Sharing Norm Pressures and Community Remittances: Evidence from a Natural Disaster in the Pacific Islands

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Abstract

Migrants are often subject to social pressures to remit beyond their own households, to share the benefits of migration with the wider community in their home country; these are 'community remittances'. We hypothesize that community sharing norm pressures are stronger in locations with more extensive home-community networks. We also postulate that the responsiveness of remittances to sharing pressures is subject to diminishing returns, attributable to a donor fatigue effect. Using customized survey data from three Polynesian migrant groups in metropolitan and regional Australia, we estimate double-hurdle regression models of community remittances. To identify the effects of sharing norm pressures we exploit an exogenous (cyclone) shock to home country incomes affecting one sub-group. We find strong evidence in support of the postulated responsiveness of community remittances to location-related differences in sharing norm pressures, and the presence of a donor fatigue effect. The policy implications are discussed.

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Key words: remittances, sharing norms, social pressures, exogenous shocks, Pacific islands, double-hurdle

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1. Introduction

The burgeoning economics literature on migration and remittances has largely overlooked the importance of remittances beyond migrants' own households and their implications for analysis of the determinants and effects of remittances in the receiving countries.[1] In this paper we examine the determinants of remittances beyond the migrants' own households, specifically in relation to the phenomenon of 'sharing norms' which has been garnering increasing interest among development economists in recent times. In poor communities it is not uncommon for those with money to find themselves pressurized by friends, relatives and community organizations into sharing their earnings and assets, including in-kind support, such as rent-free accommodation. In early development economics literature Arthur Lewis recognized the importance of 'forced redistribution' brought about by the social pressures on successful kinship members who he described as being "…besieged by increased demands for support from a large number of distant relations … [and, obliged] to share the reward with many others whose claims he does not recognize" (1956: 114).

While such social norms provide important insurance and social protection in situations where formal social security systems are largely absent, they can also constitute an obstacle to economic development. For Lewis, a necessary ingredient of economic growth is initiative, which can be stifled by sharing obligations. Similarly, Bauer and Yamey argued that sharing norms can affect effort adversely, minimizing "…the inducement for people to improve their own position" (1957: 66). In a more recent theoretical paper Hoff and Sen (2006) conceptualize systems of kinship sharing obligations as a 'poverty trap'.

In recent empirical studies in development economics sharing norm pressures have received increased attention as an obstacle to the earners' control over the use of their income, and as a deterrent to saving and investment, and hence, to economic growth and development. Such behaviours and their effects have been studied in a number of empirical contexts (Baland *et al.* 2011; di Falco and Bulte 2011; Duflo and Udry 2004; Fafchamps *et al.* 2011; Platteau 2000).

We extend the concept of sharing norms to the analysis of migrants' remittances to other households and community organisations in the home country, henceforth termed 'community remittances'. More specifically, we argue that migrants are often perceived as

[1] A notable exception is the paper by DeVoretz and Vadean (2006) which we discuss in the next section.

duty-bound to share their earnings with other, non-migrant households and community organisations back home, and, accordingly, can come under strong community pressures to share their earnings more widely, beyond their immediate dependents in their host country and home country households. This pressure can be brought to bear on migrants either through the home-country networks in the host countries, or, as in the context of our study of Polynesian migrants in Australia, through fund-raising visits by representatives of home country community groups to the host country cities where the migrants are most heavily concentrated. In relation to Samoan migrants in New Zealand for example, Macpherson and Macpherson (2009) discuss in some detail the various mechanisms at play to enforce commitment to the broader home country community, including strong pressures on newly arrived migrants to ensure that they are immediately incorporated into the local community networks:

> … [which] ensured that kinship remained important and that most migrants remained connected to the villages and families from which they had migrated. This connectedness was reflected in the flow of people, ideas, money and resources between the origin and enclave communities which became transnational Samoa. (2009: 77)

It has also been well documented in the sociological and anthropological migration literature how community groups including churches and other organizations from the Pacific islands organise visits (known as *tere patis*) to the major migrant destination cities such as Auckland, Wellington, Sydney and Melbourne, specifically for the purpose of seeking organised donations (Alexeyeff 2009; Lee 2009; Loomis 1990; Macpherson and Macpherson 2009). So regular have these organised fund-raising visits become, that leaders from the Pacific islander communities in Auckland have at times resorted to lobbying their governments back home to impose restrictions on such organised fund-raising visits (Loomis 1990).[2] Lee (2011) also finds that second-generation Tongan migrants in Australia have become increasingly resentful of the commitment their parents' generation expresses towards supporting their home country kinship groups, at the cost of funding consumption and

[2] As early as the mid-1980s the Cook Island community in new Zealand lobbied their home country governments to impose a five-year moratorium on fund-raising tours (Loomis 1990). In 2012 an expatriate Samoan politician in New Zealand attempted to limit the fundraising activities of a Samoan delegation to New Zealand. This provoked strong retaliation from community groups and churches in Samoan media, which called upon Samoans in New Zealand not to vote for him at the next election (Hill 2012). He subsequently retracted his statement (Keresoma 2012).

investment within the household, including their education. These kinds of sharing norms and obligations, and the associated community pressures, are also brought to bear on remittance-receiving households in the migrants' home country. Pacific island households in receipt of remittances from migrants abroad are expected to share with their local community, especially when they are exposed to events such as weddings, funerals or other major ceremonies (Macpherson and Macpherson 2009).[3]

The presence of strong sharing norm pressures is important from an economic perspective given that they effectively constrain and shape the allocation of any discretionary income or potential saving of migrants with (or, perceived to have) access to 'shareable' resources. Migrants wanting to avoid the regular pressures brought to bear on them by the transnational community may choose to move away from the metropolitan networks. Interviews with Cook Islander migrants in Auckland suggested they were moving to Australia specifically " … to escape the burden of the reciprocal obligations operative in the migrant community in New Zealand" (Loomis 1990: 65). Similarly, the desire to escape from sharing norm pressures could influence a migrant's choice of residential location within a country, such as moving from a large city with an extensive home country community network, to a regional area. And, even where the migrant chooses to live in such a location for other reasons, such as employment, it would still follow that there would be less exposure to regular community pressure to share one's income and assets beyond the immediate household. Investigation of this hypothesis is the main focus of this paper.

