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Daniel Riera-Crichton

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ABSTRACT

This paper evaluates the impact of international reserves, terms of trade (TOT) shocks and capital flows on the real exchange rate (REER). We observe that international reserves (IR) cushions the impact of TOT shocks on REER, and that this effect is important for developing but not for industrial countries. This buffer effect is especially significant for Asian countries, and for countries exporting natural resources. As suggested by theory, financial depth reduces the buffer role of IR in developing countries. The role of shock absorber for IR remains robust to the addition of various controls, dealing with capital flows (FDI, hot money, etc.), exchange rate management and monetary policy, as well as trade openness. We also find that short term capital inflows (Other Investment, Portfolio Investment) are associated with appreciated real exchange rate. Developing countries REER seem to be more sensitive to changes in reserve assets; whereas industrial countries display a significant relationship between hot money and REER.

Joshua Aizenman
Department of Economics ; E2
1156 High St.
University of California
Santa Cruz, CA 95064
and NBER
jaizen@ucsc.edu

Daniel Riera-Crichton
Department of Economics ; E2
1156 High St.
University of California
Santa Cruz, CA 95064
driera@ucsc.edu

The purpose of this paper is to evaluate how international reserves hoarding and economic structure affect the real exchange rate (REER) and its adjustment to inflows of capital, terms of trade shocks, and other shocks. We compare the REER patterns between developing and the OECD countries.[1] The background of our study is the growing recognition that volatility induces first order adverse effects on the economic performance of developing countries.[2] Recently, Aghion et. al. (2006) found that REER volatility reduces growth for countries with relatively low levels of financial development. Their study suggests that factors mitigating real exchange rate volatility may be associated with superior economic performance. The large hoarding of international reserves by developing countries in recent years raises the question to what extent these reserves have affected the volatility of the REER. Our study explores these issues, studying the degree to which economic structure and policies affect systematically the REER.

Section 1 examines the degree to which international reserves mitigate the impact of terms of trade (TOT) shocks on the real exchange rate. Recent studies have unraveled the fact that TOT improvement leads to REER appreciation through the income effect[3]. For most developing countries, terms of trade shocks are the most important source of exogenous volatility. Noting that the income effect induced by TOT change is the trade openness times the TOT shock, we report in Figure 1 the standard deviation of changes of log (TOT); log (TOT*trade openness) and log (REER) for several groupings of countries. Developing countries are exposed to TOT volatility that is 3 times the volatility of industrial countries, resulting in income shocks that are 3.5 times as volatile as those affecting industrial countries. Dealing with TOT volatility is a challenge for natural resources exporters, exposed to TOT volatility that is 3 times the volatility of manufacturing countries. LATAM is exposed to TOT shocks that are 1.5 times as volatile as Asia. However, the greater trade openness of Asia implies that the volatility of the income effects associated with TOT shocks, adjusted for openness, is similar in both regions.

TOT shocks impose a daunting challenge for developing countries. Shallow domestic financial systems, relatively small size, and the lack of sectoral diversification in most developing

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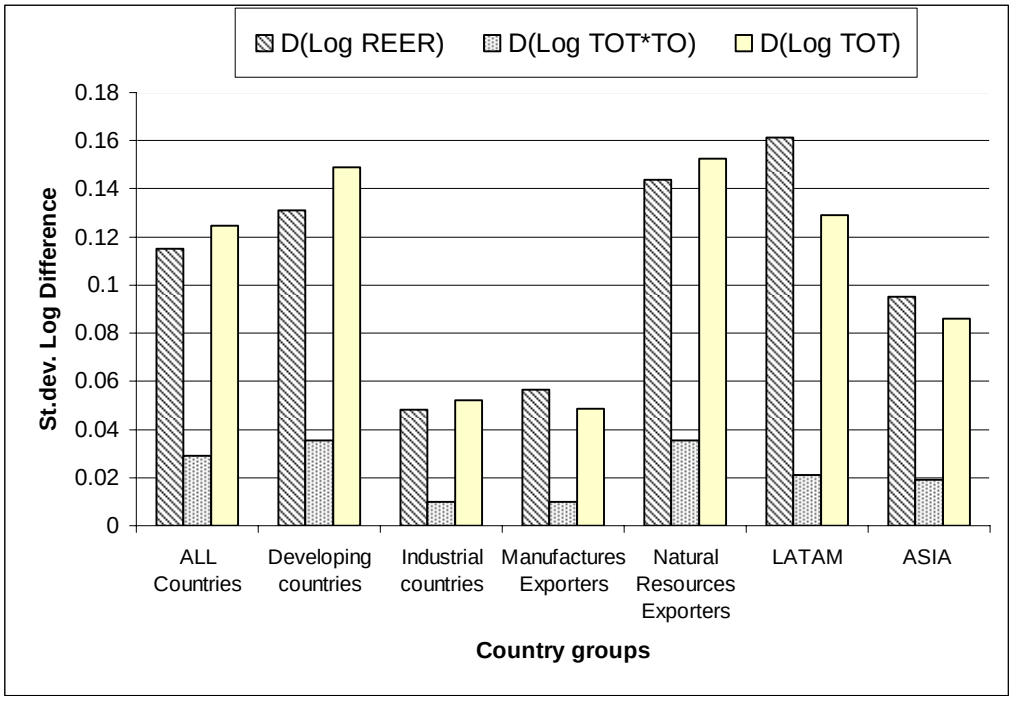
[1] See Edwards (1989) and Edwards and Savastano (2000) for a comprehensive analysis of the REER in developing countries, and Cheung, Chinn, Fujii. (1999), Chinn (2006) and Hau (2002) for studies dealing with the impact of productivity and other macro forces on the REER.

[2] See IDB (1995) and Aizenman and Pinto (2004).

[3] See Mendoza (1995) and Gregorio and Wolf (1994).

countries limit the ability of these economies to mitigate TOT shocks by internal adjustment. Sovereign risk and the lack of proper financial instruments inhibit the ability to hedge against these shocks by relying on the global financial system (see Caballero (2003)). Developing countries are left with self-insurance as a last resort option of dealing with TOT shocks. Section 1 outlines a simple methodology investigating the degree to which hoarding international reserves cushions the impact of TOT shocks on REER. The findings show, indeed, that this effect is important for developing countries, but not for industrial ones. This shock mitigation effect is especially important for Asian countries, and for countries exporting natural resources. The data also suggests that this mitigation effect has not been a prime source of reducing REER volatility for most LATAM countries. The last part of this section confirms the hypothesis that financial depth is a key element in determining the degree of mitigation offered by international liquidity.

Figure 1: TOT Shock Volatility



Section 2 extends the econometric specification by adding controls for capital flows (FDI, hot money, etc.), exchange rate management and monetary policy, as well as trade openness. The overall results regarding the stabilizing role of international reserves, reducing the impact of TOT shocks on REER are robust to these controls. Section 3 concludes.

1.1 Effective TOT shocks and REER adjustment – the shock absorbing role of international reserves

Terms of trade shocks are amongst the major exogenous sources of volatility affecting developing countries, frequently leading to real exchange rate volatility which may ultimately affect economic growth. We start the analysis by testing the extent to which international reserves mitigate the impact of terms of trade shock on the real exchange rate.

As a benchmark, we adopt a panel regression methodology:

$$(1) \qquad \ln(REER_{it}) = a_{1i} + \alpha_1 (TO * \ln(TOT))_{it} + \alpha_2 (\{TO * \ln(TOT)\} * RES)_{it} + \varepsilon_{it};$$

where the independent variable is the natural log of the real effective exchange rate (REER), defined such that higher REER indicates real appreciation (see Appendix A for definitions), $TO * \ln(TOT)$ is the *effective terms of trade*, defined by the trade openness,[4] $TO = \ln[1 + (\frac{IM + EXP}{2GDP})]$, times the natural log of the terms to trade, $\ln(TOT)$, and $\text{RES} = \ln[1 + \frac{\text{International Reserves}}{\text{GDP}}]$ a proxy for the International reserves/GDP rate.

An important concern regarding regression (1) is the possibility of a unit root in the real effective exchange rate. Theoretically, the possibility of an ever wandering real exchange rate is difficult to conceive. The results of individual tests on REER series portraying these series as I(1) processes could be due to low power in those tests. We try to work around this problem using the panel unit root test developed by Levin, Lin and Chu (2002). The test assumes that each individual unit in the panel shares the same AR(1) coefficient, but allows for individual effects, time effects and possibly a time trend. By introducing a series of lags, the test may be viewed as a pooled Augmented Dickey-Fuller (ADF), with the null hypothesis of nonstationarity (I(1)) behavior. Although we rejected the unit root hypothesis for the REER, we found high persistence: an autoregressive coefficient of about 0.84, but well below 1 [see Table A7, Appendix A].

[4] In the actual calculations our TO measure has been smoothed through a 5 period moving average process, to smooth transitory fluctuations.

The specification of regression (1) follows the observation that the *effective terms of trade shock*, $d\ln(TOT)*TO$ is a first order approximation of the income effect associated with the terms of trade improvement rate, $d\ln(TOT)$, where the income effect is defined as the GDP rate of change induced by the shock.[5] By design, (1) implies that the elasticity of the real exchange rate with respect to effective terms of trade shocks is

$$(2) \qquad \frac{d\ln(REER)}{TO*d\ln(TOT)} = \alpha_1 + \alpha_2 * RES$$

Hence, regression (1) provides information about the degree to which hoarding international reserves may impact REER dynamics induced by terms of trade shocks. Table 1 reports the regression results for 1970-2004. Column (1) presents the baseline regression pooling all countries, subject to data availability. The elasticity of the REER with respect to the effective terms of trade shock is well above one: a one percent improvement of the effective terms of trade induces a REER appreciation of about 1.8 percent.[6]

Table 1: REER vs. Effective Terms of Trade and Mitigation through Reserve Accumulation

Dependent Variable: ln(REER)	All	Developing	Industrial	Manufactures	Natural Resources	LATAM	ASIA
TO*ln(TOT)	1.802***	1.836***	0.95	0.442	4.376***	1.642**	2.269**
	[0.244]	[0.255]	[0.594]	[2.077]	[0.779]	[0.802]	[1.104]
{TO*ln(TOT)} *RES	-3.873***	-3.937***	-1.603	12.269	-10.676	-0.537	-4.672**
	[0.746]	[0.766]	[4.607]	[23.668]	[7.013]	[9.164]	[2.280]
Observations	1863	1260	603	271	253	343	202
R-Squared	0.4549	0.4367	0.5947	0.4066	0.6162	0.3903	0.2161
Years	1970-2004	1970-2004	1970-2004	1970-2004	1970-2004	1980-2004	1970-2004

Robust standard errors in brackets
* Significant at 10%; ** significant at 5%; *** significant at 1%

[5] I.e., for small terms of trade shocks, $\Delta GDP/GDP \cong TO*\Delta\ln(TOT)$.

[6] See Appendix F, Table F1, for regressions of the REER on the effective TOT and International reserves in the absence of interaction terms. For developing countries, the elasticity of the REER with respect to the effective TOT is well above one, whereas the elasticity of the REER with respect to the stock of IR/GDP is well below minus one – higher stock of IR/GDP is associated, on average, with depreciated REER.

Column (1), Table 1 implies that $d\ln(REER)/[TO * d\ln(TOT)] \cong 1.8[1-2*RES]$ that is, International reserves hoarding lessens the elasticity of the REER with respect to the effective TOT by more than twice the International reserves/GDP. Hence, for a country with trade openness of 0.25, and IR/GDP ratio of 0.1, the elasticity of the REER with respect to the TOT is .25*1.8(1-2*0.1) = 0.36. This is in line with De Gregorio and Wolf (1994), who found that the elasticity of the REER with respect to TOT, unconditional of the RES position, is about 0.4 for a sample of OECD countries. Table 1.1 below gives us the elasticity of the REER with respect to both the effective and the regular terms of trade (ETOT and TOT, respectively). These elasticities are calculated based on the average holding of international reserves and average trade openness for each sub group. The results for Industrial economies are right on target with De Gregorio and Wolf (1994). Interestingly, Developing countries, especially emerging Asia, and commodity exporters have been significantly more exposed to changes in the terms of trade. Increasing the stock of reserves in each of these countries could reduce this vulnerability to external shocks smoothing the reactions of their REERs to terms of trade changes.

Table 1.1: Means of the interaction terms and REER elasticity respect to ETOT and TOT

	All	Developing	Industrial	Asia	LATAM	Natural Resources	Manufactures
Means							
Reserves over GDP	0.09	0.108	0.055	0.163	0.078	0.075	0.056
Trade Openness	0.41	0.437	0.363	0.539	0.308	0.364	0.406
REER Elasticity to							
Effective TOT	1.45	1.42	1.24	1.51	1.60	3.58	1.13
Terms of Trade	0.60	0.62	0.45	0.81	0.49	1.30	0.46

All means are calculated over the same sample period as in the equations displayed in table 1.1.

Columns (2) and (3) in Table 1 show that aggregation matters – the mitigation effects associated with international reserves applies to developing, but not to Industrial countries. This is consistent with the notion that limited development of the capital market in developing countries hampers their ability to mitigate the volatility associated with shocks. Economic structure matters greatly – exports of natural resources magnify the impact of the effective terms of trade shocks and the mitigation associated with international reserves by a factor exceeding 2. Interestingly, this effect is insignificant for that group, yet we will show later that it is significant for the lagged effective TOT shock. In contrast, these interactions are insignificant for manufacturing intense

countries. The last two columns focus specifically on Latin America and Asia; effective TOT shocks induce large effects in both blocks. International reserves provide a powerful mitigation of effective TOT shocks in Asian countries, but not in LATAM.

