Emerald Journal of Economic Studies

How heterogeneity of recipients influences the income equalising impact of migrant's remittances

Journal:	*Journal of Economic Studies*
Manuscript ID	JES-01-2020-0033.R2
Manuscript Type:	Research Paper
Keywords:	Entrepreneurship, Migration, Income distribution., Inequality, Remittances

How heterogeneity of recipients influences the income equalising impact of migrant's remittances

Abstract:

Purpose: This research develops a dynamic theoretical framework to study the interaction between migrants' remittances and entrepreneurship, together with the effect of these phenomena on inequality and income distribution.

Design/methodology/approach: It is based on an overlapping generations model in which inequalities are explained by a combination of capital market imperfections and fixed costs of investment. Together, these features give rise to credit rationing such that some members of the population are denied opportunities that would otherwise make them better off. Within this framework, we study the implications of remittances associated with child migration.

Findings: We consider two alternative scenarios which differ according to who receives remittances – parents or siblings. We found that when migrant children send remittances to their parents, such transfer would result in higher bequests though not necessarily initiate entrepreneurial activities and a reduction in the extent of inequality. On the other hand, when migrant children send remittances to their siblings, such transfer would not only result in greater bequests, but also it reduces the critical level of wealth needed to get access to capital market, implying that remittance flow generates investment opportunity to even poorer members of the society.

Practical implication: To enhance the income equalising effect of remittances, the government might consider providing extended support to households who are sending (relatively) younger members of the family abroad to earn higher wages.

Originality/value: Studying how dynamic effects of remittances depend critically on the heterogeneity of recipients offers a further perspective that has not been explored before.

Keywords: Entrepreneurship, Migration, Remittances, Inequality, Income distribution.

Paper type: Research paper

1. Introduction

There is a broad consensus that international migration and remittances facilitate capital formation and enhance economic development. [i] With ever increasing cross border migration, the effects of remittances on choice of occupation and distribution of income would likely be extensive. Although due to credit rationing access to credit market is by and large restricted to relatively rich households, such inefficiency in the capital market may well be reduced if potential entrepreneurs could offer lenders marketable resources as collateral against loan. International remittances could play a crucial role in this regard: recipients of remittances can build up necessary savings and credit histories to get access to credit against predictable income from remittances. The present analysis investigates the likelihood that remittances reduce initial inequalities by creating investment opportunities for the poor to move beyond subsistence living.

In the last few decades, empirical research on remittances from a microeconomic perspective focused on explaining the transfer behaviour with exchange, insurance, inheritance and investment motives being increasingly acknowledged, along with more traditional altruistic and

familial motivations (e.g., Foster and Rosenzweig, 2001; Feinerman and Seiler, 2002; Carling, 2008; Laniran and Adeniyi, 2015).[ii] Subsequently the focus shifted to the discussion of remittance volatility: various factors including business cycle, proportion of skilled migrants, interest rate and exchange rate instability were identified to contribute to the instability of flow of remittances (Mughal and Makhlouf, 2011; Mahalia, 2013).

At macro level, empirical research in the last few decades concentrated mainly on the long-run impact, particularly the effect of remittances on investment and growth and afterwards on inequality and development. While some studies indicated that remittances mostly finance consumption and discourage labor-supply (Chami et al., 2003; Vargas-Silva and Ruiz, 2009; Bargain and Boutin, 2015), other studies provided a more optimistic view by recognising that (i) remittances are fungible; financial flows that are used for purchasing consumption goods, real estate, or leisure, might have freed other resources to be used for investment (ii) remittances are counter-cyclical relative to the recipient economy to smoot income shock (Rodriguez and Tiongson, 2001; Yang, 2006; Ratha, 2007; Yang, 2008; Acosta et al., 2009) .[iii]A number of studies showed that remittances are crucial in achieving mutual insurance, new agricultural techniques, consumption smoothing and further migration (Cox, Edwards and Ureta, 2003; Adam et al, 2008; Beaton et al, 2017). Some studies demonstrated how remittances help credit-constrained households to invest in human capital development, e.g., financing educational attainment (Adams and Cuecuecha, 2010; Alcaraz et al.,2012; Acharya and Leon-Gonzalez, 2014; Bouoiyour and Miftah, 2016; Azizi, 2018) and health expenditure (Valero-Gil , 2009; Ambrosius and Cuecuecha, 2013). Few studies focused on effect of remittances on environment (Li and Zhou, 2015) and political institutions (Williams, 2017).Several studies found economic growth enhancing effect of remittances (Catrinescu et al., 2009; Feeny et al., 2014) by stimulating saving (Anzoategui et al., 2014; Quartey et al, 2019) and by enhancing financial development through reducing information asymmetries from the demand side (Giuliano and Ruiz-Arranz, 2009; Aggarwal et al., 2011). Many studies observed poverty reducing impact of remittances (Adams et al., 2008; Chiwuzulum Odozi et al., 2010; Coulibaly, 2015; Arjola et al, 2020).

The distributional effect of remittances comprises a key discussion in the migration literature. Whilst various studies exhibiting positive impacts of remittances on income inequality (Zhu and Xubei, 2010; Anyanwu, 2011; Bang et al., 2016; Zsoka and Loyola, 2018), other studies describing an adverse impact mainly due to asymmetric access to migration (Mishra, 2007; Möllers and Meyer, 2014). However, some studies indicated that remittances reduce inequality in the long run as migration cost fall when migrant communities develop close networks in foreign countries (Leon and Koechlin, 2006). With regard to financing investments in small businesses, although a few studies found neither remittances nor migration to increases the probability of household's owning a business (Amuedo-Dornates and Pozo, 2006; Vasco, 2011), many studies found remittances to be important sources of financing for microenterprises by alleviating the credit constraints (Lopez– Cordova and Olmedo, 2006; Ashby and Seck , 2012) especially during cyclical fluctuations (Shapiro and Mandelman, 2016). On the other hand. quite a lot of studies identified temporary migration a way to finance the start-up costs of microenterprise development (McCormick and Wahba, 2000; Dustmann and Kirchkamp, 2002; Mesnard, 2004; Woodruff and Zenteno, 2007). According to some studies remittances act as a substitute for the formal banking system (Ambrosius & Cuecuecha, 2013; Opperman and Adjasi, 2019). Other contributions illustrated that recipients of remittances invest in family businesses only when it is supplemented with sufficient income from other sources implying that larger

income shocks are important to overcome the financial constraints of starting entrepreneurial activities (Kakhkharov, 2018).

Among theoretical studies on distributional impact of remittances, McKenzie and Rapoport (2004) used network effects to illustrate that impact of remittances on inequality varies over time displaying an inverse U-shaped pattern. Initially remittances will intensify inter-household inequality as only relatively rich households can afford higher migration cost. With the increase in the size of the relevant network of migrants at destination, such costs are likely to shrink offering low-income households to afford migration such that income inequality decreases in the long run. According to Rapaport and Docquier (2006), if proportion of agents without access to entrepreneurship is very high due to significantly large initial inequality, the economy will stuck in a low wage inefficient state. Migration prospects allow the economy stuck in an underdevelopment trap to shift towards high wage efficient long run equilibrium− if migrants' descendants steady-state wealth exceeds the critical threshold required for accessing entrepreneurship and domestic workers' descendants gain access to migration and eventually, to entrepreneurship. Shen, Docquier and Rappaport (2010) reviewed the inverse U-shaped relationship between remittances and inequality and described that remittances would diminish inequality in the long run by enhancing intergenerational wealth accumulation and hence relaxing the liquidity constraint for migration.

We depart from these theoretical works along several aspects. We consider that income equalising effect of remittances depends critically on one important aspect of recipient of remittances, that is, who receive remittances. Consideration of two alternative scenarios according to which age cohort the recipient belongs to (i.e., young or old age cohort) when the transfer take place offers a further perspective that has not, to our best knowledge, been explored before. These allow us to study (i) how flow of remittances from children to parents would result in higher intergenerational transfer though not necessarily initiate entrepreneurial activities to generate any income equalising effect and (ii) how flow of remittances from children to siblings would not only result in greater intergenerational transfer but also reduce the critical level of wealth needed to get access to the capital market to create investment opportunities even for people belonging to the poor dynasties. Such endogenous determination of wealth constraint for accessing entrepreneurship adds a new dimension to the remittance literature.

