ARE REMITTANCES INFECTOUS? EVIDENCE OF REMITTANCES CAUSING DUTCH DISEASE

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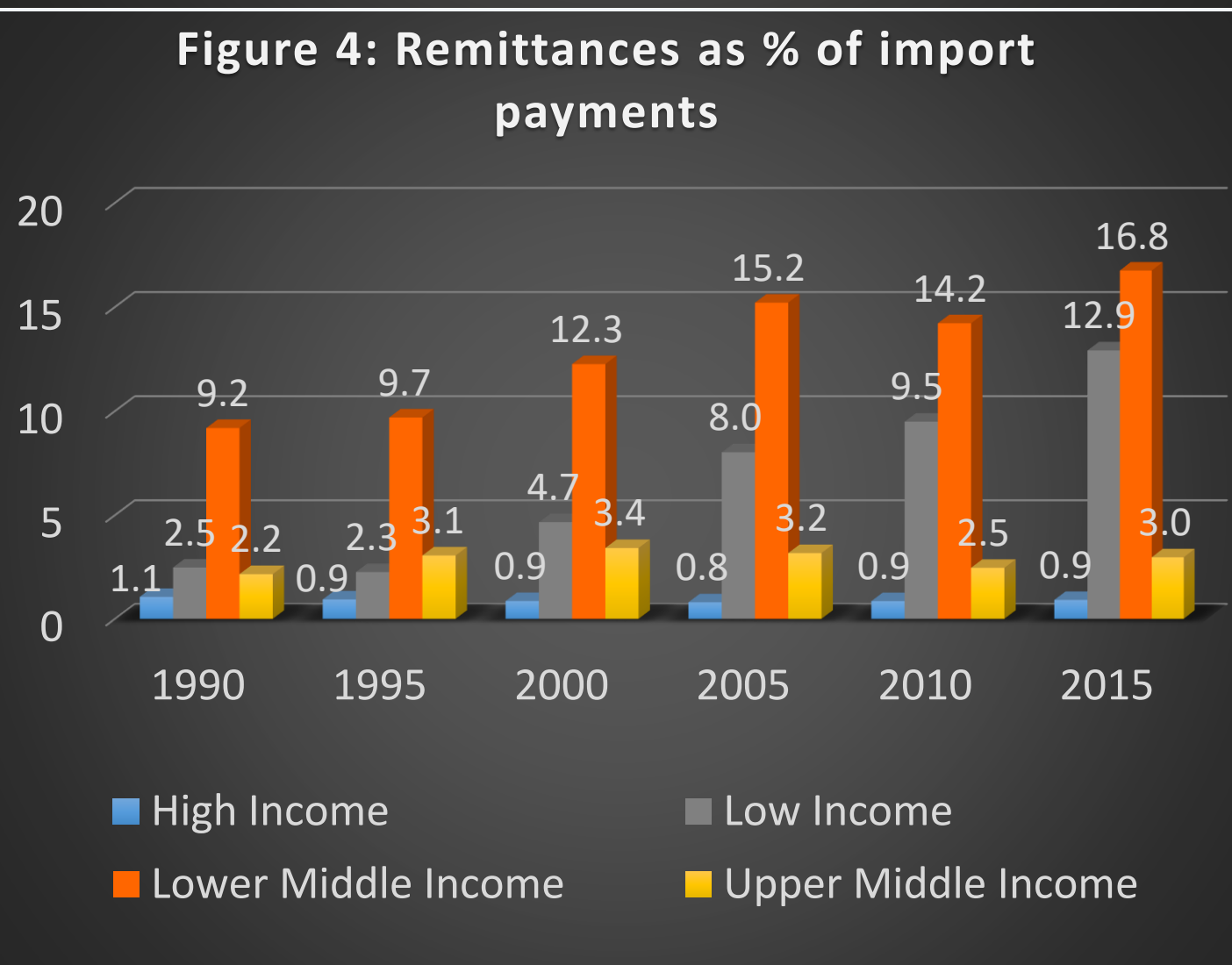