Remittances vis-à-vis bank credit and investments in Pacific island countries: The case of Fiji

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Contents

Abstract

This paper is the first to investigate the impact of international remittances on bank credit and household investment in the Pacific Island context. Using Fiji's Household Income and Expenditure Survey (HIES) data for the period 2013-14 and OLS and probit estimations, results indicate positive relationships. Policy implications are discussed.

Keywords: remittances, bank credit, investments, Fiji,

1. Introduction

Remittances—the transmission of money and goods to households by migrant workers for reasons of altruism, insurance and investment—have increased steadily over the years to become a substantial source of foreign exchange earnings for world economies, especially developing countries such as India, China, Mexico, the Philippines, Vietnam, and the Pacific Island Countries (World Bank, 2019). For example, in 2018, remittance flows to low- and middle-income countries reached US$529 billion, more than the Gross Domestic Product (GDP) of an economy like Fiji, and substantially more than the official development aid to the region. In the same period, global remittances, including to high income countries, reached US$689 billion. Even as global growth moderates, remittances to low- and middle-income countries in 2019 are forecasted to grow and reach US$549 billion; global remittances are expected to reach US$715 billion. Not only do such remittances play a crucial role in total international capital flows but they also boost the economic growth of countries particularly where financial systems remain less developed (Giuliano and Ruiz-Arranz, 2009).

Not surprisingly then, studies investigating the impact of remittances on various micro and macro-economic variables such as poverty, financial inclusion, labour supply and participation, consumption, exchange rates, foreign reserves, economic growth, financial development, health, education, investment, and entrepreneurial activity have proliferated concurrently (e.g., Catrinescu et al., 2009; Combes and Ebeke, 2011; Cooray, 2012; Gupta, Pattillo, and Wagh, 2009). Studies have encompassed many regions and countries as well––such as Sub-Sahara African, Latin America, and South Asia. The results, overall, appear mixed at best. For instance, while some studies find a positive relationship between remittances and poverty (e.g., Adams and Page, 2005; Acosta et al., 2008; Lokshin, Bontch-Osmolovski, and Glinskaya, 2010); others document a negative correlation between remittances and income inequality (e.g. Barham and Boucher, 1998; Adams and Cuecuecha, 2010a).

In light of the growing significance of remittances in household and national incomes and its expected and substantiated pertinent implications for various micro and macro variables, more studies are clearly required to better understand relationships from at least a policy perspective. And, one region where this is aptly required is the Pacific Island Countries (PICs)—amongst the world's leading recipients of international remittances. For example, in 2007, 2008 and 2014, according to World Bank reports, Tonga and Samoa were amongst the top 10 recipients of remittances relative to GDP. In 2017, Tonga was second only to Kyrgyzstan as the largest recipient of remittances.

However, economic growth, poverty, inequality, financial development, financial inclusion, investment, and all other micro and macro variables that remittances are expected to positively influence remain constant and major challenges in the region. For example, in Fiji, the share of population below the National Poverty Line remains high, averaging 31% over the last decade. The 2014 United Nations Development Program Report on Vulnerability and Exclusion in PICs highlights that one in four people are now living below national basic-needs poverty line; and have limited access to essential services such as education and health. Obesity, diabetes, and other non-communicable diseases are on the rise throughout the region.

The foregoing scenario then provides an interesting lab test for investigating the impact of remittances on various micro and macro variables. A few previous studies have investigated some relationships. For example, Sami (2013) finds a positive long run relationship between banking sector development, remittances and economic growth in Fiji. Jayaraman et al. (2009), in the case of Samoa, finds a positive association between remittances and economic growth, qualified by the scale and intensity of financial development. In the case of both Samoa and Tonga, inward remittances lead to growth in economic activities, by adding to the liquidity in the banking system, which in turn enhances credit to the private sector. The findings of positive impact of remittances on output are consistent with the findings of empirical studies undertaken in other regions (Guiliano and Ruiz-Arranz, 2009). It also emerges that growth is directly associated with financial sector development in Samoa and Tonga, which is in line with the findings of other studies (King and Levine, 1993, Levine et al., 2000, Beck and Levine, 2004).

