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Foreign Exchange Inflows, the Trade Balance and Real Effective Exchange Rates

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Abstract

There has long been a concern that large net inflows of property income or income transfers (such as aid and remittances) pull up the real exchange rate and thus divert resources away from the tradables sector (the so-called Dutch disease effect), although the empirical evidence is somewhat mixed. Using annual data for a large sample of countries back to 1971, it is shown here that the long-run effect of an improvement in the non-trade elements of the current account balance is real exchange rate appreciation and a deterioration of the trade balance.

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1 Introduction

Does an improvement in the non-trade elements of the current account balance tend to bring about a compensating deterioration in the trade balance in the long run? Does such an improvement tend to cause a real exchange rate appreciation? These are the questions addressed in this paper.

Previous research has addressed these issues only with reference to particular elements of the non-trade current account balance rather than the non-trade balance as a whole. Moreover the research has concentrated on the behaviour of the real effective exchange rate rather than on the trade balance. There has been a good deal of research on possible "Dutch disease" effects (appreciation of the real exchange rate that causes the trade balance to deteriorate) of income transfers such as aid and remittances (e.g. Barajas et al. 2010; Hassan and Holmes, 2013; and Lartey et al., 2012 for remittances; Fielding and Gibson, 2013; and Rajan and Subramanian, 2011 for aid).

Barajas et al. (2010) use panel cointegration methods to estimate the impact of flows of remittances on real effective exchange rates, and find that remittance inflows induce very little appreciation; the relevant coefficient is rarely statistically significant and quite frequently negative rather than positive. By contrast Lartey et al. (2012), in a sample of 100 countries, find a consistent positive effect of remittances on real effective exchange rates. Treating agriculture and manufacturing as tradables output and services as non-tradables, they also find a consistent negative impact of remittance inflows on the ratio of the output of tradables to non-tradables.[1] Hassan and Holmes (2013) use a balanced panel of annual data from 1987 to 2010 of 24 countries identified as high recipients of remittances, with remittances of at least 1% of

[1] Both these sets of authors talk entirely about remittance inflows; it is unclear whether countries with net outflows of remittances are also included in the sample.

GDP by 2010. They find a significant long-run effect of remittances in raising the ratio of the price of non-tradables to that of tradables.

With respect to aid, Fielding and Gibson (2013) estimate a three-variable vector autoregression for 26 sub-Saharan African countries using annual data from 1970 to 2009. They find that the initial response of the real exchange rate to a unit increase in aid is a significant appreciation only in countries with a hard peg exchange rate regime. Rajan and Subramaniam (2011) use sectoral data in order to control for unobserved country effects. They find some support for their hypothesis that aid causes real exchange rate appreciation, which has a greater adverse effect on the more export-oriented sectors.

There has also been some work on net foreign asset positions and real exchange rates, because stronger net foreign asset positions are associated with a more favourable balance of net property income flows (Bleaney and Tian, 2014; Christopoulos et al., 2012; Lane and Milesi-Ferretti, 2004). These papers find that stronger net foreign asset positions are associated with higher real exchange rates.

Although these studies all focus on particular types of cross-border income flows or transfers, they raise the general question of whether the practically inevitable long-run effect of any improvement in the non-trade element of the current account balance, whatever it may be, is real exchange rate appreciation and a compensating deterioration in the trade balance. This is the question which is the focus of the present paper, using annual data back to 1971 for a large number of countries.

2 Empirical Results

Data on net property income flows are from IMF Balance of Payments Statistics, and data on GDP, trade balances and current account balances are from the World Bank World Development Indicators (WDI) database. Net income transfers are generated as the residual. Our main source of real exchange rate data is Bruegel, which provides annual consumer-price-based real effective exchange rate indices for 67 trading partners back to 1960.[2] As a robustness test, we also use the WDI real effective exchange rate series. The countries in the sample are divided into five groups: (a) industrial, (b) fuel-exporters; (c) offshore financial centres; (d) emerging markets; and (e) other developing countries.[3]

