

The Mediating Role of Financial Development in the Remittances and Household Consumption Nexus: Evidence from a Panel of African and Asian Countries

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Abstract

This paper examines whether the strength of the relationship between remittances and household consumption, documented in the empirical literature, varies with the financial deepening. It uses a nonlinear panel model and the pooled mean group estimator for a sample of 19 countries over the period 1987 to 2013. The results show that households in financially developed countries gain significantly from remittances. They also indicate that per capita income is positively related to household consumption while inflation and urbanization are negatively related to it. These findings suggest that financial development should be enhanced not only to favor the inflows of remittances to developing countries but also to effectively channel remittances to productive activities and credit opportunities that can significantly improve household consumption.

Keywords

Remittances, Household Consumption, Financial Development, Developing Countries

1. Introduction

Migrants' remittances are becoming a major source of external resources for developing countries. Statistics from the World Bank show that remittance flows to Sub-Saharan Africa have increased from 1.06 percent of GDP in 1994 to 1.24 percent in 2004 and reached 2.78 percent in 2019. In South Asia, remittances have increased from 2.21 percent of GDP in 1994 to 3.15 percent in 2014 and

reached 3.83 percent in 2019. It is well-known that that remittance flows to Africa are underreported as formal financial sector is less developed in this region than in other developing countries. According to Freund and Spatafora (2005) informal remittances to Sub-Saharan Africa amount to 45 - 65 percent of official flows, compared to only 5 - 20 percent in Latin America. Given the increasing volume of remittances to developing countries, it is worth looking at their impact on household consumption and poverty. A number of empirical studies have examined this topic. Adams (2011) provided a literature review. The general finding from these studies supports the evidence that remittances reduce poverty). For example, Gupta et al. (2009) found that remittances mitigate poverty in Sub-Saharan Africa. Adams (2006) and Beyene (2014) reached the same conclusion in the case of Ghana and Ethiopia, respectively. In a study of 71 countries, Adams and Page (2005) found that a 10 percent increase in remittances contributes to a 3.5 percent decline in the share of people living in poverty. Imai et al. (2014) also found that remittances contribute to poverty reduction in a panel of 24 Asian countries. Similar studies confirmed that remittances bring a decline in poverty (Gustafsson & Makonnen, 1993; Yang, 2006; Acosta et al., 2008; Kalim & Shahbaz, 2009).

Although the favorable effect of remittances on household consumption, only a few studies asked whether there are certain conditions that can be associated with a stronger or weaker relationship between the two variables. A study conducted by Adams and Cuecuecha (2010) showed that the impact of remittances on households depends on how they are spent. In this work, we examine the way in which the remittances-consumption nexus can vary according to the financial deepening. The variation of this relationship with finance suggests the existence of non-linearity between both variables. The empirical analysis applies the pooled mean group method to estimate a nonlinear model for a panel of 19 developing countries over the period 1987 to 2013. The results show that the impact of remittances on household consumption increases with financial development and becomes positive and larger in financially developed countries.

The remainder of the article is organized as follows. Section 2 outlines the econometric methodology and describes the data. Section 3 discusses the empirical results, while Section 4 concludes.

2. Methodology and Data

2.1. Empirical Model

To examine the effect of financial development on the remittances and household consumption nexus, we specify the empirical model as follows:

$$C_{it} = \theta_0 + \theta_1 \text{GDP}_{it} + \theta_2 \text{Fin}_{it} + \theta_3 \text{Rem}_{it} + \theta_4 \text{Rem}_{it} \times \text{Fin}_{it} + \theta_5 \text{Inf}_{it} + \theta_6 \text{Urb}_{it} + \mu_{it} \quad (1)$$

where i is for country i in the panel, t refers to the time period, C stands for household consumption per capita, GDP refers to per capita income measured by real GDP per capita, FIN is financial development indicator measured as the

ratio of bank credit to the private sector to GDP, REM is remittance inflows, and T stands for trade openness.

It is expected that economic growth, remittances, financial deepening and urbanization benefit the poor by giving them better access to goods and services and enhancing their well-being. Therefore the expected sign of θ_1 , θ_2 , θ_3 and θ_6 is positive. The effect of inflation is negative. We included the interactive term to examine whether or not financial deepening enhances the impact of remittance inflows on household consumption. Our hypothesis is that $\theta_4 > 0$ so the impact of remittances is higher in more financially developed countries. Moreover, when θ_3 and θ_4 have opposite signs, a threshold effect exists.