However, these studies have not considered the impact of remittances on bank credit and investments (in real estate, interest baring bank deposits, etc.). The issue of how remittance earnings are spent and invested has been widely debated. Some studies find that international remittances are spent mostly on consumption goods (for example, food and consumer goods), which has little, if any, positive effect on the broader economy. Other studies find that remittances tend to be spent on investment goods (for example, education, housing), which can help build human and physical capital in developing economies. Chami et al. (2003), for example, find that a significant proportion of remittances is spent on consumption goods. Adams and Cuecuecha (2010b), on the other hand, find households receiving international remittances spend more on education and housing.

Our study fills this gap in the literature on remittances vis-à-vis investments in the PICs, using Fiji as a case study and the 2013-14 HIES data. Fiji's case is interesting from other perspectives as well. While it shares the usual socio-economic, geo-political characteristics of the PICs—small scale, scattered, vulnerable, open economies—it is the only country in the region to have undergone four military coup d'états—1987, 1988, 2001 and 2006. It is also the only country in the region with two major ethnic groups—indigenous Fijians (*I*Taukei) and British-indentured Indians from India[1] (Indo-Fijians)[2]. As could be imagined, the political coups have driven loads of Indo-Fijians to migrate, with Australia, New Zealand, Canada and the U.S. as major destinations. These unique characteristics are likely to have interesting implications for international remittances.

Using OLS and probit estimations, our study shows positive impacts of remittances on loan amount and income. That is, remittances positively influence the amount of loans that households obtain, which could be used for small business investment or consumption. Remittances are also an important source of investment in capital markets and real estate, fuelling further developments in these market segments. These investments can be used by the recipients to build collateral and access credit markets as well as capital injection for family businesses, enhancing entrepreneurship and reducing unemployment in the country. Although consumption may not be seen as a productive investment, any remittance dollar spent by recipients creates a multiplier effect for the economy as it increases demand for services and products that may in turn lead to the need for more workers hence job creation.

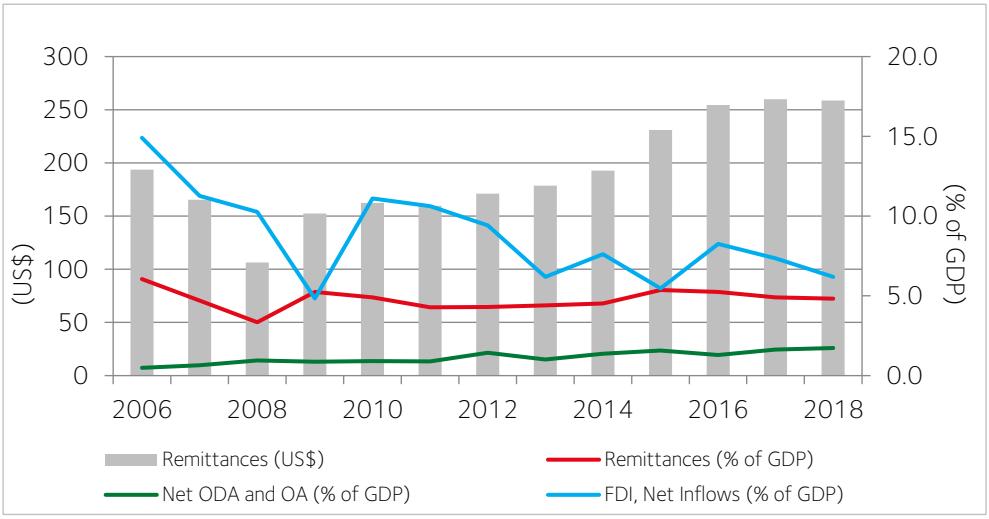
The rest of our study is structured as follows. Section 2 provides the study context. Section 3 outlines data, summary statistics, and research methods. Section 4 provides empirical results. Section 5 concludes with some policy implications.

2. Study context

It is estimated that thousands of Fijians have migrated to foreign lands since 1970, when Fiji gained independence from its British colonisers. During the 1978–1986 period, Indo-Fijians represented 83.8 percent of all immigrants leaving Fiji, which increased to 89.2 percent during the 1987–1996 period. It is estimated that for the period 1996–2017, more than around 95,000 have emigrated overseas, which is about 10-11 percent of the total population. The post-independence migration trends were for reasons of insecurity and uncertainty associated with independence (Mohanty, 2001). Subsequent reasons include favourable changes to immigration laws abroad and insecurity relating to the political coups in the country. The preferred destinations have been Australia, New Zealand, Canada and the US.