Moreover, instead of relying on network effects for gradual relaxation of migration constraint, our model identifies different critical levels of wealth for subsistent occupant and entrepreneur in order for migration to occur. Unlike previous studies which described that with migration the economy will eventually converge to high wage equilibrium, our model recognises conditions under which some remittance receiving households and their descendants will remain engaged in low yielding subsistence activity. Our model demonstrates that compared to the poorer agents, the wealthier agents are less constrained in sending children abroad which gives an explanation as to why impact of remittances on inequality might vary over time.

The remainder of the paper is organised as follows: Section 2 presents the benchmark model with no remittances. Section 3 introduces remittances that flow from children to parents whilst section 4 describes remittances that flow from children to siblings. Section 5 makes extension to

the model to allow for endogenous migration. Section 6 presents a comparison of environments. Finally, some concluding remarks are given in section 7.

2. An Economy without Remittances

Our benchmark model shares some of the features of contemporary theories of income distribution which considers capital market imperfections in explaining why the limiting income distribution may depend on initial conditions (Galor and Zeira, 1993). We consider a small open economy which is populated by two-period lived agents belonging to overlapping generations of dynastic families.[iv] Each agent has one parent and $(1+n)$ children. In the first period of life an agent inherits wealth from her parent and faces a choice between two courses of action: on the one hand, she can simply invest this wealth at the exogenous world interest rate, i, whilst choosing some subsistence occupation to produce s units of current income which she saves; on the other hand, she can use her inherited wealth to take on a more productive entrepreneurial occupation which requires k units of initial capital outlay and which yields $A>s$ units of future income. In the second period of life the agent consumes and makes bequests to her own offspring. For an agent born at time t, lifetime utility is given by

$$u_t = \gamma \log (c_{t+1}) + \beta \log (b_{t+1}) \tag{1}$$

where c_{t+1} denotes consumption and b_{t+1} denotes bequest given to each child. If x_{t+1} is total realised income available to the agent over her lifetime, the budget constraint she faces is

$$c_{t+1} + (1+n)b_{t+1} = x_{t+1} \tag{2}$$

Maximising (1) subject to (2) delivers the optimal allocations for consumption and bequests as

$$c_{t+1} = \frac{\gamma}{\gamma+\beta} x_{t+1} \tag{3}$$

$$b_{t+1} = \frac{\beta}{(\gamma+\beta)(1+n)} x_{t+1} \tag{4}$$

Substituting (3) and (4) into (1) gives utility as

$$u_t = U + (\gamma+\beta)\log x_{t+1} \tag{5}$$

where $U = \gamma \log \left(\frac{\gamma}{\gamma+\beta}\right) + \beta \log \left[\frac{\beta}{(\gamma+\beta)(1+n)}\right]$. Evidently, the agent would make his occupational choice such that his total realised income, x_{t+1}, is maximised. The value of x_{t+1} associated with each occupation is given by

$$x_{t+1} = \begin{cases} (1+i)(b_t + s) & \text{if subsistence} \\ (1+i)(b_t - k) + A & \text{if entrepreneurship} \end{cases} \tag{6}$$

If agent's inherited wealth is less than project start-up cost, it will necessitate borrowing. Loans are provided by the financial intermediaries that have access to a perfectly elastic supply of funds at world interest rate, i. We make a common assumption that an agent who applies for a loan must put up all her inherited wealth as collateral against the loan. The agent will be able to self-finance if $b_t \geq k$ (in which case $(1+i)k$ is the opportunity cost of this investment), but must acquire a loan if $b_t < k$ (in which case $(1+i)k$ is the loan repayment). We assume that $A-(1+i)k > (1+i)s$ which has two implications. Firstly, an agent never goes bankrupt as she is always able to repay her loan out of the income from the project (the entrprenurial activity is assumed

to involve no risk). Secondly, an agent always prefers to undertake project investment rather than produce at subsistence (she is always better off by doing so).

2.1 Eligibility for Loans

Whilst all agents would like to engage in project investment, they may not be able to do so because of capital market imperfections. These imperfections relate to the lack of enforceability of loan contracts due to the opportunity for agents to deliberately default on their debt obligations- that is, a borrower may abscond with the output from her project without ever repaying her loan. Suppose that, if an agent was to do this, then any income accruing to her is inaccessible to lenders who either fail to track her down or fail to apprehend her before she has the chance of disposing of her income. However, that the agent will not only lose all her collateral, $(1+i)b_t$, but also effort or resources she must spend to avoid arrest, z. The net income to a defaulter will be, therefore, $x_{t+1} = A - (1+i)b_t - z$. Evidently, this must be no greater than the income from not defaulting (given in (6)) in order for defaulting not to occur: that is $A - (1+i)b_t - z \leq (1+i)(b_t - k) + A$. This determines a critical value of wealth,

$$\hat{b} = \frac{1}{2}[k - \frac{z}{1+i}] \tag{7}$$

Clearly, since loans are given only to agents who would never default (i.e., agents whose inherited wealth is greater than $\hat{b}$) and not to agents who would always default (i.e., agents whose inherited wealth is less than $\hat{b}$), defaulting is prevented.

2.2 Dynamics of Income Distribution

Given the above, we can determine the rules governing changes in the fortunes of each dynastic family. These lineage dynamics describe the transition of individual wealth from one generation to the next according to the choice of occupation that is made in each period. From these dynamics we may infer, the long-run distribution of income, starting from any given initial distribution.

Note that each agent of generation t makes bequests to her offspring in accordance with (4) and their final income, x_{t+1} , according to their choice of occupation, is given in (6).The intergenerational evolution of wealth for an individual dynasty can be described as follows

$$b_{t+1} = \begin{cases} \frac{\beta}{(\gamma+\beta)(1+n)}(1+i)(b_t + s) & if\ b_t < \hat{b} \\ \frac{\beta}{(\gamma+\beta)(1+n)}[(1+i)(b_t - k) + A] & if\ b_t \geq \hat{b} \end{cases} \tag{8}$$

These transition equations are portrayed in Fig-2.1 as (i) and (ii), respectively, where it is assumed that $\frac{\beta(1+i)}{(1+n)(\gamma+\beta)} < 1$ so that the transition process is stable in each case. The limiting outcomes of these processes are

$$b^* = \frac{\beta(1+i)s}{(1+n)(\gamma+\beta) - \beta(1+i)} \tag{9}$$

$$b^{**} = \frac{\beta[A - (1+i)k]}{(1+n)(\gamma+\beta) - \beta(1+i)} \tag{10}$$

the former (latter) being the steady state level of wealth for a representative dynasty whose members across all generations produce at subsistence (undertake project investment). The fact that $b* < b**$ follows from $(1+i)s < A-(1+i)k$. Under further parameter restrictions, we also have $b^{*}<\hat{b}$ and $b^{**}>\hat{b}$: the first feature serves to simplify and sharpen the analysis by ensuring that an agent who succeeds in acquiring a loan will never return to subsistence; given this, the second feature excludes the situation in which all lineages automatically end up as entrepreneurs. The long-run distribution of income is straightforward to characterize for this economy: in the presence of capital market imperfection initial wealth distribution determines the limiting distribution. The only agents who become entrepreneurs are those who are relatively well-off to begin with, having a level of wealth that exceeds the critical value, all others with wealth below the critical value remain forever in subsistence. This contemplates our description of the benchmark model.

In what follows we extend the benchmark model to take account of remittance behaviour - existing domestic occupations and migration to a high wage destination will both be considered.[v] Some members of a family are sent abroad when they are young and part of their income is sent back home either to parents or to siblings. The question then arises whether there is any difference in their effect when remittances flow to parents compared to when these flow to siblings. We consider each in turn.