Table 2 supports the robustness of prior results, evaluating the adjustment to the one year lagged effective terms of trade shock on the contemporaneous REER:

$$(1') \qquad \ln(REER_{it}) = a_{1i} + \alpha_1 (TO * \ln(TOT))_{it-1} + \alpha_2 (TO * \ln(TOT) * RES)_{it-1} + \varepsilon_{it}$$

Table 2: REER vs. Lagged effective Terms of Trade and Mitigation through Reserve Accumulation

Dependent Variable: ln(REER)	All	Developing	Industrial	Manufactures	Natural Resources	LATAM	ASIA
Lagged TO* ln(TOT)	1.773***	1.806***	0.784	0.23	4.362***	1.205	1.762
	[0.278]	[0.289]	[0.581]	[1.895]	[0.759]	[0.827]	[1.103]
Lagged TO*ln(TOT)*RES	-3.557***	-3.633***	0.988	6.282	-11.528*	4.654	-4.024*
	[0.887]	[0.910]	[4.573]	[21.767]	[6.473]	[10.059]	[2.388]
Observations	1852	1263	589	262	252	343	201
R-Squared	0.4465	0.4302	0.5947	0.4027	0.6165	0.3898	0.2047
Years	1970-2004	1970-2004	1970-2004	1970-2004	1970-2004	1980-2004	1970-2004

Robust standard errors in brackets
* Significant at 10%; ** significant at 5%; *** significant at 1%

The signs are identical to Table 1, the main difference being that shocks are apparently absorbed faster in LATAM and Asia, where most of the coefficients on the lagged shocks are insignificant for these blocks.

Tables B.2 and B.3 in Appendix B report country specific results. The last two columns of the Individual country table represent the total effect of terms of trade changes (amplified by trade openness) into the real exchange rate; taking into account the mitigation offered by international reserves:

$$(3) \qquad \text{Total Effect 1990-99} = \frac{d\ln(REER)}{d[TO * \ln(TOT)]} = \left[\alpha_1 + (\alpha_2 * RES_{1990-99})\right],$$

$$(4) \qquad \text{Total Effect 2000-04} = \frac{d\ln(REER)}{d[TO * \ln(TOT)]} = \left[\alpha_1 + (\alpha_2 * RES_{2000-04})\right]$$

where RES_{years} is the average International Reserves to GDP ratio for the relevant period.

The above analysis has uncovered the how international reserves weaken the link between external shocks and changes in the real effective exchange rate. This result suggests that the volatility of the real effective exchange rate would be mitigated by higher levels of international reserves. We validate this conjecture in our data [see Appendix E]. For further reference to previous studies looking at this relationship see Hviding, Nowak, and Ricci (2004).

To verify robustness, Table B.1 in Appendix B reports distinct specifications of regressions (1) and (1') for subsets of countries. The regularities uncovered in these regressions include:

- Both Industrial and Developing countries display coefficients consistent with the benchmark relationship for both current and lagged values of TOT throughout all specifications (except simple country effects for Industrial Countries).
- Reserves play a role in the mitigation of TOT shocks only in Developing countries. This mitigation role is not displayed in Industrial countries under any specification.
- Real exchange rates in countries that specialize in exports of manufactures are inelastic to changes in their terms of trade[7]. Data also show no role for reserves as shock absorber for this subgroup.
- Contrary to manufactures exporters, commodity exporters display a very elastic real exchange rate against changes in the terms of trade. Although reserves play a leading role as shock absorbers for this subgroup, this role is consistently more significant for lagged values of TOT.
- Real exchange rates in Latin American emerging economies are remarkably independent from changes in the TOT (only 1 specification returns a significant coefficient) and reserves do not seem to function as shock absorbers for those economies. Exceptions to this general rule are countries such as Argentina, Chile or Ecuador (see table B2 in the appendix).
- Asian emerging markets seem to behave differently from their Latin American counterparts. For these economies, TOT changes clearly have an impact on their REER. Moreover, reserves play a central role moderating the effects of changes in the TOT.

[7] Only under the de-trended Log REER specification we find a slightly significant impact of TOT on REER

1.2 The Shock Absorption role of International Reserves and Financial Depth

Motivated by the growing acknowledgement of first order negative effects of real exchange rate (REER) volatility, in the first part of this section, we reveal a possible role of International Reserves as a factor lessening the transmission effects of terms of trade shocks into the REER. When is this role most effective? An obvious candidate that may determine the real need of official insurance among countries with different economic structures is the liquidity of domestic financial markets. Hence, when faced by changes in their terms of trade, countries with deep financial markets will be able to internally self-adjust in a more effective manner than those with shallow markets. Following this logic, the role of International Reserves as shock absorber will decrease with the deepening of domestic financial markets.

In this section, we introduce the interaction of our reserve mitigation term (TO*ln(TOT)*RES) with a measure of financial depth. Although in the main text we use the ratio of Money and Quasi-Money (M2) to GDP as a proxy for domestic Financial Development[8], Appendix C summarizes the results of experimenting with different measures of financial depth[9]. Table 3 shows the results of the panel regression with specific country and time effects, including the interaction term with our financial depth measure (FD). In accordance with our prior intuition, financial depth seems to significantly decrease the role of reserves as shock absorber for emerging economies. Interestingly, Asian economies seem to be extremely sensitive to both the mitigation effect of reserves and the role of financial development in the domestic market. As a quick robustness check, table 4 shows the same regression for lagged values of terms of trade, reserves and liquid liabilities. Although the role of financial development seems to die faster than that of reserves for all emerging markets, the results are quite robust, especially for Asian economies, where both effects (that is, reserves as shock absorber and the corresponding mitigation of this role through financial depth) remain highly significant.

[8] This is a rough measure of Liquid Liabilities but not uncommon in the literature (see Hausmann et. al. 1999).

[9] Following King and Levine (1993) and more recently Rousseau and Wachtel (2005) we experiment with M3, Credit Allocated to the Private Sector and M3 minus M1.

Table 3: REER vs. TOT shocks, International Reserves and Financial Depth

Dependent Variable: Log(REER)	Developing Countries	Industrial Countries	LATAM	Asia	NR Exporters	MA Exporters
TO*ln(TOT)	0.603***	0.957***	0.445	1.950***	2.554***	-2.615
	[0.131]	[0.302]	[0.402]	[0.358]	[0.579]	[2.711]
TO*ln(TOT)*RES	-3.601***	5.378	17.423	-19.38***	-0.66	-3.068
	[0.955]	[9.994]	[14.245]	[2.709]	[7.209]	[16.457]
TO*ln(TOT)*RES*FD	2.592*	-15.362	-56.529	22.594***	-23.218	68.65
	[1.403]	[19.366]	[46.858]	[3.421]	[20.933]	[48.033]
Observations	1253	511	343	202	252	224
R-squared	0.5662	0.645	0.5506	0.9229	0.6717	0.4283

The measure used as a proxy of Financial Development (FD) in this table is the monetary aggregate M2 over Nominal GDP. Robust standard errors in brackets. * Significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: REER vs. Lagged TOT shocks, International Reserves and Financial Depth

Dependent Variable: Log(REER)	Developing Countries	Industrial Countries	LATAM	Asia	NR Exporters	MA Exporters
Lagged TO*ln(TOT)	0.629***	0.810***	0.56	1.582***	2.653***	-2.602
	[0.156]	[0.289]	[0.381]	[0.344]	[0.574]	[2.578]
Lagged TO*ln(TOT)*RES	-2.944**	8.837	3.679	-15.991***	0.939	-1.851
	[1.201]	[9.647]	[14.045]	[2.298]	[5.474]	[15.414]
Lagged TO*ln(TOT)*RES*FD	1.515	-20.108	-6.076	18.418***	-29.423	44.116
	[1.717]	[18.238]	[37.875]	[2.826]	[20.139]	[57.284]
Observations	1256	505	343	201	252	221
R-squared	0.5499	0.6412	0.5413	0.9175	0.6747	0.4277

The measure used as a proxy of Financial Development (FD) in this table is the monetary aggregate M2 over Nominal GDP. Robust standard errors in brackets
* Significant at 10%; ** significant at 5%; *** significant at 1%

2. <u>REER adjustment – shocks and economic structure</u>

We extend our approach by adding controls for various types of capital flows, exchange rate regime, trade openness and relative income. To verify robustness, we estimate the factors accounting for REER adjustment in four ways [tables D1-D4 in Appendix D]: Panel with Country Effects, Country Effects on De-trended Real Effective Exchange Rate, Time and Country Effects on Log of Real Effective Exchange Rate, and Country Effects and Quadratic Time trend on Log of Real

Effective Exchange Rate. Tables D.5 to D.8 in Appendix D show all previous interactions allowing for lagged TOT. Overall, the results reported in section 1 continue to hold: The uncovered relationship between TOT, REER and the mitigation effect from reserve accumulation is robust to the inclusion of controls for other possible determinants of the real exchange rate. Higher International reserves/GDP ratio is associated with depreciated REER. However, this effect is mitigated by trade openness. These results are much weaker for the OECD.

The regularities uncovered in the prior regressions include:

Capital Inflows:

Breaking Capital Inflows in several categories allows us to expose systematic distinctions in the effect of those flows on the REER for different subgroups of countries. Table 5 presents the summary of correlations between inflows and real appreciations obtained from different econometric specifications.

- Inflows associated with short term capital (Other Investment, Portfolio Investment) and decreases in foreign reserve assets tend to appreciate the real exchange rate. This positive relationship is not consistent across all countries and all specifications. In general, developing countries' REER seem to be very sensitive to changes in reserve assets (probably due to limited financial integration), fairly inelastic to movements of short term capital and highly inelastic to changes in long term foreign capitals. On the other hand, industrial countries display a very consistent positive correlation between FDI inflows and REER appreciations across the board. Inflows of Hot Money are also associated to real appreciations in these industrialized economies. When we account for variations in the degree of trade openness, the effect of changes in reserves assets disappears from most specifications.
- Consistent with these results, manufactures exporters display a highly significant relationship between inflows of hot money and appreciation of the REER; while natural resource countries' REER are not related at all to changes in capital inflows, once we adjust for trade openness. Regionally, REER in Asian emerging economies consistently react to inflows of hot money, especially in those specifications that take trade openness into consideration. Changes in reserve assets and FDI inflows seem to play a minimal role in the determination of

the REER. Latin American emerging markets REER seem to be considerably sensitive to changes in reserve assets although this relationship is broken when we use the interactions with trade openness.

Table 5: Summary of Correlations between Capital Inflows and REER Appreciations.

	Specifications without Interactions			Specifications with Interactions		
Type of Inflow	**FDI**	**Hot Money**	**Decrease in Official Reserves**	**FDI**	**Hot Money**	**Decrease in Official Reserves**
Sign of the Significant Coefficient	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**	**+/-**
Developing Countries	0/0	2/0	8/0	0/0	2/0	8/0
Industrial Countries	6/0	8/0	5/0	8/0	8/0	2/0
Manufactures Exporters	6/2	8/0	0/0	0/3	8/0	2/0
Commodity Exporters	0/0	8/0	2/0	0/0	0/1	0/0
Latin America	2/0	2/0	8/0	0/7	5/4 (*)	0/0
Asia	0/0	2/5	0/0	2/0	8/0	2/0

Notes: Each number represents the number of significant (at a 10 % level) direct coefficients of each type of capital inflows to REER across our eight different specifications. See Appendix D for the complete results of all the regressions. Insignificant coefficients are not accounted in the table thus, "0/0" would correspond to 8 insignificant coefficients for that country subgroup.
Positive signed coefficient uncovers a positive relationship between inflow and appreciation. For the case of Reserves, positive signed coefficients reveal a positive relation between reductions of official reserves and appreciations.
(*) For Latin America there is a distinction between the effects of "Other Investment" inflows and "Portfolio" inflows. The former seem to be associated with appreciations of the REER while the later are associated to real depreciations.

- Interestingly the REER depreciation associated with long term capital inflows (proxied here by FDI), found by Athukorala and Rajapatirana (2003), is only consistently present in manufactures exporters and Latin American economies once we account for changes in trade openness. On the other hand, FDI inflows tend to appreciate REER in industrial countries, even though at a slower rate than other types of capital.

Economic Structure and REER

- The coefficients on trade openness seem to support the hypothesis that international trade helps mitigate pressures for real appreciation (see Hau (2002)). The negative relationship is consistent across all subgroups and all specifications, and is robust across all specifications for all types of flows. A possible channel is that greater trade openness increases the competitive pressure,

mitigating the market power of domestic producers, reducing margins and leading to overall lower domestic price level.

- Nominal exchange rate depreciation has the expected negative effect on REER across the board. Natural resource exporters and Latin American economies seem to be especially sensitive to these changes in nominal exchange rates.

3. Concluding remarks

Our paper suggests that hoarding and managing international reserves has the effect of mitigating the impact of TOT shocks on the REER. Consequently, countries exposed to TOT volatility may benefit from active management of international reserves in ways that go well beyond the conventional prerogative of a central bank. The sheer size of the average stabilization fund associated with international reserves imply that it can have first order intertemporal fiscal effects, and that it should be managed cooperatively by the central bank and the treasury (see Davis et. al. (2001) for a review of the experience of Chile and Norway).

We conclude the paper by outlining a possible mechanism explaining how accumulating international reserves may buffer the REER against TOT shocks. The deeper financial integration of developing countries has been associated with sizeable hoarding of international reserves, suggesting that greater financial integration and hoarding international reserves have been complementary [see Aizenman and Lee (2006)]. Greater integration of financial markets may have increased the responsiveness of financial flows to TOT shocks. Hence, TOT improvement associated with higher domestic returns would induce capital inflows, leading to further REER appreciation. Similarly, TOT deterioration may lead to disorderly outflows, where the rush to exit is motivated by the wish to minimize capital losses. The mitigating effect associated with international reserves may be the result of reducing the magnitude of the REER adjustment triggered by capital flows; thus, minimizing the odds that such capital flight may end up with a full blown financial crisis, potentially triggered by balance sheet effects of depreciation of nominal and real exchange rates [see Calvo et .al (2004) and Mendoza (2005) for further discussion of balance sheet effects]. Better understanding of these issues is left for future investigation.

References

Aghion, P., P. Bacchetta, R. Ranciere and K. Rogoff. (2006), "Exchange Rate Volatility and Productivity Growth: The Role of Financial Development," NBER Working paper # 12117.