While Fiji has thus experienced massive exodus of its citizens, there has also been a positive outcome of this—a surge in remittances. By 2018, as *Figure 1* shows, remittances had reached 4.8 percent of GDP, lower than net Foreign Domestic Investment but higher than net Official development assistance inflows and second only to tourism in the country's foreign exchange earnings.

Figure 1. Net inflows of foreign exchange earnings to Fiji, 2006-2018



Source: World Bank Indicators.

Remittances have become a key source of income at the household level when it is received regularly from family members, relatives and friends living and/or working overseas and/or other parts of Fiji. Gift on the other hand is considered as one-off transaction that is often received from family and relatives including other non-household member on occasions such as marriage, birthdays, etc. Such gifts can be prominent in the Pacific due to household's close attachment to their culture and tradition. As shown in *Table 1* regarding types of household income, remittances only represented 4 percent of total household income in 2002. By 2008, remittances had more than doubled to 9 percent and further to 11 percent by 2013. By 2013, it ranked second after permanent wages and salaries.

Table 1. Types of household incomes (%)

Income sources	2002–2003	2008–2009	2013–2014
Permanent wages and salary	42.6	44.1	61.0
Casual wages	11.4	9.6	7.0
Agriculture business	9.9	7.1	9.1
Commercial business	7.3	4.1	4.5
Subsistence	7.6	5.2	4.9
Remittances and gifts	4.2	8.5	10.5
Other income	17.1	21.4	3.0
Total	100	100	100

Source: Fiji Bureau of Statistics, HIES Report.

The bulk of foreign remittance (70 percent) appears to flow to urban areas, while an average of around 20 percent is received by those in rural areas[3], which is higher than total bank loans to the agriculture sector for the same years.[4] It is noted that the actual amount of foreign remittances might be larger for two reasons: the HIES surveys rely only on a sample size, and the Reserve Bank of Fiji data capture remittances via formal channels only. As such, the real contribution of remittances is believed to be understated due to considerable remittances via informal channels (Brown and Ahlburg, 1999). This in part is due to the high transaction cost involved in sending money through the banking system (Irving, Mohapatra, and Ratha, 2010).

3. Data, summary statistics and research methods

3.1 Data

Data used in this study is sourced from the national Household Income and Expenditure Survey (HIES) 2013-14, conducted by the Fiji Bureau of Statistics in Fiji during the period March 2013 to February 2014. HIES is a convenient and a key means of gathering socio-economic data for the formulation of Government's economic and social plans and policies. The survey collected data at both the national and local levels from 6,020 households located in 602 enumeration areas. The comprehensive survey covered a wide range of issues categorised under five schedules: (i) demographic, economic activity and housing particulars; (ii) expenditures on household utilities, education, health, etc.; (iii) other household cash expenditures (personal diary); (iv) household income; and (v) shocks and coping strategies. We use data and information from the following two surveyed questions: (1) what was the amount of regular remittances received from relatives and friends overseas in a month and year? and (2) what was the value of gift received in cash in a month and year?

3.2 Summary statistics

Table 2 shows the descriptive statistics of variables used in this study. As reported, the regular remittances households received from relatives and friends overseas are, on average, $1,951, with the maximum levels reaching $526,329. In the sample, around 21.6 percent of households received remittances from their relatives and friends abroad, equivalent to 132 households. The mean of loan amount borrowed from banks is $20,874, while the average household income is $22,638, with the highest level of household income at around $975,016. In terms of location, about 52.0 percent of households, on average, are located in urban areas. Regarding consumption, households on average spent approximate $1,026 on goods and other demands, which accounts for 4.5 percent of income. The average mean of total businesses observed in the sample is $873, including building construction, manufacturing, other own account business, transport, and wholesale-retail. Further, households obtain total transfer, on average, of $3,071, which is approximately five times higher than the mean of total other income ($584). In the sample, we see the mean of total value from agriculture at $1,849 and the value from gifts is around $453.

In terms of demography, the data shows that there are 3 adults, on average, per household, while the mean of household size is 4.6 persons. Around 84.0 percent of households are headed by males and 16.7 percent are observed to graduate from higher education. The share of married household head is 78.6 percent and the average age is 49. In the sample, there are 64.5 percent of households using public transport. The shares of households holding the ethnicity of iTaukei and Indo-Fijians are 55.4 percent and 40.3 percent, respectively.