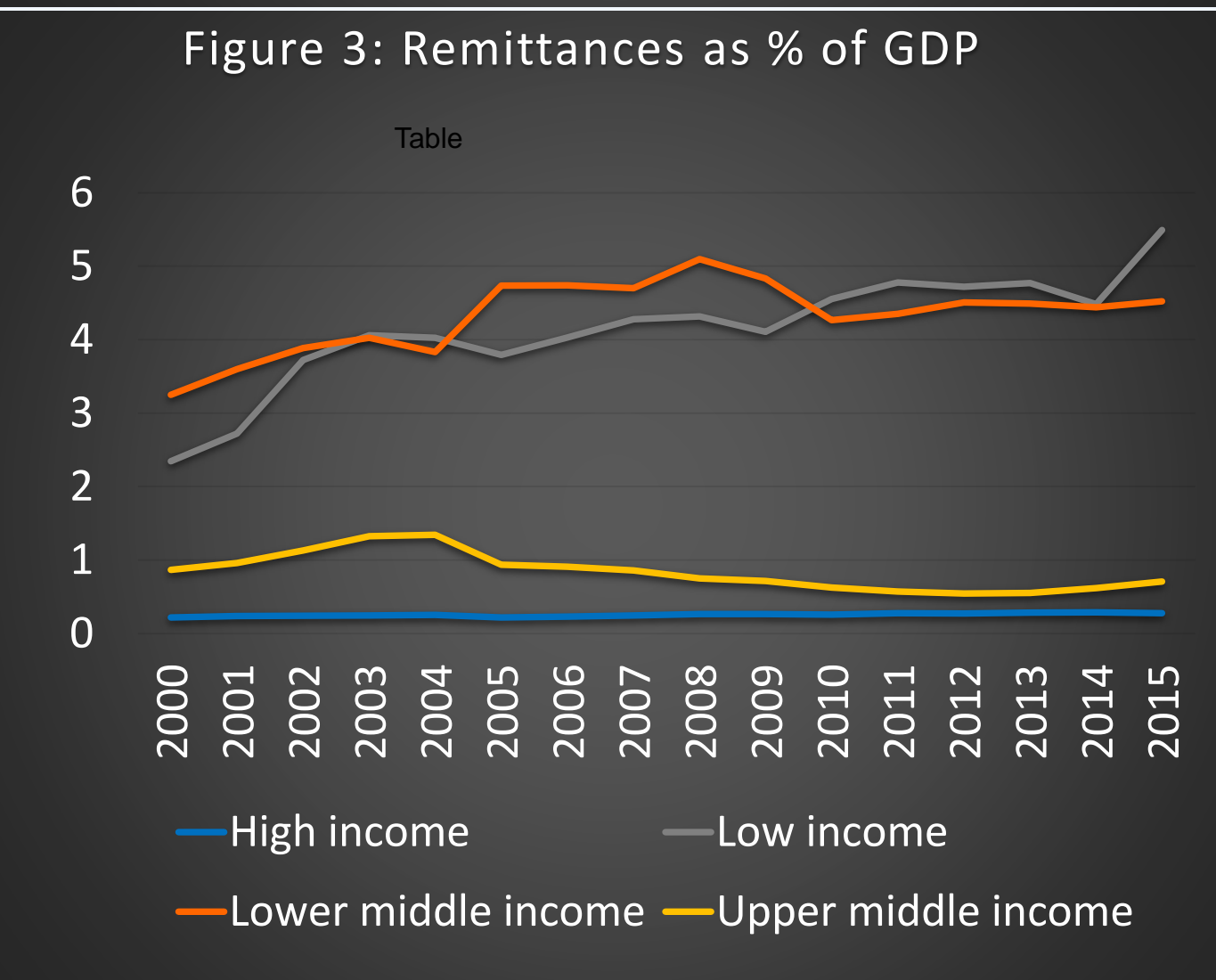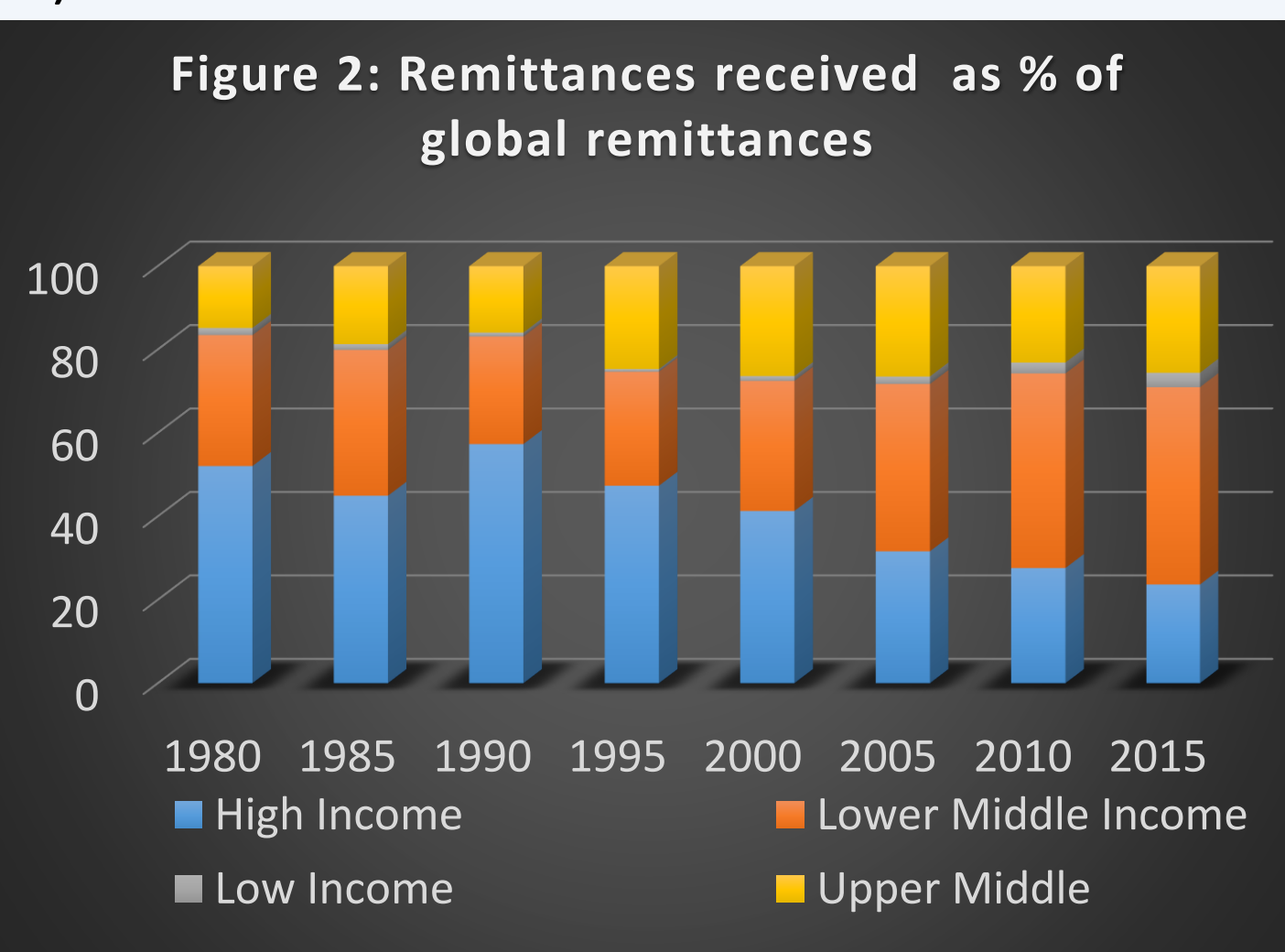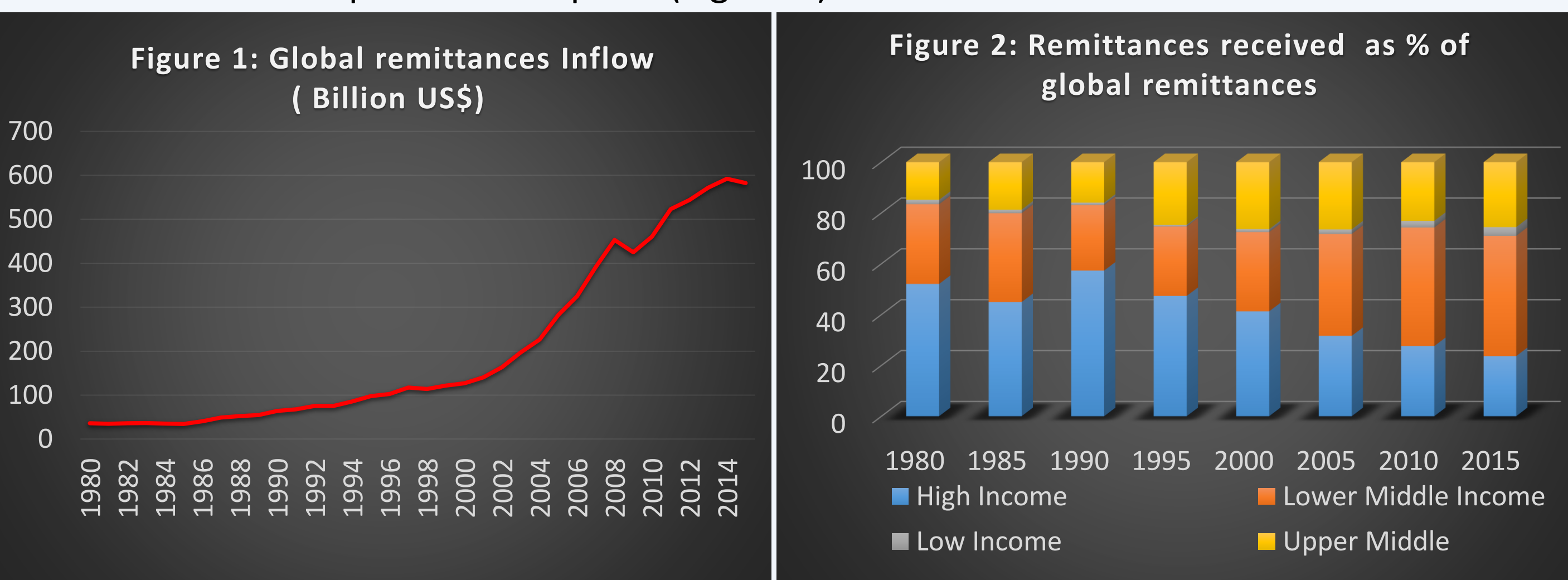North Carolina State University
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Are Remittances Infectious? Evidence of Remittances Causing Dutch Disease