Aizenman J. and J. Lee. (2005), "International Reserves: Precautionary versus Mercantilist Views, Theory and Evidence", forthcoming, *Open Economies Review*.

Aizenman J. and B. Pinto, eds. (2005), *Managing Economic Volatility and Crisis*, Cambridge Press.

Athukorala, P. and S. Rajapatirana. 2003. "Capital inflows and the real exchange rate: a comparative study of Asia and Latin America," *The World Economy*, 613-637.

Caballero R. J. (2003), "On the intertemporal financial architecture: insuring emerging markets, NBER Working paper # 9570.

Calvo, G., A. Izquierdo and L. Mejia (2004), 'On the Empirics of Sudden Stops: The Relevance of Balance-Sheet Effects', NBER Working Paper No. 10520.

Cheung, Y-W, M. Chinn, and E. Fujii. (1999), "Market Structure and the Persistence of Sectoral Real Exchange Rates," *International Journal of Finance and Economics* 6(2), April 2001.

Chinn, M. (2006), "A Primer on Real Effective Exchange Rates: Determinants, Overvaluation, Trade Flows and Competitive Devaluation," *Open Economies Review* 17: 115–143.

Davis, J., R. Ossowski, J. Daniel, and S. Barnett. (2001), "Stabilization and Savings Funds for Nonrenewable Resources Experience and Fiscal Policy Implications," IMF occasional paper # 205.

Edwards, S. (1989), *Real Exchange Rates, Devaluation and Adjustment*: *Exchange Rate Policies in Developing Countries* (Cambridge, Mass: MIT Press).

Edwards, S. (1989), *Real Exchange Rates, Devaluation and Adjustment*: *Exchange Rate Policies in Developing Countries* (Cambridge, Mass: MIT Press).

Hau, H. (2002), "Real Exchange Rate Volatility and Economic Openness: Theory and Evidence," *Journal of Money, Credit and Banking*, 611-630.

Hausmann, R., Garvin, M. Pages-Serra, C. and Ernesto Stein (1999) " Financial Trumoil and Choice of Exchange Rate Regime." Inter-American Development Bank, Working Paper 400

Hviding, K., Nowak M., and Ricci L. A.(2004) "Can Higher Reserves Help Reduce Exchange Rate Volatility?" IMF working paper WP/04/189

Gregorio, J. and Wolf, H. (1994), "Terms of Trade, Productivity and the Real Exchange Rate," NBER working paper #4807

IDB (Inter American Development Bank). 1995. *Economic and Social Progress in Latin America*, Part 2: Overcoming Volatility.

King, Robert G., and Ross Levine (1993). "Finance and Growth: Schimpter might be right", *Quarterly Journal of Economics* 108: 717-37

Levin, Andrew, Lin, Chien-Fu and Chia-Shang James Chu (2002). "Unit Root Tests in Panel Data: Asymptotic and Finite Sample Properties", *Journal of Econometrics*, 108, 1-24,

Mendoza, E. (1995), "The Terms of Trade, the Real Exchange Rate and Economic Fluctuations," *International Economic Review*, Vol. 36, No.1. pp. 101-137.

_____ (2005), Real Exchange Rate Volatility and the Price of Nontradables in Sudden-Stop-Prone Economies, NBER Working paper # 11691.

Rousseau, Perer L. and Wachtel, Paul (2005). "Economic Growth and Financial Depth" UNU-WIDER Discussion Paper 2005/10.

APPENDIX A: DEFINITIONS AND DATA

Real Effective Exchange Rates (REER)

The real effective exchange rate index represents a nominal effective exchange rate index adjusted for relative movements in national price or cost indicators of the home country,

$$REER = \Pi_i^t [(e / e_i)(P / P_i)]^{w_i}$$

Where e: Exchange rate of the subject currency against the US dollar (US dollars per rupee in index form)

e_i: Exchange rates of currency *i* against the US dollar (US dollars per currency *i* in index form)

w_i: Weights attached to the country/ currency *i* in the index

P: Consumer Price Index (CPI) of Subject country

P_i: Consumer price index of country *i*

An Increase in REER corresponds to a Real Domestic Appreciation

Trade Openness (TO)

Trade openness is the sum of merchandise exports and imports divided by twice the value of GDP, all in current U.S. dollars. The final variable TO is defined as a smooth moving average including a maximum of 5 past observations of trade openness.

Terms of Trade (TOT)

Net barter terms of trade are the ratio of the export price index to the corresponding import price index measured relative to the base year 2000

Sources:

1) United Nations Conference on Trade and Development, Handbook of International Trade and Development Statistics.
2) Constructed. We use export and import value data from IFS. We use two kinds of proxies for export/import price indices.
    a. Indices for export and import prices that are compiled from survey data for wholesale prices or directly from the exporter or importer (called "direct pricing"). See IFS line 76.
    b. Indices for Unit Value of Exports see IFS line 74 and Unit Value of Imports see IFS line 75 are Laspeyres, with weights derived from the data for transactions.

We use indices based on direct pricing when available since these are generally considered preferable to unit value indices, because problems of unit value bias are reduced.

Reserves (RES)

The "Reserves" variable used for the interaction with terms of trade the total stock of Reserves (special drawing rights, reserves of IMF members held by the IMF, and holdings of foreign exchange under the control of monetary authorities) where gold holdings are excluded. Data is finally converted as the ratio of domestic GDP.

Net Capital Inflows

FDI: Foreign Direct Investment captures the net inflows from foreign direct investors to the domestic economy

Portfolio Investment: Portfolio Investment is composed of flows in equity and debt considered for portfolio investment

Other Investment: Other Investment is composed of trade credits, loans, currency and other flows. Most of this capital flows are short term

- Δ INTER. RESERVES: Decrease in Official International Reserves

Economic Structure

1- **RELATIVE INCOME:** GDP per Capita relative to the US GDP per capita
2- **EXMG:** Excess Money Growth. Calculate as Money and Quasi-Money (M2) growth rate minus GDP (in current US$) growth.
3- **MANGDP:** Percentage of the economic activity captured by the manufacturing sector (excluding construction)
4- **CGDP:** Percentage of the economic activity dedicated to the production of commodities other than manufactures.

REGRESSION SPECIFICATIONS

1- Simple Panel with Country Fixed Effects

$$\ln(REER_{it}) = CountryEffects_i + \alpha * X_{it} + \varepsilon_{it}$$

Where α is a vector of (n, 1) estimators and X is a vector (1, n) of independent variables.

2- Panel with Country Fixed Effects and Quadratic Time Trend

$$\ln(REER_{it}) = CountryEffects_i + \alpha * X_{it} + \beta_1 * T + \beta_2 * T^2 + \varepsilon_{it}$$

Where T represents a time trend

3- Panel with Country Fixed Effects and Time Effects

$$\ln(REER_{it}) = CountryEffects_i + TimeEffects_t + \alpha * X_{it} + \varepsilon_{it}$$

DETRENDING THE REAL EFFECTIVE EXCHANGE RATE

We use the Hodrick-Prescott (HP) filter [10] to test the robustness of the previous regressions results against the hypothesis of common trends. Using this filter the de-trended real effective exchange rate (TLREER) solves the following optimization problem:

$$\underset{\{TREER_T\}_{t=1}^{T}}{Min} \sum_{t=1}^{T} (LogREER_t - TREER_t)^2 + \lambda \sum_{t=2}^{T-1} [(TREER_{t+1} - TREER_t) - (TREER_t - TREER_{t-1})]^2$$

Where lambda is the penalty parameter. In the appendix we present results with a lambda = 1600

[10] Hodrick, R. J., and Prescott, E. C., "Postwar U.S. Business Cycles: An Empirical Investigation." *Journal of Money, Credit and Banking* 29 (1),Feb. 1997, 1-16.

Country and Year Availability

Table A.1 Developing Countries

Country	First Year	Last Year	Country	First Year	Last Year	Country	First Year	Last Year
Algeria	1981	2002	Gambia	1981	2002	Pakistan	1980	2004
Argentina	1981	2004	Ghana	1981	2002	Panama	1981	2002
Bolivia	1981	2002	Hungary	1980	2004	Paraguay	1981	2002
Brazil	1980	2004	India	1980	2003	Peru	1981	2002
Bulgaria	1986	1991	Indonesia	1982	2002	Philippines	1981	2003
Burundi	1981	2002	Iran	1996	2000	Poland	1980	2004
Cameroon	1981	2002	Ireland	1971	2004	Sierra Leone	1981	2002
Chile	1981	2002	Israel	1975	2004	Singapore	1980	2004
China	1981	2002	Jordan	1980	2004	Solomon Is.	1978	1988
Colombia	1980	2004	Kenya	1995	2000	South Africa	1975	2004
Congo	1981	2002	Korea	1971	2004	St. Lucia	2003	2003
Costa Rica	1981	2002	Lesotho	1981	2002	Thailand	1980	2004
Côte d'Ivoire	1981	2002	Malawi	1981	2002	Togo	1981	2002
Cyprus	1980	1987	Malaysia	1981	2002	Trinidad. & Tobago	1975	1990
Dominican Rep	1981	2002	Malta	1975	1989	Tunisia	1981	2002
Ecuador	1981	2002	Mexico	1981	2002	Turkey	1981	2004
Egypt	1981	2002	Morocco	1980	2002	Uganda	1983	2002
Equatorial Guinea	1986	2002	Nicaragua	1988	2002	Uruguay	1981	2002
Fiji	1980	1988	Nigeria	1981	2002	Venezuela	1981	2002
Gabon	1981	2002	Oman	1999	2003	Zambia	1981	2002

Table A.2 Selected OECD Countries

Country	First Year	Last Year	Country	First Year	Last Year
Australia	1972	2004	Japan	1971	2004
Austria	1971	1993	Netherlands	1971	2004
Belgium	1994	2004	New Zealand	1971	2004
Canada	1971	2004	Norway	1971	2004
Denmark	1971	2004	Portugal	1984	2003
Finland	1971	2004	Spain	1971	2004
France	1991	2004	Sweden	1971	2004
Germany	1971	2004	Switzerland	1971	1987
Iceland	1971	1997	United Kingdom	1972	2004
Italy	1971	2004	United States	1971	2004

Table A.3 Regions

East/South Asia	Latin America
China	Argentina
India	Bolivia
Indonesia	Brazil
Korea	Chile
Malaysia	Colombia
Pakistan	Costa Rica
Philippines	Ecuador
Singapore	Mexico
Thailand	Nicaragua
	Panama
	Paraguay
	Peru
	Uruguay
	Venezuela

Export Composition: The two subgroups of countries under Manufactures and Natural Resources exporters are selected based in the following criteria

-Consistently in the top 20 ranking of countries with the highest net External Balance
-Net Export Balance Always positive for all sub periods
- Manufactures exporters must have a negative balance for net exports of commodities.
- Natural Resources exporters must have a negative balance for net exports of manufactures.

-

Table A.4 Export Composition, Manufactures

MA	Net Exports of Manufactures (% of GDP)				
Country	**1970-76**	**1977-83**	**1984-90**	**1991-97**	**1998-04**
Korea	1.83	8.67	9.51	5.11	11.65
Finland		3.61	1.93	7.09	10.05
Germany	8.96	8.73	8.85	4.71	7.18
Sweden	1.86	3.47	3.12	4.68	7.08
Belgium	6.00	3.43	5.01	6.11	5.85
Japan	7.83	8.99	6.96	5.01	4.84
Italy	5.01	6.25	3.83	5.01	4.35
France	1.87	2.05	0.19	0.71	0.65

Table A.5 Export Composition, Natural Resources

NR	Net Exports Natural Resources (% GDP)				
Country	**1970-76**	**1977-83**	**1984-90**	**1991-97**	**1998-04**
Oman	19.70	12.69	20.62	31.18	39.52
Kuwait	67.63	48.50	13.13	32.78	39.51
Nigeria	21.88	28.46	33.74	26.05	39.30
Saudi Arabia	47.07	49.87	15.62	30.97	24.94
Algeria	23.08	23.40	13.56	19.41	23.49
Russia				6.89	19.53
Norway	0.87	9.65	10.92	13.40	18.41
Venezuela	22.19	19.30	17.85	18.27	16.13
Chile	8.88	7.53	12.77	9.93	9.23
Australia	3.66	2.91	4.95	4.61	4.88
Canada	4.88	4.68	4.39	4.67	4.68
South Africa	4.57	3.87	1.38	1.80	2.12
Mexico	0.20	6.02	5.04	1.56	0.55

Table A.6 Relative Volatility of the Shocks (measure as standard deviation of the log differences)

	D(Log REER)	D(Log TOT*TO)	D(Log TOT)	D(Log RESERVES)
ALL Countries	0.115	0.029	0.1248	0.0256
Developing countries	0.131	0.0355	0.149	0.0287
Industrial countries	0.0483	0.0098	0.0522	0.0129
Manufactures Exporters	0.0566	0.0099	0.0487	0.0135
Natural Resources Exporters	0.1439	0.0353	0.1526	0.0276
LATAM	0.1614	0.0211	0.1292	0.0222
ASIA	0.095	0.0193	0.0862	0.0252

Table A.7: Results from an ADF test on the log of REER

coefficient	t-value	t-star	P > t	Lags	Trend
-0.16212	-18.457	-7.62705	0	2	No
-0.14916	-18.705	-9.15011	0	1	No
-0.27354	-22.114	-4.01753	0	1	Yes

Regressions are based on a balanced panel of 96 countries over the period 1980-2003