Table 2: Summary statistics

Variable	Description	Obs.	Mean	Std. Dev.	Min	Max
Remint	Regular remittances that households received from relatives and friends overseas	6,100	1,951.271	12,507.950	0.000	526,329.000
Bank credit	The value of loan amount borrowed from banks	829	20,874.440	50,961.720	22.000	700,000.000
Income	The level of household's main income	6,100	22,637.520	31,615.000	1,124.640	975,015.800
Other income	The level of household's other income	6,100	584.124	4,801.880	0.000	295,000.000
Urban	1 if households are located in urban areas; 0 otherwise	6,100	0.521	0.500	0.000	1.000
Consumption	The level of household's consumption	6,100	1,025.850	1,567.043	0.000	21,060.000
Business	The total income from running a business by households, including building construction, manufacturing, other own account business, transport, and wholesale-retail	6,100	873.252	3,600.973	0.000	78,584.000
Total transfer	The value of total transfer	6,100	3,070.571	13,991.740	0.000	548,329.400
Agri	The income value from agricultural activities of a household	6,100	1,848.503	4,089.247	0.000	64,650.000
Gifts	The value of gifts	6,100	453.292	1,357.717	0.000	64,792.000
Adults	The number of adults per household	6,100	3.307	1.547	1.000	13.000
Hhsize	The number of family members per household	6,100	4.651	2.242	1.000	19.000
Malehead	1 if a household is headed by male; 0 otherwise	6,102	0.839	0.367	0.000	1.000
Higheduc	1 if the household head is highly educated; 0 otherwise	6,102	0.167	0.373	0.000	1.000
Married	1 if the household head is married; 0 otherwise	6,102	0.786	0.410	0.000	1.000
Age	Age of the household head	6,100	48.932	13.342	1.000	98.000
Agesq	Square of age of the household head	6,100	2,572.369	1,360.960	1.000	9,604.000
Pubtrans	1 if a household uses public transport; 0 otherwise	6,141	0.646	0.478	0.000	1.000
Itaukei	1 if the ethnicity is Itaukei; 0 otherwise	6,102	0.554	0.497	0.000	1.000
Indofijian	1 if the ethnicity is Indofijian; 0 otherwise	6,102	0.403	0.491	0.000	1.000

3.3 Research methods

We use the ordinary least squares (OLS) estimator in the baseline regressions to investigate the link between remittances and the size of bank loans. It is well known that the OLS technique is a method for estimating the unknown parameters in a linear regression model, with the goal of minimising the differences between the observed responses in a dataset and the responses predicted by the linear approximation of the data. The OLS estimator is consistent when the covariates are exogenous and there is no perfect multicollinearity. OLS requires very strong assumptions and conditions for it to be an optimal estimation strategy. For example, OLS is a good estimation strategy when the errors are homoscedastic and serially uncorrelated. Under these conditions, the method of OLS provides minimum-variance mean-unbiased estimation when the errors have finite variances. Under the additional assumption that the errors be normally distributed, OLS is the maximum likelihood estimator. The following OLS model is proposed to test the connection between remittances and loan amount borrowed from banks $\boldsymbol{Loan_i}$:

$$Loan_i = \alpha_0 + \alpha_1 Remittances_i + \alpha_2 X_i + \varepsilon_i \quad (1)$$

where the key independent variable $\boldsymbol{Remittances_i}$ is regular remittances that households received from relatives and friends overseas; X_i is the vector of the household and community characteristics of the i^{th} household that may affect the entrepreneurial decision; the parameter $\boldsymbol{\alpha_1}$ captures the effect of remittances on loan amount; $\boldsymbol{\alpha_2}$ is a vector of parameters associated with $\boldsymbol{X_i}$ in affecting loan amount; and $\boldsymbol{\varepsilon_i}$ is the error term.
The empirical framework of this research inquiring into probability of households receiving remittances have property income. Thus, we aim to estimate this likelihood by using probit model, while controlling for a host of other factors deemed to be relevant to investments. Equation (1) is used to estimate the likelihood that remittances from overseas lead to income from property investment:

$$Income_i^* = \beta_0 + \beta_1 Remittances_i + \beta_2 X_i + \varepsilon_i \quad (2)$$

where $\boldsymbol{Property\ income_i^*}$ is a latent variable of $\boldsymbol{Property\ Income_i}$ and given as:

$$Income_i = \begin{cases} 1\ if\ Income_i^* > 0 \\ 0\ otherwise \end{cases} \quad (3)$$

where the parameter $\boldsymbol{\beta_1}$ measures the average impact of the remittances on household income; $\boldsymbol{\beta_2}$ is a vector of coefficients associated with X_i in affecting income.

