

**Understanding the impact of remittances and diaspora-driven FDI on
poverty reduction in developing countries**

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Introduction

According to a UN report (United Nations, 2017), the majority of the world's biggest diasporas comes from developing countries. Many of them are suffering from an insufficiency in sources of development, especially in a post-crisis era, where traditional factors of growth seem to be subject to cyclical uncertainties. Diasporas, due to their heterogeneous nature, might be able to provide a more reliable source of development. Hence, mobilizing and exploring the potentials of those oversea migrants are of crucial interest for developing countries.

Focusing mainly on the material impacts of those diasporas, migrants can affect capital inflows to their country of origin in two ways: Diaspora members can directly transfer money back to their home countries in form of remittance, or indirectly stimulating FDI inflows by reducing symmetric information and transaction costs. Empirical studies (Comes et al, 2018) have found that remittances and diaspora-driven FDIs have a statistically significant impact on the home country's economic growth. However, only few of them had analyzed the impact of those diaspora-driven inflows on poverty reduction. According to a UN report, poverty can be defined as "a condition characterized by severe deprivation of basic human needs" (United Nations, 1995). GDP growth is not the exact synonym of poverty eradication. Whether the diaspora-driven economic growth is pro-poor or not is still to be discussed. The extent to which diaspora can help reduce poverty in their home country depends on the degree to which the poor households participate in the triggered growth process.

This paper tries to provide empirical evidences on the impact of remittances and diaspora-driven FDIs on poverty reduction in developing countries.

The remainder of this paper is organized as follows: Part I, summary of theoretical background and previous empirical studies; Part II, presentation of the methodology and research strategy; Part III, description and interpretation of the results.

I. Literature Review

Theoretical Background

Diaspora members can either influence capital inflows to their home country in the form of remittances or indirectly by stimulating FDIs. These capital inflows are believed to impact poverty eradication.

The real motivation laying behind diaspora members' act of transferring remittances is debatable. Some argue that it results from a completely altruistic preference. In other words, diaspora members derive their utility from the welfare of family members remaining in their country of origin. (Agarwal and Horowitz, 2002) Some others argue that remittances can be viewed as a form of obligation, following from the existence of an "intra-familial implicit contract" between the expatriated and his family back at home. (Stark and Lucas, 1988) Both the complete altruism and the implicit contract theorem provide consistent explanations to the countercyclicality of remittances.

Nevertheless, it is undeniable that remittances act as an additional but stable financial resource, increasing income and consumption of the receiving households substantially. As poverty rate is calculated using consumption or income data, if the remaining family members are classified as living below the poverty line, remittances can help them loosen their budget constraint and mitigate above the poverty line. Moreover, one's spending is other people's income. Even if the remaining family members live far above the chosen poverty line, they can still help increase the income of the poor households via multiplier effect.

Compared to remittances, the link between diaspora and FDI inflows might be less obvious. However, international migrations are believed to have substantial impact on stimulating FDI flows to their country of origin. Firstly, diaspora members can sometimes be themselves investors. Sociological studies have demonstrated that diaspora members have a revealed preference to cultural products and commodities associated with their country of origin, as the consumption of those goods helps them construct their diasporic social identity abroad (Gsir and Mescoli, 2015). The same

theory seems to be applicable for diaspora investors, who might have preferences towards investing in their own country of origin (Leblang, 2010). Secondly, diaspora members can act as intermediaries between foreign investors and the local industry. In fact, “home bias” is one of the major constraints preventing FDI flows into emerging markets. In an empirical study using longitudinal data on FDI flows of 6263 bilateral country pairs, significant evidence of “persistent home bias” was found (Levis et al, 2016). According to their study, cultural and institutional differences are important determinants of FDI inflows. Such differences create asymmetric information problems and transactional costs (Levis et al, 2016). It is arguable that diaspora members can mobilize their familiarity with their countries of origin and social linkages with other members of the same diaspora, to help resolve asymmetric information and reduce transactional costs. They can provide foreign investors information such as consumers’ taste in the local market, knowledge on local regulations and institutions, to overcome the “home bias” and stimulate FDI flows to their home country.

Concerning the impact of FDI on poverty eradication, the existing literature seems to be controversial. Some argued for a positive impact via spillover effects, increasing investment capital and employment creation. (Bevan, 2004) Others are pessimistic about its impact and defend that the growth process engendered by FDI inflows is not pro-poor and might lead to an underdevelopment of developing countries. (Kentor, 1998)

Summary of Previous Empirical Studies

Leblang 2010 used a dyadic cross-sectional model to test the impact of migrants on both Foreign Direct Investments and Foreign Portfolio Investments. After controlling for multiple factors such as cultural similarities, trade openness and physical distance, statistically significant impact of diaspora was found for both type of investment inflows.