APPENDIX B: REER vs. TERMS OF TRADE SHOCKS

Table B.1: Different specifications for subsets of countries

Countries	Specification	Dependent Variable	TOT	SE	TOT * Reserves	SE	T	T^2	Obs.	R^2
All	Country Effects	Log REER	1.802***	[0.244]	-3.873***	[0.746]			1863	0.4549
	CE + Time Trend	Log REER	1.513***	[0.223]	-4.304***	[0.675]	-0.008*	0	1863	0.4955
	CE + TE	Log REER	1.247***	[0.205]	-3.513***	[0.662]			1863	0.5324
	HP (1600)	TREER	0.487***	[0.138]	-1.729***	[0.531]			1863	0.0379
All Lagged	Country Effects	Log REER	1.773***	[0.278]	-3.557***	[0.887]			1852	0.4465
	CE + Time Trend	Log REER	1.483***	[0.259]	-3.877***	[0.827]	-0.006	0	1852	0.4874
	CE + TE	Log REER	1.260***	[0.241]	-3.410***	[0.804]			1852	0.5249
	HP (1600)	TREER	0.527***	[0.174]	-1.401**	[0.627]			1852	0.0327
Developing	Country Effects	Log REER	1.836***	[0.255]	-3.937***	[0.766]			1260	0.4367
	CE + Time Trend	Log REER	1.047***	[0.215]	-4.281***	[0.766]	-0.079***	0.001***	1260	0.5535
	CE + TE	Log REER	0.917***	[0.201]	-3.612***	[0.679]			1260	0.581
	HP (1600)	TREER	0.464***	[0.143]	-1.688***	[0.539]			1260	0.038
Developing	Country Effects	Log REER	1.806***	[0.289]	-3.633***	[0.910]			1263	0.4302
Lagged	CE + Time Trend	Log REER	1.093***	[0.254]	-3.885***	[0.867]	-0.071***	0.001***	1263	0.5367
	CE + TE	Log REER	0.970***	[0.239]	-3.500***	[0.812]			1263	0.57
	HP (1600)	TREER	0.510***	[0.180]	-1.375**	[0.639]			1263	0.0323
Industrial	Country Effects	Log REER	0.95	[0.594]	-1.603	[4.607]			603	0.5947
	CE + Time Trend	Log REER	1.322**	[0.590]	-1.969	[4.766]	0.009***	-0.000***	603	0.6085
	CE + TE	Log REER	1.581**	[0.632]	-4.13	[4.834]			603	0.6232
	HP (1600)	TREER	1.030***	[0.213]	-2.853	[2.274]			603	0.0532
Industrial	Country Effects	Log REER	0.784	[0.581]	0.988	[4.573]			589	0.5947
Lagged	CE + Time Trend	Log REER	1.168**	[0.573]	0.301	[4.686]	0.009***	-0.000***	589	0.6066
	CE + TE	Log REER	1.314**	[0.609]	-0.76	[4.631]			589	0.6223
	HP (1600)	TREER	0.902***	[0.210]	-1.211	[2.129]			589	0.049
Manufactures	Country Effects	Log REER	0.442	[2.077]	12.269	[23.668]			271	0.4066
Exporters	CE + Time Trend	Log REER	0.823	[2.151]	-1.914	[25.259]	-0.016	0	271	0.4429
	CE + TE	Log REER	-0.813	[2.868]	6.139	[28.984]			271	0.4507
	HP (1600)	TREER	1.013*	[0.530]	-9.594	[6.013]			271	0.0211
Manufactures	Country Effects	Log REER	0.23	[1.895]	6.282	[21.767]			262	0.4027
Exporters	CE + Time Trend	Log REER	0.678	[1.974]	-8.498	[22.474]	-0.015	0	262	0.4416
Lagged	CE + TE	Log REER	-1.321	[2.687]	-1.659	[25.778]			262	0.4543
	HP (1600)	TREER	0.425	[0.497]	-1.4	[6.190]			262	0.0098
Natural	Country Effects	Log REER	4.376***	[0.779]	-10.676	[7.013]			253	0.6162
Resources	CE + Time Trend	Log REER	3.994***	[0.756]	-12.613**	[6.350]	-0.009	0	253	0.6579
Exporters	CE + TE	time effect	3.491***	[0.854]	-8.006	[6.414]			253	0.6831
	HP (1600)	TREER	2.194***	[0.613]	-15.144***	[5.320]			253	0.1221
Natural	Country Effects	Log REER	4.362***	[0.759]	-11.528*	[6.473]			252	0.6165
Resources	CE + Time Trend	Log REER	3.962***	[0.756]	-12.622**	[6.299]	-0.011*	0	252	0.6537
Exporters	CE + TE	Log REER	3.523***	[0.844]	-7.271	[6.282]			252	0.6813
Lagged	HP (1600)	TREER	2.221***	[0.601]	-12.595***	[4.779]			252	0.1465
LATAM	Country Effects	Log REER	1.642**	[0.802]	-0.537	[9.164]			343	0.3903
	CE + Time Trend	Log REER	0.65	[0.832]	4.444	[8.659]	-0.083***	0.002***	343	0.4287
	CE + TE	Log REER	0.606	[0.813]	6.164	[8.355]			343	0.5198
	HP (1600)	TREER	0.408	[0.586]	4.251	[6.306]			343	0.0226
LATAM	Country Effects	Log REER	1.205	[0.827]	4.654	[10.059]			343	0.3898
Lagged	CE + Time Trend	Log REER	0.686	[0.793]	7.282	[9.548]	-0.064***	0.001***	343	0.413
	CE + TE	Log REER	0.662	[0.758]	8.174	[8.891]			343	0.5202
	HP (1600)	TREER	0.154	[0.532]	8.365	[7.158]			343	0.029
ASIA	Country Effects	Log REER	2.269**	[1.104]	-4.672**	[2.280]			202	0.2161
	CE + Time Trend	Log REER	1.752***	[0.512]	-6.619***	[1.624]	-0.164***	0.003***	202	0.8368
	CE + TE	Log REER	1.551***	[0.495]	-6.605***	[1.385]			202	0.8894
	HP (1600)	TREER	0.216	[0.343]	-0.331	[0.744]			202	0.0071
ASIA	Country Effects	Log REER	1.762	[1.103]	-4.024*	[2.388]			201	0.2047
Lagged	CE + Time Trend	Log REER	1.413***	[0.512]	-6.229***	[1.668]	-0.158***	0.003***	201	0.8289
	CE + TE	Log REER	1.385***	[0.479]	-6.395***	[1.427]			201	0.8883
	HP (1600)	TREER	0.016	[0.342]	0.006	[0.807]			201	0.004

Table B.2: Log REER vs. TERMS OF TRADE: Individual Countries (no trend)

Dependent Variable Log REER	Terms of Trade		Terms of Trade * Reserves		Obs	R-squared	Total Effect 1990-99	Total Effect 2000-04	Volatility of TOT
Algeria	0.921	[1.795]	36.452	[21.306]	23	0.4137	3.393279	12.91223	0.0902
Argentina	44.994	[6.597]***	-793.738	[113.969]***	25	0.5594	-0.76438	-27.4739	0.0099
Australia	10.149	[0.921]***	-63.007	[16.952]***	33	0.7871	7.626154	6.907381	0.0206
Austria	16.803	[13.353]	-280.526	[187.404]	24	0.2939	-4.74984	3.230961	0.0093
Belgium	-1.367	[4.695]	57.881	[83.458]	12	0.3227	1.998743	0.988936	0.0108
Bolivia	1.345	[1.846]	77.249	[37.692]*	23	0.8385	7.190718	8.426918	0.0649
Brazil	-6.046	[2.192]**	-18.407	[44.493]	25	0.3863	-7.04516	-7.428	0.0216
Burundi	5.154	[0.617]***	-32.071	[4.999]***	23	0.7434	1.000668	2.818424	0.0488
Cameroon	0.264	[1.907]	-182.262	[106.348]	23	0.0874	0.09035	-8.05198	0.0216
Canada	5.257	[4.535]	-211.588	[172.354]	35	0.0487	-0.84815	-3.9066	0.0105
Chile	8.436	[1.561]***	-50.188	[13.080]***	23	0.6338	-1.46511	-0.97332	0.0517
China	38.103	[17.606]**	-431.96	[153.822]**	23	0.2259	-7.19028	-56	0.0087
Colombia	1.587	[10.937]	73.252	[78.815]	25	0.3741	9.439636	10.32927	0.0194
Congo, Republic of	2.428	[0.939]**	36.857	[32.604]	23	0.3657	2.941388	3.44642	0.1159
Costa Rica	-2.085	[4.334]	28.723	[44.425]	23	0.101	0.56918	0.451427	0.0364
Côte d'Ivoire	0.582	[0.478]	-37.471	[21.887]	23	0.26	-0.49561	-3.87651	0.0848
Cyprus	-7.907	[10.673]	25.031	[51.539]	8	0.8416	-3.7336	-2.45531	0.0166
Denmark	-6.698	[1.877]***	148.646	[28.909]***	35	0.4637	4.880927	12.60173	0.0116
Dominican Rep.	3.155	[1.945]	-65.165	[48.125]	23	0.1681	0.830061	1.07641	0.0514
Ecuador	7.158	[1.322]***	-46.25	[21.816]**	23	0.66	3.386239	5.400608	0.0573
Egypt	2	[0.844]**	-63.281	[14.008]***	23	0.3746	-10.2414	-7.00149	0.0600
Equatorial Guinea	0.487	[0.347]	-4.054	[2.560]	18	0.1799	0.412928	0.135584	0.1573
Fiji	2.156	[1.907]	-31.649	[11.505]**	9	0.7802	-3.40377	-3.81525	0.0541
Finland	0.065	[2.972]	9.376	[61.627]	35	0.0065	0.688312	0.671141	0.0166
France	4.912	[3.829]	-337.649	[272.996]	15	0.1407	-2.68579	-2.22818	0.0061
Gabon	2.381	[0.578]***	-14.162	[9.728]	23	0.4263	1.973659	1.929885	0.1306
Gambia, The	-2.987	[2.355]	184.589	[92.015]*	23	0.2859	38.18945	35.59034	0.0567
Germany	-1.786	[3.076]	47.037	[57.857]	34	0.0779	-0.08829	-0.64367	0.0185
Ghana	19.626	[6.744]***	-140.716	[148.911]	23	0.5838	9.341858	4.979629	0.0508
Hungary	-13.193	[2.128]***	39.43	[29.032]	22	0.5405	-7.06913	-6.5527	0.0351
Iceland	7.548	[1.771]***	-97.397	[22.108]***	28	0.3312	1.873382	1.844021	0.0154
India	-47.612	[4.233]***	516.252	[63.435]***	24	0.7087	-25.3773	16.04066	0.0097
Indonesia	7.108	[1.623]***	1.197	[26.197]	22	0.7613	7.220985	7.280557	0.0574
Ireland	2.829	[2.047]	-21.415	[11.969]*	35	0.1355	0.770717	2.002309	0.0218
Israel	-4.289	[3.490]	42.098	[22.733]*	30	0.2438	0.925048	4.132718	0.0211
Italy	2.696	[1.258]**	-37.944	[28.131]	35	0.1082	1.424221	1.887972	0.0202
Japan	2.013	[6.441]	-226.311	[111.787]*	35	0.2281	-6.0853	-24.3248	0.0207
Jordan	-11.637	[1.136]***	31.755	[3.878]***	25	0.745	-4.55274	-0.30726	0.0320
Kenya	-2.892	[5.163]	49.464	[71.037]	6	0.1051	-0.30107	1.541209	0.0550
Korea	3.157	[7.419]	17.626	[64.699]	35	0.0411	4.417353	6.858481	0.0329
Lesotho	4.827	[2.104]**	-34.683	[15.980]**	23	0.0731	-6.46674	-8.57529	0.0584
Malawi	2.413	[0.402]***	16.927	[8.022]**	23	0.7628	3.643276	4.01933	0.0576
Malaysia	-4.505	[1.120]***	15.158	[6.231]**	23	0.638	-0.58792	0.622804	0.0744
Malta	-1.825	[0.873]*	0.604	[1.557]	15	0.5911	-1.57121	-1.59734	0.0409
Mexico	3.841	[2.048]*	-177.211	[71.729]**	23	0.1901	-5.69239	-9.71975	0.0360

Morocco	1.864	[2.354]	-6.042	[20.203]	23	0.0964	1.172524	0.458257	0.0266
Netherlands	-3.163	[2.211]	31.075	[39.964]	35	0.1032	-1.14995	-2.47822	0.0096
New Zealand	-0.293	[1.191]	29.575	[12.954]**	35	0.1966	1.90258	1.423403	0.0195
Nicaragua	-2.581	[12.768]	-25.065	[144.098]	15	0.1056	-4.48777	-5.43802	0.0446
Nigeria	6.648	[1.369]***	-22.726	[11.276]*	23	0.5821	4.10128	2.638195	0.1208
Norway	0.038	[0.322]	0.974	[2.415]	35	0.0176	0.165762	0.185171	0.0377
Oman	-4.682	[2.068]	28.299	[11.851]	5	0.5314	-0.38616	-0.9774	0.1053
Pakistan	0.587	[3.905]	180.263	[77.974]**	25	0.3399	4.372123	14.9713	0.0182
Panama	-3.72	[3.471]	22.188	[55.815]	23	0.1292	-1.88255	-2.11735	0.0192
Paraguay	8.33	[8.402]	-122.221	[69.753]*	23	0.5248	-4.77552	-6.37776	0.0266
Peru	-12.423	[2.465]***	22.793	[34.700]	23	0.7537	-9.64043	-8.94619	0.0357
Philippines	-6.201	[1.468]***	47.298	[13.514]***	24	0.4473	-1.85904	1.280084	0.0258
Poland	-1.247	[1.057]	144.776	[37.645]***	20	0.6573	11.89795	18.95151	0.0986
Portugal	3.339	[1.700]*	-1.431	[28.072]	21	0.304	3.12042	3.246945	0.0166
Sierra Leone	-2.809	[0.761]***	56.415	[25.622]**	23	0.4102	-0.77461	1.684829	0.1235
Singapore	0.536	[0.635]	-0.898	[1.299]	26	0.0315	-0.00389	-0.06588	0.1065
Solomon Is.	1.09	[0.931]	-0.413	[3.931]	11	0.5372	1.055265	1.033999	0.1221
South Africa	8.363	[2.463]***	-295.929	[134.140]**	30	0.2885	3.054353	-6.1382	0.0157
Spain	-0.231	[3.198]	15.579	[49.158]	35	0.0196	1.08814	0.361527	0.0191
Sweden	5.904	[1.963]***	-56.652	[43.973]	35	0.2698	1.730086	2.326805	0.0171
Switzerland	9.758	[15.266]	-30.977	[114.031]	18	0.458	5.908318	5.655074	0.0151
Thailand	6.832	[1.849]***	-21.225	[9.096]**	25	0.6472	2.888231	1.507516	0.0348
Togo	5.85	[2.320]**	-5.524	[8.320]	23	0.6351	5.221563	5.215947	0.0361
Trinidad & Tobago	3.6	[1.024]***	-11.309	[2.946]***	16	0.6144	2.671946	1.352825	0.1018
Tunisia	12.562	[3.598]***	-121.252	[48.821]**	23	0.5939	2.970556	-0.27149	0.0246
Turkey	-10.378	[3.447]***	34.234	[44.545]	25	0.2378	-8.10595	-6.19887	0.0083
Uganda	5.419	[1.432]***	-33.319	[21.326]	21	0.4698	3.20476	0.290683	0.0591
United Kingdom	23.715	[8.824]**	-603.084	[210.701]***	33	0.2138	4.118539	8.682902	0.0091
United States	14.147	[5.898]**	-2,132.26	[1,255]*	35	0.1093	-5.39353	0.801306	0.0039
Uruguay	-4.075	[10.680]	-25.147	[159.464]	23	0.1165	-5.57496	-7.47942	0.0138
Venezuela	1.247	[2.049]	16.333	[17.311]	23	0.4222	3.505121	3.197085	0.0672
Zambia	0.459	[0.827]	-30.488	[18.780]	23	0.2087	-0.96593	-1.81874	0.0847