An important concern when we investigate the relationship between remittances and household income is of the presence of endogeneity of remittances that has been highlighted in the literature in case of a correlation between the explanatory variables and the error term. For example, as argued by Catrinescu et al. (2009), the estimated coefficient might be biased if the error term is autocorrelated due to misspecification. This may happen when there are relevant explanatory variables which are omitted from the model, or when the covariates are measured with error. In such cases, econometric estimations may produce biased and inconsistent estimates, leading to potential endogeneity of the key independent variable *remittances*. Similarly, Giuliano and Ruiz-Arranz (2009) argue that endogeneity might arise from the overstatement of the magnitude of remittances in association with income at the national level. De and Ratha (2012) emphasise that endogeneity of remittances may be potential due to both simultaneity bias and omitted variables when the decision to receive

remittances and the remittance amount depend on various outcome variables, such as children's education and changes in consumption patterns. Thus, to address the endogeneity concerns, instrumental variable (IV) regressions are applied. However, if a strong instrument is available, consistent estimates may be obtained. An instrument is a variable that does not itself belong on the right-hand side of the model as an explanatory variable. It is not correlated with the regression error term, but is strongly correlated with the endogenous explanatory variable, conditional on the other independent variables (De and Ratha, 2012). The diagram for instrumental variable strategy is illustrated in *Figure 2* as follows:

Figure 2. Diagram for IV strategy

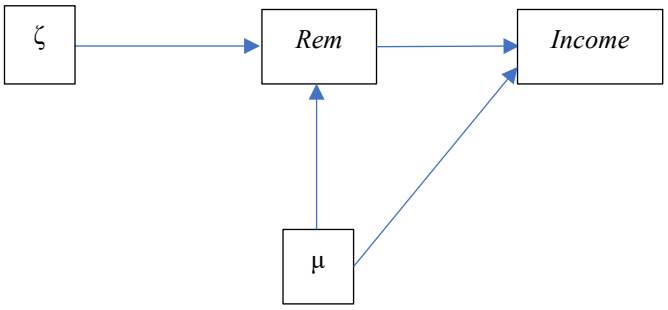


Figure 2 shows that instrumental variable ζ is associated with *Remittances* but not with ***Income***. It is possible that ζ and ***Income*** might be correlated, but the only way this correlation takes place is through the indirect path of ζ being correlated with *Remittances* which, in turn, determines ***Income***. The more direct path of ζ being an independent variable in the model for ***Income*** is ruled out (Cameron and Trivedi, 2005).

4. Empirical results

4.1 Endogeneity

As argued previously, there might be potential endogeneity of remittances. Extant literature has highlighted several techniques to deal with endogeneity, such as using the system generalised method of moments (SGMM) (Giuliano and Ruiz-Arranz, 2009) or the Anderson-Hsiao method (Catrinescu et al., 2009). An advantage of using these techniques is to utilise internal instruments to address endogeneity; however, these methods are applicable in the case of panel dynamics and, in most cases, on a national-level dataset of multiple countries. Our study follows a study by Adams and Cuecuecha (2010) on a household-level data sample to adopt the instrumental variable econometric approach to examine whether our key independent variable *Remittances* is endogenous. As highlighted by Adams and Cuecuecha (2010), distance to railroad stations represents a good instrument because of its nexus with migration costs and the need for sending migrants in the past; thus, it is correlated with the development of present migrant social networks but uncorrelated with the household expenditure patterns. Due to our data limitation in providing the distance to railroad stations, we employ another transport-related variable public transport to be an instrument. Further, as discussed previously that Fiji is the only country in the region where British-indentured Indians from India *Indo-Fijians* is a major ethnic group, we suppose that the ethnicity-related variables to correlate with sending migrants overseas. As such, we select two instruments, including public transport and Indo-Fijians. Test of endogeneity, validity, relevance, and power of the instruments are presented in *Table 3*.

