of Akaike information criteria (Table 3).

Table 2 Unit root test results without structural breaks

	Augmented Dickey-Fuller test		*Phillips-Perron test*	
	T-statistics	*P-values*	*T-statistics*	*P-values*
At level				
GDP	0.458026	0.9847	–0.271183	0.9251
Export	–0.343643	0.9142	–0.977507	0.7603
Foreign aid	–0.23035	0.9306	–1.119432	0.7074
FDI	–1.428006	0.5666	–5.151746	0.0000
Remittances	–1.541728	0.5099	–1.564617	0.4982
At first difference				
GDP	–4.551689	0.0003	–6.025456	0.0000
Export	–5.276002	0.0000	–5.698314	0.0000
Foreign aid	–4.305431	0.0006	–6.075877	0.0000
FDI	–6.372402	0.0000	–12.95346	0.0000
Remittances	–4.535139	0.0003	–5.8284	0.0000

Table 3 VAR lag order selection criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	266.6923	NA	5.17e-09	–4.891444	–4.766546	–4.840812
1	1,036.533	1,453.345	4.65e-15	–18.81371	–18.06432	–18.50992
2	1,141.739	188.7805	1.04e-15	–20.31288	–18.93900*	–19.75593*
3	1,151.609	16.78713	1.39e-15	–20.03007	–18.03169	–19.21995
4	1,158.241	10.66176	1.99e-15	–19.68675	–17.06388	–18.62347
5	1,251.504	141.2019	5.69e-16	–20.96269	–17.71533	–19.64626
6	1,291.610	56.97214*	4.45e-16*	–21.24504*	–17.37318	–19.67544
7	1,303.001	15.11803	6.04e-16	–20.99068	–16.49433	–19.16792
8	1,311.093	9.982549	8.88e-16	–20.67464	–15.55380	–18.59872

Notes: *indicates lag order selected by the criterion.
LR: sequential modified LR test statistic (each test at 5% level).
FPE: final prediction error.
AIC: Akaike information criterion.
SC: Schwarz information criterion.
HQ: Hannan-Quinn information criterion.

The null hypothesis of no cointegration is also rejected in the model. Unrestricted cointegration rank test with trace and maximum eigenvalue generated through the Johansen cointegration testing suggests that at least one equation is cointegrated. Since the equations were found cointegrated, we chose to model the data through VCEM using the optimal lag 6.

The error correction term in the model for the long run is represented as:

$$ECT_{t-1} = Y_{t-1} - aX1_{t-1} - bX2_{t-1} - cX3_{t-1} - dX4_{t-1} - \varepsilon_{t-1} \quad (3)$$

$$ECT_{t-1} = 1.000\ Y_{t-1} + 0.2496\ X1_{t-1} - 0.5328\ X2_{t-1} - 0.2986\ cX3_{t-1} - 0.0351\ X4_{t-1} - \varepsilon_{t-1} \quad (4)$$

where ECT represents the error correction term and t – 1 represents lag 1. Y represents GDP, X1, X2, X3 and X4 represents the explanatory variables.

Table 4 represents the long run results obtained through the VECM model.

Table 4 Results of VECM in the long run

[+]*Dependent variable = GDP*	*Model 1*			*Model 2*		
[+]*Variable*	*Coefficient*	*Std. error*	*t-statistics*	*Coefficient*	*Std. error*	*t-statistics*
Export	–0.2496	0.2003	1.24585	0.5101***	0.1051	4.8519
Foreign aid	0.53288***	0.14613	3.6465			
FDI	0.2986***	0.0488	6.1132			
Foreign aid × FDI				0.0130***	0.0029	4.4119
Remittances	0.0351	0.04939	0.7106	0.1420***	0.0260	5.4561
constant		3.0718			6.398	
R-squared		0.64			0.65	
Adjusted R-squared		0.54			0.58	
F-statistics		6.13			8.4	

Notes: [+]The variables represented in the table are in the logarithmic form.
***Represents the significance at 5% level.