Our empirical analysis of the presence and effects of sharing norm pressures exploits a unique dataset compiled by the authors from a survey of Pacific island migrants in Australia, which has three distinct advantages over previous remittances survey data for this region. First, availability of disaggregated data on remittances in relation to the category of recipient allows for the estimation of separate remittances functions for remittances to the migrants' own household in the home country and to others in the community beyond the migrants' household. Second, the survey included migrants living in both regional (Riverina) and metropolitan localities (Sydney) in New South Wales, with those in the former being less exposed to the regular pressures prevalent among the extensive networks in the large cities

[3] Brown *et al* (2006) show, for instance, that internal transfers from remittance-receiving households to non-migrant households can, in some situations, be even greater in value than the remittances received.

where most Polynesian migrants are concentrated. Third, the survey included migrants from three country-of-origin groups within the Polynesian community – Samoans, Tongans, and Cook Islanders. The latter two unique features of the dataset enable us to assess the effect of variability in the strength of social pressures on remittance behaviour and provide us with an identification strategy to estimate remittance pressures, which we discuss below.

Earlier studies have exploited the occurrence of natural disasters or other exogenous shocks to incomes in the home country as an identification strategy for understanding remittance motives (Yang and Martínez 2006; Yang and Choi 2007). Following this, our identification strategy is based on the occurrence of a major exogenous shock to one of the groups that allows for the identification of social pressures on remittances. In 2010 cyclone *Pat* caused widespread devastation to the Cook Islands (TVNZ 2010). Thus, we have a catastrophic event that would affect the migrant household's decision about the sending of remittances both to the migrants' own households and to the wider community for the Cook Islands. No such catastrophic event was witnessed by the home communities in either Tonga or Samoa during this period.

A comparison between Cook Islander migrant households in metropolitan (Sydney) and regional (Riverina) locations and those of other countries should allow us to identify the presence of 'donor fatigue'(Eckel *et al.* 2007). Donor fatigue is identified as a declining rate of response to persistent calls for remittances from networks and organisations seeking funds for the wider community in the home countries. Specifically, the differential between Sydney- and Riverina-based households' remittances to the broader community in the home country should be, conditional on observable characteristics, strictly less for Cook Islanders than for migrants from a country where no catastrophic event occurred in the survey year. We expect the response to this shock from Cook Island households in Riverina to be stronger than the response of their counterparts in Sydney.

The rest of the paper is organized as follows: section 2 discusses the literature on 'sharing norms' and their implications for remittances behaviour, and presents the theoretical model underlying our econometric analysis; section 3 discusses the empirical strategy, the data, some descriptive statistics; section 4 presents the econometric results; section 5 discusses the main findings and identifies areas for further investigation.

2. Modelling the effects of 'sharing norm' pressures on remittances

Community Remittances

Our household utility maximisation model incorporating community remittances is a modified version of the model presented by DeVoretz and Vadean (2006). The household's utility function is given by:

$$u_i = u\left[c_i\left(C_i\right), s_i^f\left(R_i^f\right), s_i^p\left(R_i^p\right), s_i^g\left(R_i^{ch}\right)\right] \tag{1}$$

u_i represents household utility; c_i represents household consumption and $\frac{\partial c_i}{\partial C_i} > 0$; s_i^f are connections with family in home country and are positively dependent on remittances to that household, and $\frac{\partial s_i^f}{\partial R_i^f} > 0$; s_i^p are connections with other relatives and friends in the home country in other households which we assume to be positively related to remittances to persons outside the household, $\frac{\partial s_i^p}{\partial R_i^p} > 0$; and s_i^g represents connections with the broader community in the home country which we assume is positively related to remittances to church organisations and other community groups $\frac{\partial s_i^g}{\partial R_i^{ch}} > 0$. It is assumed that household income is allocated between consumption expenditure and remittances $Y_i = C_i + R_i^f + R_i^p + R_i^{ch}$, such that there is no borrowing or saving.

We assume that the household's utility function is separable across two groups: (a) traditional expenditures $c_i + s_i^f$; and (b) community relations outside the household $s_i^p + s_i^g$. Income will be allocated between these two categories $Y_i = Y_{i1} + Y_{i2}$ and utility takes the form:

$$u_i = u\left[u_{i1}\left(c_i + s_i^f\right), u_{i2}\left(s_i^p + s_i^g\right)\right] \tag{2}$$

Utility maximization entails the following equilibrium conditions:

$$\frac{\partial u_i}{\partial\left(c_i + s_i^f\right)} = \frac{\partial u_i}{\partial\left(s_i^p + s_i^g\right)} \tag{3}$$

$$\frac{\partial u_{i2}}{\partial\left(s_i^p\right)}=\frac{\partial u_{i2}}{\partial\left(s_i^g\right)} \tag{4}$$

The marginal utility from a unit of traditional household expenditures equals marginal utility from one more unit of community relations (outside the household) and the marginal utility associated with relations and friends outside the household is equal to the marginal utility derived from community relations. Remittances to relations and friends will be zero if:

$$\frac{\partial u_i}{\partial\left(s_i^p+s_i^g\right)}<\frac{\partial u_i}{\partial\left(c_i+s_i^f\right)} \tag{5}$$

or

$$\frac{\partial u_i}{\partial\left(s_i^p+s_i^g\right)}>\frac{\partial u_i}{\partial\left(c_i+s_i^f\right)}\bigcup\frac{\partial u_{i2}}{\partial\left(s_i^p\right)}<\frac{\partial u_{i2}}{\partial\left(s_i^g\right)};\forall R_i^p\in\left(0,Y_{i2}\right) \tag{6}$$

This will arise if the marginal utility derived from community relations is less than marginal utility from traditional expenditures or the marginal utility derived from community relations is greater than that derived from traditional expenditures but the household's marginal utility from relatives and friends outside the household is less than marginal utility from group/organisation relations. Otherwise remittances will be positive and determined by the equilibrium conditions subject to $c_i\left(C_i\right),s_i^f\left(R_i^f\right),s_i^p\left(R_i^p\right),and\ s_i^g\left(R_i^{ch}\right)$. In a similar fashion, remittances to groups and organisations will be zero if:

$$\frac{\partial u_i}{\partial\left(s_i^p+s_i^g\right)}<\frac{\partial u_i}{\partial\left(c_i+s_i^f\right)} \tag{7}$$

or

$$\frac{\partial u_i}{\partial\left(s_i^p+s_i^g\right)}>\frac{\partial u_i}{\partial\left(c_i+s_i^f\right)}\bigcup\frac{\partial u_{i2}}{\partial\left(s_i^g\right)}<\frac{\partial u_{i2}}{\partial\left(s_i^p\right)};\forall R_i^{ch}\in\left(0,Y_{i2}\right) \tag{8}$$

Otherwise remittances will be positive and determined by the equilibrium conditions subject to $c_i\left(C_i\right),s_i^f\left(R_i^f\right),s_i^p\left(R_i^p\right),and\ s_i^g\left(R_i^{ch}\right)$.