Table 3. Tests of endogeneity

	Remittances and bank credit		Remittances and income	
	Panel [1]		Panel [2]	
	Chi^2 stats	*P*-value	Chi^2 stats	*P*-value
Hausman test of endogeneity	1.618	[0.203]	1.638	[0.201]
Hansen J test of overidentification	0.441	[0.506]	0.941	[0.332]
Kleibergen-Paap LM test of underidentification	5.205	[0.074]	4.833	[0.089]
Anderson-Rubin Wald test of weak instrument robust inference	2.940	[0.230]	2.860	[0.239]

This study performs tests of endogeneity of remittances on bank credit (Panel [1]) and remittances on income (Panel [2]). First, in both Panels [1] and [2], the Hausman test of endogeneity shows insignificant Chi^2 statistics, which implies that we cannot reject the null hypothesis of an exogenous specified independent variable *(Remittances)*. Thus, the endogeneity of remittances does not impose in our specifications with bank credit and income. Second, the Hansen J test of over-identification shows insignificant Chi^2 statistics in both Panels with *P*-values > 0.10, indicating that the null hypothesis of overidentified specifications cannot be rejected, and that our models are exactly identified. The Hansen J test statistics also imply the validity of our instruments in the sense that the two instruments are uncorrelated with the error term and valid to address the endogeneity problem (Hayashi, 2000).

Third, the significant Chi^2 statistics from the Kleibergen-Paap LM test of under-identification indicate that our specifications are under-identified (Kleibergen and Paap, 2006), thus suggesting the relevance of our instruments that are correlated with the suspected endogenous variable. Last, the Anderson-Rubin Wald test of weak instrument robust inference shows insignificant Chi^2 statistics, implying that we cannot reject the null hypothesis of valid orthogonality conditions, hence confirming an adequate power of our instruments.

As endogeneity of remittances is not imposed in our specifications, we demonstrate the empirical results of the impacts of remittances on bank credit and income in the next sections by using OLS and probit estimations.

4.2 Remittances and bank credit

Table 4 reports estimated results of the OLS regressions for the amount of loan. We analyse the relationship between remittances and loan amount under four specifications. In Model [1], we test if remittances have an effect on loan amount, conditional on other control variables in relation to general household demographic characteristics. In Model [2], we further control for household income and expense. Apart from those characteristics, we add household head related variables in Model [3], such as gender, education level, and marital status, among others. Model [4] consists of all mentioned characteristics of both household and household head.

Generally, the results show a significant and positive coefficient of remittances, suggesting that remittances help to boost the amount that a household borrows from banks. It appears that the higher amount of international remittances increases the amount of loans, confirming a positive link between remittances and this measure of bank credit. Holding other factors unchanged, a $1 increase of regular remittances leads to an increase of loan amount by 1.4 percent (Model [1]), 1.9 percent (Model [2]), and around 1.8 percent (Models [3] and [4]). It could be the case that households receiving remittances use remittances as collateral or they possess assets that could be pledged to borrow greater amounts compared to the households not receiving remittances. It is also clear that this linkage is robust and remains significant in different specifications.

We also find the relationship between control variables and loan amount. As shown, urban yields a significant and positive coefficient in all four specifications, suggesting that households located in urban areas tend to borrow larger amounts of loan. Similarly, the coefficient of income is significant and positive in Models [2], [3], and [4], showing that the higher income the household has, the higher loan amount they can borrow. Adversely, the significant and negative coefficient of consumption shows that households having a higher level of consumptions are approved a smaller loan amount.

The positive association of remittances and bank credit can be explained from both demand and supply sides. From the lender's perspective, banks tend to express their interest in capturing remittances for the financial system, which leads to their specific targeted receivers. From the borrower's perspective, the remittance-receiving borrowers might have better knowledge of financial products if migrants transmit financial knowledge together with remittances, which then reduces the problem of information asymmetry from the demand side (Roa, 2015). In this case, the remittance-receiving borrowers appear to have their creditworthiness evaluated by the banks at a higher level, then increasing their likelihood of loans granted. On one hand, remittances and bank credit, in some cases, may substitute for

each other, especially when remittances are used to invest in human or physical capital in countries where financial systems remain underdeveloped (Calero, Bedi, and Sparrow, 2009). On the other hand, remittances and financial services are likely to complement each other because remittance inflows may act as a collateral for loans (Ambrosius and Cuecuecha, 2016). All in all, regardless of either function of remittances, this source of earnings play an important role in increasing the loan amount that households borrow from banks.

