Sending money home: Transaction cost and Bilateral Remittances to developing countries

United Nations University WIDER
World Institute for Development Economics Research

Junaid Ahmed[1] Mazhar Mughal[2] and Inmaculada Martinez- Zarzoso[3]

[1]*Pakistan Institute of Development Economics, Islamabad, Pakistan.*
[2]*Pau Business School, Pau, France.*
[3]*Faculty of Economics, University of Göttingen, Germany and Universidad Jaume I in Castellon, Spain.*

Background

The developing world has witnessed rapid growth in the recorded flows of remittances, which in 2018 amounted to USD 529 billion, up from around USD 342 billion in 2010 (World Bank, 2019a). According to official figures, remittance flows to LMICs have grown by 54 percent compared to 2010.

These figures are probably an underestimate since a large proportion of transfers are made through informal channels such as *Hundi, Hawala* etc.

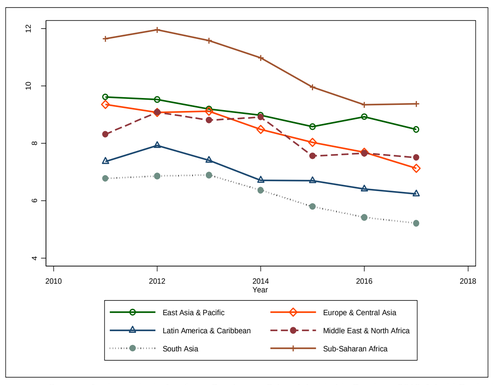
An important factor that causes migrants to use informal channels is the high cost of transferring funds through formal channels (Gibson et al. 2006; Yang, 2011). The average cost of transferring USD 200 to developing countries remained at 7 percent in the first quarter of 2019, about the same level as in previous quarters (World Bank, 2019).

Reducing the cost of remitting is an important policy objective which can help to bring remittances into the formal economy, enhance financial inclusion and increase the net income of receiving households.

In recent years, there has been increased interest by the international community (World Bank, IMF, UN) to formalize remittances. An important factor that causes migrants to use informal channels is the high cost of transferring funds through formal channels (Gibson et al. 2006; Yang, 2011).

The average cost of transferring USD 200 to developing countries that people pay remained at 7 percent in the first quarter of 2019, about the same level as in previous quarters (World Bank, 2019). This is more than double the Sustainable Development Goal (SDG) target of 3 percent by 2030. The cost for remittance services can varies sometimes substantially, by region and transfer methods.

Figure 1: Region-wise mean transaction cost (2011-2017)



Source: Author calculation from Remittance Prices Worldwide Database 2019, World Bank data sets

Relevant literature

A number of studies incorporate geographical distance as a proxy for the cost of remitting in order to overcome the paucity of data on remittance cost. Greater distance between countries is associated with increased costs of sending money, thus negatively affecting remittance inflows (Lueth and Ruiz-Arranz, 2008; Frankel, 2011; McCracken et.al, 2017). However, De Sousa and Duval (2010) report the opposite result: they find a significant positive relationship between geographical distance and remittances. They argue that this result can be explained by the loan repayment hypothesis. Schiopu and Siegfried (2006) find no significant difference in the coefficients of distance and remittance flows. However, the effect is positive for countries without a common border. One issue with the above literature is that using geographical distance, a variable that is time invariant in nature, to proxy transaction cost does not allow the researcher to consider technological changes and financial innovations that have made remitting more convenient. Likewise, it does not account for migration concentration: corridors with a greater network of migrants and higher competition for remittance services exhibit consistently lower costs than others (Beck and Martínez Pería, 2011) indicating a lower level of information friction that further reduces the transaction cost of sending remittances.

Taking a different perspective, Ahmed and Martínez-Zarzoso (2016) and Kakhkharov et al. (2017) focus on the cost of remitting for specific recipients, and find that transaction cost – as expected– negatively affects the volume of remittances. Whereas the former study focuses exclusively on remittances sent to Pakistan, the latter only considers remittances received in 12 post-Soviet economies. The data on remittances go from 2003 to 2013/2014 and the results lack external validity given the national and regional focus they take. Methodologically, one side gravity model is estimated in Ahmed and Martínez-Zarzoso (2016) not being able to properly account for multilateral resistance factors, while Kakhkharov et al. (2017) estimated basic panel data models at the country level with less than 100 observations. To address the limitations that these studies have in terms of methodology, scope and data used, this study uses bilateral data on remittance flows and exploits a global dataset of transaction costs for 30 sending nations and 75 receiving countries for the period 2011-2017. Employing an instrumental variable (IV) design, this paper examines the question of whether and to what extent the cost of remittances reduces the flow of formal remittances to developing countries.