3. An Economy with Remittances from Children to Parents

We will first consider that the recipients of remittances are parents (this is more likely when the migrants are relatively older members of the family). Each parent of each generation sends a fraction, θ, of her children abroad, with the remaining fraction, $1-\theta$, staying at home and there is no reverse migration. A parent who sends a child abroad incurs a migration cost of μ. Initially, we treat the fraction of agents, θ, as exogenous. Subsequently, we extend the model further to allow for endogenous migration.

3.1 Behaviour of Domestic Agents

An agent of generation t may find herself in one of two situations. She may be located at home, in which case her utility function is given by

$$u_t^h = \gamma \log c_{t+1}^h + \beta \log \left(b_{t+1}^h\right) \tag{11}$$

If she bequeaths wealth only to her children who stay at home and not to her children who are sent abroad (to earn higher income), the total value of bequests will be $(1-\theta)(1+n)b_{t+1}^h$ (this is not a crucial assumption and one could allow parents to leave bequests to all of their offspring without altering the main results). Correspondingly, the agent's budget constraint is

$$c_{t+1}^h + (1-\theta)(1+n)b_{t+1}^h = x_{t+1}^h \tag{12}$$

The allocation of consumption and bequest that maximise (11) subject to (12) are

$$c_{t+1}^h = \frac{\gamma}{\gamma+\beta} x_{t+1}^h \tag{13}$$

$$b_{t+1}^h = \frac{\beta}{(\gamma+\beta)(1-\theta)(1+n)} x_{t+1}^h \tag{14}$$

Utility is then computed by substituting equation (13) and (14) into (11) as

$$u_t = V + (\gamma + \beta)\log x^h_{t+1} \tag{15}$$

$$\text{where } V = \gamma\log\left(\frac{\gamma}{\gamma+\beta}\right) + \beta\log\left[\frac{\beta}{(\gamma+\beta)(1-\theta)(1+n)}\right]$$

Now final income of the agent will be different from before due to the presence of remittances and the cost of migration. The total value of remittances that the agent receives when old is $\theta(1+n)r_{t+1}$ and the total migration cost the agent incurs when old is $\theta(1+n)\mu$. The agent's final income is, therefore,

$$x^h_{t+1} = \begin{cases} (1+i)\,(b^h_t + \text{s}) + \theta(1+n)r_{t+1} - \theta(1+n)\,\mu & \text{if subsistence} \\ (1+i)\,(b^h_t - k) + A + \theta(1+n)\,r_{t+1} - \theta(1+n)\,\mu & \text{if entrepreneurship} \end{cases} \tag{16}$$

Under the same parameter restriction as before, $A-(1+i)\,k > (1+i)\,s$, there is never any bankruptcy and never any preference for subsistence. Again, we need to consider the possibility of agents defaulting on their loans.

3.2 Eligibility for Loans

Given our previous description of events, the payoff from defaulting is $A-(1+i)b^h_t - z + \theta(1+n)r_{t+1} - \theta(1+n)\mu$. In addition to the output from the project, the agent is able to keep her remittances as these are received when the agent is old and do not therefore serve as collateral which can be seized in the event of defaulting. Like her income from the project, she would consume these remittances in hiding. Comparing this payoff with the income from not defaulting given in (16), the condition for no defaulting to occur is $A-(1+i)b^h_t - z + \theta(1+n)r_{t+1} - \theta(1+n)\mu \leq (1+i)\,(b^h_t - k) + A + \theta(1+n)\,r_{t+1} - \theta(1+n)\,\mu$. This implies the same critical value of wealth, $\hat{b} = \frac{1}{2}\left[k - \frac{z}{1+i}\right]$, as that given in (7). As before, if an agent's bequest, b^h_t, is greater than or equal to this critical level of wealth, $\hat{b}$, she is eligible for borrowing, should she require one, to start entrepreneurial activities; but if her b^h_t lies below this $\hat{b}$, she is denied any credit opportunities .

3.3 Behaviour of Overseas Agents

On the other hand, the agent may find herself located abroad. In the first period of life she earns an overseas income, *w*, which she allocates between savings and remittances and in the second period of life she consumes and makes bequests to her own offspring. This income could be the result of supplying labour to firms that produces output under constant returns to scale according to F(K,L) = LF(K/L ,1) = Lf(k)) , where L is labour and k is capital. Profit maximisation would yield w = f(k) − f′(k)and f′(k) = i, implying a constant k and constant w. Her utility function is given by

$$u^a_t = \gamma\log c^a_{t+1} + \beta\log b^a_{t+1} + \alpha\log r_t \tag{17}$$

Since the agent bequeaths wealth to all her offspring (who stay abroad with her), the total value of bequest is $(1+n)b^a_{t+1}$. Her budget constraint and final income are

$$c^a_{t+1} + (1+n)b^a_{t+1} = x^a_{t+1} \tag{18}$$

$$x^a_{t+1} = (1+i)(w - r_t) \tag{19}$$

Given (18), together with (19), the agent chooses consumption, bequests and remittances so as to maximise (17). These yields

$$c_{t+1}^{a} = \frac{\gamma(1+i)w}{\gamma+\beta+\alpha} \tag{20}$$

$$b_{t+1}^{a} = \frac{\beta(1+i)}{(\gamma+\beta+\alpha)(1+n)} \tag{21}$$

$$r_t = \frac{\alpha w}{\gamma+\beta+\alpha} \tag{22}$$

3.4 Dynamics of Income Distribution

The above results can be used to deduce the dynamics of income distribution. Recall that agents in this economy bequeath wealth to their offspring according to (14). The value of x_{t+1} is given by (16) and subsistence production (project investment) is undertaken by agents for whom $b_t < \hat{b}$ $(b_t \geq \hat{b})$.

$$b_{t+1}^{h} = \begin{cases} \frac{\beta}{(1+n)(1-\theta)(\gamma+\beta)}\left[(1+i)\left(b_t^h+s\right)+\frac{\theta(1+n)\alpha w}{\gamma+\beta+\alpha}-\theta(1+n)\mu\right] & if\ b_t^h < \hat{b} \\ \frac{\beta}{(1+n)(1-\theta)(\gamma+\beta)}\left[(1+i)\left(b_t^h-k\right)+A+\frac{\theta(1+n)\alpha w}{\gamma+\beta+\alpha}-\theta(1+n)\mu\right] & if\ b_t^h \geq \hat{b} \end{cases} \tag{23}$$

These dynamic equations are portrayed in Fig-1.2 to describe the intergenerational transition of wealth when remittances flow from children to parents. The limiting outcomes of these processes are

$$b^{*} = \frac{\beta[(1+i)s+\frac{\theta(1+n)\alpha w}{\gamma+\beta+\alpha}-\theta(1+n)\mu]}{(1+n)(\gamma+\beta)(1-\theta)-\beta(1+i)} \tag{24}$$

$$b^{**} = \frac{\beta[A-(1+i)k+\frac{\theta(1+n)\alpha w}{\gamma+\beta+\alpha}-\theta(1+n)\mu]}{(1+n)(\gamma+\beta)(1-\theta)-\beta(1+i)}\ ; \tag{25}$$

Proposition 1: Flow of remittances from children to parents would result in higher intergenerational transfer, but not necessarily initiate entrepreneurial activities unless the steady-state wealth of agent's offspring exceeds the critical wealth needed for borrowing.

Proof: Each of the transition paths in this model with remittances from children to parents (illustrated in (23)) are higher and steeper compared to the transition paths in the benchmark model (illustrated in (8)), implying an improvement in the fortunes of all agents though not necessarily a reduction in the extent of inequality. In Fig-2.2, for relatively rich agents (whose inherited wealth $b_t \geq \hat{b}$), the transition path shifts from (ii) to (v) or (vi), depending on the size of the transfer. But for poorer agents (whose inherited wealth $b_t < \hat{b}$), the transition path would shift from (i) to (iii): the steady-state wealth of agent's offspring will remain below $\hat{b}$ and they will be denied borrowing opportunities. However, larger transfer would shift the transition path from (i) to (iv) such that these agents' offspring would be able to obtain loan to finance entrepreneurial activities.