Table 4. Remittances and bank credit

	(OLS) Model [1]	(OLS) Model [2]	(OLS) Model [3]	(OLS) Model [4]
Remint	1.431**	1.867**	1.781**	1.759**
	(0.589)	(0.725)	(0.723)	(0.721)
Urban (Yes = 1)	21330.375***	11710.076***	11799.953***	11880.622***
	(2845.981)	(2457.771)	(2636.777)	(2744.915)
Income		0.225***	0.216***	0.214***
		(0.044)	(0.045)	(0.045)
Other income		3.598***	3.648***	3.669***
		(1.170)	(1.157)	(1.161)
Consumption		-2.380***	-2.449***	-2.252**
		(0.804)	(0.908)	(0.943)
Business		-0.032	-0.048	-0.051
		(0.289)	(0.276)	(0.282)
Total transfer		-0.438	-0.387	-0.368
		(0.502)	(0.513)	(0.510)
Agri		0.028	-0.010	0.000
		(0.144)	(0.143)	(0.145)
Gifts		-0.251	-0.170	-0.149
		(0.411)	(0.408)	(0.408)
Adults	-54.194	-1003.513	-719.221	-736.382
	(1467.842)	(1309.334)	(1317.734)	(1284.574)
Hhsize	-1470.812	-837.470	-1005.470	-1003.149
	(1173.773)	(1047.940)	(1060.313)	(1051.585)
Malehead (Yes = 1)			-2539.226	-2794.914
			(5836.729)	(5811.660)
Higheduc (Yes = 1)			-5349.457	-5146.209
			(4525.223)	(4503.021)
Married (Yes = 1)			-2440.408	-2377.422
			(4826.985)	(4916.518)
Age			-108.989	-78.638
			(823.445)	(820.717)
Agesq			-2.434	-2.767
			(7.722)	(7.685)
Observations	790	790	790	790
R-squared	0.066	0.228	0.235	0.236

Notes: Dependent variable is loan amount. Key independent variable is remittances that households received from relatives and friends overseas. Cell values represent the coefficient estimations of individual variables, followed by standard errors in parentheses. ***, **, and * denote the significance at 1%, 5%, and 10% levels, respectively. Constant terms are included in all regressions.

4.3 Remittances and Investments

Table 5 reports the results of estimations for households receiving property income from investments. The variables of main interest are the amount of remittances (*Remint,* as in Models [1] and [2]) and binary variable *Drem*. We develop four specifications to test the impact of remittances on income, in which Models [1] and [2] examine *Remint* as a continuous variable denoting the amount of remittances that a household received from family and friends overseas, while Models [3] and [4] consider remittances as a dummy variable, which assumes value 1 if households receive remittances and 0 otherwise. Further, in Models [1] and [3], we examine a function of income on remittances and household demographic characteristics (e.g., location, marital status, age of household head, etc.). We further consider the effects of outflows (e.g., consumption) and inflows (e.g., business, transfer, etc.) along with remittances on household property income [Models [2] and [4]).

The results show that the amount of remittances increases the likelihood of receiving property income only in the absence of other income, indicating that due to the fact that money is fungible, the impact of remittances may not always be distinguishable from the impact of other sources of income. We find the significant and positive coefficient of remittances in Model [1] though the economic term is relatively small; however, it remains insignificant in Model [2]. In Models [3] and [4] where remittance is a binary variable, we confirm the positive impact of remittances on income by showing a statistically significant coefficient (0.273 and 0.265 in Models [3] and [4], respectively). This suggests that the receipt of remittances is strongly associated with likelihood of receiving property income.

Our finding of a positive linkage between remittances and household income is consistent with previous studies. For example, Walker and Brown (1995) find an important contribution of remittances to both savings and investment in the migrant-sending countries in the context of Tongan and Western Samoan migrant households. Similarly, Brown (2008) emphasise that remittances likely helps to reduce poverty and economic inequality in Fiji and Tonga. This finding is confirmed by Ngoma and Ismail (2013) who show that migrant remittances tend to ease liquidity constraints and generate spillover effects on human capital formation by facilitating more schooling opportunities. In the same vein, Amuedo-Dorantes and Pozo (2011) show that, remittance income positively matters for income smoothing for many households in Mexico.