As for the impact of remittances on home country’s development, there exists numbers of country-level empirical studies exploring the relationship between remittances and national GDP growth. Among which, Iqbal and Sattar 2005 used time series data for the period 1972 to 2002 to estimate the effect of workers; remittances

on GDP growth in Pakistan. A behavioral function of real GDP growth was employed to explore the impact of the variable of interest and other control variables. Findings suggest that worker's remittances appear to be an important source of economic growth.

Compared to the amount and diversity in studies focusing on GDP, fewer empirical studies contribute to the impact of remittances on poverty rate. Moises et al. 2011 used quantile regression method to analyze panel data for 66 developing countries from 1981 to 2005, and found an "uneven effect across poverty quantiles in developing countries".

II. Methodology

Empirical Strategy

One can observe from the summary above, that there seems to be a lack of literature on the impact of diaspora on poverty through the indirect channel of stimulating FDI. Furthermore, no comparison between the two channels of effect has so far been made. Hence, this paper tries to overcome this gap by proposing two equations to be regressed:

Firstly, regressing FDI on Migrants to examine the impact of diaspora on FDI:

$$\ln FDI_{i,t} = \alpha_0 + \alpha_1 \ln Mig_{i,t} + \alpha_2 \ln GDP_{i,t} + X_{i,t} + \epsilon_{i,t} \quad (1)$$

Then, regressing Poverty rate on Remittances and FDI:

$$\ln Pov_{i,t} = \beta_0 + \beta_1 \ln Rem_{i,t} + \beta_2 \ln FDI_{i,t} + \beta_3 \ln GDP_{i,t} + \beta_4 \ln Gini_{i,t} + Y_{i,t} + v_{i,t} \quad (2)$$

Where $FDI_{i,t}$ is the FDI inflows into country i in year t ; $Mig_{i,t}$ the migrant stock abroad from country i in year t ; $Pov_{i,t}$ the poverty headcount of country i in year t ; $Rem_{i,t}$ the remittances that country i is receiving in year t ; $GDP_{i,t}$ the nominal GDP in current US dollar of country i in year t ; $Gini_{i,t}$ the Gini Index of country i in year t . $X_{i,t}$ and $Y_{i,t}$ represent the fixed effect.

Multiplying up the two coefficients, $\alpha_1 \times \beta_2$ can be interpreted as the effect of diaspora on poverty via the FDI channel.

Furthermore, in order to obtain an unbiased estimator and overcome omitted variable bias, the model used for poverty rate is inspired by a gravity model from (Lueth et al, 2006), including Gini Index and GDP as control variates.

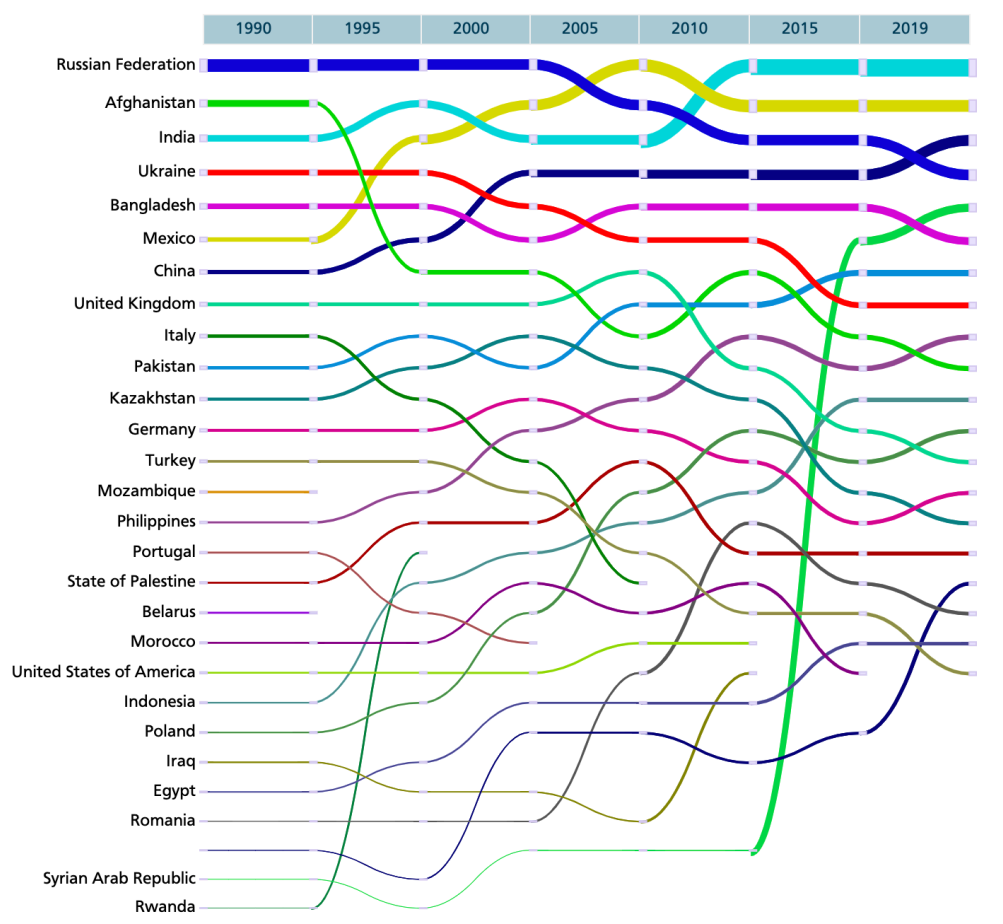
Moreover, there might be some country-specific endowments, constant overtime, that are impacting the level of FDI inflows and poverty rate of that particular country. Hence, a fixed effect estimator is used for both of the two regressions instead of the

