

This chapter empirically investigates the net foreign assets position of low-income countries. The estimation relies on an unbalanced panel of annual data covering 1980–2006. As with the real exchange rate, panel unit root tests confirm the unit root nature of the variables involved in the estimation (see Table 4.1 in Chapter 4); and panel cointegration tests performed for the benchmark regressions (Table 5.1, column 1) reject the null hypothesis of no cointegration (see discussion of these tests in Chapter 4). Similar to the real exchange rate regressions, the panel cointegration estimation is based on dynamic ordinary least squares with fixed effects. In addition to determinants identified in the literature (public debt, demographics, and income per capita), the analysis considers the role of policy distortions (capital account and domestic financial liberalization) and of the quality of institutions.²

Benchmark Net Foreign Asset Regressions for Low-Income Countries

Table 5.1 reports the preferred regression of the net-foreign-assets-to-trade ratio in column (1).³

¹An earlier version of this chapter was published in the *International Seminar on Macroeconomics*, Vol. 6, No. 1, published by the University of Chicago Press. © 2009 by the National Bureau of Economic Research. All rights reserved.

²See Chapters 1 and 2 for a discussion of the literature and of the data set. The data set is presented in detail in the Appendix.

³The ratio of net foreign assets to trade is preferred to the ratio to GDP because GDP is more sensitive to fluctuations in the exchange rate, which is known to be correlated with the right-hand-side variables from the analysis presented in the previous section. The public debt data are from Jaimovich and Panizza (2006); because the availability of public debt data for LICs is limited, the variable is spliced with external debt (mostly public in LICs) for a few countries. Time dummies might be appropriate to absorb common movements in the net foreign assets position of LICs arising from, for example, exchange rate fluctuations that may cause valuation effects; results are virtually identical if these dummies are excluded. The net foreign assets regressions drop Nicaragua from the sample because of extreme values of both debt and net foreign assets, which would increase the coefficient of debt substantially (doubling it to almost 1).

Results are broadly consistent with those obtained in the analysis of the current account. Starting with the less-common indicators, note first that domestic financial liberalization is associated with higher net foreign assets, again an indication (as discussed in Chapters 3 and 4) that domestic financial reforms have a significantly larger positive effect on aggregate saving than on aggregate investment. Second, the relationship with capital account liberalization is negative in LICs (Table 5.1) and positive in high-income countries (Table 5.2), a result that is consistent with the current account regressions and with standard neoclassical theory, according to which developing countries should experience capital inflows when opening up to foreign capital. Third, countries with better institutional characteristics also have higher net foreign assets, which may be explained by the argument that better institutions may facilitate the saving process, resulting in higher net foreign assets.⁴

Regarding the standard variables, the analysis confirms a strong link between net foreign assets and public debt, demographic factors, and income. In the long run, half of the increase in public debt is reflected in a reduction of net foreign assets. The effect is close to the one estimated by Lane and Milesi-Ferretti (2002b) for developing countries ranging in the 0.5–0.8 interval. The effect of public debt on net foreign assets is somewhat larger than the effect of fiscal balance on the current account presented in Chapter 3.⁵ A higher share of dependent population is associated with lower saving and net foreign assets, a result that is also consistent

⁴An alternative explanation is related to the high correlation of these indicators with the level of development, which may affect saving as discussed above and may be only imperfectly captured by income per capita.

⁵This result could be due to deficits being partly monetized in LICs over the sample: deficits financed by money creation would be less likely to result in external debt, while deficits financed by public debt would be more likely to result in external debt. Hence, the lower effect of the fiscal balance on the current account may simply reflect the average of two effects, while the effect of debt on net foreign assets would capture only one of them.

Table 5.1. Net Foreign Assets Regressions*(Panel dynamic ordinary least squares with fixed effects; only long-run coefficients reported)*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variables	NFA to Trade	NFA to GDP	NFA (w/NPV) to Trade	NFA to Trade	NFA to Trade	NFA to Trade	NFA to Trade	NFA to Trade	NFA to Trade	NFA to Trade
Public debt to trade	-0.4566*** (0.0000)			-0.4240*** (0.0000)	-0.4369*** (0.0000)	-0.4084*** (0.0000)	-0.4764*** (0.0000)	-0.4840*** (0.0000)	-0.4686*** (0.0000)	-0.4610*** (0.0000)
Fertility ¹	-0.3135*** (0.0028)	-0.0531** (0.0260)	-0.0761 (0.1597)		-0.2997*** (0.0035)	-0.5563*** (0.0000)	-0.1375 (0.1316)	-0.3612*** (0.0026)	-0.4913*** (0.0001)	-0.2896** (0.0119)
Relative productivity (log) ¹	1.5867*** (0.0016)	0.2829*** (0.0019)	0.5295*** (0.0050)	1.6864*** (0.0026)	1.8451*** (0.0003)			1.1766** (0.0316)	1.7841*** (0.0008)	1.3836*** (0.0039)
Constraint on executive	0.2280*** (0.0000)	0.0293** (0.0109)	0.0086 (0.7005)	0.2520*** (0.0000)	0.2221*** (0.0000)	0.1847*** (0.0000)	0.1944*** (0.0000)	0.2324*** (0.0000)	0.2504*** (0.0000)	0.2505*** (0.0000)
Domestic financial liberalization ¹	2.0003*** (0.0001)	0.2081** (0.0458)	0.2147 (0.4030)	2.0634*** (0.0000)	1.6171*** (0.0001)	1.3346*** (0.0009)	1.6155*** (0.0009)	1.2107** (0.0223)	1.8758*** (0.0006)	2.2360*** (0.0001)
Capital account liberalization ¹	-1.4137*** (0.0011)	-0.1060 (0.1886)	-0.4333** (0.0436)	-1.3293*** (0.0030)		-0.7920** (0.0498)	-1.6001*** (0.0003)	-1.5802*** (0.0004)	-1.4892*** (0.0042)	-1.1084** (0.0191)
Public debt to GDP		-0.5423*** (0.0000)								
NPV of external debt to trade			-0.8922*** (0.0000)							
Old-age dependency ¹				-16.3720** (0.0192)						
Capital account liberalization (other) ¹					-0.4263* (0.0948)					
Income per capita (relative to United States)						28.0763*** (0.0000)				
GDP per worker, PWT (log)							0.8484** (0.0498)			
Terms of trade, goods and services (log)								0.3861 (0.1988)		
Trade restrictions ¹									0.5061 (0.1425)	
Administered agricultural prices ¹										0.4681 (0.1833)
Maximum agricultural price intervention ¹										0.4551** (0.0127)
Observations	610	590	612	610	653	599	610	539	554	566
R-squared	0.81	0.84	0.96	0.82	0.83	0.82	0.81	0.82	0.82	0.81