Table B.3: Log REER vs. TERMS OF TRADE: Individual Countries (Time & Quadratic Time Trends)

Dependent Variable Log REER	Terms of Trade		Terms of Trade * Reserves		Time Trend		Quadratic Time Trend		Obs.	R-squared
Algeria	-0.593	[2.099]	-11.949	[14.170]	-0.187	[0.158]	0.002	[0.003]	23	0.8108
Argentina	54.019	[7.178]***	-896.022	[159.674]***	-0.059	[0.056]	0.001	[0.001]	25	0.6481
Australia	7.669	[1.303]***	-43.5	[13.355]***	0.003	[0.007]	0	[0.000]	33	0.8549
Austria	6.275	[4.266]	-60.431	[59.229]	0.019	[0.002]***	0	[0.000]***	24	0.9197
Belgium	-4.248	[3.838]	86.046	[57.759]	-0.098	[0.044]*	0.002	[0.001]*	12	0.5384
Bolivia	6.857	[5.645]	42.717	[37.459]	0.18	[0.183]	-0.003	[0.003]	23	0.8621
Brazil	-13.804	[2.099]***	44.627	[31.061]	0.108	[0.026]***	-0.003	[0.001]***	25	0.7601
Burundi	4.107	[0.901]***	-26.3	[6.915]***	-0.05	[0.034]	0.001	[0.001]	23	0.7861
Cameroon	0.612	[1.383]	-65.803	[117.333]	0.075	[0.038]*	-0.002	[0.001]**	23	0.5346
Canada	-1.577	[3.760]	42.348	[113.089]	-0.009	[0.006]	0	[0.000]	35	0.7587
Chile	4.429	[5.158]	-15.191	[27.169]	-0.122	[0.103]	0.003	[0.002]	23	0.7408
China	-11.115	[5.714]*	178.811	[54.470]***	-0.34	[0.026]***	0.006	[0.001]***	23	0.9537
Colombia	-4.748	[10.760]	79.185	[75.440]	-0.089	[0.042]**	0.002	[0.001]*	25	0.6127
Congo	0.276	[0.766]	12.094	[26.950]	-0.408	[0.070]***	0.009	[0.002]***	23	0.6638
Costa Rica	3.351	[3.675]	-19.205	[36.258]	-0.094	[0.036]**	0.002	[0.001]**	23	0.3527
Côte d'Ivoire	-0.222	[0.644]	-6.146	[21.889]	0.03	[0.035]	-0.001	[0.001]	23	0.3731
Cyprus	-2.048	[6.226]	3.173	[30.331]	-0.042	[0.036]	0.001	[0.001]	8	0.9794
Denmark	-2.321	[1.371]	80.254	[21.309]***	0.01	[0.002]***	0	[0.000]***	35	0.7246
Dominican Rep.	-0.506	[0.766]	-19.219	[18.263]	-0.188	[0.022]***	0.004	[0.000]***	23	0.8129
Ecuador	3.525	[2.500]	-55.423	[18.265]***	-0.224	[0.076]***	0.004	[0.001]***	23	0.7686
Egypt	2.051	[1.983]	-83.081	[14.829]***	0.155	[0.053]***	-0.004	[0.001]***	23	0.6463
Equatorial Guinea	-0.072	[0.063]	-0.801	[1.170]	-0.244	[0.034]***	0.004	[0.001]***	18	0.8857
Fiji	0.208	[0.765]	-2.15	[10.640]	0.384	[0.174]*	-0.014	[0.006]*	9	0.94
Finland	4.324	[1.642]**	-86.336	[33.027]**	0.027	[0.005]***	-0.001	[0.000]***	35	0.6209
France	8.297	[3.878]*	-304.52	[224.088]	0.015	[0.024]	0	[0.000]	15	0.6209
Gabon	-0.397	[0.413]	-4.024	[4.084]	-0.052	[0.035]	0	[0.001]	23	0.8873
Gambia, The	-1.377	[1.077]	71.793	[53.577]	-0.005	[0.033]	0	[0.001]	23	0.7721
Germany	12.296	[3.716]***	-178.965	[67.778]**	0.001	[0.003]	0	[0.000]**	34	0.6417
Ghana	1.824	[5.747]	-82.165	[64.175]	-0.582	[0.219]**	0.01	[0.004]**	23	0.8622
Hungary	-6.456	[1.626]***	45.028	[12.009]***	-0.064	[0.017]***	0.002	[0.000]***	22	0.9063
Iceland	6.789	[1.306]***	-92.396	[16.793]***	0.011	[0.003]***	0	[0.000]***	28	0.6859
India	-3.414	[8.929]	0.05	[100.140]	-0.122	[0.059]*	0.002	[0.001]	24	0.9117
Indonesia	3.965	[2.258]*	-1.356	[24.358]	-0.03	[0.066]	0	[0.001]	22	0.9269
Ireland	1.676	[2.043]	-6.55	[14.844]	0.008	[0.004]*	0	[0.000]	35	0.2568
Israel	-5.9	[3.961]	46.938	[24.268]*	0.003	[0.013]	0	[0.000]	30	0.2718
Italy	5.487	[1.412]***	-57.99	[31.090]*	0.009	[0.006]	0	[0.000]*	35	0.3372
Japan	5.743	[1.152]***	-59.678	[20.164]***	0.088	[0.006]***	-0.002	[0.000]***	35	0.9545
Jordan	-9.576	[2.108]***	35.605	[6.578]***	-0.113	[0.054]**	0.002	[0.001]**	25	0.8383
Korea	2.567	[1.328]*	6.598	[13.004]	-0.223	[0.004]***	0.004	[0.000]***	35	0.9871
Lesotho	3.227	[1.906]	-18.825	[13.545]	0.09	[0.025]***	-0.002	[0.001]***	23	0.8068
Malawi	2.147	[0.655]***	10.831	[8.206]	0.035	[0.023]	-0.001	[0.000]*	23	0.8098
Malaysia	-1.378	[1.452]	6.486	[5.278]	-0.039	[0.047]	0	[0.001]	23	0.8059
Malta	-0.639	[2.276]	-2.836	[2.943]	-0.067	[0.032]*	0.002	[0.001]*	15	0.7584
Mexico	4.134	[3.096]	-126.801	[62.869]*	-0.05	[0.074]	0.001	[0.001]	23	0.4316
Morocco	-0.882	[0.662]	-1.684	[9.778]	-0.117	[0.011]***	0.002	[0.000]***	23	0.8821
Netherlands	-13.419	[2.259]***	205.82	[42.912]***	0	[0.002]	0	[0.000]	35	0.4922
New Zealand	0.999	[1.031]	12.477	[11.830]	-0.003	[0.005]	0	[0.000]	35	0.2832
Nicaragua	1.551	[7.660]	-29.756	[64.320]	0.947	[0.258]***	-0.017	[0.005]***	15	0.7077
Nigeria	3.918	[2.314]	-30.485	[8.182]***	-0.243	[0.183]	0.004	[0.004]	23	0.7415
Norway	-0.155	[0.362]	4.803	[3.032]	0.011	[0.003]***	0	[0.000]***	35	0.3457
Pakistan	-0.771	[0.933]	61.619	[19.138]***	-0.118	[0.018]***	0.002	[0.000]***	25	0.9543
Panama	-2.602	[1.375]*	27.437	[18.871]	-0.054	[0.010]***	0.001	[0.000]***	23	0.9219
Paraguay	3.397	[6.521]	-23.29	[46.954]	-0.149	[0.034]***	0.003	[0.001]***	23	0.8138
Peru	9.721	[8.701]	-69.043	[53.452]	0.322	[0.108]***	-0.005	[0.002]***	23	0.8558
Philippines	-2.942	[1.229]**	8.891	[15.022]	-0.064	[0.023]**	0.001	[0.001]**	24	0.7073
Poland	-4.705	[2.154]**	167.475	[50.107]***	0.258	[0.168]	-0.004	[0.003]	20	0.8324
Portugal	-3.348	[1.074]***	33.891	[15.780]**	0.054	[0.015]***	-0.001	[0.000]**	21	0.9092
Sierra Leone	0.145	[1.462]	18	[32.397]	-0.133	[0.081]	0.002	[0.002]	23	0.615
Singapore	1.245	[1.129]	0.465	[2.425]	0	[0.024]	0	[0.001]	26	0.2692

Solomon Is.	0.113	[0.288]	-0.732	[0.905]	0.277	[0.063]***	-0.011	[0.002]***	11	0.9152
South Africa	-7.621	[2.695]***	519.109	[123.963]***	0.023	[0.013]	-0.001	[0.000]***	30	0.8161
Spain	1.887	[2.792]	-11.199	[44.469]	0.026	[0.005]***	-0.001	[0.000]***	35	0.5914
Sweden	0.245	[2.124]	33.193	[47.220]	-0.008	[0.005]	0	[0.000]	35	0.8377
Switzerland	-12.134	[3.651]***	118.98	[25.403]***	0.069	[0.005]***	-0.003	[0.000]***	18	0.9494
Thailand	-5.201	[2.233]**	24.879	[8.783]**	-0.054	[0.015]***	0.001	[0.000]	25	0.8616
Togo	2.772	[1.455]*	-5.445	[2.873]*	-0.038	[0.015]**	0	[0.000]	23	0.8823
Trinidad & Tobago	3.32	[0.543]***	-10.281	[1.318]***	0.14	[0.016]***	-0.005	[0.001]***	16	0.9285
Tunisia	1.442	[2.245]	-50.018	[24.401]*	-0.116	[0.018]***	0.002	[0.000]***	23	0.9231
Turkey	-3.052	[4.502]	54.224	[41.894]	-0.114	[0.019]***	0.002	[0.000]***	25	0.6665
Uganda	-0.049	[1.555]	2.785	[15.073]	-0.153	[0.047]***	0.002	[0.001]*	21	0.7044
United Kingdom	17.346	[5.964]***	-363.271	[161.525]**	0.011	[0.006]*	0	[0.000]	33	0.5485
United States	13.989	[15.745]	-2,275.21	[3,024.243]	-0.003	[0.015]	0	[0.000]	35	0.1177
Uruguay	0.573	[4.915]	-29.08	[82.966]	-0.13	[0.048]**	0.003	[0.001]**	23	0.4707
Venezuela.	-1.389	[1.829]	18.338	[10.202]*	-0.28	[0.101]**	0.006	[0.002]***	23	0.7757
Zambia	-1.259	[0.832]	-0.662	[13.986]	-0.102	[0.038]**	0.002	[0.001]**	23	0.4368

APPENDIX C: The Role of Domestic Financial Development

In this section we explore the effects of financial depth using liquid assets in the economy (M3), M3 net of direct transaction assets (namely M1) and a measure of credit to the private sector (PRIV CR) all as a percentage of current GDP.
We use two panel specifications: Specification 1 uses Fixed and Time Effects. Specification 2 uses the detrended value of REER as the dependent variable and aggregates fixed effects on the deterministic side.