4. Remittances from Children to Siblings

Let us now consider that the recipients of remittances are siblings (this is more likely when the migrants are relatively younger members of the family). To keep the model simple, we assume that each migrant remits an equal amount to each sibling.

4.1 Behaviour of Domestic Agents

The utility functions and the budget constraints are again given by (11) and (12) as before for those who remain at home. Utility maximisation by domestic agents implies the expressions in (13), (14) and (15) will continue to hold. Since $\theta(1+n)$ of their siblings are sent abroad, and each sibling remits an amount of r_t to each agent, the total value of remittances that an agent receives from her siblings when young is $\theta(1+n)r_t$ which is saved. The migration cost that the agent bear to send her own children abroad will be $\theta(1+n)\mu$. The income of the agent is therefore given by

$$x_{t+1}^h = \begin{cases} (1+i)\{b_t^h + \mathrm{s} + \theta(1+n)r_t\} - \theta(1+n)\mu & \text{if subsistence} \\ (1+i)\{b_t^h - \mathrm{k} + \theta(1+n)r_t\} + A - \theta(1+n)\mu & \text{if entrepreneurship} \end{cases} \quad (26)$$

Where, $A-(1+i)k > (1+i)s$, as before to ensure that loans can always be repaid, and that project investment is always preferred to subsistence.

4.2 Eligibility for Loans

Another feature that changes from before is the incentive to default on loans. Since the agent receives remittances from siblings when young, these can serve as additional collateral to be seized in the event of defaulting.

Proposition 2: The critical level of wealth needed to get access to the capital market is lower when remittances flow from children to siblings than when remittances flow from children to parents.

Proof: Given our previous description of events, the payoff from defaulting is $A-(1+i)\,b_t^h - (1+i)\;\theta(1+n)r_t - z - \theta(1+n)\mu$ which, compared to the income from not defaulting (given in (26)), yields the following condition for defaulting not to occur: $A-(1+i)\,b_t^h - (1+i)\;\theta(1+n)r_t - z - \theta(1+n)\mu \le (1+i)\{-\mathrm{k} + \theta(1+n)r_t\} + A - \theta(1+n)\mu$ implying a critical level of wealth, $\tilde{b}$, as follows

$$\tilde{b} = \frac{1}{2}[k - 2\theta(1+n)r_t - \frac{z}{1+i}] \quad (27)$$

Comparing (27) with (7), gives $\tilde{\mathrm{b}} < \hat{b}$, indicating a decrease in the wealth constraint. Flow of remittances from children to siblings will reduce the critical level of wealth needed to get access to borrowing implying that even poorer agents, with smaller inherited wealth, will now be able to undertake project investment.

4.3 Behaviour of Overseas Agents

The utility functions and the budget constraints are given by (17) and (18) for those who move abroad. Since overseas agent sends remittances to each of her siblings at home, the total value of remittances sent by her will be $(1-\theta)(1+n)r_t$. It follows that her final income will be

$$x^a_{t+1} = (1+i)[w - (1-\theta)(1+n)r_t] \tag{28}$$

Given this, together with (18), the agent chooses consumption, bequests and remittances as to maximise (17). This implies

$$c^a_{t+1} = \frac{\gamma(1+i)w}{\gamma+\beta+\alpha} \tag{29}$$

$$b^a_{t+1} = \frac{\beta(1+i)}{(\gamma+\beta+\alpha)(1+n)} \tag{30}$$

$$r_t = \frac{\alpha w}{(\gamma+\beta+\alpha)(1-\theta)(1+n)} \tag{31}$$

4.4 Dynamics of Income Distribution

The transition of lineage wealth satisfies

$$b^h_{t+1} = \begin{cases} \frac{\beta}{(1+n)(1-\theta)(\gamma+\beta)}\left[(1+i)\{b^h_t + \mathrm{s} + \frac{\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} - \theta(1+n)\,\mu\right] & if\ b_t < \tilde{b} \\ \frac{\beta}{(1+n)(1-\theta)(\gamma+\beta)}\left[(1+i)\{b^h_t - \mathrm{k} + \frac{\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} + A - \theta(1+n)\mu\right] & if\ b_t \geq \tilde{b} \end{cases} \tag{32}$$

These dynamic equations are portrayed in Fig-2.3 to describe the intergenerational transition of wealth when remittances flow from children to siblings. The limiting outcomes of these processes are

$$b^* = \frac{\beta[(1+i)\{s + \frac{\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} - \theta(1+n)\mu]}{(1+n)(\gamma+\beta)(1-\theta) - \beta(1+i)} \tag{33}$$

$$b^{**} = \frac{\beta[(1+i)\{\frac{\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)} - k\} + A - \theta(1+n)\mu]}{(1+n)(\gamma+\beta)(1-\theta) - \beta(1+i)}; \tag{34}$$

Proposition 3: Flow of remittances from children to siblings would result in higher intergenerational transfer compared to the benchmark case. Moreover, if $(1+i) > (1-\theta)(1+n)$*, then the shift in the transition path is greater when remittances are sent to siblings than when they are sent to parents.*

Proof: See Appendix 1 (A1.1).

Each of the transition paths in this model with remittances from children to siblings (illustrated in (32)) are higher compared to the transition paths in the benchmark model (illustrated in (8)). With further parameter restrictions, $(1+i) > (1-\theta)(1+n)$, they are also higher compared to the transition paths in the model with remittances from children to parents (illustrated in (23)) implying an improvement in the fortunes of all agents. For relatively rich agents (whose inherited wealth $b_t \geq \tilde{b}$), the transition path shifts from (ii) to (ix) or (x); for poorer agents (whose inherited wealth $b_t < \tilde{b}$), the transition path shifts from (i) to (vii) or (viii), depending on the size of the transfer. Most importantly, reduction in the wealth constraint implies that even with smaller

transfer of remittances the steady-state wealth of these agent's offspring will exceed the critical $\tilde{b}$ and allow them to borrow from the capital market.

5. Further Extension

The final extension to the model involves the endogenisation of migration. The basic changes to the original analysis are as follows:

(i) $n = 1$; each agent has two children.

(ii) $\theta = 1/2$ or $\theta = 0$; one child at most is sent abroad and one stays at home (both children cannot be sent abroad, otherwise the domestic economy will cease to exist).

(iii) $r_t = \alpha w$; a migrant child simply agrees with her parents to remit a fraction, α, of her earning back home (rather than deciding this through her own altruism) both for the case in which remittances are sent to parents and for the case in which remittances are sent to siblings since there is only one parent and only one sibling.

These changes simplify the analysis without altering any of the results and allow us to study the endogenous migration decision in a relatively straightforward way. Everything else in the model remains unchanged. The extended version of the analysis is summarised as follows.

5.1 Changes to the Original Analysis

In the benchmark case, under parameter restriction of $n = 1$ and $\theta = ½$, maximising lifetime utility of an agent (illustrated in equation (1)) subject to the budget constraint, $c_{t+1} + 2b_{t+1} = x_{t+1}$, yields optimal consumption and bequests as follows: $c_{t+1} = \frac{\gamma}{\gamma+\beta} x_{t+1}$ and $2b_{t+1} = \frac{\beta}{\gamma+\beta} x_{t+1}$. These gives utility as

$$u_t = U + (\gamma + \beta)\log x_{t+1} \text{ where } U = \gamma\log\left(\frac{\gamma}{\gamma+\beta}\right) + \beta\log\left(\frac{\beta}{\gamma+\beta}\right) - \beta\log(2) \tag{35}$$

As before, value of x_{t+1} associated with each occupation is given by equation (6) and critical level of wealth is given by equation (7). The dynamics of lineage wealth are described by

$$b_{t+1} = \begin{cases} \frac{\beta}{2(\gamma+\beta)}[(1+i)(b_t + s)] & if\ b_t < \hat{b} \\ \frac{\beta}{2(\gamma+\beta)}[(1+i)(b_t - k) + A] & if\ b_t \geq \hat{b} \end{cases} \tag{36}$$

where $B \equiv \frac{\beta(1+i)}{2(\gamma+\beta)} < 1$, for stability in each case.