We estimate the long-run effect of the non-trade component of the current account balance with the following ARDL model for country *i* at time *t* using annual data from 1971 to 2017:

$$\Delta TB_{it} = a_{it} - b_i \Delta NPI_{it} - c_i \Delta TR_{it} - e_i TB_{it-1} - fe_i NPI_{it-1} - ge_i TR_{it-1} + u_{it} \qquad (1)$$

where *TB* is the trade balance, *NPI* is net property income and *TR* is income transfers, all as ratio of GDP, *u* is a random error and the other letters are parameters. We have estimated the model using the pooled mean group (PMG) method of Pesaran et al. (1999), in which the short-run dynamics are country-specific but the estimated long-run relationships (represented by *f* and *g*) are common to all countries, because the restriction of common dynamics is comfortably rejected by the data.

The results of estimating equation (1) are shown in Table 1 for the sample as a whole and for sub-samples of countries. The estimated long-run coefficients are shown at the top of the table. For the whole sample these coefficients are -0.80 for transfers and -1.43 for net

[2] www.bruegel.org/publications/datasets.
[3] For the list of countries see the Appendix.

property income, and highly significant. For the sub-samples all the long-run coefficients but one are negative and significant at the 1% level. In each case the Hausman statistic indicates that the null of common long-run coefficients across the sample cannot be rejected. These results show that the long-run effect of any change in the non-trade current account balance is a compensating opposite change of similar magnitude in the trade balance.

Table 2 is similar, except that the dependent variable is now the change in the logarithm of the real effective exchange rate. Column (1) uses Bruegel data for 162 countries and over 5000 observations; column (2) uses WDI data for 92 countries and just over 2800 observations. In both cases the long-run effect of higher net transfers or net property income is significant real exchange rate appreciation, and once again the Hausman statistic is insignificant.

3 Conclusions

We have investigated the long-run relationship between the non-trade-balance elements of the current account and the trade balance, and also the real effective exchange rate. Previous research has examined the relationship between remittances or aid flows and real exchange rates, without controlling for the other non-trade flows, which may partly account for the mixed results. We find clear evidence of a long-run negative relationship between the trade balance and the rest of the current account, and that in the long run stronger net income transfers are associated with real exchange rate appreciation.

Table 1. Pooled mean group estimation of trade balance against net transfers and property income

	(1) All	(2) Industrial	(3) Financial	(4) Fuel	(5) Emerging	(6) Other Dev.
Long-run coeffs						
Net transfers (TR)	-0.803***	0.135	-0.755***	-0.539***	-0.465***	-0.904***
	(-30.55)	(0.61)	(-16.02)	(-4.10)	(-3.53)	(-27.66)
Net Property	-1.432***	-1.725***	-0.973***	-1.266***	-1.932***	-1.475***
Income (NPI)	(-22.76)	(-6.34)	(-8.68)	(-9.09)	(-12.02)	(-13.39)
Short-run coeffs						
Error Correction	-0.314***	-0.164***	-0.349***	-0.420***	-0.268***	-0.349***
	(-19.78)	(-5.82)	(-8.31)	(-7.55)	(-10.17)	(-13.31)
dTR	-0.481***	0.149	-0.547**	-0.629***	-0.229	-0.688***
	(-6.71)	(0.60)	(-2.19)	(-1.23)	(-1.34)	(-10.46)
dNPI	-0.614***	-0.000	-0.428**	-1.780***	-0.710***	-0.648**
	(-4.53)	(-0.00)	(-2.57)	(-3.06)	(-3.97)	(-2.35)
Constant	-0.019***	-0.002	-0.032***	0.005	-0.013***	-0.027***
	(-7.04)	(-1.06)	(-2.65)	(0.58)	(-5.09)	(-8.85)
No. Countries	174	26	27	20	26	75
No. Observations	5558	909	847	591	999	2212
Log-Likelihood	12045.2	2675.6	1582.9	813.0	2496.5	4493.3
RMSE	0.041	0.017	0.042	0.075	0.023	0.042
p-Value Hausman	0.527	0.209	0.252	0.580	0.663	0.296

Notes: all variables are divided by GDP. The dependent variable is the change in the trade balance (TB). Estimation method: pooled mean group. The long-run coefficients are constrained to be identical across countries. For the short-run coefficients, which are country-specific, the number shown is the mean across all countries. Figures in parentheses are heteroscedasticity-robust t-statistics. ***, **, *: significant at the 10, 5 and 1 percent levels. TR = net transfers; NPI = net property income. The Hausman statistic is the p-value of the null hypothesis that the estimated long-run coefficients are identical across countries. Annual data 1971-2017.