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INTRODUCTION

Remittances, "monies earned or acquired by non-nationals which are transferred back to their country of origin" (IOM) are an increasingly important source of external finance – particularly for developing (low and middle income) countries. Worldwide, remittance flows are estimated to have reached $575 billion USD in 2016, reflecting an almost a 16-fold increase since 1980.

There is a higher dependence on remittances in poorer than in richer countries (Figure 3). For many developing nations, remittance inflows are much larger than their official development assistance and more stable than the private capital flows. These capital inflows can provide critical income support after economic shocks and natural disasters, and have a positive role in reducing poverty (Jonganwich 2007). Empirical evidence has been mixed on the relationship between remittances and economic growth (Catrinescu et al. 2009, Ahortor and Adenutsi, 2009; Barajas et al. 2009; Chami et al., 2005). Further, remittances are an important source of foreign exchange for developing countries and cover a substantial portion of imports (Figure 4).

Figure 1: Global remittances Inflow (Billion US$)

Figure 2: Remittances received as % of global remittances

Figure 3: Remittances as % of GDP

Figure 4: Remittances as % of import payments

The potential impact of remittance inflows, however are not uniformly positive. Remittances may generate increased spending on non-tradable goods which, in turn, may increase relative prices, appreciate the real exchange rate (RER), and reduce competitiveness (Amuedo-Dorantes 2014). This phenomena is also known as "Dutch Disease".

The extent to which remittances cause Dutch disease is important. Appreciation of RER can have adverse effects on tradable sector and widen the current account deficit. In addition, substantial capital inflows can induce inflationary pressure. Hence policy makers may need to mitigate against potential negative impacts of remittances in their economy.

OBJECTIVES

This paper analyzes the impact of remittances on the export competitiveness of the economy as a possible cause of "Dutch Disease". Specifically, this study seeks to:

(1) assesses if remittance inflows appreciate real exchange rates (RERs) and thereby reduce export competitiveness of recipient countries;

(2) explore if the impact of remittances on real exchange rates differ across countries by their income status and/or by the time period under consideration (long, short run impacts).

The breadth of countries and time period included in this dataset permit a unique and comprehensive examination of the impact of remittances on real effective exchange rates.

MODEL and METHODOLOGY

To investigate if remittances have an impact on the RER of remittance receiving countries, a model which controls for determinants of the RER which is consistent with economic theory and previous literature was developed. The Real effective exchange rate (REER) is used as a measure of the RER and is modelled as:

$$REER_{it} = \alpha + \beta_1 \text{Remittance}_{it} + \beta_2 \text{Per Capita GDP}_{it} + \beta_3 \text{Govt. Expenditure}_{it} + \beta_4 \text{Trade Openness}_{it} + \beta_5 \text{ToT}_{it} + \beta_6 \text{World Real Interest Rate}_{it} + \beta_7 \text{Age Dependency Ratio}_{it} + \beta_8 \text{Foreign Aid}_{it} + \varepsilon_{it}$$

where i refers to the remittance receiving country and t denotes the year. Pooled OLS and fixed effect were used to estimate alternative model specifications. Countries are divided according to their income status as per the World Bank income classification. Robust standard errors (controlling for heteroscedasticity and autocorrelation) are used.