Contribution of the study

The contribution of this paper is twofold.

First, this paper is the first to estimate the effect of transaction cost on remittances using a global sample of countries, departing in this way from previous studies that were more limited in scope (Ahmed and Martínez-Zarzoso, 2016; Freund and Spatafora, 2008; among others).

Second, we employ a number of external instruments à la Altonji and Card (1991) and Card (2001) to tackle potential endogeneity between the volume of remittances and transfer fees. We instrument the cost of remitting with initial origin-specific migrant concentration interacted with indicators of financial access and the speed of transferring funds.

Methodology

We employ an augmented gravity model in which bilateral remittance flows are explained by the GDPs of both the sending (i) and the recipient country (j), and by transaction costs. In particular, the cost of remitting ($Trans\_Cost_{ij}$).

We extend the baseline model by adding other sending and recipient country characteristics that are likely to influence the cross-border remittance flows.

The extended model is given by:

$$\ln(Remit_{ijt}) = \beta_0 + \beta_1 \ln(GDP_{it}) + \beta_2 \ln(GDP_{jt}) + \beta_3 \ln(Transcost_{ijt}) + \sum_{k=1}^{K} \gamma_k X_{ikt} + \sum_{k=1}^{K} \delta_k X_{jkt} + \mu_{ij} + \tau_t + \varepsilon_{ijt}$$

In equation (2), the vector of control variables is represented by X, which includes, among other variables, exchange rate variables, liquid liabilities to GDP for both sending and recipient countries as a measure of financial development, and government stability proxied by institutional quality.

Data

The model of bilateral remittances is estimated using data for 30 sending nations and 75 receiving countries over the period from 2011 to 2017 .

Table 2.: Descriptive statistics

Variable	Obs.	Mean	S.D	Min	Max
ln(Remit)	1,643	5.74	1.78	-5.74	10.31
ln(Remit per migrant)	1,153	7.84	1.11	1.52	11.15
ln(Remit per capita)	1,643	2.04	2.03	-9.72	7.46
ln(Trans. cost 200)	1,365	2.00	0.48	0.24	3.18
ln(Trans. cost 500)	1,363	1.52	0.48	-0.22	2.92
ln(Distance)	1,673	8.35	0.77	5.75	9.83
ln(Stock of migrants)	1,160	-2.12	1.39	-7.47	2.54
ln(GDP_PPP)$_i$	1,701	14.35	1.27	10.85	16.79
ln(GDP_PPP)$_j$	1,694	12.54	2.18	6.28	16.96
Exc. rate stab$_i$	1,701	0.94	0.10	0.38	1.00
Exc. rate stab$_j$	1,526	0.92	0.14	0.08	1.00
ln(Bilateral exchange rate)	1636	3.40	2.64	-5.33	10.26
ln(liquid liabilities to GDP$_i$)	1,336	4.49	0.37	3.56	5.38
ln(liquid liabilities to GDP$_j$)	1,417	3.98	0.62	2.33	5.49
Border	1,673	0.05	0.23	0.00	1.00
Language	1,673	0.39	0.49	0.00	1.00
Colony	1,673	0.15	0.35	0.00	1.00
Instit$_i$	1,701	0.59	0.24	0.00	1.00
Instit$_j$	1,526	0.58	0.15	0.00	1.00

Empirical results

Table 2. Remittances and Transaction Cost: Baseline Estimations

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
ln (Remit)	FE	CRE	FE	CRE	FE	CRE
Explanatory variables						
ln (Trans.cost 200)			-0.24**	-0.24**	-0.22***	-0.22***
			(0.09)	(0.09)	(0.08)	(0.08)
ln(Distance)		0.02		0.02		0.02
		(0.11)		(0.11)		(0.11)
ln(GDP_PPP)$_i$	0.85	0.85	1.22	1.22	0.55	0.55
	(0.71)	(0.72)	(0.81)	(0.81)	(0.73)	(0.73)
ln(GDP_PPP)$_j$	0.30	0.30	0.41	0.41	0.96***	0.96***
	(0.22)	(0.22)	(0.29)	(0.29)	(0.31)	(0.32)
ln(Stock of migrants)	0.20*	0.20*	0.23*	0.23*	0.29**	0.29**
	(0.11)	(0.11)	(0.12)	(0.13)	(0.14)	(0.14)
Border		0.34		0.08		-0.01
		(0.37)		(0.29)		(0.35)
Language		0.03		0.13		0.11
		(0.16)		(0.16)		(0.16)
Colony		0.09		-0.04		-0.27
		(0.21)		(0.21)		(0.20)
ln(Bil. exchange rate)					0.79**	0.79**
					(0.32)	(0.32)
Exc. rate stab$_i$	-0.12	-0.12	-0.18	-0.18		
	(0.13)	(0.14)	(0.15)	(0.15)		
Exc. rate stab$_j$	0.37**	0.37**	0.46***	0.46***		
	(0.14)	(0.15)	(0.16)	(0.17)		
Observations	1,071	1,071	924	924	981	981
R-squared	0.407	0.707	0.418	0.714	0.300	0.706
Number of pairs	217	217	217	217	232	232
Pair FE (fixed or random)	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES

Note: Robust standard errors in parentheses. All models regress the natural log of bilateral remittances. Models 1, 3 and 5 show two-way fixed effects estimates. Columns 2, 4 and 6 show estimates using the CRE approach. *** p<0.01, ** p<0.05, * p<0.1.

Table 3. Remittances and Transaction Cost (USD 200): FE-IV Estimations

Dependent variable:	(1)	(2)	(3)	(4)
ln (Remit)				
Explanatory variables				
ln(Trans. Cost 200)	-1.57**	-1.62***	-1.54***	-0.91**
	(0.63)	(0.61)	(0.58)	(0.44)
ln(GDP_PPP)$_i$	1.55*	1.72*	2.72***	3.40***
	(0.81)	(0.96)	(1.02)	(0.89)
ln(GDP_PPP)$_j$	1.09*	0.71	0.77	0.50
	(0.62)	(0.64)	(0.69)	(0.64)
ln(Stock of migrants)	0.66***	0.59**	0.56**	0.44**
	(0.22)	(0.23)	(0.22)	(0.18)
Exc. Rate stab$_i$		0.97*	0.83	0.05
		(0.58)	(0.51)	(0.48)
Exc. Rate stab$_j$		0.57**	0.74***	0.65**
		(0.29)	(0.28)	(0.27)
ln(liquid liabilities to GDP$_i$)			2.31***	2.80***
			(0.73)	(0.65)
ln(liquid liabilities to GDP$_j$)			0.97**	0.79**
			(0.40)	(0.33)
Instit$_i$				-0.81***
				(0.23)
Instit$_j$				-0.22
				(0.30)
Observations	413	383	362	362
Number of pairs	92	86	78	78
Hansen (Prob)	0.548	0.315	0.345	0.606
Pair FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

Note: Robust standard errors in parentheses. Dependent variable: natural log of bilateral remittances. The models use a two-step GMM with fixed effects (stata command xtivreg2). 2. Instruments include instr1 = bank_bra_hos * migst2011, instr2 = atm_hos * migst2011 and instr3 = speed of transfer. *** p<0.01, ** p<0.05, * p<0.1.

Table 4. Remittances and Transaction Cost. Additional Estimates

Dependent. Variables:	(1) ln(Remit)	(2) ln(Remit)	(3) ln(Remit)	(4) Remit /Mig.	(5) Remit/Pop.
Explanatory variables:					
ln(Trans. cost 200)			-0.710*	-0.985**	-0.872**
			(0.410)	(0.500)	(0.439)
ln(Trans. cost 500)	-1.444				
	(1.476)				
Trans. cost 500 (%)		-0.0950			
		(0.152)			
ln(GDP_PPP)$_i$	4.333***	3.344***	3.204***	2.632***	3.264***
	(1.550)	(0.850)	(0.840)	(0.946)	(0.881)
ln(GDP_PPP)$_j$	1.233	0.652	0.385	0.281	0.463
	(1.116)	(0.718)	(0.624)	(0.656)	(0.633)
ln(Stock of migrants)	0.586*	0.434**	0.376**		0.421**
	(0.325)	(0.220)	(0.168)		(0.176)
Exc. rate stab$_i$	0.00556	-0.258	0.0465	0.267	0.0909
	(0.690)	(0.496)	(0.479)	(0.555)	(0.483)
Exc. rate stab$_j$	0.675*	0.590*	0.589**	0.783***	0.651**
	(0.343)	(0.322)	(0.278)	(0.282)	(0.275)
ln(liquid liabilities to GDP$_i$)	3.227***	2.619***	2.746***	2.167***	2.632***
	(0.996)	(0.607)	(0.624)	(0.676)	(0.641)
ln(liquid liabilities to GDP$_j$)	1.007	0.653	0.676**	0.979***	0.782**
	(0.664)	(0.469)	(0.311)	(0.333)	(0.321)
Instit$_i$	-1.398**	-0.951***	-0.770***	-0.709***	-0.762***
	(0.687)	(0.351)	(0.223)	(0.242)	(0.227)
Instit$_j$	-0.339	-0.329	-0.266	-0.410	-0.224
	(0.383)	(0.292)	(0.307)	(0.333)	(0.297)
Observations	362	362	362	362	362
Number of pairs	78	78	78	78	78
Pair FE	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES
Hansen (prob.)	0.279	0.108	0.180	0.186	0.619