Table 2. Real effective exchange rates and net transfers and property income

REER Measure	(1) Bruegel	(2) WDI
Long-run coeffs		
Net transfers (TR)	0.735***	0.636***
	(7.64)	(4.44)
Net Property	0.889***	1.517***
Income (NPI)	(4.20)	(5.61)
Short-run coeffs		
Error Correction	-0.165***	-0.157***
	(-10.14)	(-10.36)
dTR	-0.307*	-0.645*
	(-1.80)	(-1.88)
dNPI	1.290***	0.807*
	(3.81)	(1.76)
Constant	0.763***	0.725***
	(10.13)	(10.18)
No. Countries	162	92
No. Observations	5336	2842
Log-Likelihood	6955.0	4018.4
RMSE	0.105	0.111
p-Value Hausman	0.720	0.781

Notes: the dependent variable is the change in the log of the real effective exchange rate. TR = net transfers; NPI = net property income (both divided by GDP). Estimation method: pooled mean group. See also the notes to Table 1.

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Appendix – Country Classifications

ADVANCED

Australia, Austria, Belgium, Canada, Cyprus, Denmark, Estonia, Euro Area, Finland, France, Germany, Iceland, Italy, Japan, Latvia, Lithuania, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Slovenia, Spain, Sweden, United Kingdom, United States

OFFSHORE FINANCIAL CENTRES

Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, Bermuda, Botswana, Cape Verde, Costa Rica, Dominica, Grenada, Hong Kong, Ireland, Lebanon, Macau, Malta, Marshall Islands, Mauritius, Palau, Panama , St Kitts and Nevis, St Lucia, St Vincent and the Grenadines, Samoa, Seychelles, Singapore, Switzerland, Vanuatu

FUEL ECONOMIES

Algeria, Angola, Azerbaijan, Bahrain, Brunei, Chad, Congo, Ecuador, Equatorial Guinea, Gabon, Iran, Iraq, Kazakhstan, Kuwait, Libya, Nigeria, Oman, Qatar, Saudi Arabia, South Sudan, Sudan, Timor, Trinidad and Tobago, Turkmenistan, United Arab Emirates, Venezuela, Yemen Arab Republic

EMERGING MARKETS

Argentina, Brazil, Bulgaria, Chile, China, Colombia, Czech Republic, Egypt, Greece, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Pakistan, Peru, Philippines, Poland, Russia, South Africa, South Korea, Taiwan, Thailand, Turkey, Ukraine, Uruguay

OTHER DEVELOPING

Afghanistan, Albania, Armenia, Bangladesh, Belarus, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Burkina Faso, Burundi, Cambodia, Cameroon, Central African Republic, Comoros, Côte d'Ivoire, Croatia, Democratic Republic of the Congo, Djibouti, Dominican Republic, El Salvador, Eritrea, Ethiopia, Faroe Islands, Fiji, French Polynesia, Gambia, Georgia, Ghana, Guatemala, Guinea, Guinea-Bissau, Guyana, Haiti, Honduras, Jamaica, Jordan, Kenya, Kiribati, Kosovo, Kyrgyz Republic, Laos, Lesotho, Liberia, Macedonia, Madagascar, Malawi, Maldives, Mali, Mauritania, Micronesia, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, New Caledonia, Nicaragua, Niger, Papua New Guinea, Paraguay, Romania, Rwanda, Sao Tome and Principe, Senegal, Serbia, Sierra Leone, Solomon Islands, Sri Lanka, Suriname, Swaziland, Syria, Tajikistan, Tanzania, Togo, Tonga, Tunisia, Tuvalu, Uganda, Uzbekistan, Vietnam, West Bank and Gaza, Zambia, Zimbabwe