As REER is defined as the relative price of domestic to foreign goods, an increase in REER implies a RER appreciation. The *priori* expectation of the explanatory variables are:

Table 1: Expected impact of model covariates

Variable	Expected Sign	Inference
Remittance	(+)/(-)	Remittance inflows increase expenditure on non-tradables appreciating REER (+). If remittances are spent on tradables, REER would depreciate (-).
Per Capita GDP	(+)	Technological progress increases productivity in the tradable sector lowering costs, increasing relative prices of non-tradables, and has an appreciating effect (+) on REER.
Govt. Exp.	(+)/(-)	Expenditures on non-tradable (tradeable) goods would appreciate (depreciate) REER.
Trade Openness	(+)/(-)	A relatively export-dominated economy would appreciate the REER(+); an import-dominated foreign sector would depreciate the REER (-).
ToT	(+)/(-)	An export (import) dominated ToT would appreciate (depreciate) the REER.
World Real Interest	(+)/(-)	Rise in World real interest rate may cause the REER to appreciate (+) in creditor countries and depreciate (-) in debtor countries.
Age Dependency	(+)	Higher dependent population leads to lower savings, a reduced current account balance, and causes the REER to appreciate (+)
Foreign Aid	(+)/(-)	Productivity increase of the tradable sector and non-tradable sector by aid will appreciate (+)and depreciate (-) the REER respectively.

DATA

A dataset containing 159 countries with data coverage from 1980-2015 was constructed from two main sources. REER data were compiled from the Bruegel REER database. The remainder of the data was collected from the World Bank's World Development indicator database. Remittances, government expenditure, openness, and aid are expressed as a percent of GDP. Per capita GDP is expressed in constant 2010 USD, and the US real interest rate is used as a proxy for the world real interest rate.

RESULTS

Models are estimated for the whole sample and for country groups with different income status' (Table 2). As remittances are particularly important to middle- and low-income countries, and their impact may have changed across time, results are also estimated and compared between two decades (1980-90 and 2005-2015, Table 3). Overall, the impact of the independent variables on the RER is as anticipated and are largely consistent across time and country income status.

Results indicate that there is no evidence that remittances appreciated the RER except in high income countries. This suggests that remittances received by the households of those countries are primarily spent on non-tradables and/or the income supplements from abroad reduce participation in the labor market and contribute to contracting the tradable sector. Results in Table 3 indicate that the impact of remittances on the RER remains insignificant for middle and low income countries in different decades. Furthermore, Chi-square tests find no evidence that the effect of remittances on the RER has changed across time.

This analysis offers a unique examination of the impact of remittances on RERs across a considerable range of countries and long time period. These results differ from several other studies which find that remittances do cause an exchange rate depreciation (Acosta et al., 2009; Makhlouf and Mughal, 2013). Other analyses, however, are more narrow in their focus (e.g. single country case studies) which may explain the different findings.