Social pressures to remit outside the household ('community remittances') will intensify if there is a general fall in incomes in the home country, just as remittances to the household will increase with a fall in income within the migrants' home country household.

Previous researchers have recognised that recipient household income and remittances are endogenously determined.[4] One strategy that researchers have relied on is to exploit the existence of negative exogenous income shocks to identify remittances' role as insurance (Yang and Choi 2007). Specifically, it is assumed that remittances respond in the following manner:

$$R_i^{fs} = -Z_i^{fs} + \gamma_i + \varepsilon_i \tag{9}$$

Where, abstracting from time, remittances to household *i* from household members overseas are determined by Z which is the transitory component of income and this depends on the state of the world (*s*), and an individual fixed effect γ that incorporates permanent income and a random component ε. We argue that a similar response to shocks exists for community remittances, such that:

$$R_i^{ps} = -\sum_{j=1}^{n} Z_j^{ps} + \gamma_i + \varepsilon_i \tag{10}$$

and

$$R_i^{chs} = -\sum_{j=1}^{n} Z_j^{chs} + \gamma_i + \varepsilon_i \tag{11}$$

where $i \neq j$. Hence, the first term on the right-hand side of the relatives and friends equation (10) represents the sum total of income shocks amongst households in that group, and, in the case of church organisations and community groups equation (11), the sum total of income shocks across the communities in which those organisations and churches minister. Shocks affecting these groups will increase community remittances. However as noted earlier, the channel for these shocks to impact on remittances is through social pressure from the community and church organisations rather than directly as in the case of an income shock in their own household. Large shocks in the community generate pressure to make remittances.

To operationalize the framework described above we proceed as follows. From our earlier discussion it is expected that regular social pressures would be stronger in large cities where the home country community organizations and networks are more dense and weaker in regional areas. Our initial step is to explore regional differences in remittances where

[4] For a useful review of the remittances literature which addresses endogeneity issues see Adams (2011).

location acts as a proxy for the level of social pressures faced by migrant households. More formally, our main hypothesis can be stated:

$$h_0 : SP_{urban} = SP_{regional}$$
$$h_1 : SP_{urban} > SP_{regional} \quad (12)$$

where SP_{urban} and $SP_{regional}$ are sharing norm pressures faced by migrant households in each area respectively. It is expected that h_0 will hold for remittances to family in the home country while h_1 will be true for community remittances to home country.

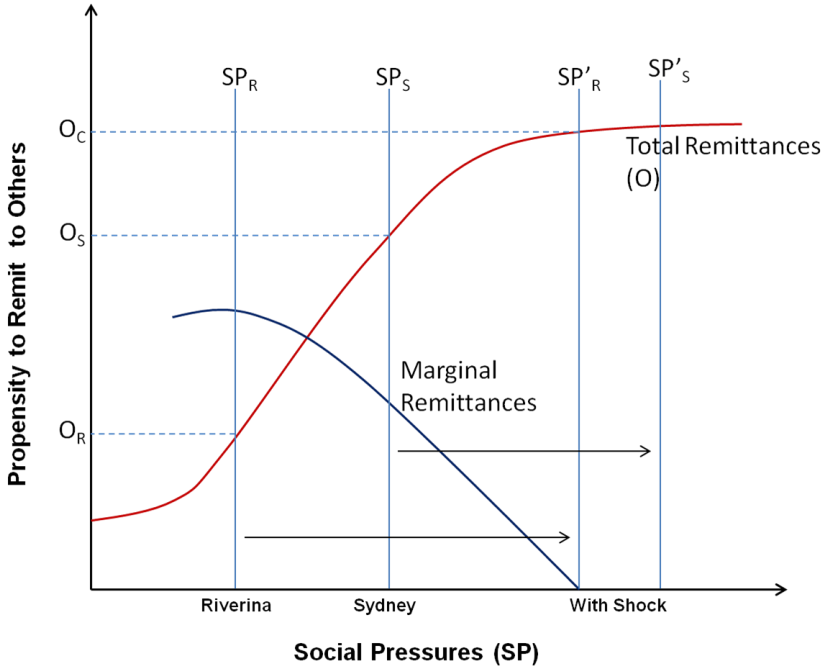
In relation to our hypotheses in equation (12) we expect that the presence of a major exogenous shock in *SP* affecting only the Cook Islander migrants would result in this group behaving differently to Tongans and Samoans. More specifically, we expect that in the context of a major catastrophe adversely affecting the incomes of many households, community remittances (to *Others*) will be greater than otherwise (Yang and Choi 2007).[5] However, the stronger regular social pressures to remit to *Others* that face metropolitan households (SP_{urban}) would generate a weaker response if they are subject to donor fatigue. As noted earlier, we see no reason not to expect the impact of the shock on remittances to the migrants' own, home country households to be similar in both locations. There is no correlation between households affected by the shock and the residential location of migrant households in Australia.

This hypothesis can be illustrated graphically as in Figure 1. We measure the aggregate level of remittances to *Others* (*O*) (community remittances) on the vertical axis and strength of sharing norm pressures (*SP*) on the horizontal axis, where *O* is positively related to *SP*, but, at a declining rate, given the presence of donor fatigue. We are not assuming that *O* is driven exclusively by *SP*. Following the model of charitable giving proposed by DellaVigna *et al*. (2012) we allow *O* to be determined partly by altruism, and partly by *SP*, where the amount attributable to *SP* is a function of the migrant's perceived social pressure cost of failing to fulfil remittance obligations in line with the community's expectations. In normal times, these social pressures will be weaker in more remote locations (SP_R in Figure 1) and remittances will be correspondingly lower ($O_{R)}$ in comparison with migrants living in

[5] *Others* consists of remittances to both community categories ; ie. to relatives and friends outside the migrant's household, and to community groups and organisations such as churches. In the empirical analysis we use the combined *Others* category as we have no basis for determining what factors influence a household's allocation of remittances between the two categories of community recipients.

metropolitan areas (SP_S and O_S). For example, in our data we identify that 26% of households in metropolitan locations belonged to community or social groups compared to 19% of households located in the regional areas; and, 73% of metropolitan and 61% of regional households were active members of churches.