For model 1, the long run result of Johansen cointegration and VECM indicates that foreign aid and FDIs are positively and significantly associated to the economic development of Fiji Islands. A unit change in FDI and foreign aid improves GDP by 0.29 and 0.53 respectively. However, exports and remittances were found insignificant. In model 2, it is assumed (see discussion section) that both foreign aid and FDI will be used for the development purpose. Thus, in the long run, the joint effect of the variables (FDI and foreign aid) on the GDP is also found to be significant and positive. Additionally, in the long run, the joint effect of these variables (FDI and foreign aid) increase exports and remittances to a significant level at 1%. The joint effect of FA and FDI presented through model 2 signifies that a unit change in FA and FDI increases economic growth by 0.013 at 1% level. Eventually, the unit changes in exports and remittances also significantly boost GDP by 0.51 and 0.14 respectively.

The ECT value of the VECM in the short run is obtained to be –0.067. Thus, the previous period's deviation from the long run equilibrium is corrected in the current period as an adjustment speed of 6.7%. Remittances in the short run (at the lag 4) play a significant role in the improvement of GDP. Nevertheless, the robustness and validation tests in details with multiple periods and scenarios is a part of our next consecutive study. The proposed study highlights the contrasting and similar effects under different periods.

4 Discussion and policy

Findings on the impact of foreign aid in countries that share similar contexts provide inconsistent results. Even within the same country, depending on the selected data time frame, foreign aid provides a different outcome on economic growth. Ekanayake and Chatrna (2010) performed a study on 85 developing countries covering Asia, Africa, Latin America, and the Caribbean. Their findings revealed that only the African region showed a positive impact of foreign aid on economic growth; whereas, the Asian, Latin American and Caribbean regions showed negative impacts. The inconsistent results examined during the literature review, along with the findings of the present study, raise the debate on how country specific contexts might impact the effect of foreign aid in each specific scenario. The findings of the research apply specifically to developing economies.

In the case of Fiji, Gounder (2001a, 2001b) concluded that foreign aid had a significant positive effect in Fiji's economic growth, while Rao et al. (2007) reported a negligible impact of foreign aid on economic growth for Fiji. Prior to these two studies, Boone (1996) suggested that the characteristics of the government within the country that receives foreign aid, play a major role on the effectiveness of such aid. During the period considered in this study, Fiji suffered fours coups d'état. The first two occurred along 1987, followed by the year 2000 coup and the 2006 coup. These four coups had a direct impact on Fijis economical context, especially during the first 12 to 18 months after each coup. The 35 years selected time frame for this study can mitigate the impact of these coups.

The present study findings suggest that foreign aid has a positive impact on Fiji's economic growth. Its contribution becomes vital (0.53, model 1), when compared to the rest of the variables under study. The literature review and the findings of this study support the view that the political, as well as the economic context of the country have a direct impact on the effect of foreign aid in each recipient country. In order to effectively allocate foreign aid to countries in need, there has to be a case by case study that will determine the impact of such aid in the specific economic, political and temporal context of the country. This way, foreign aid allocation may maximise its impact, according to the peculiarities of each country and region. In certain countries and contexts other type of actions that governments can have more control over, and subsequently implement policies to support, might provide a far more positive effect on the economy, than the allocation of foreign aid. Furthermore, the type of foreign aid received (project-based, voluntary-based etc.) might also alter its effect on country growth. Therefore, we recommend a more proactive government support on the factors that have a positive impact in fostering exports and FDI.

The studies by Marković and Marković (2015) and Berg and Schmidt (1994) have indicated that increase in exports stimulates economic growth. Based on previous results, and on the findings of this research, it is highly recommended to government to focus on fostering exports, as the model reveals they provide the highest positive impact (0.51, model 2) in order to raise its economic growth. In order to foster exports growth, Fijian Government has initiated to support the local entrepreneurs and encourage them to produce goods made up of locally available raw materials that can be exported to nearby

countries. Thus, it is expected that exports, and therefore GDP, can be increased in the near future. Furthermore, Fiji being an export hub for the Pacific Island States (PIC), and considering one third of its exports are re-exports, building a logistic infrastructure that adds value to this trade will further positively impact Fiji's economic development.

FDI represents the third variable with a greater positive impact on Fiji's economic growth (0.29, model 1). Gani (1999) identified the positive impact of FDI in Fiji. This result is also aligned with Jayaraman and Choong (2006) and Feeny et al. (2014). FDI in Fiji during the last twenty years was focused on mining exploration, primary products processing and especially the development of the tourism industry. Based on the strong positive impact of exports on Fiji's economic growth, government policies should foster the synergies than can arise by directing FDI towards enhancing the capacities of Fiji to increase its export capacity, such as value investment on technology that generates high returns. This way, two variables that have a positive effect on Fiji's economic growth, could complement each other.