Note: NFA = net foreign assets; NPV = net present value; PWT = Penn World Table. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Robust p -values in parentheses. Robust dynamic ordinary least squares panel regressions with fixed effects of the net foreign assets to trade ratio (or NFA to GDP in column (2), or NFA adjusted for the NPV of external debt in column (3)) on public-debt-to-trade ratio, fertility, log of relative productivity, quality of institutions (constraint on executive), financial liberalization, and capital account liberalization. Additional controls encompass alternative measures of debt, demographics, capital account liberalization, relative income or productivity, terms of trade, trade restrictions, and agricultural price reforms. Unbalanced panel with annual data, 1980–2006.

¹The variable is constructed relative to the weighted average of the trading partners.

with theoretical intuition and past evidence. The positive association of income per capita with net foreign assets in LICs is in line with the standard

development model in which poor countries borrow (note, however, that Lane and Milesi-Ferretti, 2002b, find the opposite result).

Robustness

Robustness exercises are presented in columns (4)–(10) of Table 5.1. The results are robust to using alternative measures of net foreign assets with matching alternative debt indicators (net foreign assets and public debt to GDP in column 2, or net foreign assets and external debt, both adjusted for the net present value of external debt in column 3), as well as alternative measures of demographics, capital account liberalization, and relative income or productivity (columns 4–7). Terms-of-trade shocks or other policy distortions, such as trade restrictions and price controls in the agricultural sector, do not seem to matter after controlling for other determinants (columns 8–10).

Are Low-Income Countries Different?

Table 5.2 presents the benchmark net foreign assets regression (Table 5.1, column 1) for high- and low-income countries in columns (1) and (2), as well as the test of equality of coefficients in column (3). The high-income group appears quite different for about half of the indicators and not too different for the other half. As mentioned, the most interesting result is the opposite coefficient for capital account liberalization, consistent with the fact that rich countries lend and poor borrow. Debt appears insignificant for the high-income sample, which is in line with the range of zero to 0.2 found by Lane and Milesi-Ferretti (2002b) for this group of countries. A possible interpretation is that public debt is less likely to be foreign financed in higher-income countries than in LICs, possibly resulting from much deeper financial markets in more developed countries (which may allow these countries to get closer to Ricardian equivalence). The role of demographics, domestic financial liberalization, and institutions seems to follow the same economic pattern for both sets of countries, although the size of the effect may be somewhat different.

Table 5.2. Net Foreign Assets Regressions: Comparing Low-Income with High-Income/Emerging Market Countries

(Panel dynamic ordinary least squares with fixed effects; only long-run coefficients reported)

Variables	(1)	(2)	(3)
	Net Foreign Assets to Trade		Test of Equality of Coefficients (p-values)
	LICs	HICs/EMs	
Public debt to trade	–0.4566*** (0.0000)	–0.0059 (0.9141)	0.000
Fertility ¹	–0.3135*** (0.0026)	–0.2623** (0.0136)	0.731
Relative productivity (log) ¹	1.5867*** (0.0015)	0.3129 (0.3092)	0.030
Constraint on executive	0.2280*** (0.0000)	0.1221*** (0.0007)	0.074
Domestic financial liberalization ¹	2.0003*** (0.0001)	0.8670*** (0.0088)	0.059
Capital account liberalization ¹	–1.4137*** (0.0010)	1.2703*** (0.0000)	0.000
Observations	1,414		
R-squared	0.87		

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Robust p -values in parentheses. Robust dynamic ordinary least squares panel regressions with fixed effects of the net-foreign-assets-to-trade ratio on same fundamentals as in the benchmark (column (1)) of Table 5.1, interacted with dummy variables for the sample of low-income countries (LICs) and a dummy variable for richer countries, including high-income countries and emerging markets (HICs and EMs). Unbalanced panel with annual data, 1980–2006.

¹The variable is constructed relative to the weighted average of the trading partners.

Speed of Adjustment

As in the real exchange rate analysis, an error-correction specification is implemented to gauge the speed of adjustment of the net foreign assets position. An error-correction term was derived using the difference of the net foreign assets from the sum of the products of the fundamentals entering the baseline regression in Table 5.1, column (1), multiplied by the corresponding-level coefficients. Error-correction regressions equivalent to the specification discussed above deliver robust ordinary least squares coefficients of the lagged error-correction term of about 0.25, suggesting that shocks to the gap between the net foreign assets position and its long-run relationship have a half-life of about two and a half years.