Figure 1: Diminishing Returns to Sharing Norm Pressures



However, in the event of some major catastrophe in the home country, we argue there will be a differential effect across locations. *SP* increases for all migrants irrespective of location, as shown by the rightward movement of SP_R to SP'_R and SP_S to SP'_S, and a corresponding increase in aggregate community remittances for both regional and metropolitan migrants. The increase in aggregate community remittances associated with increased social pressures can come about either as a result of more potential remitters becoming actual remitters (i.e. would-be remitters become positive remitters), or, because existing remitters increase the amount they remit, or, some combination of these. However, as we expect there to be less donor fatigue among regional households, the increase in remittances to other households and organizations will be relatively stronger compared with metropolitan households.[6] Given the presence of diminishing returns to social pressure (donor

[6] Indeed, Eckel *et al.* (2007) conducted an experiment associated with charitable donations linked to Hurricane Katrina and found evidence of such donor fatigue, or what they termed, 'Katrina overload' . This occurred due

fatigue), the gap in aggregate community remittances of the two groups narrows. In Figure 1 it is assumed that their community remittances converge at O_C where the marginal return to *SP* approaches zero.

3. Empirical strategy, data and descriptive statistics

Modelling participation and level decisions

It was noted in the previous section that changes in social pressure can impact on both the propensity to remit and the level (or intensity) of remittances.[7] Our empirical analysis allows for the possibility that the determinants of each of these decisions, participation and level, should be modelled separately. Some households who are observed not to remit to other households and community groups do so not because of a financial constraint but for other reasons.

Remittances data typically include both remitters (remittances > 0) and non-remitters (remittances = 0). Consequently, the choice of statistical tool for modelling remittance decisions depends on the assumptions made about the non-remitting migrants' behaviour i.e. whether they never remit, or just happened not to remit in the observed time period (Wodajo 2008). This implies there are at least two types of non-remitting households: type 1 being those who never remit; type 2 being those who can be considered would-be remitters but who did not remit in the observed period due to household constraints and/or shocks.

If it is assumed that all non-remitting households in the sample are only type 1, that is, zero-remittances could only be caused by a decision never to remit, then the appropriate framework for analysing remittances would be a type 1 Tobit model, the standard Tobit model (Cameron and Trivedi 2005; Wooldridge 2010). The standard Tobit model allows for the incorporation of all observations including those censored at zero, without considering the type of these zero remittances. It assumes that the non-remittances arise only as a result of a corner solution (i.e. type 1), with the censoring point fixed at zero. In other words, the decision whether or not to remit and the amount of remittances sent effectively collapses into a single decision as in Brown (1997). If on the other hand it is assumed that the sample consists only of type 2 non-remitting households, i.e. zero remittances arise from the

to two factors; location and time. Those closer to the disaster area and those facing longer time periods of demand donated less.

[7] By 'propensity' we mean the probability of sending remittances in the observed period.

households' decision in the observed period not to remit, then the appropriate framework for analysis would be a sample selection model such as Heckman's two-step model[8] (Heckit) (Cameron and Trivedi 2005; Dustmann and Mestres 2008; Wodajo 2008; Wooldridge 2010). This model recognises the process of remitting to be a two-stage decision; first, whether to remit or not, and second, how much to remit. This allows for separate mechanisms to determine participation (whether to remit or not) and level (how much to remit), with all households assumed to be potential (or, would-be) remitters, implying that all zero remittances are of type 2.

The main problem with the Tobit and Heckman models is that they assume that non-remitting households are exclusively of one type or the other, type 1 or type 2 respectively. For a more complete analysis of remittances data, it is necessary to allow for the possibility of both types of non-remitters within the same framework. This requires a more flexible modelling framework than the standard Tobit or the Heckman models (Wooldridge 2010). Cragg (1971) proposed a two-part extension of the standard Tobit known as the 'double-hurdle' model, that deals with and econometrically disentangles the observed zeros (Wodajo 2008; Wooldridge 2010). This model assumes that zero remittances could be reported in both decision stages, where the zeros in stage 1 (participation decision) arise from those who never remit, and those in the second stage (level decision) arise from constraints in the migrant households. Cragg's double-hurdle model is an improvement on both the standard Tobit and Heckman models and more appropriate for analysing remittance data; it features both censoring and selection mechanisms, and allows for both types of zero-remittances.

In the double-hurdle model a migrant household has to overcome two hurdles in order to report remittances greater than zero to the home country (Cragg 1971). The participation and level equations of the double-hurdle model are similar to those in the Heckman two-step model, except the Heckman model does not allow for both types of zero-remittances. The first hurdle is represented by a Probit model and the second hurdle is represented by a standard linear regression model (Cragg 1971; Greene 2010):

$$\text{Prob}(y > 0 \mid \boldsymbol{x}) = \text{Prob}(\boldsymbol{x}'\beta + \varepsilon > 0 \mid \boldsymbol{x}) = \Phi(\boldsymbol{x}'\beta / \sigma) \tag{13}$$

and

$$E\left[y \mid y > 0, \boldsymbol{x}\right] = \boldsymbol{x}'\beta + \sigma\phi(\boldsymbol{x}'\beta / \sigma) / \Phi(\boldsymbol{x}'\beta / \sigma) \tag{14}$$

[8] The *Heckman two-step* model is also sometimes known as the *generalised Tobit* as it relaxes the assumptions of normality and homoskedasticity of type 1 *Tobit.*

where y is household remittances, $\boldsymbol{x}$ is the vector of independent variables, which may or may not be different in the two equations, and β is the vector of coefficients. Equation (14) allows for negative values of y, an unreasonable assumption when modelling remittance data as non-negativity must be guaranteed. This can be done either by truncating the distribution at zero or assuming that y follows a different distribution such as natural logarithm, $\ln y = \beta' \boldsymbol{x} + \varepsilon$, where the error terms are normally and independently distributed given $y > 0$.

The use of this model although not new in economics (García and Labeaga 1996; Wodajo 2008; Yu and Abler 2008), has not until recently been used for analysing remittance data (Bettin *et al.* 2012; Sinning 2011). In the current study the double-hurdle model is estimated for both categories of remittances - to *Own Household* and to *Others*. As a robustness check, these model estimates will be compared to the corresponding estimates from the Heckman two-step model. The double-hurdle model, unlike the Heckman model, does not require different independent regressors in the two stages for identification.[9] The Heckman model needs an identifier to allow for non-randomness in the participation decision.