2.2. Estimation Method

This study uses the Pooled Mean Group (PMG) estimator proposed by Pesaran, Shin and Smith (1999). This estimator allows the short-run coefficients and the speeds of adjustment to vary freely across countries, but impose common long-run coefficients. Following Pesaran, Shin and Smith (1999), Equation (1) is viewed as the reduced form of an autoregressive distributive lag (ARDL) dynamic panel model.

$$y_{it} = \sum_{j=1}^m \lambda_{ij} y_{it-j} + \sum_{j=0}^n \delta'_{ij} x_{it-j} + \mu_i + \varepsilon_{it} \quad (2)$$

where x_{it} is a $k \times 1$ vector of explanatory variables; δ_{ij} are the $k \times 1$ coefficient vectors; λ_{ij} are scalars; and μ_i represents the country-specific effect. From this model, we derive the long-run relation as follows:

$$y_{it} = \theta'_i x_{it} + \mu_{it} \quad (3)$$

If the variables are cointegrated, then the error term μ_{it} is an I(0) process for all i , and Equation (2) can be reparameterized in the form of an unrestricted error correction model in which the short-run dynamics of the variables are influenced by the deviation from the long-run relationship:

$$\Delta y_{it} = \phi_i (y_{it-1} - \theta'_i x_{it}) + \sum_{j=1}^{m-1} \lambda_{ij}^* \Delta y_{it-j} + \sum_{j=0}^{n-1} \delta_{ij}^{**} \Delta x_{it-j} + \mu_i + \varepsilon_{it} \quad (4)$$

The error-correction speed of adjustment parameter, ϕ_i , and the long-run coefficients, θ_i , are of primary interest. One would expect ϕ_i to be significantly negative under the prior assumption that the variables exhibit a return to long-run equilibrium. The main interest of ARDL models is that the long run relationship and the short run parameters are estimated jointly. They also allow to deal with variables that are possibly of different order of integration, namely I(0) and I(1), and not simply I(1). This property is extremely useful given the low power of panel unit root tests in short samples.

2.3. Data

The empirical analysis uses annual time series data for 19 selected countries: Be-

nin, Burkina Faso, Cameroon, Cote d'Ivoire, Ghana, Kenya, Mali, Niger, Nigeria, Senegal, South Africa, Bangladesh, China, India, Indonesia, Malaysia, Pakistan, Philippines, and Thailand. The countries were chosen based on data availability. The variables under study are: household consumption per capita, remittances as share of GDP, real GDP per capita expressed in constant 2005 US dollar, the ratio of domestic credit to private sector provided by banks as share of GDP as an indicator of financial development, inflation rate measured as the growth rate of consumer price index and urbanization as share of total population. The ratio of bank credit is considered to catch the intensity of financial constraints. All the data cover the period 1987 to 2013 and are obtained from the 2015 World Development Indicators by the World Bank. The data were converted into natural logarithms, except inflation rate which has some negative values. **Table 1** gives some descriptive statistics of the data.

As **Table 1** depicts, the household consumption per capita had an average value of 6.33 over the period and reached its maximum at 8.29 and its minimum at 5.13. Real GDP per capita had an average of 6.73 and ranged between 5.52 and 8.86. Domestic credit to private sector had a mean value of 3.22 and reached its maximum at 5.11 and its minimum at 1.14. Remittance inflows over GDP had an average value of 0.24 and a maximum value of 2.58. The standard deviations of the variables show that there is a great variability among countries. The Jarque-Bera test for normality rejects the null hypothesis of normality and suggests that all the variables are not normally distributed.

3. Empirical Results

Before carrying out the empirical analysis, we test for stationary and cointegration to make sure that all variables in the model are cointegrated. We test for stationarity using (Levin et al., 2002; Im et al., 2003; Maddala & Wu, 1999) unit root tests. The results reported in **Table 2** strongly suggest that except inflation all the variables are non-stationary in level and stationary in first differences. Consequently, panel cointegration tests can be employed to study the long-run relationship among the variables.

Table 1. Descriptive statistics.

Variables	Obs.	Mean	Std. Dev.	Min	Max	Kurt.	Skew.	JB
Consumption	513	6.33	0.70	5.13	8.29	3.42	0.92	76.24
GDP per capita	513	6.73	0.82	5.52	8.86	3.15	0.93	75.39
Remittances	513	0.24	1.38	-4.75	2.58	2.87	-0.57	28.36
Finance	513	3.22	0.84	1.14	5.11	2.61	0.28	10.27
Inflation	513	7.40	9.65	-14.21	72.83	15.27	3.01	4000.24
Urbanization	513	3.53	0.38	2.57	4.29	2.63	-0.54	27.89

Note: JB refers to the Chi² statistic from the Jarque-Bera test of normality.

Next, to test the cointegration between variables the Johansen-Fisher cointegration test has been applied and results are reported in **Table 3**. Both trace test and maximum eigenvalue support the existence of a long-run relationship between the variables.

In a panel framework, several standard estimators can be used to estimate a cointegrating relationship: OLS, Fully Modified OLS (FMOLS) and Dynamic OLS (DOLS). [Chen et al. \(1999\)](#) analyzed the properties of the OLS estimator and showed that the FMOLS and DOLS estimators may be more promising in cointegrated panel regressions. However, [Kao and Chiang \(2000\)](#) showed that both the OLS and FMOLS have small bias and that the DOLS estimator outperforms both estimators. In this study, we perform the PMG estimation. For comparison

Table 2. Results of panel unit root tests.