When remittances are transferred from children to parents, maximising lifetime utility of an agent (illustrated in equation (11)) subject to the budget constraint, $c^h_{t+1} + b^h_{t+1} = x^h_{t+1}$ yields optimal consumption and bequests as follows: $c^h_{t+1} = \frac{\gamma}{\gamma+\beta} x^h_{t+1}$ and $b^h_{t+1} = \frac{\beta}{\gamma+\beta} x^h_{t+1}$. These gives utility as

$$u_t = V + (\gamma + \beta)\log(x_{t+1}) \text{ where } V = \gamma\log\left(\frac{\gamma}{\gamma+\beta}\right) + \beta\log\left(\frac{\beta}{\gamma+\beta}\right) \tag{37}$$

Since the agent receives remittances of $r_{t+1} = \alpha w$ when old and overseas wages are constant, the agent's final income will be:

$$x^h_{t+1} = \begin{cases} (1+i)(b^h_t + s) + \alpha w - \mu & \text{if subsistence} \\ (1+i)(b^h_t - k) + A + \alpha w - \mu & \text{if entrepreneurship} \end{cases} \tag{38}$$

The critical level of wealth is given by equation (7). The dynamics of lineage wealth can be derive from equation (14) as

$$b_{t+1} = \begin{cases} \frac{\beta}{(\gamma+\beta)}\left[(1+i)(b_t^h+s)+\alpha w-\mu\right] & if\ b_t < \hat{b} \\ \frac{\beta}{(\gamma+\beta)}\left[(1+i)(b_t^h-k)+A+\alpha w-\mu\right] & if\ b_t \geq \hat{b} \end{cases} \quad (39)$$

As in the original analysis, these transition paths are higher and steeper than in the case without remittances. And remittances will not initiate entrepreneurial activity if the steady-state wealth of a migrant's offspring remains below the threshold level.

When remittances are transferred from children to siblings, the restriction that $n=1$, $\theta = 1/2$ would result in the same optimal consumption, and bequests as in the case with remittances from children to parents and the same utility as described in equation (37). Since the agent receives remittances of $r_t = \alpha w$ when young and incurs μ in child migration cost when old, her final income will be

$$x_{t+1}^h = \begin{cases} (1+i)\,(b_t^h + s + \alpha w) - \mu & \text{if subsistence} \\ (1+i)\,(b_t^h - k + \alpha w) + A - \mu & \text{if entrepreneurship} \end{cases} \quad (40)$$

The critical value of wealth will become $\tilde{b} = \frac{1}{2}[k - 2\alpha w - \frac{z}{1+i}]$; as our original analysis, $\tilde{b} < \hat{b}$. The dynamics of wealth are described as follows:

$$b_{t+1} = \begin{cases} \frac{\beta}{(\gamma+\beta)}\left[\left((1+i)\,(b_t^h + s + \alpha w\right) - \mu\right] & if\ b_t < \tilde{b} \\ \frac{\beta}{(\gamma+\beta)}\left[\left((1+i)\,(b_t^h - k + \alpha w\right) + A - \mu\right] & if\ b_t \geq \tilde{b} \end{cases} \quad (41)$$

Note that in the original analysis $1+i > (1-\theta)(1+n)$ was the condition required for the shift of the transition paths to be greater when remittances are sent to siblings than when they are sent to parents. In the simplified version of the model, where $n=1$, $\theta = 1/2$, this condition is satisfied unambiguously as $1+i > 1, i > 0$.

5.2 Endogenising Migration

The migration decision is subject to liquidity constraint as is the case for accessing entrepreneurship. The cost of migration plays a critical role in determining the wealth threshold above (below) which migration is plausible (implausible). Consider an agent born at time t who belongs to a dynasty that has never sent children abroad and is deciding whether to send one of her children abroad. The income of the agent if she decides to do this is

$$x_{t+1} = \begin{cases} (1+i)\,(b_t + s) - \mu & \text{if subsistence} \\ (1+i)\,(b_t - k) + A - \mu & \text{if entrepreneurship} \end{cases} \quad (42)$$

The agent decides on whether to send one of her own children abroad by comparing the utility from not doing so with the utility from doing so. The former is computed from (35) and (6).

$$u_t = \begin{cases} \mathrm{U} + (\gamma+\beta)\log\left[(1+i)(b_t + s)\right] & \text{if subsistence} \\ \mathrm{U} + (\gamma+\beta)\log\left[(1+i)(b_t - k) + A\right] & \text{if entrepreneurship} \end{cases} \quad (43)$$

And the latter is computed from (37) and (42) as

$$u_t = \begin{cases} \mathrm{V} + (\gamma+\beta)\log[(1+i)(b_t+s)-\mu] & \text{if subsistence} \\ \mathrm{V} + (\gamma+\beta)\log[(1+i)(b_t-k)+A-\mu] & \text{if entrepreneurship} \end{cases} \quad (44)$$

When the agent is engaged in subsistence production, she will send one of her offspring overseas if $\mathrm{V} + (\gamma+\beta)\log[(1+i)(b_t+s)-\mu] \geq \mathrm{U} + (\gamma+\beta)\log[(1+i)(b_t+s)]$ or

$$\beta\log(2) \geq (\gamma+\beta)\log\left[\frac{(1+i)(b_t+s)}{(1+i)(b_t+s)-\mu}\right] \quad (45)$$

The right hand side of this condition is a decreasing function of b_t implying that the condition is more likely to be satisfied at higher values of b_t. We can, therefore, deduce the following: if $\bar{b}$ denotes the critical value of b_t for which the condition holds with equality, then migration occurs if $b_t \geq \bar{b}$ and do not occur if $b_t \leq \bar{b}$. However, migration will always occur in the absence of migration cost, (when $\mu = 0$).

If the agent is engaged in project investment, she will send one of her offspring overseas if $\mathrm{V} + (\gamma+\beta)\log[(1+i)(b_t-k)+A-\mu] \geq \mathrm{U} + (\gamma+\beta)\log[(1+i)(b_t-k)+A]$ or

$$\beta\log(2) \geq (\gamma+\beta)\log\left[\frac{(1+i)(b_t-k)+A}{(1+i)(b_t-k)+A-\mu}\right] \quad (46)$$

As above, the right-hand side of this condition is a decreasing function of b_t implying that the condition is more likely to be satisfied at higher values of b_t and. More precisely, if $\bar{\bar{b}}$ denote the critical value of b_t for which the condition holds with equality, then migration occurs if $b_t \geq \bar{\bar{b}}$ and do not occur if $b_t \leq \bar{\bar{b}}$.

Proposition 4: Since $\bar{\bar{b}} < \bar{b}$, the critical level of wealth required by an entrepreneur for sending her children abroad is lower than that required by a subsistence agent.

Proof: See appendix 1 (A1.2).

Since incentive to migration is larger for wealthy households, migration prospect would first increase inequality in sending countries. Over time, accumulation of intergenerational transfer would eventually enable the poorer agents to overcome the migration constraint and hence decrease inequality in the long run. Fig-2.4 shows that intergenerational accumulation of wealth will enable a subsistent occupant to overcome the migration constraint if $b_t \geq \bar{b}$ (shown as a shift in the transition path from (i) to (xi)); however, it may not necessarily enable her to overcome the borrowing constraint unless $b_t \geq \tilde{b}$ (shown as a shift in the transition path from (i) to (xi)) implying that all lineage will not automatically become entrepreneur as a result of incidence of remittances.