Table 5. Remittances and total property income

	(Probit) Model [1]	(Probit) Model [2]	(Probit) Model [3]	(Probit) Model [4]
Remint	0.000***	0.000		
	(0.000)	(0.000)		
Drem (Yes = 1)			0.273***	0.265***
			(0.057)	(0.058)
Consumption		0.000***		0.000***
		(0.000)		(0.000)
Business		-0.000		-0.000
		(0.000)		(0.000)
Total transfer		0.000		0.000
		(0.000)		(0.000)
Agri		-0.000**		-0.000*
		(0.000)		(0.000)
Gifts		0.000*		0.000
		(0.000)		(0.000)
Urban (Yes = 1)	-0.230***	-0.183***	-0.234***	-0.180***
	(0.058)	(0.069)	(0.058)	(0.068)
Adults	-0.028	-0.026	-0.029	-0.029
	(0.025)	(0.025)	(0.025)	(0.025)
Hhsize	0.061***	0.050***	0.063***	0.052***
	(0.017)	(0.017)	(0.017)	(0.017)
Malehead	0.030	0.014	0.031	0.015
	(0.105)	(0.105)	(0.105)	(0.105)
Higheduc	0.027	0.026	0.014	0.016
	(0.081)	(0.081)	(0.081)	(0.081)
Married	-0.126	-0.115	-0.126	-0.115
	(0.094)	(0.094)	(0.094)	(0.095)
Age	0.016	0.018	0.014	0.017
	(0.012)	(0.012)	(0.012)	(0.012)
Agesq	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	6098	6098	6098	6098
Pseudo R-squared	0.026	0.035	0.033	0.042

Notes: Dependent variable is property income from investments. Key independent variable is remittances that households received from relatives and friends overseas. Cell values represent the marginal effects of individual variables, followed by standard errors in parentheses. ***, **, and * denote the significance at 1%, 5%, and 10% levels, respectively. Constant terms are included in all regressions.

5. Conclusion and policy implications

In this paper, we investigate the impacts of international remittances on bank credit and household investment in the context of PICs, using the Household Income and Expenditure Survey conducted in Fiji in 2013-14. Our empirical results show that remittances have a significant impact on the amount of bank credit and a strong likelihood that households receiving remittances obtain income from investing in properties. This has major policy implications that should be dissected, explored and developed, if we are to maximise on the investment potential of remittances in Fiji.

The findings could be an indication or interpreted as the result of the strong collaboration between RBF and financial institutions in rolling out initiatives for greater financial inclusion and the effective awareness campaign by commercial banks on investment services and products, specifically, real estate. The investment in property market we can assume is motivated by the attractiveness of the capital gains and appreciating value of the asset. To leverage off the findings of the study, below are some policy suggestions:

1. *Financial literacy and awareness campaign:* There are opportunities for the government and investment intermediaries (such as banks and capital markets) to collaborate in adopting formal measures aimed at encouraging migrants to become investors. Joint financial literacy and investment awareness campaigns to be targeted at remitters in collaboration with Fiji Embassy offices abroad.

2. *Developing innovative product and services to redirect remittances towards investment purposes:* To redirect a portion of remittances to investments, financial service providers might consider being more pro-active to provide various market-driven forms of remittance-based savings, insurance, pension, investment or credit products for small business start-ups or other investment purposes. Countries such as the Philippines, El Salvador, Guatemala and most recent Samoa have launched similar products and Fiji can learn from their experiences and follow suit.

3. *Reducing the cost of remitting funds to Fiji:* High remittance costs in Fiji discourage migrants from sending money back home or using formal channels. Thus, a low-remittance-fees policy might be considered to encourage migrants to send money back home as well as capture those who may initially use informal cheaper channels and direct them to formal systems.

4. *Introducing remittance linked saving account for the remittance recipients* before they have access to more technical products, such as credits, insurance, and credit cards. A basic saving account is one of the most effective ways to ensure that the unbanked people step into formal financial system. As such, financial institutions have a key role to play by providing incentives. There are other platforms which the remitters could utilise to save their money, for instance, direct voluntary contribution to FNPF, to unit trusts saving accounts and shares on the South Pacific Stock Exchange through the Intermediaries.

Notes and references

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Notes

1 Both Fiji and India were colonies of the British Empire.

2 All citizens of the country are now officially called *Fijians*.

3 HIES reports 2002-2003, 2008-2009 and 2013-2014. 2015 Financial Services Demand Side Survey–Fiji.

4 Total bank loans to the agriculture sector in 2008 and 2013 remained at $32 million and $39 million, respectively.

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