Variables	Level			First difference		
	IPS	LLC	PP Fisher	IPS	LLC	PP Fisher
Consumption	6.181 (1.00)	5.431 (1.00)	22.163 (0.981)	-13.425 (0.000)	-13.080 (0.000)	245.94 (0.000)
Finance	0.145 (0.557)	-0.855 (0.196)	27.164 (0.904)	-13.287* (0.000)	-13.469* (0.000)	249.000* (0.000)
GDP per capita	7.444 (1.00)	4.038 (1.00)	22.605 (0.977)	-10.107* (0.000)	-10.449* (0.000)	185.429* (0.000)
Remittances	-1.106 (0.134)	-2.465* (0.006)	41.955 (0.303)	-16.463* (0.000)	-17.557* (0.000)	307.829* (0.000)
Inflation	-9.609 (0.000)	-10.474 (0.000)	170.802 (0.000)	-21.569 (0.000)	-22.187 (0.000)	461.298 (0.000)
Urbanization	10.997 (1.000)	9.845 (1.000)	86.967* (0.000)	3.364 (0.999)	5.856 (1.000)	98.960* (0.000)

Note: IPS, LLC and PP-Fisher are the [Im, Pesaran and Shin \(2003\)](#), [Levin, Lin and Chu \(2002\)](#) and [Maddala and Wu \(1999\)](#) Fisher-PP panel unit root tests. Values in parentheses are *p-value*. * (**) signifies rejection of the unit root hypothesis at the 5% (10%) level.

Table 3. Results of Johansen-Fisher cointegration test.

Hypothesized No. of CE (s)	Trace		Max-eigen value	
	Statistics	Prob.	Statistics	Prob.
At most 1	512.0*	0.0000	359.4*	0.0000
At most 2	238.4*	0.0000	160.2*	0.0000
At most 3	110.8*	0.0000	55.66*	0.0321
At most 4	71.69*	0.0008	42.29	0.2911
At most 5	49.01	0.1087	32.60	0.7171
At most 6	41.36	0.3260	41.36	0.3260

Note: * (**) signifies rejection of the null hypothesis at the 5% (10%) level.

Table 4. Long-run relationship.

	OLS	DOLS	FMOLS	PMG
GDP	0.961* (60.43)	0.772* (10.65)	0.775* (19.79)	0.924* (29.17)
Remittances	-0.039* (-2.28)	-0.178* (-2.47)	-0.025 (-1.05)	-0.130* (-6.37)
Finance	-0.126* (-11.50)	-0.107* (-2.43)	-0.039* (-2.13)	-0.037* (-4.73)
Remittances * Finance	0.023* (4.51)	0.046* (2.12)	0.018* (2.31)	0.056* (7.42)
Inflation	-0.001 (-1.21)	0.005* (3.95)	-0.001 (-0.98)	-0.001* (-2.55)
Urbanization	0.021 (0.93)	0.217 (1.42)	0.081 (1.18)	-0.426* (-5.85)

Note: The asterisks ** and * denote significance at the 10% and 5% levels, respectively. PMG estimates are based on ARDL (1, 2, 2, 2, 2, 2).

purposes, we also perform the OLS, DOLS and FMOLS regressions. The results are given in **Table 4**. As expected, GDP per capita is robustly and significantly positively related to household consumption. Inflation and urbanization are negatively related to private consumption in the PMG regression. Further, the coefficient associated with remittances is negative and significant while that of the interactive term is positive and significant. This suggests that financial deepening increases the impact of remittances on private consumption. In other words, remittances work better in more financially developed countries. The threshold of financial development (the private credit ratio) is evaluated at 10.3% of GDP and 89% of the observations are above this threshold. Then, when financial development is above this level, the impact of remittances is positive and increasing with financial deepening.

4. Conclusion

This paper examines the effect of remittances on household consumption in a sample of 19 African and Asian countries. Previous studies on this issue used linear framework. In this study, however, we use a non-linear model to examine whether or not the strength of the relationship between remittances and household consumption varies with the financial deepening. The pooled mean group method is used to estimate this model. The results show that the impact of remittances on consumption increases with financial deepening and becomes positive when financial development is above 10.3% of GDP. Then, households in more financially developed countries gain significantly from remittances. The results also indicate that per capita income is positively related to household consumption while inflation and urbanization are negatively related to it. These findings suggest that African and Asian countries can look at remittances and

financial development as poverty-reducing tools in designing poverty-reduction policies. Financial development should be enhanced not only to increase the inflows of remittances to developing countries but also to effectively channel remittances to productive activities and credit opportunities that can significantly improve household consumption. They should also do more in reducing the costs of sending money by improving new payment technologies (Kao & Chiang, 2000).

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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