To test the hypothesis in equation (12), empirically we compare the propensity to send remittances to *Others* and the level of remittances sent to *Others* by migrants in Riverina and Sydney, exploiting the occurrence of cyclone *Pat* to identify the strength of social pressure faced by the Cook Islander sub-sample, after controlling for a range of observable characteristics. We estimate the effect of variation in *SP* by introducing into the model interaction terms identifying location and country of origin to capture the differential effects on Cook Islanders in regional *vs*. metropolitan locations. Following the discussion in section 2, our expectation is that the interaction variable identifying Cook Islanders in the regional location will be positive, thereby narrowing the underlying difference in remittances to *Others* between metropolitan and regional locations. This would be indicative of the *donor fatigue effect* in metropolitan areas where regular social pressures to remit beyond the migrants' own households are relatively higher. The assumption we make is that there are no

[9] The presence of continuous observations on the dependent variable implies that exclusion restrictions are not required for the identification of the stochastic processes of the two stages of the model, and, as the error terms of the stochastic processes governing the participation and level equations are uncorrelated the two equations of the double-hurdle model are estimated independently.

other unobservable factors that would cause Cook Islander response to the variation in *SP* to be different to the responses of Tongans and Samoans to a similar variation in *SP*.

More specifically the empirical model for the second hurdle or level decision is given by equation (15), where βs are the coefficients to be estimated; R_i is the natural logarithm of the amount of remittances[10] sent by household *i* to category *n* (*n= Own Household*, *Others*); Y_i is income of household *i* in the host country; T_i is a vector of host country household *i* variables; N_i is a vector of home country (HC) household variables; $Origin_i$ is HC of household *i*; U_i unexpected shocks within the migrant's home and host country households; Loc_i is current location of household *i* – metropolitan or regional area; and Loc_i^* interaction term between the location and HC of household.

$$R_{in} = \beta_o + \beta_1 \boldsymbol{Y}_i + \beta_2 \boldsymbol{T}_i + \beta_3 \boldsymbol{N}_i + \beta_3 Origin_i + \beta_4 U_i + \beta_5 Loc_i + \beta_6 Loc_i^* + \varepsilon_i \qquad (15)$$

The location variable (Loc_i) captures all non-observable differences in remittance behaviour between the two locations, which would include the regular social pressures faced by migrant households. The interaction term (Loc_i^*) is expected to capture the effect of the exogenous shock (cyclone *Pat)* on remittances to *Others*, for the Cook Islander sub-sample. For Cook Islanders, Loc_i^* is expected to be positive and significant compared to the omitted case, Tongan households, and the other identified group, Samoan households.

Survey and data

A customized survey of Polynesian migrant households living in the metropolitan Sydney area and in a regional area of New South Wales (Riverina) was conducted by the authors in 2010-11. It covered three of the largest Pacific island migrant communities in Australia; Tongans, Samoans, and, Cook Islanders.[11] A total of 824 households from these communities were surveyed. The sample represents about 5% each of the total Tongan- and Samoan-born populations and approximately 12% of the Cook Islands-born population in New South Wales (NSW) as estimated by the 2006 Census (Department of Immigration and Citizenship 2010a; 2010b; 2010c). A majority of the interviews (92%) were conducted face to face at the interviewers' or respondents' home, public gathering places (such as churches, libraries, clubs, etc.) and at respondents' workplaces. The remaining 8% of the interviews were conducted via telephone. The respondents were recruited through a combination of

[10] As remittances are not normally distributed we use log remittances.
[11] For further details of the survey see (Brown *et al.* 2012).

methods, initially through interviewer networks combined with snowball sampling. Additional participants were recruited through intercepts at specific community localities frequented by Pacific islanders and street intercepts at various community organizations and public locations. A total of 837 surveys were completed with 636 from the Sydney area and 201 from Riverina.

Descriptive statistics

Descriptive statistics of some key variables, at the household and individual (household head) level, including the proportion and level of remittances to own households and *Others* in home country are presented in Table 1. In addition, there are also differences between the three country groups. At the individual level, more than 75% of household heads in both localities are male, are in their low- to mid-40s, and have 10 to 11 years of education. The mean number of years the household head has lived abroad is greater than 20 years in both Sydney and Riverina for all three countries except for Samoans in Riverina (with approximately 19 years). About 11% of household heads in Riverina and 20% in Sydney intend to return to their home countries. At the household level, 55% and 29% of households in Riverina and Sydney have a parent living in the home country respectively. About 38% of households in both Riverina and Sydney hosted a visitor from the home country. Approximately 61% and 73% of households in Riverina and Sydney are active in churches. Over 90% of households have other family migrants living in Australia and elsewhere. The average number of other migrants in Riverina was 3.95, while it was 5.67 in Sydney.

Table 1: ***Profile of migrant households and composition of remittances*** *(Standard deviation)*

Variables	Tonga		Samoa		Cook Islands		Total	
	Riverina N=**60**	Sydney N=**173**	Riverina N=**73**	Sydney N=**271**	Riverina N=**61**	Sydney N=**186**	Riverina N=**194**	Sydney N=**630**
Household level								
HHs with Parent in HC (%)	50.00	26.59	60.27	36.90	54.10	19.89	55.15	29.05
HHs had a visitor from HC (%)	43.33	51.45	27.40	35.79	47.54	29.03	38.66	38.10
Own house in Australia (%)	26.67	33.53	15.07	19.19	9.84	24.19	17.01	24.60
Own house in HC (%)	11.67	31.79	8.22	16.24	8.20	13.44	9.28	19.68
Active in church (%)	58.33	71.68	61.64	78.60	63.93	65.59	61.34	72.86
Rural origin in HC (%)	41.67	17.92	47.95	17.34	29.51	31.72	40.21	21.75
Unexpected events in Australian HH (%)	1.67	11.56	9.59	10.33	3.28	10.75	5.15	10.79
Total HH income ($'000)	87.79 *(36.35)*	107.28 *(69.97)*	72.28 *(48.6)*	100.06 *(58.21)*	82.02 *(45.66)*	91.41 *(50.64)*	80.16 *(44.41)*	99.54 *(59.92)*
Total number of other migrants	3.73 *(2.15)*	5.28 *(3.23)*	3.71 *(2.73)*	5.80 *(2.96)*	4.46 *(2.14)*	5.83 *(2.59)*	3.95 *(2.39)*	5.67 *(2.94)*
Household Head								
Male (%)	80.00	78.03	87.67	86.25	83.61	75.54	84.02	80.83
Intent to return to HC (%)	13.33	26.59	12.33	16.97	8.20	19.89	11.34	20.48
Age (yrs)	41.98 *(11.89)*	48.23 *(11.12)*	41.66 *(12.28)*	44.3 *(11.72)*	42.67 *(12.61)*	44.56 *(9.58)*	42.08 *(12.21)*	45.45 *(11.08)*
Total years away from HC	24.07 *(10.54)*	24.86 *(10.62)*	18.86 *(11.55)*	23.70 (9.71)	22.39 *(12.73)*	23.00 *(12.47)*	21.58 *(11.79)*	23.81 *(10.84)*
Education (years)	10.44 *(2.36)*	12.03 *(2.43)*	10.03 *(3.51)*	10.81 *(3.17)*	10.84 *(2.99)*	10.23 *(3.22)*	10.41 *(3.04)*	10.97 *(3.07)*
Proportions of remitting HHs *(%)*								
Total remittances	90.00	99.42	95.89	92.99	91.80	88.71	92.78	93.49
Remitting to Own HH in HC	88.33	90.75	94.52	80.07	80.33	58.60	88.14	76.67
Remitting to Others in HC	60.00	82.66	63.01	78.60	77.05	76.34	66.49	79.05
Mean value of remittances for remitting HHs *(in $ '000s)*								
Total remittances	6.77 *(11.26)*	9.47 *(14.34)*	5.76 *(6.18)*	10.69 *(10.87)*	4.91 *(5.13)*	3.67 *(5.4)*	5.80 *(7.8)*	8.36 *(11.28)*
Remittances to Own HH in HC	5.27 *(8.6)*	5.99 *(7.12)*	3.78 *(3.45)*	6.01 *(6.62)*	3.49 *(3.72)*	2.30 *(3.39)*	4.14 *(5.59)*	4.97 *(6.28)*
Remittances to Others in HC	1.03 *(1.75)*	2.15 *(3.63)*	0.93 *(1.51)*	2.43 *(3.12)*	0.79 *(0.95)*	1.02 *(1.64)*	0.92 *(1.44)*	1.95 *(3.02)*