Table C.1: M3 as proxy of Financial Depth

Specification	1	1	1	1	1	1
Dependent Variable: Log(REER)	**Developing Countries**	**Industrial Countries**	**LATAM**	**Asia**	**NR Exporters**	**MA Exporters**
Log (TOT)	0.568***	1.037***	0.418	1.732***	2.565***	-2.085
	[0.130]	[0.316]	[0.400]	[0.382]	[0.577]	[2.119]
Log (TOT)*RES	-2.239**	3.216	12.481	-17.447***	0.368	220.040***
	[0.989]	[12.916]	[14.054]	[3.442]	[7.610]	[65.539]
Log(TOT)*RES*FD	0.045	-13.528	-33.526	16.788***	-25.971	-420.859***
	[1.298]	[25.271]	[39.310]	[4.047]	[20.632]	[122.476]
Observations	1250	431	343	202	252	210
R-squared	0.5808	0.6558	0.548	0.9169	0.6729	0.5021

Specification	2	2	2	2	2	2
Dependent Variable: Detrended REER	**Developing Countries**	**Industrial Countries**	**LATAM**	**Asia**	**NR Exporters**	**MA Exporters**
Log (TOT)	0.191	0.979***	0.041	0.206	1.106**	1.560***
	[0.124]	[0.197]	[0.454]	[0.261]	[0.523]	[0.394]
Log (TOT)*RES	-2.094	-13.973**	6.236	2.442	-18.170***	-6.456
	[1.323]	[6.653]	[15.404]	[2.478]	[6.402]	[10.232]
Log(TOT)*RES*FD	2.166	22.047*	-13.703	-3.787	25.589	-10.788
	[1.749]	[12.425]	[42.429]	[3.021]	[18.415]	[20.626]
Observations	1250	431	343	202	252	210
R-squared	0.0192	0.0746	0.0058	0.0217	0.082	0.123

Table C.2: M3 net of M1 as proxy of Financial Depth

Specification	1	1	1	1	1	1
Dependent Variable: Log(REER)	**Developing Countries**	**Industrial Countries**	**LATAM**	**Asia**	**NR Exporters**	**MA Exporters**
Log (TOT)	0.550***	1.042***	0.397	1.691***	2.540***	-3.309
	[0.130]	[0.303]	[0.418]	[0.368]	[0.578]	[2.239]
Log (TOT)*RES	-1.910**	-2.76	9.215	-14.774***	-0.786	195.869***
	[0.922]	[3.293]	[10.991]	[2.514]	[5.890]	[58.379]
Log(TOT)*RES*FD	-0.62	-1.165	-33.39	16.023***	-39.249*	-393.207***
	[1.490]	[12.117]	[40.113]	[3.340]	[22.719]	[114.965]
Observations	1239	421	343	202	252	200
R-squared	0.5808	0.6572	0.5477	0.9188	0.675	0.5028

Specification	2	2	2	2	2	2
Dependent Variable: Detrended REER	**Developing Countries**	**Industrial Countries**	**LATAM**	**Asia**	**NR Exporters**	**MA Exporters**
Log (TOT)	0.206*	0.874***	0.051	0.258	1.140**	1.508***
	[0.124]	[0.200]	[0.477]	[0.253]	[0.497]	[0.399]
Log (TOT)*RES	-2.253*	-4.973**	3.99	1.004	-18.707***	-8.364
	[1.203]	[2.353]	[11.958]	[1.647]	[4.252]	[9.517]
Log(TOT)*RES*FD	3.047	9.815	-9.862	-2.324	51.932***	-7.468
	[1.952]	[6.029]	[42.107]	[2.296]	[15.700]	[19.413]
Observations	1239	421	343	202	252	200
R-squared	0.02	0.0716	0.0054	0.0191	0.1034	0.1266

Table C.3: Credit to Private Sector as proxy of Financial Depth

Specification	1	1	1	1	1	1
Dependent Variable: Log(REER)	**Developing Countries**	**Industrial Countries**	**LATAM**	**Asia**	**NR Exporters**	**MA Exporters**
Log (TOT)	0.539***	0.926***	0.552	1.402***	2.277***	-0.139
	[0.128]	[0.322]	[0.420]	[0.405]	[0.556]	[1.948]
Log (TOT)*RES	-1.305	6.072	-0.068	-10.495*	5.421	17.538
	[0.998]	[9.427]	[7.324]	[5.685]	[6.771]	[28.577]
Log(TOT)*RES*FD	-1.489	-15.3	4.054	8.133	-45.451***	-33.169
	[1.512]	[13.788]	[17.984]	[7.414]	[11.885]	[73.014]
Observations	1252	600	341	202	253	269
R-squared	0.5644	0.6409	0.5449	0.9108	0.6978	0.4143
Specification	2	2	2	2	2	2
Dependent Variable: Detrended REER	**Developing Countries**	**Industrial Countries**	**LATAM**	**Asia**	**NR Exporters**	**MA Exporters**
Log (TOT)	0.217*	0.945***	0.1	0.382	1.210**	1.326***
	[0.121]	[0.201]	[0.468]	[0.256]	[0.506]	[0.361]
Log (TOT)*RES	-2.978***	-8.39	0.715	-1.695	-15.091***	-4.068
	[1.124]	[7.048]	[7.553]	[2.624]	[5.029]	[4.499]
Log(TOT)*RES*FD	4.095***	8.489	3.021	1.58	14.274	-12.725
	[1.584]	[10.154]	[15.049]	[3.442]	[9.845]	[9.772]
Observations	1252	600	341	202	253	269
R-squared	0.027	0.0542	0.0052	0.0167	0.0793	0.0826

APPENDIX D: REGRESSIONS INCLUDING CAPITAL FLOWS AND ECONOMIC STRUCTURE*

Table D.1.1: Panel with Country Effects no Interaction Terms

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.231	0.163	1.030***	2.676**	0.87	1.146	-0.771
	[0.322]	[0.345]	[0.323]	[1.147]	[0.927]	[0.723]	[0.744]
– Δ INTER. RESERVES	0.906***	0.939***	0.471**	0.281	1.566***	1.642***	0.683
	[0.206]	[0.221]	[0.220]	[1.178]	[0.536]	[0.525]	[0.549]
OTHER INVESTMENT	0.404**	0.393**	0.599***	0.870*	1.827***	0.044	0.581
	[0.171]	[0.182]	[0.149]	[0.453]	[0.379]	[0.296]	[0.381]
PORTFOLIO INVESTMENT.	0.309	0.193	0.497***	-0.768	1.598***	0.492*	-2.405***
	[0.189]	[0.255]	[0.186]	[0.636]	[0.507]	[0.287]	[0.748]
SHOCKS							
TERMS OF TRADE	1.669***	1.681***	1.356***	0.493	3.195***	1.905***	0.491
	[0.203]	[0.214]	[0.220]	[0.720]	[0.410]	[0.431]	[0.513]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.105*	-0.111*	-0.027	-0.061	-0.191*	-0.157**	-0.114
	[0.054]	[0.058]	[0.032]	[0.119]	[0.102]	[0.063]	[0.215]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.900***	-0.860***	-1.215***	-1.198**	-1.021***	-1.273***	-1.223***
	[0.129]	[0.144]	[0.119]	[0.463]	[0.296]	[0.310]	[0.184]
EXCESS MONEY GROWTH	0.003	0.003	0.008	-0.012	-0.406***	0.007	0.013
	[0.006]	[0.007]	[0.020]	[0.010]	[0.135]	[0.007]	[0.253]
RELATIVE INCOME	0.391	-0.013	1.114***	-1.792**	-0.028	0.442	-3.397***
	[0.362]	[0.507]	[0.212]	[0.795]	[0.639]	[1.157]	[0.864]
Observations	1584	1136	448	193	235	336	194
R-squared	0.5356	0.5226	0.7643	0.5634	0.7906	0.5054	0.5064

* Following the BOP accounting conventions, "- Δ INTER. RESERVES" in this Appendix reports the decrease in international reserves/GDP ratio.

Table D.1.2: Panel with Country Effects with Interaction Terms

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		-0.889	-1.162	3.964***	-10.177*	4.225	-5.303**	-2.685
		[0.856]	[0.929]	[1.514]	[5.609]	[4.277]	[2.648]	[2.914]
	TRADE OPENNES	1.272*	1.477*	-7.354**	28.911***	-8.599	20.479**	1.245
		[0.762]	[0.829]	[3.391]	[11.076]	[10.758]	[8.211]	[2.312]
– Δ INTER. RESERVES		2.675***	2.907***	-1.081	0.662	1.027	-0.073	4.483***
		[0.487]	[0.547]	[1.344]	[2.468]	[1.939]	[2.187]	[1.482]
	TRADE OPENNES	-3.255***	-3.556***	3.861	0.064	0.844	5.387	-4.432***
		[0.736]	[0.803]	[3.306]	[4.772]	[4.450]	[6.437]	[1.368]
OTHER INVESTMENT		1.094***	1.127***	1.516***	5.465***	-0.696	1.623**	2.705***
		[0.328]	[0.379]	[0.562]	[1.192]	[2.541]	[0.801]	[1.022]
	TRADE OPENNES	-1.271**	-1.328**	-2.695**	-9.445***	5.964	-4.752**	-2.345***
		[0.580]	[0.638]	[1.338]	[2.110]	[6.401]	[2.346]	[0.892]
PORTFOLIO INVESTMENT		1.984	1.841	4.989***	12.274*	3.143	-2.096	18.368***
		[1.869]	[2.607]	[1.192]	[6.751]	[2.800]	[3.106]	[4.893]
	TRADE OPENNES	-0.015	-0.014	-0.046***	-0.118*	-0.017	0.028	-0.189***
		[0.019]	[0.026]	[0.012]	[0.066]	[0.029]	[0.031]	[0.046]
SHOCKS								
TERMS OF TRADE		2.201***	2.258***	1.700***	1.149	3.687***	1.195	2.686***
		[0.294]	[0.310]	[0.387]	[1.388]	[0.741]	[0.799]	[0.895]
	STOCK OF INTERNATIONAL RESERVES	-4.252***	-4.652***	-3.168	-20.086	-6.635	10.686	-7.968***
		[0.978]	[1.042]	[3.856]	[12.609]	[4.584]	[8.469]	[2.437]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.103*	-0.112*	-0.01	-0.01	-0.219**	-0.171***	-0.057
		[0.055]	[0.060]	[0.032]	[0.096]	[0.104]	[0.058]	[0.172]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.915***	-0.865***	-1.204***	-1.657***	-0.910***	-1.742***	-1.030***
		[0.127]	[0.142]	[0.119]	[0.515]	[0.290]	[0.339]	[0.159]
EXCESS MONEY GROWTH		0.002	0.003	-0.009	-0.001	-0.391***	0.008	0.004
		[0.006]	[0.007]	[0.023]	[0.012]	[0.148]	[0.007]	[0.229]
RELATIVE INCOME		-0.068	-0.701	1.321***	-2.730***	0.092	-0.203	-3.358***
		[0.369]	[0.524]	[0.231]	[0.946]	[0.862]	[1.225]	[0.820]
Observations		1578	1130	448	193	235	336	194
R-squared		0.5512	0.5412	0.775	0.6357	0.798	0.5255	0.582

Table D.2.1: Country Effects on De-trended Real Effective Exchange Rate with no Interaction Terms

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.188	0.191	0.169	-1.278***	0.63	1.952***	-0.216
	[0.195]	[0.205]	[0.323]	[0.423]	[0.967]	[0.536]	[0.342]
– Δ INTER. RESERVES	0.569***	0.569***	0.824***	0.288	0.448	1.402***	0.515**
	[0.149]	[0.160]	[0.163]	[0.296]	[0.572]	[0.443]	[0.246]
OTHER INVESTMENT	0.032	0.009	0.676***	0.265*	1.059***	-0.305	0.290*
	[0.144]	[0.153]	[0.108]	[0.147]	[0.349]	[0.256]	[0.168]
PORTFOLIO INVESTMENT	0.358**	0.412**	0.489***	-0.177	0.564	0.283	0.895***
	[0.154]	[0.205]	[0.127]	[0.231]	[0.434]	[0.258]	[0.312]
SHOCKS							
TERMS OF TRADE	0.317**	0.299**	0.804***	-0.901***	0.832**	0.802***	0.446***
	[0.126]	[0.132]	[0.146]	[0.304]	[0.404]	[0.296]	[0.159]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.149***	-0.147***	-0.137***	-0.254***	-0.245**	-0.128**	-0.132
	[0.040]	[0.043]	[0.026]	[0.042]	[0.101]	[0.052]	[0.082]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.269***	-0.257***	-0.459***	-1.143***	-0.819***	-0.855***	-0.187**
	[0.080]	[0.090]	[0.080]	[0.157]	[0.250]	[0.216]	[0.089]
EXCESS MONEY GROWTH	0.009**	0.009**	0.035*	-0.009***	-0.380***	0.009*	-0.215*
	[0.005]	[0.005]	[0.021]	[0.003]	[0.117]	[0.005]	[0.129]
RELATIVE INCOME	0.881***	1.119***	0.144	1.028***	-0.860*	2.140**	1.614***
	[0.157]	[0.218]	[0.138]	[0.182]	[0.464]	[0.963]	[0.289]
Observations	1584	1136	448	193	235	336	194
R-squared	0.1096	0.1059	0.3046	0.515	0.3767	0.2314	0.2547

Table D.2.2: Country Effects on De-trended Real Effective Exchange Rate with Interaction terms

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		0.447	0.485	4.451***	-0.333	0.064	-2.591	-0.414
		[0.646]	[0.728]	[1.471]	[1.863]	[3.831]	[1.924]	[1.614]
	TRADE OPENNES	-0.388	-0.4	-10.355***	-0.773	1.724	14.284**	0.083
		[0.570]	[0.642]	[3.417]	[3.554]	[9.870]	[6.117]	[1.284]
– Δ INTER. RESERVES		1.754***	1.829***	2.380**	2.292**	1.081	-0.202	0.329
		[0.344]	[0.389]	[1.045]	[1.021]	[1.755]	[1.539]	[0.803]
	TRADE OPENNES	-2.097***	-2.178***	-3.975	-4.281**	-1.292	5.255	0.274
		[0.502]	[0.553]	[2.568]	[1.882]	[4.407]	[4.620]	[0.755]
OTHER INVESTMENT		0.344	0.201	1.689***	1.719***	1.781	1.379*	0.234
		[0.238]	[0.267]	[0.531]	[0.439]	[1.961]	[0.760]	[0.441]
	TRADE OPENNES	-0.664	-0.462	-2.553**	-2.706***	-2.377	-4.967**	0.068
		[0.450]	[0.475]	[1.275]	[0.755]	[5.010]	[2.343]	[0.421]
PORTFOLIO INVESTMENT		-1.183	-2.337	0.57	-1.559	-3.524*	-1.69	7.620***
		[1.443]	[1.914]	[0.806]	[3.131]	[2.056]	[2.369]	[2.564]
	TRADE OPENNES	0.017	0.029	-0.001	0.015	0.042**	0.023	-0.065***
		[0.014]	[0.019]	[0.009]	[0.030]	[0.021]	[0.022]	[0.024]
SHOCKS								
TERMS OF TRADE		0.473***	0.445**	0.725***	-0.24	2.191***	-0.166	0.709**
		[0.176]	[0.186]	[0.246]	[0.540]	[0.632]	[0.559]	[0.336]
	STOCK OF INTERNATIONAL RESERVES	-0.974	-0.9	1.068	-9.020*	-14.364***	13.784**	-0.849
		[0.693]	[0.731]	[2.296]	[5.383]	[4.637]	[6.012]	[1.028]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.147***	-0.147***	-0.138***	-0.244***	-0.261***	-0.138***	-0.119
		[0.041]	[0.045]	[0.025]	[0.040]	[0.087]	[0.046]	[0.083]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.283***	-0.274***	-0.506***	-1.136***	-0.906***	-1.226***	-0.160*
		[0.080]	[0.090]	[0.085]	[0.176]	[0.235]	[0.252]	[0.092]
EXCESS MONEY GROWTH		0.009**	0.009*	0.013	-0.008**	-0.379***	0.010**	-0.212*
		[0.005]	[0.005]	[0.025]	[0.003]	[0.126]	[0.005]	[0.126]
RELATIVE INCOME		0.719***	0.964***	0.219	0.900***	-1.824***	1.596	1.685***
		[0.172]	[0.243]	[0.147]	[0.221]	[0.608]	[1.010]	[0.285]
Observations		1578	1130	448	193	235	336	194
R-squared		0.119	0.1161	0.3341	0.5548	0.4288	0.2866	0.2723