6. Comparison of environments

In the benchmark case without remittances, the critical wealth needed as collateral against loan is $\hat{b}$. Only wealthy agents, whose bequests $b_t \geq \hat{b}$, will be able to borrow and the poor agents, whose bequests $b_t < \hat{b}$, will be denied opportunities only to engage in subsistence activities; the

agents end up belonging to one of two classes—rich or poor. To the basic setup we added flow of remittances in two different ways according to who receive remittances.

When remittances flow from children to parents, the incentive condition implies the same critical value of wealth, $\hat{b}$, above (below) which loans are granted (denied). The parents, who receive remittances at their old age, will not be able to use these as collateral against loan. The transition paths are higher, and steeper compared to the benchmark case implying that all agents are better off. However, in case of insufficient transfer, the steady state level of wealth of agent's offspring will remain below the critical wealth needed to get access to capital market implying that inequality will not necessarily decline in the long run.

When remittances flow from children to siblings, incentive condition implies a relatively lower critical level of wealth, $\tilde{b}$, above (below) which loans are granted (denied). Such a reduction in critical wealth (since $\hat{b} < \tilde{b}$) is due of the fact that the agents, who receive remittances at her young age, can utilise these as additional collateral to be seized in the event of defaulting. This relaxation in the wealth constraint will enable even poorer agents and their descendants to undertake project investments.

The final extension of our model corresponds to endogenising migration. Under further parameter restrictions we obtained the same qualitative results, but in a much simpler model. It allowed us to demonstrate that shifts in the transition paths are higher when remittances are sent to siblings than when they are sent to parents. This establishes that income equalising effect of remittances will be higher when the recipient of remittances are siblings. We found that the wealth threshold for migration is lower for an entrepreneur compared to a subsistent occupant (since $\bar{\bar{b}} < \bar{b}$) indicating that migration prospect may increase inequality in the short run. We also found that intergenerational accumulation of wealth will enable a subsistent agent to send children abroad if the steady state wealth exceeds the critical wealth for migration ($b_t \geq \bar{b}$). However, transfer of remittances may not be sufficient for the agent to obtain loan unless the steady state wealth exceeds the critical wealth for borrowing ($b_t > \tilde{b}$). Hence, there will be some remittance receiving households in the economy who will in fact live on low-yielding subsistence activity implying that all remittance receiving lineages will not necessarily end up as entrepreneurs.

7. Concluding remarks

Due to accelerated cross border migration and resultant increase in the flow of remittances, it is now, more than ever, crucial to understand how remittances condition the incidence of entrepreneurship and the evolution of income distribution. In this regard we presented novel insights on the basis of theoretical analysis. Our study can be viewed within the context of the contemporary literature on income distribution which describes capital market imperfections as a determinant of occupational choice and resulting income distribution. Inefficiency in the capital market would ideally be eliminated if (i) lenders can perfectly enforce loan contracts and (ii) borrowers can offer lenders marketable resources as collateral against loan. However, in poor communities, the enforcement of loan contact is difficult, and the ownership of wealth is small or non-existent. In this respect international remittances appears to play a significant role.

In our benchmark model with no remittances, poor people are denied credit opportunities and access to entrepreneurship is restricted to relatively rich households whose inheritance exceeds a critical level of wealth implying that the initial inequality will persist in the absence of migration and remittances. This is analogous to the description of Galor and Zeira (1993) which states that amidst capital market imperfection there will be a persistent difference between rich and poor. We extended the benchmark model by adding two alternative scenarios (i) remittances to parents and (ii) remittances to siblings in order to be able to examine to what extent migration prospects exert an equalising effect on income distribution. Though in a different context, this is similar in essence to the findings of Aghion and Bolton (1997) and Blackburn and Bose (2003) which state that due to trickle-down effect a long run efficient wealth distribution could be attained that is independent of the initial distribution.

In the extended model with remittances from children to parents, we observe that although remittances result in higher intergenerational transfers compared to the benchmark case, it will not initiate entrepreneurial activities unless the transfer is sufficiently large for the offspring to overcome the wealth constraint. Even if remittances to parents enable offspring to gain access to credit, the income equalising effects will be delayed by generations as parents, who receive remittances when they are old, will not be able to use these as collateral against loan but only be able to bequeath these additional income to their offspring. This is consistent with Rapaport and Docquier (2006) which states that intergenerational transfers have no dynamic effects if migrants' descendants steady-state wealth do not gain access to entrepreneurship.

In the extended model with remittances from children to siblings, we observe more inequality-reducing effects compared to when it flows to parents since such transfers will not only contribute to higher intergenerational transfers but will also relax the borrowing constraint to entitle even poorer agents to obtain loans to undertake more rewarding entrepreneurial activities. Such endogenous variation of wealth threshold for accessing entrepreneurship depending on who receive remittances adds another aspect to the dynamics of income distribution. Our findings established that though migration incentives are stronger for the poorer agents, wealthier agents are less constrained offering a further perspective of initial inequality enhancing effect of migration and remittances. This supports the finding of McKenzie and Rapoport (2004) and Shen, Docquier and Rappaport (2010) stating that flow of remittances will increase inequality in the sending community at the beginning as only relatively rich households will be able to afford migration. However, contrary to majority of the theoretical works mentioned above, our model demonstrates that migration prospect may not inevitably eliminate the gap between rich and poor, there can be some remittance-receiving households who will in fact remain engaged in low yielding subsistence activity.

In a nutshell, the paper provides a useful theoretical framework with proper micro foundation of the wealth generating process to support migration and remittances as a drive to strengthen economic security of the households in the sending country. If remittances are in the first instance transferred to the siblings. more agents will eventually be able to move beyond subsistence to reduce the initial inequality. Consequently, one may deduce a policy implication: to enhance the income equalising effect of remittances, the government should provide increased support to households when potential migrants are relatively younger members of the family.

Notice however that our findings rely on specific linear preferences of the households over consumption and bequest. Our discussion only includes altruistic and contractual motive of sending remittances when there are several other incentives. Moreover. we did not consider the effect of migration on labour supply as we considered it to be small. These assumptions while making our analysis particular, allow us to stress the major elements inclined to determine the impact of migration and remittances on inequality in a general context. Although incorporating risk to entrepreneurial activities could make the model more reasonable, the welfare effects of migration and remittances would certainly be more complex to disentangle. Nonetheless, our simplified approach gives a rigorous theoretical appraisal to the debate on effects of remittances in financing entrepreneurship and lessening income inequality.

Appendix 1

A1.1 Proof of proposition 3:

In case of subsistent occupant, from equation (23) and (32),

$$[(1+i)\{b_t^h + \mathrm{s} + \frac{\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} - \theta(1+n)\,\mu] > [(1+i)(b_t^h + s) + \frac{\theta(1+n)\alpha w}{(\gamma+\beta+\alpha)} - \theta(1+n)\mu]$$

$$(1+i)b_t^h + (1+i)\mathrm{s} + \frac{(1+i)\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} > (1+i)b_t^h + (1+i)s + \frac{\theta(1+n)\alpha w}{(\gamma+\beta+\alpha)}$$

$$(1+i) > (1+n)(1-\theta)$$

In case of entrepreneurship, from equation (23) and (32),

$$(1+i)\{b_t^h - \mathrm{k} + \frac{\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} + A - \theta(1+n)\mu > [(1+i)(b_t^h - k) + A + \frac{\theta(1+n)\alpha w}{\gamma+\beta+\alpha} - \theta(1+n)\mu]$$

$$(1+i)b_t^h - (1+i)\mathrm{k} + \frac{(1+i)\theta\alpha w}{(\gamma+\beta+\alpha)(1-\theta)}\} > (1+i)b_t^h - (1+i)k + \frac{\theta(1+n)\alpha w}{(\gamma+\beta+\alpha)}$$

$$(1+i) > (1+n)(1-\theta)$$

A1.2 Proof of proposition 5:

From equation (44),

$$\beta\log(2) \geq (\gamma+\beta)\log\left[\frac{(1+i)(b_t+s)}{(1+i)(b_t+s)-\mu}\right]$$

$$\text{At } b_t = \bar{b} \qquad \beta\log(2) = (\gamma+\beta)\log\left[\frac{1}{1-\frac{\mu}{(1+i)\bar{b}+(1+i)s}}\right] \tag{i}$$