Note: Robust standard errors in parentheses. The models use a two-step GMM with fixed effects (stata command xtivreg2). Instruments include: instr1 = bank_bra_hos * migst2011, instr2 = atm_hos * migst2011, and instr3 = speed of transfer, except for Model 3 which uses the current stock of immigrants as the interacted instrument instead of initial migrant stock. Model 1 regresses remittance flows on the cost of remitting USD 500 instead of USD 200. Model 2 regresses remittances on the cost of remitting USD 500 without taking logarithms. Models 4 and 5 use remittances per migrant and per capita remittances as dependent variables, respectively. *** p<0.01, ** p<0.05, * p<0.10.

Table 5. Sub-sample regressions for top versus non-top remittance corridors

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
ln (Remit)						
Explanatory variables:						
ln(Trans. cost 200)	-0.65***	-0.50	-0.76***	-0.02	-0.62**	-0.46
	(0.21)	(0.78)	(0.28)	(0.23)	(0.27)	(0.44)
ln(GDP_PPP)$_i$	6.53***	1.30	6.15***	1.30*	2.80***	10.69**
	(1.58)	(1.25)	(1.37)	(0.71)	(0.69)	(4.38)
ln(GDP_PPP)$_j$	1.37	-1.06	0.91	-0.85	-0.17	-0.19
	(0.86)	(1.21)	(0.74)	(0.65)	(0.51)	(1.17)
Exc. rate stab$_i$	-0.34	0.02	-0.12	-0.10	0.22	-0.91
	(0.56)	(0.80)	(0.51)	(0.32)	(0.35)	(1.04)
Exc. rate stab$_j$	0.65**	0.64	0.68**	0.32*	0.25*	0.94**
	(0.30)	(0.57)	(0.30)	(0.19)	(0.14)	(0.43)
ln(liquid liabilities to GDP$_i$)	3.70***	1.12	3.43***	1.45*	2.27***	6.91***
	(0.89)	(1.38)	(0.72)	(0.85)	(0.57)	(2.57)
ln(liquid liabilities to GDP$_j$)	0.71**	0.47	0.84**	0.17	0.54***	1.53
	(0.28)	(0.80)	(0.40)	(0.25)	(0.19)	(1.20)
Instit$_i$	-1.02***	-0.35	-0.94***	-0.32*	-0.34**	-1.93***
	(0.27)	(0.36)	(0.27)	(0.17)	(0.15)	(0.67)
Instit$_j$	0.26	-0.61	0.22	-0.25	-0.01	-0.01
	(0.36)	(0.52)	(0.35)	(0.31)	(0.23)	(0.67)
Observations	230	147	283	94	250	127
Number of pairs	50	30	62	18	50	30
Pair FE	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES
Hansen (prob.)	0.232	0.289	0.119	0.293	0.142	0.0301

Note: Robust standard errors in parentheses. The models use a two-step GMM with fixed effects (stata command xtivreg2). Instruments include: instr1 = bank_bra_hos * migst2011, instr2 = atm_hos * migst2011, and instr3 = speed of transfer. Model 1 presents the results for the top three corridors, while model 2 excludes these three. Model 3 includes only the top five corridors and model 4 excludes them. Models 5 and 6 are estimated for above and below median remittances, respectively. *** p<0.01, ** p<0.05, * p<0.1.

Key Findings

Transaction costs remain a significant predictor of the volume of formal remittances.

A decrease of 1 percent in the cost of remitting increase the amount of remittances sent by between 1.6 percent.

The beneficial effect found for the transfer of small amounts does not extend to larger ones, indicating the presence of a scale effect.

In addition to cost, migrant's stock, exchange rate stability in the recipient country and financial development in both the recipient and sending countries are also found to be important factors driving remittances.

The results remain robust when controlling for exchange rate stability, financial development and migrant stocks.

Conclusion

The negative effect of transaction cost on remittances depends on the amount remitted per transaction.

Lowering the cost of remitting and thereby increasing remittance inflows can additionally have an impact in terms of reducing economic inequalities. We found that the remittance-increasing effect of cost reductions is mainly observed for small transfers.

Public policies designed to increase remittances and decrease the cost of remitting need to focus on smaller amounts more frequently sent by low-income migrants.

UN-WIDER Poster Workshop, 2021