HH=Household; HC=Home country;

In addition, there are also differences between the three country groups. The mean amount remitted by Cook Islanders, in both Riverina and Sydney, is considerably lower than the mean amounts remitted by Tongans and Samoans and, unlike the other two groups, Cook Islanders in Riverina remitted more on average than those in Sydney; this was solely associated with remittances to *Own Household*. In all cases remittances to *Others* were lower in Riverina. This is generally supportive of our main hypotheses that, in the absence of a catastrophic event, migrants in the more remote regional localities remit less to the wider community than those in the metropolitan areas. In our sample, of the 654 households that remitted to *Own Household*, 512 also remitted to *Others* while only 123 households remitted exclusively to their *Own Household*.

4. Results

The regression results for the double-hurdle and Heckman models are shown in Table 2 (remittances to *Own Household*) and Table 3 (remittances to *Others*). It is worth noting that the results for the two models are very similar, with only a few instances where a variable is statistically significant for one but not for the other model.[12] Given our *a priori* grounds for preferring the double-hurdle model, this section discusses the results of this model only.[13] All regressions are estimated with errors clustered at religious denomination level. Group pressures and norms manifest themselves differently in various religious denominations (Iannaccone 1998). For example, there is the opportunity for more free-riding in the larger congregations, though the empirical evidence on this is not conclusive. In addition, sectarian religions are generally associated with greater giving than more mainstream churches.

[12] For the Heckman model an identifier chosen to allow for non-randomness in the participation decision by households to remit outside the household is the total number of other migrants from the home country household not residing in the host country household, which reflects another aspect of social norm pressure. Namely, the more migrants there are from the home country household in other locations in Australia or elsewhere will serve to increase pressure on the household to remit outside their own household as the network links back to the home community are denser. As discussed earlier, the density of home community links in the local Australian community can affect sharing norm pressures. This can also apply to the density of home community links in the family networks

[13] Model statistics log likelihood, AIC, BIC and Vuong test for non-nested models also indicated that the double-hurdle was preferred for both categories of remittances – *Own Household* and *Others*.

Table 2: Regression Results: Remittances to *Own Household* *(Robust standard errors)*

Variables	Heckman		Double-Hurdle	
	Stage 1	Stage 2	Hurdle 1	Hurdle 2
Total HH income	0.0009	0.0030***	0.001	0.0031***
	(0.0009)	*(0.0006)*	*(0.0008)*	*(0.0006)*
Year of education of HH head	-0.0182**	-0.008	-0.0191*	-0.0084
	(0.0083)	*(0.0129)*	*(0.0104)*	*(0.0131)*
Own house in Australia	0.2798**	0.1032	0.2944***	0.1201
	(0.1169)	*(0.0907)*	*(0.1034)*	*(0.0951)*
Total years away from HC (HH head)	-0.005	0.0085***	-0.0061	0.0079***
	(0.0102)	*(0.0029)*	*(0.0094)*	*(0.0028)*
Active in church	0.0293	0.2114**	0.0329	0.2137**
	(0.171)	*(0.0998)*	*(0.1628)*	*(0.098)*
HH head intends to return to HC	0.5474***	0.0503	0.4865***	0.0962
	(0.1401)	*(0.0859)*	*(0.1749)*	*(0.0918)*
Had visitor from HC	1.7161***	0.343**	1.7897	0.4324***
	(0.0814)	*(0.1608)*	*(0.0615)*	*(0.1108)*
Own house in HC	1.1061***	0.3601***	1.1073	0.4054***
	(0.1615)	*(0.062)*	*(0.1687)*	*(0.0724)*
Rural origin of HH head in HC	-0.427**	-0.2049*	-0.4234**	-0.2265*
	(0.178)	*(0.1204)*	*(0.173)*	*(0.1246)*
Parent living in HC	1.4234***	0.4542***	1.4335***	0.5219***
	(0.2446)	*(0.0887)*	*(0.2302)*	*(0.0551)*
Unexpected events in Australian HH	0.4466**	0.2896***	0.4010**	0.3131***
	(0.1928)	*(0.0956)*	*(0.2004)*	*(0.0923)*
Samoan	-0.2011	0.1604	-0.1719	0.1508*
	(0.1654)	*(0.098)*	*(0.1435)*	*(0.0878)*
Cook Islander	-0.7922***	-0.4585***	-0.7204***	-0.5194***
	(0.2277)	*(0.1265)*	*(0.2133)*	*(0.0874)*
Living in Riverina	-0.0149	-0.1428	-0.036	-0.1517
	(0.321)	*(0.1529)*	*(0.2952)*	*(0.1648)*
Riverina*Samoa	0.7773***	-0.1851	0.7923***	-0.1413
	(0.2543)	*(0.1549)*	*(0.2405)*	*(0.177)*
Riverina*Cook Islander	0.2091	0.2841	0.2995	0.3202
	(0.3658)	*(0.2195)*	*(0.4006)*	*(0.231)*
Total number of migrants	-0.0474***	----------	-0.0507***	-0.0085
	(0.0107)	----------	*(0.0097)*	*(0.0084)*
Constant	0.7389	7.2345***	0.7498	7.1561***
	(0.5458)	*(0.2291)*	*(0.4684)*	*(0.2652)*
athrho	-0.2588*		----------	
	(0.141)		----------	
lnsigma	-0.0094		-0.015	
	(0.0217)		*(0.0157)*	
	Statistics			
Number of observations	806		802	
Log likelihood	-1138.2290		-1134.1320	
AIC / BIC	2288.4570 / 2316.6100		2280.2650 / 2308.3870	
rho	-0.2531		----------	
sigma	0.9906		----------	
lambda	-0.2508		----------	