Table 2: Fixed Effect Estimates Disaggregated by Income Status, 1980-2015

VARIABLES	All Countries REER	High Income REER	Upper Middle REER	Upper Middle REER	Lower Middle REER	Lower Middle REER	Low Income REER	Low Income REER
Remittance	0.837	3.901**	-0.854	-0.314	2.867	2.545	0.660	0.282
	(0.628)	(1.525)	(0.638)	(0.583)	(2.430)	(2.399)	(0.979)	(1.063)
Per Capita GDP	0.004***	0.001***	0.012***	0.012**	-0.001	-0.004	-0.051	-0.076
	(0.002)	(0.000)	(0.004)	(0.005)	(0.0121)	(0.013)	(0.04)	(0.051)
Govt. Exp.	1.053	1.932***	2.089**	2.543***	0.729	1.572	0.843	0.869
	(1.007)	(0.417)	(0.849)	(0.896)	(3.142)	(2.926)	(0.91)	(0.865)
Trade Openness	-0.603**	-0.138**	-0.344***	-0.353***	-1.792	-1.690	-0.286	-0.151
	(0.289)	(0.059)	(0.114)	(0.095)	(1.142)	(1.085)	(0.219)	(0.187)
Terms of Trade	0.215***	0.263***	0.008	0.008	0.438*	0.387*	0.334*	0.367***
	(0.079)	(0.042)	(0.085)	(0.09)	(0.232)	(0.201)	(0.164)	(0.160)
World Real Interest	3.773***	-0.148	1.55	1.419	8.140*	6.809*	5.774***	5.915***
	(1.193)	(0.349)	(1.072)	(1.061)	(4.308)	(3.769)	(1.087)	(1.124)
Age Dependency	0.629	0.107	1.779*	2.041**	-0.644	0.122	-0.181	0.079
	(0.490)	(0.327)	(1.023)	(1.138)	(0.93)	(0.745)	(1.171)	(1.086)
Foreign Aid				-1.886**		-3.745*		-0.726*
				(0.879)		(1.975)		(0.413)
Constant	17.39	8.732	-76.21	-99.15	189.3	151.9	102.1	90.96
	(35.64)	(24.33)	(86.49)	(96.51)	(133.8)	(118.4)	(110.9)	(100.2)
Observations	3,451	754	1,084	1,002	1,018	987	595	573
R-squared	0.088	0.275	0.256	0.277	0.130	0.145	0.238	0.268
# of Countries	159	43	49	49	42	42	25	25

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 3: Fixed Effect Estimates Changes Across Time, Comparison of 1980-90 and 2005-15

Dependent Variable: $REER_{ij}$	Upper Middle Income 1980-1990	Upper Middle Income 2005-2015	Test $\beta_{1980-90}=\beta_{2005-15}$	Lower Middle Income 1980-90	Lower Middle Income 2005-2015	Test $\beta_{1980-90}=\beta_{2005-15}$	Low Income 1980-90	Low Income 2005-2015	Test $\beta_{1980-90}=\beta_{2005-10}$
Remittance	0.016	0.467		-0.059	-0.201		-11.32	-0.385	
	(1.52)	(0.743)		(4.597)	(0.510)		(13.64)	(0.485)	
Per Capita GDP	0.008	0.004**		-0.053	0.01*		0.137	0.045	
	(0.006)	(0.002)		(0.076)	(0.005)		(0.141)	(0.037)	
Govt. Exp.	2.412***	0.213	***	-5.359	-0.551		-0.740	0.308***	
	(0.729)	(0.421)		(6.906)	(0.648)		(1.131)	(0.099)	
Trade	-0.703***	-0.270***	***	-5.718	-0.244**		-1.827	-0.05	
	(0.094)	(0.089)		(3.49)	(0.120)		(1.263)	(0.049)	
Terms of Trade	0.012	0.0567		1.262*	0.089	*	-0.123	-0.049	
	(0.071)	(0.039)		(0.67)	(0.093)		(0.280)	(0.06)	
World Real Interest	5.27***	-0.690	***	25.75	-1.019*	*	2.752	-1.038*	
	(1.689)	(0.52)		(15.16)	(0.553)		(2.691)	(0.598)	
Age Dependency	2.567**	-0.486	**	9.738	-1.063*	*	1.11	-1.137**	
	(1.198)	(0.479)		(6.073)	(0.526)		(2.873)	(0.543)	
Foreign Aid	0.198	-0.725***	**	-11.18	-0.367		-2.539**	-0.057	***
	(0.252)	(0.205)		(8.069)	(0.356)		(0.972)	(0.102)	
Constant	-137.2	120.9***		-470.5	177.1***		152.1	192.0***	
	(111.3)	(33.83)		(397.5)	(47.66)		(254.5)	(59.11)	
Observations	168	423		238	364		138	220	
R-squared	0.385	0.338		0.296	0.407		0.290	0.260	
# of Countries	20	45		22	40		15	24	

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Conclusions

Controlling for country heterogeneity, the empirical estimates find evidence of remittances causing the RER to appreciate in case of high income countries. However, the result does not hold for countries of other income groups. The impact of remittances on RER of middle and low income countries do not differ between the 80's and the late 2000's.

These results have important policy implications. As the impact of remittances differ on countries of different income levels, countries should be very careful in devising economic policies to take advantage of inward remittances. A "one size fits all" solution will not be the prudent way to go forward in tackling the potential problems arising from remittance inflows. Additional micro studies exploring the spending patterns of remittance receipts would be useful to identify and examine the underlying reasons that remittances have different impacts on countries with different income levels.

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