pooled OLS. The F test for country fixed effect produces a p-value of 0.000 for both regressions.¹

Data

The sample consists of observations from 1990 to 2019, of 11 developing countries with largest diaspora abroad, chosen according to a United Nations annual report on international migration.

Graph: Twenty countries or areas of origin with the largest diaspora populations



(Source: United Nations, Department of Economic and Social Affairs, Population Division)

Data on migration stock by country of origin is obtained from a database of UN Department of Population, published in 2010. Data on FDI inflows is obtained from World Development Indicators of the World Bank and nominal GDP in current US

¹ Details on the F test are available on request.

dollar is obtained from World Bank national accounts data and OECD National Accounts data files.

Table 1: Summary Statistics of Dependent Variables

Variable	Units	Obs	Mean	s.d.	Min	Max
Rem	current US\$ (million)	311	11833.62	17147.57	6	82202.73
FDI	current US\$	315	1.73e+10	4.31e+10	-4.55e+09	2.91e+11
Mig	Number of individuals	77	5464920	3359967	813066	1.75e+07
GDP	current US\$	314	6.94e+11	1.76e+12	1.69e+10	1.36e+13
Gini	NA	161	33.73473	7.009091	.0412	54.34

In order to disentangle the ambiguities that might exist while defining the poverty threshold, this paper takes into account poverty headcount ratios calculated from three different poverty lines. We first consider what the World Bank defined in October 2015 as “International Poverty Line” (IPL) of \$1.90 a day, a commonly admitted threshold for absolute poverty. (Ferreira et al, 2015) We also take into consideration two other thresholds of \$3.20 and \$5.50 a day, to estimate the impact of our variables on households in moderate poverty. Poverty headcount ratios and Gini Index are calculated from longitudinal consumption data of the PovcalNet Project by the World Bank.

Table 2: Summary Statistics of Poverty Headcount Ratios

Poverty Line	Obs	Mean	s.d.	Min	Max
\$1.9 /day	202	0.1330135	0.1530777	0	0.6667
\$3.2 /day	132	0.3612081	0.2796343	0.0010804	0.900163
\$5.5 /day	132	0.5820164	0.3131248	0.0330375	0.9830471

Migration stock by countries of origin and poverty rates are only available with five years interval. A linear interpolation is employed to overcome the problem of missing data.

III. Results

Table 3: Impact of Migration Stock on FDI Inflows (with linearly interpolated data²)

	lnFDI	P > t
lnMig	0.7560229 (0.3878916)	0.052
lnGDP	1.171358*** (0.1515634)	0.000
Constant	-20.25664*** (3.440781)	0.000

* p< 0.05 ** p< 0.01 *** p< 0.001

(Note: standard deviations reported in parenthesis)

Results above suggest that 1% increase in migration stock aboard of country *i* in period *t*, would cause a 75.6% increase in its FDI inflow in period *t*. The impact of migration stock on FDI inflows seems to be strong in value. However, the coefficient obtained is at the margin of statistical significance, with a p-value at 0.052. Hence, we fail to reject the null hypothesis for α_1 at 95% confidence level, suggesting that the coefficient might be obtained by chance and not due to any factors of interest.

Table 4: Impacts on Poverty Headcount Ratios (with linearly interpolated data³)

lnPoverty Headcount	\$1.90 / day	\$3.20 / day	\$5.50 / day
lnRem	-0.1166464 (0.065696)	-0.189575 *** (0.0518357)	-0.129696*** (0.027342)

² Estimations with original data can be found in annex.