From equation (45),

$$\beta\log(2) \geq (\gamma+\beta)\log\left[\frac{(1+i)(b_t-k)+A}{(1+i)(b_t-k)+A-\mu}\right]$$

$$\text{At } b_t = \bar{\bar{b}} \qquad \beta\log(2) = (\gamma+\beta)\log\left[\frac{1}{1-\frac{\mu}{(1+i)\bar{\bar{b}}+A-(1+i)k}}\right] \tag{ii}$$

Comparing equation (i) and (ii),

$$(1+i)\bar{\bar{b}} + A - (1+i)k = (1+i)\bar{b} + (1+i)s$$

$$A - (1+i)k = (1+i)\bar{b} + (1+i)\bar{\bar{b}} + (1+i)s \tag{iii}$$

Now when $A-(1+i)\,k > (1+i)s$, equation (iii) becomes

$$(1+i)\bar{b} - (1+i)\bar{\bar{b}} + (1+i)s > (1+i)s$$

$$\bar{b} > \bar{\bar{b}}$$

Appendix 2

Figure 2.1: Transition of Lineage Wealth (An Economy without Remittance)

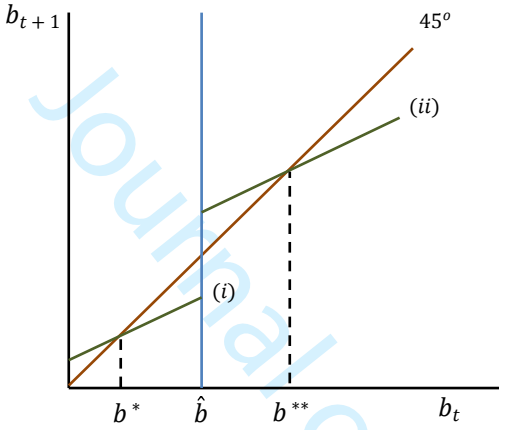


Figure 2.1: Transition of Lineage Wealth (Remittance from Children to Parents)

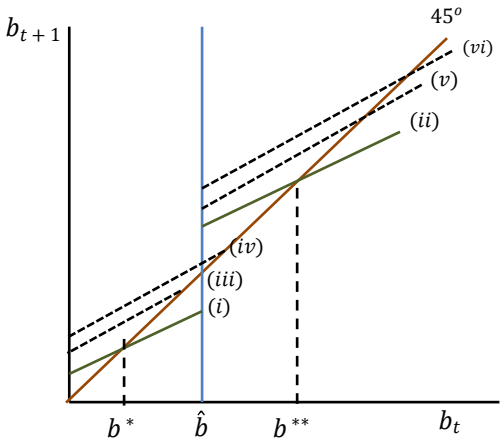


Figure 2.3: Transition of Lineage Wealth (Remittance from Children to Siblings)

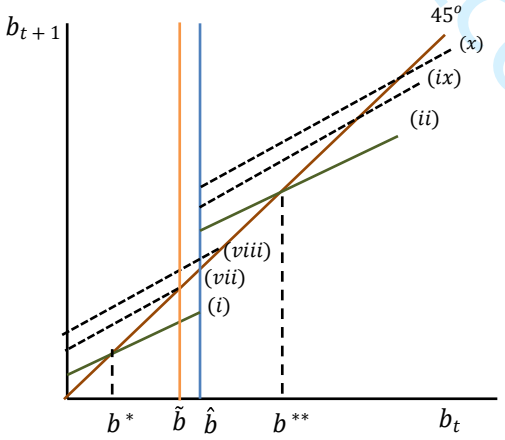
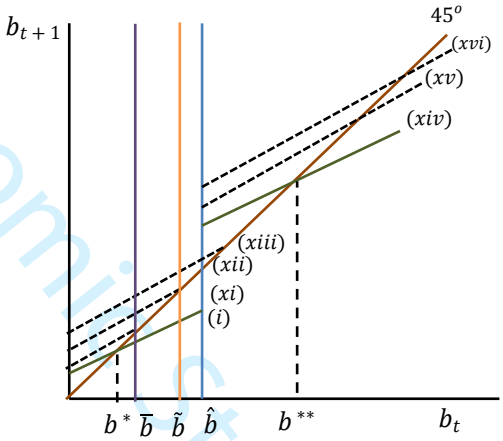


Figure 2.4: Transition of Lineage Wealth (Remittance from Children to Siblings)



References

Acharya, C.P., Leon-Gonzalez, R. (2014), "How do migration and remittances affect human capital investment? The effects of relaxing information and liquidity constraints", Journal of Development Studies, 50(3):444–460.

Acosta, P.A., Lartey, E.K., Mandelman, F.S.(2009), "Remittances and the Dutch disease" Journal of International Economics, 79, pp. 102-116.

Adams, R.H., Cuecuecha, A. (2010), "Remittances, household expenditure, and investment in Guatemala", World Development, 38 (11), pp. 1626-1641.

Adams, R. H., Cuecuecha, A., and Page, J. (2008), "Remittances, consumption and investment in Ghana", World Bank Policy Research Working Paper, No. 4515.

Aggarwal, R., Demirgüç-Kunt, A., Martínez Pería, M.S. (2011), "Do remittances promote financial development?", Journal of development economics, 96 (2), pp. 255-264.

Aghion, P., Bolton, P.(1997), "A Theory of Trickle-Down Growth and Development", The Review of Economic Studies, 64(2), 151-172.
Alcaraz, C., Daniel, C., Alejandrina, S. (2012), "Remittances, schooling, and child labor in Mexico", Journal of Development Economics, 97(1): 156-65.
Ambrosius, C. , Cuecuecha, A. (2013), "Are remittances a substitute for credit? Carrying the financial burden of health shocks in national and transnational households", World Development, 46, pp. 143-152.
Amuedo-Dorantes, C., Pozo, S. (2006), "Remittance Receipt and Business Ownership in the Dominican Republic", World Economy, 29(7), 939-956.
Anyanwu, J.C. (2011), "International remittances and income inequality in Africa", Review of Economics and Business Studies, 7 (2011), pp. 117-148.
Anzoategui, D., Demirgüç-Kunt, A., Martínez Pería, M.S. (2014), "Remittances and financial inclusion: Evidence from El Salvador", World Development, 54 , pp. 338-349.
Arjola et al. (2020), "Measuring Dynamic Effects of Remittances on Poverty and Inequality with Evidence from Kosovo", Eastern European Economics.
Ashby, N., Seck, O. (2012), Remittances, institutional quality, and entrepreneurship, mimeo.
Azizi, S. (2018), "The impact of workers' remittances on human capital and labor supply in developing countries", Economic Modelling, 30, pp. 1-20.
Bang, J.T., Mitra, A., Wunnava, P.V. (2016), "Do remittances improve income inequality? An instrumental variable quantile analysis of the Kenyan case", Economic Model, 58:394–402
Bargain, O., Boutin, D. (2014), "Remittances and child labour in Africa: evidence from Burkina Faso", IZA discussion paper no. 8007.
Beaton, K., Cevik, S., Yousefi, S.R. (2017), "Smooth Operator: Remittances and Fiscal Shocks", IMF Working Paper, International Monetary Fund, Washington.
Blackburn, K., Bose, N. (2003) "A model of trickle-down through learning." Journal of Dynamic Control**,** 27, 445-466.
Bouoiyour, J., Miftah, A. (2016), "Education, male gender preference and migrants' remittances: interactions in rural Morocco", Economic Modelling, 57 (2016), pp. 324-331.
Carling, J. (2008), "The determinants of migrant remittances", Oxford Review of Economic Policy, 24 (3), 582-599.
Catrinescu, N., M. Leon-Ledesma, M. Piracha, Quillin, B. (2009), "Remittances, institutions, and economic growth", World Development, 37 (1), pp. 81-92.
Chami, R., Jahjah, S. and Fullenkamp, C. (2003), "Are Immigrant Remittance Flows a Source of Capital for Development?" ,IMF Working Paper, WP/03(189).
Chiwuzulum Odozi, J. , Awoyemi, T.T. , Omonona, B.T. (2010), "Household poverty and inequality: the implication of migrants' remittances in Nigeria", Journal of Economic Policy Reform, 13 (2), pp. 191-199.
Cox, A., Edwards, Manuelita, U. (2003), "International migration, remittances, and schooling: evidence from El Salvador", Journal of Development Economics, 72 (2), 429-46.
Coulibaly, D. (2015), "Remittances and Financial Development in Sub-Saharan African Coutries: a System Approach", p. 45.
Dustmann, C., Kirchkamp, O. (2002), "The optimal migration duration and activity choice after re-migration", Journal of Development Economics, 67(2), 351-72.
Feeny, S. I., McGillivray, M. (2014), "Remittances and economic growth: larger impacts in smaller countries?", Journal of development studies, pp. 1-12.

