

An Empirical Analysis of the Foreign Aid and Real Exchange Rate Nexus

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Background and Motivation

- Despite progress, a large number of people are still living in poverty.
 - >>> Foreign aid continues to play an important role.
- The merits and demerits of “foreign aid” remain debatable.
 - >>> Despite potential benefits, foreign aid also carries considerable risks: Real exchange rate (RER) appreciation effects reducing competitiveness of the export industries – the Dutch Disease!

Background and Motivation...

- ***Limited and inconclusive empirical evidence!***

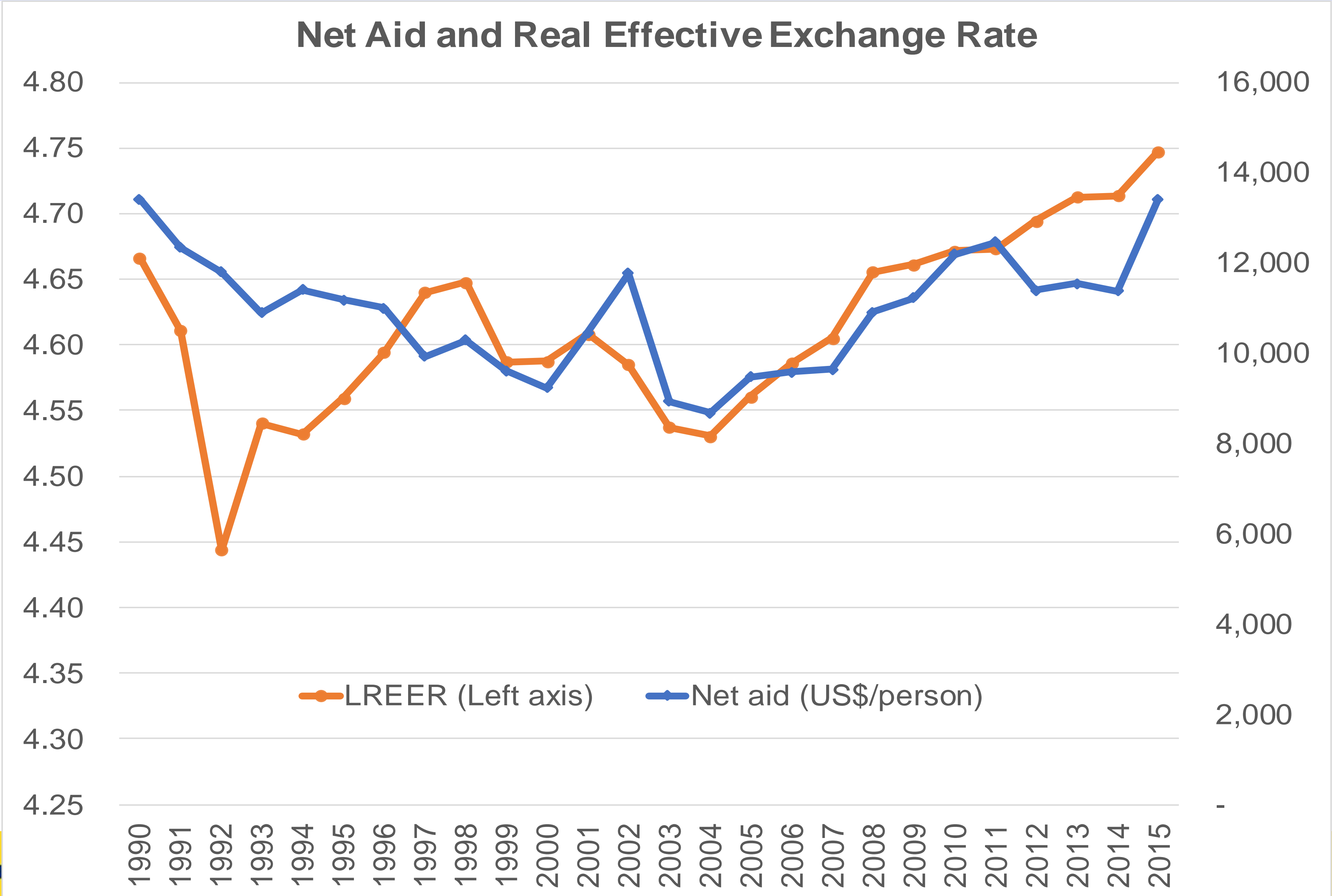
- >>> Appreciation effects (Adu & Denkyirah, 2018; Juselius et al., 2017; Arellano et al., 2009; Elbadawi et al., 2008; Prati & Tressel, 2006;)

- >>> Depreciation effects (Temple & Van de Sijpe, 2017; Bakardzhieva et al., 2010; Fielding, 2007; IMF, 2005;)

- ***Limited scholarly attention: Roles of domestic economic conditions!***

- Without robust empirical evidence, policymakers are left with economic theory to guide their policy decisions.

Background and Motivation...



Background and Motivation...

Does foreign aid induce real exchange rate appreciation?



Research Methodology

- A dynamic panel data model:

$$RER_{it} = \delta RER_{i,t-1} + \theta NAID_{it} + \sum_{j=1}^n \gamma_j Z_{jit} + \mu_i + \varepsilon_t + v_{it}$$

- Model variables:

- RER: Natural logarithm of real effective exchange rate
- NAID: Natural logarithm of net ODA and official aid per capita
- Control variables (Z): TO, TOT, GDPPC, GC, ERR, FD, EMS, NERG

- The role of financial sector development (FD): Sub-sample analysis and interaction term between NAID and FD variables.