Table 3: Regression Results: Remittances to *Others* *(Robust standard errors)*

Variables	Heckman		Double-Hurdle	
	Stage 1	Stage 2	Hurdle 1	Hurdle 2
Total HH income	0.0024***	0.0047***	0.0028***	0.0036***
	(0.0004)	*(0.0005)*	*(0.0004)*	*(0.0003)*
Year of education of HH head	-0.0259	0.0320***	-0.0328**	0.0415***
	(0.0172)	*(0.0117)*	*(0.0166)*	*(0.0108)*
Own house in Australia	-0.1817	-0.0269	-0.229	0.0327
	(0.1752)	*(0.1115)*	*(0.1521)*	*(0.0549)*
Total years away from HC (HH head)	-0.0005	0.0123***	0.0011	0.0109***
	(0.0036)	*(0.0022)*	*(0.0036)*	*(0.0014)*
Active in church	0.3286**	0.5035***	0.3402**	0.3595***
	(0.1419)	*(0.1265)*	*(0.1677)*	*(0.0587)*
HH head intends to return to HC	0.2378	0.3762**	0.3169	0.2299***
	(0.2454)	*(0.1474)*	*(0.2344)*	*(0.0692)*
Had visitor from HC	0.2001***	-0.0329	0.1598**	-0.0687
	(0.0586)	*(0.0532)*	*(0.0786)*	*(0.0614)*
Own house in HC	0.091	0.1931	-0.0022	0.2114
	(0.1441)	*(0.1423)*	*(0.1086)*	*(0.129)*
Rural origin of HH head in HC	-0.0999	-0.165	-0.1960***	-0.0903
	(0.1106)	*(0.1342)*	*(0.0741)*	*(0.1222)*
Parent living in HC	0.0456	0.4578***	0.1317*	0.4336***
	(0.0576)	*(0.1034)*	*(0.0759)*	*(0.0979)*
Unexpected events in Australian HH	0.3582*	0.3838***	0.2428	0.2988*
	(0.1997)	*(0.14)*	*(0.1942)*	*(0.1673)*
Samoan	-0.1898	0.3277**	-0.1961	0.3402***
	(0.1454)	*(0.1382)*	*(0.1251)*	*(0.1266)*
Cook Islander	-0.1727	-0.4599***	-0.1745	-0.4596***
	(0.1889)	*(0.0887)*	*(0.1498)*	*(0.0383)*
Living in Riverina	-0.5016**	-0.4315**	-0.4759***	-0.2437*
	(0.2249)	*(0.1945)*	*(0.1824)*	*(0.1304)*
Riverina*Samoa	0.2538	-0.1569*	0.3048	-0.2446*
	(0.2594)	*(0.0944)*	*(0.2296)*	*(0.1443)*
Riverina*Cook Islander	0.5101***	0.2867*	0.5558***	0.1156
	(0.1429)	*(0.1667)*	*(0.0934)*	*(0.1461)*
Total number of migrants	0.0520***	----------	0.0738***	0.0115
	(0.0199)	----------	*(0.0224)*	*(0.0073)*
Constant	0.4296	4.9954***	0.2999	5.4202***
	(0.2777)	*(0.0938)*	*(0.2694)*	*(0.1595)*
athrho	1.1130***		----------	
	(0.2875)		----------	
lnsigma	0.1410*		-0.0126	
	(0.0793)		*(0.0315)*	
	Statistics			
Number of observations	806		805	
Log likelihood	-1270.2830		-1263.0830	
AIC / BIC	2552.5660 / 2580.7180		2538.1660 / 2566.3110	
rho	0.8051		----------	
sigma	1.1515		----------	
lambda	0.927		----------	

In relation to our main variables of interest *Riverina* and *Riverina*Cook Islander*, the results are clearly supportive of our main hypotheses.[14] For all three migrant groups, living in regional Riverina has no statistically significant effect on either the propensity to remit or the levels of remittances sent to the migrants' *Own Household* (Table 2). However, residing in Riverina has a strong negative effect on community remittances (to *Others*), in terms of both the propensity and levels. This is fully consistent with the presence of weaker sharing norm pressures in the more remote locality in comparison with those living in Sydney. On the other hand, for Cook Islanders in Riverina, the coefficient is positive, and statistically significant for the propensity to remit to *Others*. This is indicative of the effect of the exogenous (cyclone) shock in narrowing the differences between the two localities, recalling our main proposition regarding the higher degree of donor fatigue among migrants in Sydney, who are subject to much stronger, regular social pressures to remit to the wider community. The effect on the levels of remittances sent is also positive but not statistically significant at conventional levels. It is also worth noting that in relation to the propensities to remit to *Others*, the coefficients on the country groups (Samoan and Cook Islander, with Tongan the excluded category) are not statistically significant, suggesting that the incidence of community remittances is broadly similar across the three Polynesian country groups. In relation to levels of remittances among those who did remit, it would appear that the Samoans remit relatively more and the Cook Islanders relatively less in comparison with Tongans.

Other control variables likely to be associated with stronger pressures to remit to the wider community include: (i) having one or more parent still living in the home country, which has a positive effect on the propensity and level of remittances, both to *Own Household* and to *Others*; (ii) having hosted a visitor from the home country, which has a positive effect on remittances to both *Own Household* (through the level of remittances) and to *Others* (through the propensity to remit); (iii) intention of returning home, which has a positive effect on remittances to *Own Household* (through propensity to remit) and to *Others* (through the level of remittances); and, (iv) being church-active (self declared) which has a positive effect on remittances to *Own Household* (level of remittances) and to *Others* (through both propensity and level).

The results for a number of the other control variables are also worth noting. The number of other migrants from the same home country household affects remittances to *Own*

[14] These variables were jointly significant at the 1 per cent level.