With regard to personal remittances, the literature also provides support in favour of the positive impact on GDP growth. This is aligned with the findings of the present study. According to Stahl and Arnold (1986), the use of personal remittances for consumption and investment purposes would have a positive impact on economic growth due to the possible multiplier effects. Our results are also supported by the study of Kumar (2010b) that found the positive and significant relationship between remittances and economic growth in Fiji using the bounds test analytical method based on a data from 1979–2007. The results from Sami (2013), conducted on Fiji, also found that remittances represent a positive and significant impact on the economic growth. Therefore, the increase of personal remittances through bank transfers should be considered. One of the positive consequences would be that banks will count on more capital to finance the local enterprises. Furthermore, as Barnett and Sergi (2018) state, the development of the banking system in emerging economies will contribute to a more reliable financial system. As the country progresses on a stable financial and political situation, more Fijian residents abroad will feel it is safer to send their savings home, further benefiting Fiji's economic growth. Political stability represents one factor in which the internal forces have a strong command. Therefore, policies that support stability and run away from past turmoil periods, will have a positive impact on the flow of remittances and will foster GDP's growth. Furthermore, as Mishra et al. (2016) state, developing countries would benefit by implement economic policies to enhance their competitiveness through economic and institutional reforms that promotes a stable political and economic context. According to Fernandez et al. (2018) each country distinctive competencies might also impact competitiveness.

The last finding of this study came from a thorough analysis of the results by inquiring about the possible combinations of the variables and its potential synergetic effects. As a result of this analysis, we identified a positive relation between FDI and foreign aid. When both variables are present in Fiji's economy, their combination provides an extended positive impact on growth (0.13, model 2). This synergy implies that policies implemented to foster FDI and foreign aid will have the individual positive impact of each of them, plus an additional positive effect coming from their combination.

5 Limitations and conclusions

Fiji suffered four coups d'état during the timeline of this study. The year right after each coup, all the variables behaved differently, without a consistent trend. As an example, foreign aid increased the year after the two 1987 coups (May and October) and decreased the years after the 2000 and the 2006 coup (The World Bank Report, 2018). The impact of the coups on the economic variables might depend on the success of each coup and the different expectations that emerged from each of them. Due to the nature and disparity of the impact, length, and outcomes of each of the coups, they are not taken into consideration as a critical consistent impact factor in the present study and its economic consequences will be specifically addressed in a future line of research.

One more limitation encountered in this study was the lack of data and reports on the personal remittances sector from the Reserve Bank of Fiji and the Fiji Revenue and Customs Authority. Thus, the model results rely on the third party data (World Bank).

The purpose of this study was to explore the effects of foreign exchange earnings from exports, personal remittances, FDI and foreign aid on Fiji's GDP. Fiji is one of the most important countries in the South Pacific region with a different government structure and a unique geographical location that is prone to major disasters. This makes Fiji a key country as a recipient of external funds. However, if such funds are not allocated effectively, their positive impact will be reduced. This study supports the point of view on the positive impact on GDP from personal remittances, exports, FDI and foreign aid in low income countries prone to natural disasters, while presenting a special case on the positive aggregate impact of FDI and foreign aid in Fiji's GDP growth.

According to the research findings, policy development in Fiji should be based in three criteria: prioritise the variables where government has a greater capacity to intervene, have a greater individual positive impact on economic growth, and present synergies that allow their combined effect to have even a higher impact on Fiji's GDP growth. This way, the implementation of policies that foster foreign aid and FDI will provide the highest positive impact on economic growth. The second combination of variables that might have an aggregate value is FDI and exports. If policies to attract FDI are directed towards the investment of physical and technological infrastructures to support export, synergies might arise to foster economic growth. Finally, foreign aid remains a key element to support Fiji's economy, especially during times of special hardship such as natural disasters.

For the conducting of the current study, a due care has been taken while data collection, modelling and representation of results; nevertheless, the study can further be enhanced by splitting positive economic growth periods and negative ones in order to improve the robustness of the results. The combined effect of foreign aid and FDI will also be addressed during these periods in the future line of research. Additionally, we also plan to conduct a macroeconomic modelling of the data of Pacific countries to understand the overall effect of foreign exchange earnings in each region, in order to accomplish the successful allocation of scarce funds to foster economic growth. Finally, the growth of national income will be used in the following research as a proxy to economic growth in order to compare and contrast the results for the present study.

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