³ Ibidem.

lnFDI	0.2454705 *** (0.0591404)	0.2415319 *** (0.0472185)	0.1356765*** (0.024823)
lnGDP	-1.417948 *** (0.1437166)	-0.869728*** (0.1136991)	-0.4074854*** (0.0594594)
lnGini	0.0642774 (0.1181639)	0.0793306 (0.0951534)	0.0484252 (0.0502087)
Constant	29.54048 *** (2.98127)	17.04686*** (2.365849)	7.807439*** (1.239068)

* p< 0.05 ** p< 0.01 *** p< 0.001

(Note: standard deviations reported in parenthesis)

The findings suggest that remittances have a negative impact on poverty headcount ratio for both three poverty lines. Nevertheless, the coefficient obtained for the International Poverty Line of \$1.90 is not statistically significant. Significant impacts are only observed for thresholds of \$3.20 and \$5.50 per day, measuring poverty in a more moderate sense. In particular, 1% increase in remittances would cause the poverty headcount at \$3.20 to decrease by 18.96% ; and results in a 12.97% reduction in headcount for \$5.50. As our data on poverty is measured with longitudinal consumption data, the result suggests that, remittances are only affective to increase the consumption of those who are already above a certain living standard. These results seem to corroborate Serino’s findings, on “uneven effect of remittances on poverty quantiles”.

Table 5: Comparing the Effect of Remittances and Diasporic FDI on Poverty

lnPoverty Headcount	\$1.90 / day	\$3.20 / day	\$5.50 / day
lnRemittances	-0.0113775	-0.1896594	-0.1297432
$\alpha_1 \times \beta_2$	0.189278347	0.182610603	0.102576431

It is worthy of attention that remittances and diasporic FDI work in opposite direction for poverty reduction. A 1% increase of migration stock abroad is likely to increase the poverty headcount by around 18% via the FDI channel, suggesting that the

growth process generated by two channels of diaspora's impact might differ in nature and in effect. Remittances driven development seems to be pro-poor, whereas FDI inflows seems to dampen the poverty situation. This aspect of findings is compatible with Kentor's statement (Kentor, 1998) that dependency on FDI inflows might lead to an underdevelopment of developing countries.

However, having in mind that the impact of migration stock on FDI inflows is barely significant, our model is indeed subject to limitations, especially concerning diaspora driven FDIs. The part of diaspora members engaged in investment activities is not directly captured and the coefficient obtained from $\alpha_1 \times \beta_2$ is only a rough estimate for migrant's impact on poverty rate through the FDI channel.

Moreover, our result for coefficient α_1 of equation (1) seems to be extremely large ($\hat{\alpha}_1 = 0.7560229$), suggesting that the model might be positively biased. Indeed, there might be some omitted variables such as boarder openness, positively correlated with both migrants stock and FDIs, leading to an overestimation of the coefficient of interest. A valid and relevant instrumental variable, such as the number of diasporic investors or the number of diasporic CEO in multinational firms, can be employed to overcome the endogeneity issue of migrants stock. Yet, such data appears to be limited in availability for panel regression.

Conclusion

Summing up, strong empirical evidences suggest that diaspora remittances reduce moderate poverty in receiving countries. Nevertheless, statistically significant but negative impact was found for FDI inflows, indicating that the growth process generated by diaspora via the FDI channel might not be pro-poor.

These findings have further policy implications for the government in developing countries. Firstly, countries suffering from extreme poverty (i.e. large headcount ratio for the IPL) should perhaps not consider remittances as primary recourse in poverty eradication. Secondly, governments should be cautious concerning FDI policies, as it might worsen the situation of the poor and enlarge inequalities.

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Annex

Table 1: Impact of Migration Stock on FDI Inflows with Original Data

	lnFDI	P > t
lnMig	2.460829*** (1.200461)	0.046
lnGDP	.8008445 (.5078358)	0.121
Constant	-36.80814*** (10.55176)	0.001

* p< 0.05 ** p< 0.01 *** p< 0.001

(Note: standard deviations reported in parenthesis)

Table1: Impacts on Poverty Headcount Ratios with Original Data

lnPoverty Headcount	\$1.90 / day	\$3.20 / day	\$5.50 / day
lnRem	-0.0394644 (0.1132053)	-0.2992463 ** (0.1105235)	-0.1813971** (0.060578)
lnFDI	0.2154055* (0.1087426)	0.2893599* (0.1405797)	0.1713267* (0.0770518)
lnGDP	-1.613928 *** (0.2330464)	-0.8888504*** (0.2424573)	-0.4428336*** (0.1328909)
lnGini	0.0408005 (0.1452349)	0.0557444 (0.1230599)	0.0212486 (0.0674491)
Constant	33.87468 *** (4.918678)	16.87453*** (4.991972)	8.142289* (2.736102)

* p< 0.05 ** p< 0.01 *** p< 0.001

(Note: standard deviations reported in parenthesis)