Feinerman, E., Seiler, E. J. (2002), "Private transfers with incomplete information: A contribution to the Altruism-exchange motivation for transfers debate", Journal of Population Economics, 15(4), 715.

Foster,A., Rosenzweig, M. (2001), "Imperfect Commitment, Altruism, And The Family: Evidence From Transfer Behavior In Low-Income Rural Areas", The Review of Economics and Statistics, 83 (3), 389-407.

Galor, O., Zeira, J. (1993), "Income Distribution and Macroeconomics", The Review of Economic Studies, 60 (1), 35-52.

Giuliano, P., Ruiz-Arranz, M. (2009), "Remittances, financial development, and growth", Journal of Development Economics, 90, pp. 144-152.

Kakhkharov, J. (2018), "Migrant remittances as a source of financing for entrepreneurship", International Migration, 57 (5), 37-55.

Laniran, T.J., Adeniyi, D. A. (2015), "An evaluation of the determinants of remittances: evidence from Nigeria", AHMR, 1(2), 130-153.

Leon, G., Koechlin, V. (2006), " International remittances and income inequality: An empirical investigation", Technical Report Inter-American Development Bank

Li, X., Zhou, J. (2015), "Environmental effects of remittance of rural–urban migrant", Economic Modelling, 47, pp. 174-179.

Lopez–Cordova, E., and Olmedo, A. (2006), "International remittances and development: Existing evidence, policies and recommendations", WTALIITD Occasional Paper Series (41).

Mahalia, J. (2013), "Macroeconomic Determinants of Remittance Volatility – An Empirical Test", International Migration, 51 (S1), e36-e52.

McCormick,B.Wahba, J. (2000) "Overseas unemployment and remittances to a dual economy", The Economic Journal, 110, 509-34.

McKenzie,D., Rapoport, H. (2004), "Network effect and the dynamics of migration and inequality, theory and evidence from Mexico", BREAD Working Paper, Harvard University. 63.

Mesnard, A. (2004), "Temporary migration and capital market imperfections", Oxford Economic Papers, vol. 56, issue 2: 242-262.

Mishra, P. (2007), "Emigration and wages in source countries: evidence from Mexico", Journal of Development Economics, 82 (2007), pp. 180-199

Möllers, J., and Meyer, W. (2014), "The Effects of Migration on Poverty and Inequality in Rural Kosovo", IZA Journal of Labor & Development 3 (16).

Mughal,M., Makhlouf, F. (2011), " Remittances, Dutch Disease, and Competitiveness - A Bayesian Analysis", CATT - UPPA - Université de Pau et des Pays de l'Adour.

Opperman, P., Adjasi C.K.D. (2019), "Remittance volatility and financial sector development in sub-Saharan African countries", Journal of Policy Modelling, 41 (2), pp. 336-351.

Quartey, P., Ackah, C., Lambon-Quayefio, M.P. (2019), "Inter-linkages between remittance and savings in Ghana", International Journal of Social Economics, Vol. 46 No. 1, pp. 152-166.

Rapoport, H., Docquier, F. (2006), "The Economics of Migrants' Remittances", Handbook on Economics of Giving, Reciprocity and Altruism, 2, 1135-1198.

Ratha, D. (2007), "Leveraging Remittances for Development", Roberts, B., Banaian, K.: Remittances in Armenia: Size, Impacts, and Measures to enhance their Contribution to Development. Special Study for USAID/Armenia, Bearing Point (2004).

Rodriguez, E. R., Tiongson, E. R. (2001), "Temporary migration overseas and household labor supply: Evidence from urban Philippines", International Migration Review, 35(3), 708–725.

Shapiro, A. F., Mandelman, F. S. (2016), "Remittances, entrepreneurship, and employment dynamics over the business cycle", Journal of International Economics, 103(C), 184-199.

Shen, I., Docquier, F., Rapoport, H. (2010), "Remittances and inequality: a dynamic migration model", The Journal of Economic Inequality, 8(2), 197-220.

Valero-Gil, Jorge, N. (2008), "Remittances and the household's expenditures on health", mimeo, Universidad Autonoma de Nuevo Leon, Monterrey, Mexico.

Vargas-Silva, C. and Ruiz, I. (2009), "To send or not to send: That is the question. A review of the literature on workers remittances", Journal of Business Strategies, 26: 73–98.

Vasco, C. (2011), "The Impact of International Migration and Remittances on Agricultural Production Patterns, Labor Relationships and Entrepreneurship: The Case of Rural Ecuador", Kassel University Press GmbH, Kassel, Germany (Vol. 9).

Williams, K., (2017), "Do remittances improve political institutions? Evidence from Sub-Saharan Africa", Economic Modelling, 61 (2017), pp. 65-75.

Woodruff, C., Zenteno, R. (2007), "Migration networks and microenterprises in Mexico", Journal of Development Economics, 82(2): 509–528.

Yang, D. (2006), "Coping with Disaster: The Impact of Hurricanes on International Financial Flows", 1970–2001.Mimeo. University of Michigan, Ann Arbor.

Yang, D. (2008), "International Migration, Remittances, and Household Investment: Evidence from Philippine Migrants' Exchange Rate Shocks", Economic Journal, 118.

Zhu,N., Xubei, L. (2010), "The impact of migration on rural poverty and inequality: a case study in China", Agricultural Economy, 41 (2), pp. 191-204.

Zsoka, K., and Loyola, F. (2018), "How Do Migration and Remittances Affect Inequality? A Case Study of Mexico", International Monetary Fund.

---

[i] International migration occurs when people from countries with low wages, productivity, and resource availability, move and settle in countries with comparatively better opportunities. Depending on individual circumstances and financial infrastructures, the money saved abroad may be sent regularly to family and relatives or repatriated upon return.

[ii] Altruism implies that the volume of remittances increases with the need of household members back home. Exchange motive corresponds to the repayment of the expense borrowed by the family or friends while they travelled abroad. The insurance motive implies that the migrants send cash or kind to protect the family members' standard of living during economic shocks. And the investment motive denotes that the migrants transfer funds in order to assist the family members to take on investment opportunities.

[iii] Remittances are fungible and so remittances that are not directly used for investment might have freed other resources to be used for investment. Remittances are unrequited transfers and can be used by the recipients to ease wealth constraints to invest in physical and human capital, smoothing consumption, and facilitating entrepreneurship. Flow of remittances is likely to be counter-cyclical relative to the recipient economy they tend to rise when the recipient economy suffers a downturn in activity, an economic crisis, natural disaster, or political conflict, as migrants may send more funds during hard times to help their families and friends back home.

[iv] Overlapping generations model considers two consecutive generations: individuals live a finite length of time, long enough to overlap with at least one period of another agent's life. The relationship between parent (1st generation) and child (2nd generation) also represents the relationship between uncle (1st generation) and nephew (2nd generation) and so on.

[v] International remittances often represent substantial shares of household incomes, and wages earned abroad are usually multiples of those earned at home.