Household and to *Others*, but in opposite directions; negative in relation to *Own Household* propensity and positive in relation to *Others* propensity. One possible explanation for these results could be as follows. It is quite common for migrants from the same home country household to consult with each other and to deliberate over the amounts and timing of their contributions to their common, home country household (Brown and Jimenez 2011). Given a collectively determined level of household need, it would follow that the greater the number of contributing migrant households, the greater the likelihood of some would-be remitting households deciding not to remit; hence, the negative coefficients in the *Own Household* equation. On the other hand, as argued previously, the greater the number of migrants from the same home country household living in the host country, the greater their potential exposure to and incorporation into the host country migrant networks. Given that it is through incorporation into such networks that most social pressure to remit to the wider community emanates, it can be expected that there will be a positive relationship between numbers of other migrants and community remittances. In terms of our model, the marginal utility of another unit of community remittances increases relative to traditional household expenditure (*Own Household* remittances) and so the propensity to remit increases.

Household income has a positive effect on levels of remittances to *Others*, and on propensity and levels to *Own Household*. We would be cautious in attributing any causality in this instance as the potential endogeneity between remittances and income is well documented. Wealth, as measured by ownership of a house in the migrant's home country or in the host country has a positive effect on the remittances to the migrants' *Own Household*, but not to *Others*. The level of education of the household head has a negative effect on the propensity to remit to *Others*, and a positive effect on levels. This suggests that the better educated, controlling for income, are less likely to be influenced by community sharing norm pressures in their decision to remit, but, for those who do remit, the impact on the level is positive. The findings regarding levels are consistent with past research on the economic impacts of religion, where income and education were found to have had positive effects on households' church donations (Azzi and Ehrenberg 1975; Iannaccone 1998). The presence of unexpected negative events in Australia appears to have a positive effect on the propensity and level of remittances sent to *Own Household*, and on the levels sent to *Others*. One possible explanation is that major events such as weddings, funerals and other social ceremonies involve greater financial transfers to both the migrants' *Own Household* and to

Others, such as payment for air tickets or other associated expenses for visitors to Australia, and/or, payments for related ceremonies held in the migrant's home country.

5. Conclusions

The sharing norm phenomenon has attracted considerable attention in the sociological literature and in some of the earlier development economics literature, but has only recently begun to receive attention in the applied development economics literature. Of particular concern is the extent to which 'forced redistribution' of earnings by more successful individuals can have a negative effect on their saving and investment decisions, and/or their incentives to embark on new initiatives. As yet, the analysis of sharing norms among migrant communities and the social pressures they face in relation to remittances has remained largely absent from the economics literature.

Often migrants' remittances benefit not only the migrants' own households in the home country but also the broader community, including non-migrant households and community groups such as churches, which we term community remittances. We extend the model of DeVortez and Vadean (2006) to explicitly consider the role that social pressures may play on community remittances. While altruism plays some part in community remittances, these remittances can also be attributed to the strength of community sharing norms associated with the strong kinship relationships among Polynesian migrants. Pressures are brought to bear on these migrants through the transnational migrant networks, which we argue are stronger in those locations where the migrant communities are most densely concentrated. We use customized survey data from three Polynesian migrant groups in metropolitan and regional Australia to provide evidence that community remittances are affected by social pressures, the strength of which varies across locations.

The movement of an increasing number of Pacific island migrants away from the metropolitan cities has been attributed to their desire to escape the burden of the home- and migrant-community pressures to share their earnings and assets beyond their immediate dependents in their home country households. If migrants with a stronger disposition to escape such social pressures (and to avoid the social costs of not donating) choose to live in a location where social pressures are not as strong, this raises the issue of potential endogeneity bias in estimation of social pressure effects. To identify a causal relationship between variations in social pressure and the predisposition to send community remittances, we

exploit an exogenous negative shock to community incomes that was unrelated to the migrants' choice of residential location, which affected one part of the sample only. Specifically, a major cyclone struck the Cook Islands, one of our three origin countries, in the year preceding the survey. We exploit this to test for differences in social pressure effects across location on the treated group. In particular, the diminishing marginal utility associated with expenditure on community relations, as expressed through community remittances, suggests that the stronger the regular social pressures to make community remittances, the weaker the effect of any additional pressures to remit; the phenomenon of 'donor fatigue'(Eckel *et al.* 2007). We hypothesized that among migrant households in metropolitan areas where regular social pressures are stronger, the responsiveness to an unexpected catastrophic event would be relatively weaker in comparison with their counterparts in a more remote region where regular social pressures are weaker.

Our empirical results were based on estimates of a double-hurdle model, which is more flexible in its treatment of cases of non-remittance and has been found to be superior to standard methodologies in recent studies of remittance determinants. We found strong evidence in support of the postulated responsiveness of community remittances to location-related differences in sharing norm pressures, which would be consistent with a donor fatigue effect in the face of increased community pressures. Cook Islanders living in Riverina (regional location) behaved more 'generously' in relation to remittances to *Others* outside their own households; the propensity to remit to *Others* was found to be very similar for Riverina and Sydney (metropolitan location) sub-samples from the Cook Islands. For other groups community remittances were, as expected, significantly lower in the Riverina region. This convergence we argued was consistent with our postulated diminishing returns to sharing norm pressures.

This has potentially important implications for understanding the effects of remittances on the migrant-sending countries. In particular, the stronger the sharing norm pressures on the migrants, the greater the extent to which non-migrant households will benefit from the social protection that remittances provide in situations where formal social security systems are largely absent. On the other hand, to the extent that some trade-off can be expected between remittances sent to others in the community versus higher savings by the migrants and/or their own households, the weaker the sharing norm pressures the greater the potential impact of remittances on promoting asset accumulation and investment in the home

country. Host country policies and their effectiveness in promoting migration to the more remote regional and rural areas could therefore have important welfare and economic development implications for the migrant-sending communities.

In our case, a large part of remittances to *Others* is collected by the churches. It is conceivable, given the strong influence of the church in these communities, that there are differences between the various church denominations in terms of pressures brought to bear on their congregations. While we found that being 'church active' was positively associated with remittances beyond the migrants' own household it is likely that the degree of pressure could vary between the various religious denominations, and would be a useful further area of investigation

The survey is expected to be repeated in future, in order to track households over time. This will offer the opportunity to explore the extent to which remittances to the home community revert to 'norms' after a major event. It may be possible that the event strengthens networks and leads to a greater sharing role, or, remittances could decline soon after the exogenous shock as the whole community experiences some degree of donation fatigue after meeting temporary higher demands. The dynamics of sharing norms remains unclear and largely un-researched.

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