Table D.3.1: Time and Country Effects on Log of Real Effective Exchange Rate with no Interaction terms (coefficient for Time dummies not shown)

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.143	0.062	1.255***	4.312***	-0.671	-0.966	-0.357
	[0.277]	[0.257]	[0.369]	[1.469]	[0.912]	[0.773]	[0.610]
– Δ INTER. RESERVES	0.524***	0.491**	0.373*	0.31	1.341**	1.139*	-0.32
	[0.179]	[0.195]	[0.223]	[1.185]	[0.574]	[0.581]	[0.425]
OTHER INVESTMENT	0.092	-0.016	0.490***	1.191**	1.418***	-0.172	-0.403
	[0.165]	[0.175]	[0.163]	[0.528]	[0.389]	[0.286]	[0.343]
PORTFOLIO INVESTMENT	0.079	-0.106	0.532***	-0.767	0.777	0.239	-1.115*
	[0.218]	[0.298]	[0.201]	[0.785]	[0.670]	[0.389]	[0.577]
SHOCKS							
TERMS OF TRADE	1.143***	0.766***	1.564***	-1.797	2.330***	1.359***	0.105
	[0.184]	[0.191]	[0.251]	[1.958]	[0.442]	[0.389]	[0.370]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.201***	-0.214***	-0.129**	-0.39	-0.333***	-0.145**	-0.413**
	[0.058]	[0.063]	[0.058]	[0.289]	[0.107]	[0.065]	[0.186]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.831***	-0.686***	-1.856***	-1.463**	-0.688*	-1.243***	0.513**
	[0.146]	[0.162]	[0.177]	[0.617]	[0.382]	[0.312]	[0.220]
EXCESS MONEY GROWTH	0.01	0.011	0.028	-0.012	-0.420***	0.008	-0.284
	[0.007]	[0.007]	[0.019]	[0.014]	[0.145]	[0.007]	[0.196]
RELATIVE INCOME	-0.163	-0.57	1.026***	-2.904**	-0.934	-2.697**	3.603***
	[0.349]	[0.420]	[0.220]	[1.164]	[0.658]	[1.091]	[0.922]
Observations	1584	1136	448	193	235	336	194
R-squared	0.602	0.6189	0.8008	0.6012	0.8303	0.6091	0.84

Table D.3.2: Time and Country Effects on Log of Real Effective Exchange Rate with Interaction terms (coefficient for Time dummies not shown)

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		-0.842	-0.717	3.203**	-12.157*	6.777	-7.088***	3.147
		[0.806]	[0.861]	[1.493]	[6.807]	[4.846]	[2.536]	[2.419]
	TRADE OPENNES	1.159	0.927	-5.038	33.862***	-18.249	19.115**	-3.343*
		[0.727]	[0.784]	[3.400]	[12.932]	[12.191]	[7.803]	[1.932]
– Δ INTER. RESERVES		1.875***	1.737***	-1.58	0.895	-1.388	-1.372	0.542
		[0.428]	[0.464]	[1.296]	[2.866]	[2.420]	[2.167]	[1.253]
	TRADE OPENNES	-2.488***	-2.274***	4.714	-0.472	6.339	7.518	-0.821
		[0.618]	[0.663]	[3.228]	[5.474]	[5.435]	[6.104]	[1.264]
OTHER INVESTMENT		0.483	0.262	1.223**	6.052***	-0.016	0.943	2.010**
		[0.310]	[0.356]	[0.611]	[1.317]	[2.651]	[0.717]	[0.825]
	TRADE OPENNES	-0.731	-0.537	-2.356	-10.789***	3.182	-3.633*	-2.532***
		[0.530]	[0.582]	[1.501]	[2.284]	[6.706]	[2.010]	[0.772]
PORTFOLIO INVESTMENT		-1.456	-2.676	6.916***	17.410**	-3.202	-4.940*	7.324*
		[1.996]	[2.726]	[1.450]	[8.617]	[3.529]	[2.858]	[4.145]
	TRADE OPENNES	0.018	0.029	-0.066***	-0.170**	0.042	0.054*	-0.070*
		[0.020]	[0.027]	[0.015]	[0.085]	[0.037]	[0.029]	[0.039]
SHOCKS								
TERMS OF TRADE		1.656***	1.313***	2.071***	-0.027	2.510***	0.31	1.361***
		[0.262]	[0.268]	[0.468]	[2.477]	[0.791]	[0.686]	[0.478]
	STOCK OF INTERNATIONAL RESERVES	-4.115***	-4.264***	-5.007	-17.702	-4.66	13.245*	-4.193***
		[0.879]	[0.907]	[4.651]	[17.604]	[4.832]	[7.207]	[1.432]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.205***	-0.220***	-0.126**	-0.396	-0.382***	-0.167***	-0.307*
		[0.059]	[0.064]	[0.055]	[0.267]	[0.101]	[0.063]	[0.157]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.834***	-0.678***	-1.897***	-2.453***	-0.391	-1.630***	0.712***
		[0.147]	[0.163]	[0.173]	[0.693]	[0.421]	[0.338]	[0.234]
EXCESS MONEY GROWTH		0.009	0.011	0.025	-0.004	-0.405**	0.01	-0.404**
		[0.007]	[0.007]	[0.020]	[0.016]	[0.157]	[0.007]	[0.179]
RELATIVE INCOME		-0.579*	-1.083***	1.256***	-3.521***	-1.216	-3.357***	3.603***
		[0.351]	[0.420]	[0.236]	[1.196]	[0.897]	[1.089]	[0.849]
Observations		1578	1130	448	193	235	336	194
R-squared		0.6129	0.6291	0.8157	0.6771	0.8376	0.6315	0.8684

Table D.4.1: Country Effects and Quadratic Time trend on Log of Real Effective Exchange Rate with no Interaction Terms (time trend coefficients not shown)

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.172	0.253	1.135***	3.288**	0.117	0.838	-0.617
	[0.280]	[0.267]	[0.334]	[1.327]	[0.971]	[0.772]	[0.537]
– Δ INTER. RESERVES	0.886***	0.820***	0.436*	0.164	1.387**	1.241**	-0.204
	[0.197]	[0.220]	[0.225]	[1.237]	[0.535]	[0.558]	[0.457]
OTHER INVESTMENT	0.253	0.042	0.625***	0.913*	1.585***	-0.019	-0.261
	[0.167]	[0.174]	[0.152]	[0.475]	[0.375]	[0.297]	[0.327]
PORTFOLIO INVESTMENT	0.098	-0.01	0.471**	-0.823	0.897	0.565*	-1.306**
	[0.202]	[0.262]	[0.193]	[0.659]	[0.567]	[0.303]	[0.580]
SHOCKS							
TERMS OF TRADE	1.295***	0.918***	1.358***	0.295	2.656***	1.488***	0.501
	[0.197]	[0.202]	[0.247]	[0.771]	[0.419]	[0.427]	[0.370]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.150***	-0.174***	-0.018	-0.061	-0.235**	-0.140**	-0.233
	[0.056]	[0.060]	[0.033]	[0.119]	[0.098]	[0.068]	[0.165]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.654***	-0.734***	-1.338***	-1.349***	-0.598*	-1.368***	0.106
	[0.135]	[0.158]	[0.142]	[0.513]	[0.338]	[0.328]	[0.219]
EXCESS MONEY GROWTH	0.005	0.007	0.029	-0.012	-0.463***	0.006	-0.169
	[0.006]	[0.007]	[0.020]	[0.010]	[0.143]	[0.007]	[0.207]
RELATIVE INCOME	0.197	0.04	1.125***	-1.995**	-0.659	-0.159	2.754***
	[0.341]	[0.424]	[0.212]	[0.808]	[0.638]	[1.086]	[0.788]
Observations	1584	1136	448	193	235	336	194
R-squared	0.5614	0.587	0.7675	0.566	0.8056	0.5247	0.7562

Table D.4.2: Country Effects and Quadratic Time trend on Log of Real Effective Exchange Rate with Interaction Terms (time trend coefficients not shown)

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		-0.48	-0.054	4.061***	-8.831	5.683	-5.270**	4.569*
		[0.827]	[0.945]	[1.546]	[6.130]	[4.207]	[2.610]	[2.328]
	TRADE OPENNES	0.794	0.389	-7.325**	27.869**	-13.911	19.185**	-5.048***
		[0.737]	[0.841]	[3.485]	[11.956]	[10.641]	[8.101]	[1.875]
– Δ INTER. RESERVES		2.352***	2.042***	-1.046	1.162	0.006	-1.191	1.726
		[0.449]	[0.490]	[1.303]	[2.515]	[1.930]	[2.173]	[1.333]
	TRADE OPENNES	-2.724***	-2.250***	3.628	-0.733	3.066	7.433	-2.083
		[0.661]	[0.710]	[3.224]	[4.789]	[4.332]	[6.293]	[1.299]
OTHER INVESTMENT		0.736**	0.411	1.646***	5.777***	-0.702	1.459*	1.995**
		[0.325]	[0.361]	[0.579]	[1.247]	[2.391]	[0.800]	[0.791]
	TRADE OPENNES	-0.907	-0.709	-2.985**	-9.828***	5.108	-4.609**	-2.569***
		[0.564]	[0.592]	[1.407]	[2.219]	[6.161]	[2.318]	[0.779]
PORTFOLIO INVESTMENT		-0.337	-1.815	5.520***	13.283*	-1.862	-3.722	9.987*
		[1.949]	[2.635]	[1.296]	[6.825]	[2.812]	[3.069]	[5.595]
	TRADE OPENNES	0.007	0.022	-0.052***	-0.127*	0.028	0.046	-0.101*
		[0.019]	[0.026]	[0.014]	[0.066]	[0.028]	[0.031]	[0.052]
SHOCKS								
TERMS OF TRADE		1.879***	1.488***	1.557***	0.904	3.226***	0.496	1.885***
		[0.278]	[0.283]	[0.429]	[1.540]	[0.717]	[0.761]	[0.550]
	STOCK OF INTERNATIONAL RESERVES	-4.613***	-4.354***	-1.307	-18.49	-8.472*	13.001	-4.065**
		[0.914]	[0.943]	[4.265]	[13.991]	[4.562]	[7.932]	[1.820]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.150***	-0.177***	0.001	-0.015	-0.286***	-0.156**	-0.125
		[0.057]	[0.062]	[0.033]	[0.097]	[0.097]	[0.063]	[0.133]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.650***	-0.700***	-1.373***	-1.788***	-0.364	-1.792***	0.256
		[0.135]	[0.158]	[0.141]	[0.548]	[0.344]	[0.346]	[0.225]
EXCESS MONEY GROWTH		0.005	0.007	0.016	-0.001	-0.450***	0.008	-0.308
		[0.006]	[0.007]	[0.023]	[0.012]	[0.155]	[0.007]	[0.187]
RELATIVE INCOME		-0.269	-0.532	1.381***	-2.968***	-1.002	-0.867	2.565***
		[0.345]	[0.438]	[0.230]	[0.955]	[0.865]	[1.112]	[0.739]
Observations		1578	1130	448	193	235	336	194
R-squared		0.5747	0.5978	0.7798	0.6379	0.8161	0.549	0.7937

Table D.5.1: Panel with Country Effects and Lagged Terms of Trade with no Interaction Terms

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.226	0.161	0.872***	2.177*	0.087	1.095	-0.644
	[0.313]	[0.334]	[0.308]	[1.135]	[1.005]	[0.690]	[0.677]
– Δ INTER. RESERVES	0.652***	0.693***	0.31	0.389	0.33	1.359***	0.62
	[0.195]	[0.210]	[0.232]	[1.090]	[0.601]	[0.481]	[0.504]
OTHER INVESTMENT	0.252	0.242	0.500***	0.789*	1.500***	-0.039	0.689*
	[0.175]	[0.187]	[0.148]	[0.461]	[0.378]	[0.285]	[0.362]
PORTFOLIO INVESTMENT	0.204	0.1	0.365*	-1.001	0.991*	0.396	-2.195***
	[0.188]	[0.252]	[0.193]	[0.674]	[0.509]	[0.284]	[0.722]
SHOCKS							
Lagged TERMS OF TRADE	1.541***	1.553***	1.198***	-1.015	2.790***	1.814***	0.209
	[0.237]	[0.250]	[0.225]	[1.051]	[0.464]	[0.437]	[0.513]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.101*	-0.104*	-0.061*	-0.056	-0.199**	-0.170***	-0.074
	[0.054]	[0.059]	[0.032]	[0.120]	[0.099]	[0.063]	[0.215]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.923***	-0.876***	-1.238***	-1.660***	-0.894***	-1.217***	-1.158***
	[0.128]	[0.143]	[0.123]	[0.561]	[0.306]	[0.315]	[0.179]
EXCESS MONEY GROWTH	0.003	0.003	0.015	-0.020*	-0.380***	0.008	0.028
	[0.006]	[0.006]	[0.021]	[0.011]	[0.118]	[0.007]	[0.253]
RELATIVE INCOME	0.183	-0.324	1.102***	-2.004**	-0.075	-0.353	-3.650***
	[0.367]	[0.519]	[0.214]	[0.822]	[0.664]	[1.071]	[0.852]
Observations	1586	1137	449	192	234	336	194
R-squared	0.5238	0.511	0.7605	0.5673	0.7618	0.5049	0.5043