Research Methodology: SGMM Estimator

- The model may suffer from endogeneity issue:
 - Unobserved heterogeneity: The lagged DV is correlated with the error term.
 - OLS & Fixed-effect methods: Biased & inconsistent estimates (Baltagi, 2008; Gujarati & Porter, 2003)
- ⇒ *The model is estimated by system generalized method of moments (SGMM) to control for the endogeneity issue.*

Data

- Sample: 115 aid-recipient economies from 1990-2015.
- Selection of the sample and study period is dictated by the availability of data.
- A panel dataset of foreign aid, RER and other variables obtained from the following databases:
 - World Development Indicators (WDI), Breugel, UNCTAD, World Economic Outlook (WEO), Ilzetzki, Reinhart & Rogoff (2017), Chinn & Ito (2006, 2008).

Aid & RER: Baseline Results

- Lagged RER: Strongly significant and positive.
- Net aid generates RER depreciation effects.
- Trade Openness (TO), Excess Money Supply (EMS), and Change in Nominal Exchange Rates (NERG): RER depreciation effects.

	OLS (1)	FE (2)	SGMM (3)
L.LREER	0.826*** (0.052)	0.780*** (0.048)	0.758*** (0.061)
LNAID	-0.006* (0.003)	-0.014** (0.007)	-0.033** (0.016)
LTO	-0.014* (0.008)	-0.085** (0.035)	-0.152*** (0.057)
LTOT	-0.002 (0.007)	-0.012 (0.013)	-0.013 (0.033)
LGDPPC	-0.001 (0.003)	0.060 (0.062)	0.016 (0.034)
LGC	0.013 (0.009)	0.041 (0.034)	0.052 (0.053)
ERR	0.014** (0.006)	0.016 (0.012)	0.026 (0.025)
FD	-0.008 (0.013)	0.119 (0.081)	0.181 (0.162)
EMS	-0.071 (0.051)	-0.102** (0.042)	-0.181* (0.093)
NERG	-0.287*** (0.068)	-0.332*** (0.117)	-0.269** (0.118)
Constant	0.866*** (0.279)	0.616 (0.415)	0.000 (0.000)
Observations	2,340	2,340	2,340
Countries	115	115	115
R-squared	0.836	0.798	
Number of instruments			
p-value for Hansen J. test			0.42
p-value for AR(1) in residuals test			0.025**
p-value for AR(3) in residuals test			0.18

*** p<0.01, ** p<0.05, * p<0.1, and standard errors in parentheses



Aid & RER: Role of Financial Development

- Lagged RER: Strongly significant and positive.
- FD<Average: Depreciation effects.
- FD>Average: Appreciation effects.
- The threshold effect of FD is confirmed by the “NAID*FD” interaction variable: Positive and statistically significant!

	FD<Median (4)	FD>Median (5)	NAID*FD (6)
L.LREER	0.520*** (0.174)	0.948*** (0.183)	0.706*** (0.064)
LNAID	-0.091** (0.041)	0.069* (0.036)	-0.060** (0.024)
LTO	-0.059 (0.115)	-0.126* (0.073)	-0.175** (0.069)
LTOT	0.011 (0.044)	0.063 (0.054)	-0.008 (0.046)
LGDPPC	-0.024 (0.058)	0.005 (0.054)	0.005 (0.044)
LGC	0.320** (0.128)	-0.101 (0.132)	0.075 (0.065)
ERR	0.018 (0.021)	-0.133*** (0.049)	0.043 (0.035)
EMS	-0.137 (0.169)	-0.074 (0.142)	-0.189* (0.104)
NERG	-0.301* (0.175)	0.124* (0.071)	-0.308** (0.133)
FD			0.053 (0.246)
NAID*FD			0.077** (0.037)
Constant	0.000 (0.000)	0.000 (0.000)	1.458*** (0.523)
Observations	1,186	1,021	2,340
Countries	86	87	115
Number of instruments	74	60	109
p-value for Hansen J. test	0.870	0.503	0.478
p-value for AR(1) in residuals test	0.025**	0.001***	0.018**
p-value for AR(3) in residuals test	0.748	0.727	0.282

*** p<0.01, ** p<0.05, * p<0.1, and standard errors in parentheses



Conclusion

- Foreign aid has depreciation effects on real exchange rate.
 - ⇒ Beneficial for promoting economic development and improving the export competitiveness of the aid-recipient countries.
- Importance roles of domestic economic conditions.
 - ⇒ The depreciation effects of foreign aid remain unchanged when the role of exchange rate regime is considered.
 - ⇒ However, the financial sector changes the impacts of foreign aid on RER. When the financial sector is above a certain threshold, foreign aid causes RER appreciation.

Policy Implications

- Continue to encourage better uses of foreign aid in promoting economic progress and living standards of the people in the aid-recipient countries.
- Active aid flow management for the aid-recipient countries policymakers:
 - ⇒ Closely monitor aid flows because they may induce rapid credit expansion that may cause RER appreciation.
 - ⇒ Leverage the aid flows to promote structural reforms in order to maintain the competitiveness of the export industries because once foreign aid induce economic activity and financial sector development to reach a certain threshold, the real exchange rate appreciation may be inevitable.

Thank You!