Table D.5.2: Panel with Country Effects and Lagged Terms of Trade with Interaction Terms

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		-0.796	-1.024	3.856**	-11.496**	5.834	-6.002**	-2.655
		[0.843]	[0.926]	[1.548]	[5.456]	[4.099]	[2.612]	[2.862]
	TRADE OPENNES	1.128	1.292	-7.389**	30.778***	-13.209	22.273***	1.378
		[0.759]	[0.836]	[3.453]	[10.834]	[10.467]	[8.102]	[2.285]
– Δ INTER. RESERVES		2.187***	2.418***	-1.206	0.574	-1.439	-0.656	3.934**
		[0.504]	[0.569]	[1.357]	[2.495]	[2.409]	[2.139]	[1.530]
	TRADE OPENNES	-2.758***	-3.039***	3.718	1.059	3.663	5.953	-3.696**
		[0.767]	[0.843]	[3.352]	[4.795]	[5.464]	[6.286]	[1.449]
OTHER INVESTMENT		0.880***	0.894**	1.266**	5.265***	-0.76	1.282*	2.573**
		[0.323]	[0.379]	[0.582]	[1.220]	[2.579]	[0.761]	[1.033]
	TRADE OPENNES	-1.279**	-1.312**	-2.281	-8.984***	4.966	-4.335**	-2.201**
		[0.585]	[0.645]	[1.391]	[2.173]	[6.516]	[2.174]	[0.877]
PORTFOLIO INVESTMENT		0.898	0.606	4.356***	13.446**	1.167	-5.217*	14.536***
		[1.964]	[2.824]	[1.424]	[6.474]	[3.155]	[2.815]	[5.141]
	TRADE OPENNES	-0.005	-0.003	-0.041***	-0.129**	-0.003	0.060**	-0.153***
		[0.020]	[0.028]	[0.015]	[0.063]	[0.033]	[0.028]	[0.047]
SHOCKS								
Lagged TERMS OF TRADE		2.060***	2.124***	1.337***	-0.209	4.194***	1.403	1.944**
		[0.343]	[0.362]	[0.381]	[1.512]	[0.772]	[0.876]	[0.966]
	STOCK OF INTERNATIONAL RESERVES	-3.802***	-4.243***	-1.458	-17.459	-15.679***	5.931	-6.884**
		[1.203]	[1.271]	[3.739]	[12.196]	[5.171]	[10.301]	[2.772]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.116**	-0.122**	-0.052	-0.034	-0.301***	-0.192***	-0.058
		[0.056]	[0.061]	[0.032]	[0.108]	[0.096]	[0.056]	[0.183]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.908***	-0.850***	-1.238***	-1.944***	-0.818***	-1.688***	-0.984***
		[0.126]	[0.142]	[0.125]	[0.574]	[0.302]	[0.358]	[0.158]
EXCESS MONEY GROWTH		0.004	0.004	-0.003	-0.01	-0.406***	0.01	-0.047
		[0.006]	[0.007]	[0.023]	[0.013]	[0.135]	[0.006]	[0.236]
RELATIVE INCOME		-0.192	-0.897	1.303***	-2.780***	-0.323	-1.005	-3.705***
		[0.381]	[0.550]	[0.235]	[0.929]	[0.896]	[1.226]	[0.855]
Observations		1543	1097	446	192	230	324	190
R-squared		0.5428	0.5327	0.77	0.6404	0.7859	0.5308	0.5641

Table D.6.1: Country Effects on De-trended Real Effective Exchange Rate with Lagged Terms of Trade with no Interaction Terms

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.174	0.177	0.09	-1.090**	0.175	1.932***	-0.188
	[0.187]	[0.197]	[0.304]	[0.458]	[0.915]	[0.527]	[0.345]
– Δ INTER. RESERVES	0.480***	0.478***	0.713***	0.279	-0.102	1.244***	0.378
	[0.144]	[0.154]	[0.175]	[0.294]	[0.593]	[0.429]	[0.248]
OTHER INVESTMENT	-0.023	-0.048	0.605***	0.338**	0.977***	-0.353	0.292*
	[0.143]	[0.151]	[0.105]	[0.155]	[0.328]	[0.255]	[0.169]
PORTFOLIO INVESTMENT	0.304*	0.346	0.419***	-0.063	0.357	0.171	0.984***
	[0.161]	[0.217]	[0.125]	[0.251]	[0.405]	[0.276]	[0.322]
SHOCKS							
Lagged TERMS OF TRADE	0.378***	0.365**	0.692***	-0.548*	0.868**	0.869***	0.300*
	[0.139]	[0.145]	[0.133]	[0.297]	[0.338]	[0.281]	[0.170]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.159***	-0.157***	-0.158***	-0.234***	-0.280**	-0.135***	-0.146*
	[0.040]	[0.043]	[0.025]	[0.043]	[0.110]	[0.051]	[0.087]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.245***	-0.233***	-0.471***	-1.014***	-0.756***	-0.781***	-0.176**
	[0.078]	[0.087]	[0.080]	[0.160]	[0.254]	[0.211]	[0.089]
EXCESS MONEY GROWTH	0.010**	0.010**	0.040*	-0.010***	-0.337***	0.010*	-0.228*
	[0.004]	[0.005]	[0.022]	[0.003]	[0.105]	[0.005]	[0.134]
RELATIVE INCOME	0.813***	1.028***	0.152	1.123***	-0.865*	1.641*	1.544***
	[0.148]	[0.209]	[0.137]	[0.194]	[0.463]	[0.881]	[0.296]
Observations	1586	1137	449	192	234	336	194
R-squared	0.1148	0.1112	0.2966	0.5018	0.393	0.2226	0.2408

Table D.6.2: Country Effects on De-trended Real Effective Exchange Rate with Lagged Terms of Trade with Interaction Terms

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		0.453	0.488	4.327***	0.839	1.091	-3.242*	-0.574
		[0.625]	[0.705]	[1.458]	[1.826]	[3.479]	[1.930]	[1.637]
	TRADE OPENNES	-0.434	-0.44	-10.216***	-2.892	-0.254	16.099***	0.336
		[0.563]	[0.635]	[3.348]	[3.590]	[9.077]	[6.064]	[1.292]
– Δ INTER. RESERVES		1.617***	1.694***	2.312**	2.232**	0.624	-1.111	0.177
		[0.357]	[0.405]	[1.064]	[1.000]	[1.944]	[1.483]	[0.831]
	TRADE OPENNES	-1.936***	-2.021***	-4.003	-3.882**	-2.016	7.354*	0.438
		[0.522]	[0.575]	[2.612]	[1.835]	[4.741]	[4.391]	[0.793]
OTHER INVESTMENT		0.312	0.153	1.563***	1.771***	0.823	1.329*	0.117
		[0.242]	[0.273]	[0.533]	[0.471]	[1.894]	[0.741]	[0.448]
	TRADE OPENNES	-0.707	-0.485	-2.335*	-2.589***	0.134	-5.020**	0.23
		[0.463]	[0.489]	[1.282]	[0.811]	[4.861]	[2.246]	[0.419]
PORTFOLIO INVESTMENT		-1.511	-2.926	0.011	0.276	-3.458	-2.637	7.262**
		[1.572]	[2.133]	[0.965]	[3.181]	[2.195]	[2.518]	[2.817]
	TRADE OPENNES	0.02	0.035*	0.004	-0.002	0.041*	0.032	-0.061**
		[0.015]	[0.021]	[0.010]	[0.030]	[0.023]	[0.024]	[0.026]
SHOCKS								
Lagged TERMS OF TRADE		0.490**	0.471**	0.497**	-0.281	2.711***	0.239	0.581
		[0.215]	[0.225]	[0.240]	[0.498]	[0.635]	[0.496]	[0.367]
	STOCK OF INTERNATIONAL RESERVES	-0.783	-0.763	2.631	-2.955	-19.071***	8.143	-1.018
		[0.863]	[0.895]	[2.290]	[6.366]	[4.421]	[6.695]	[1.106]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.157***	-0.158***	-0.162***	-0.241***	-0.343***	-0.144***	-0.125
		[0.041]	[0.045]	[0.025]	[0.043]	[0.070]	[0.045]	[0.088]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.257***	-0.246***	-0.521***	-0.978***	-0.773***	-1.169***	-0.156*
		[0.080]	[0.090]	[0.084]	[0.169]	[0.209]	[0.252]	[0.093]
EXCESS MONEY GROWTH		0.010**	0.010**	0.018	-0.009**	-0.340***	0.010**	-0.215*
		[0.005]	[0.005]	[0.026]	[0.004]	[0.110]	[0.005]	[0.128]
RELATIVE INCOME		0.673***	0.909***	0.21	1.117***	-1.870***	0.996	1.594***
		[0.163]	[0.234]	[0.146]	[0.226]	[0.609]	[1.006]	[0.296]
Observations		1543	1097	446	192	230	324	190
R-squared		0.1238	0.1214	0.3275	0.5344	0.4826	0.2844	0.2601

Table D.7.1: Time and Country Effects on Log of Real Effective Exchange Rate with Lagged Terms of Trade and no Interaction terms

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.11	0.05	1.057***	4.526***	-1.161	-0.93	-0.372
	[0.272]	[0.254]	[0.341]	[1.473]	[0.894]	[0.728]	[0.556]
– Δ INTER. RESERVES	0.352**	0.383**	0.189	1.085	0.564	0.948*	-0.301
	[0.170]	[0.186]	[0.245]	[1.019]	[0.571]	[0.522]	[0.399]
OTHER INVESTMENT	-0.012	-0.093	0.390**	1.437***	1.132***	-0.17	-0.324
	[0.168]	[0.177]	[0.167]	[0.501]	[0.379]	[0.268]	[0.319]
PORTFOLIO INVESTMENT	-0.033	-0.207	0.411*	-0.622	0.298	0.262	-0.874
	[0.228]	[0.318]	[0.218]	[0.793]	[0.648]	[0.368]	[0.537]
SHOCKS							
Lagged TERMS OF TRADE	1.089***	0.764***	1.490***	-5.558**	2.123***	1.472***	0.129
	[0.214]	[0.220]	[0.270]	[2.164]	[0.456]	[0.379]	[0.313]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.208***	-0.218***	-0.170***	-0.227	-0.323***	-0.152**	-0.384**
	[0.058]	[0.062]	[0.057]	[0.240]	[0.101]	[0.062]	[0.180]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.798***	-0.652***	-1.862***	-1.987***	-0.685*	-1.200***	0.520**
	[0.148]	[0.167]	[0.180]	[0.651]	[0.396]	[0.329]	[0.217]
EXCESS MONEY GROWTH	0.01	0.011*	0.042**	-0.027*	-0.434***	0.009	-0.312
	[0.006]	[0.007]	[0.021]	[0.014]	[0.130]	[0.007]	[0.196]
RELATIVE INCOME	-0.329	-0.781*	1.032***	-3.698***	-1.324*	-3.288***	3.683***
	[0.353]	[0.427]	[0.223]	[1.079]	[0.693]	[0.966]	[0.850]
Observations	1586	1137	449	192	234	336	194
R-squared	0.595	0.6144	0.7969	0.6389	0.8214	0.6134	0.852

Table D.7.2: Time and Country Effects on Log of Real Effective Exchange Rate with Lagged Terms of Trade and Interaction terms

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		-0.831	-0.713	3.247**	-8.936	6.049	-8.091***	2.353
		[0.801]	[0.878]	[1.506]	[6.490]	[4.573]	[2.479]	[2.375]
	TRADE OPENNES	1.093	0.88	-5.404	28.069**	-16.342	21.152***	-2.525
		[0.732]	[0.810]	[3.414]	[12.023]	[11.562]	[7.691]	[1.910]
– Δ INTER. RESERVES		1.490***	1.410***	-1.559	1	-3.14	-2.361	-0.364
		[0.441]	[0.475]	[1.325]	[2.944]	[2.513]	[2.005]	[1.167]
	TRADE OPENNES	-2.056***	-1.852***	4.028	1.199	8.678	8.96	0.346
		[0.650]	[0.693]	[3.314]	[5.773]	[5.648]	[5.657]	[1.174]
OTHER INVESTMENT		0.376	0.184	1.008	5.857***	-0.177	0.892	1.713**
		[0.303]	[0.355]	[0.642]	[1.329]	[2.565]	[0.659]	[0.789]
	TRADE OPENNES	-0.827	-0.645	-2.025	-9.540***	2.493	-3.708**	-2.169***
		[0.537]	[0.592]	[1.573]	[2.366]	[6.544]	[1.843]	[0.711]
PORTFOLIO INVESTMENT		-2.232	-3.371	6.337***	16.965**	-4.317	-7.137***	7.387*
		[2.119]	[3.022]	[1.685]	[7.417]	[3.690]	[2.485]	[3.785]
	TRADE OPENNES	0.025	0.035	-0.062***	-0.165**	0.048	0.077***	-0.068*
		[0.021]	[0.031]	[0.017]	[0.073]	[0.039]	[0.025]	[0.035]
SHOCKS								
Lagged TERMS OF TRADE		1.627***	1.356***	1.851***	-3.303	3.258***	0.809	1.261***
		[0.315]	[0.331]	[0.503]	[2.647]	[0.747]	[0.695]	[0.427]
	STOCK OF INTERNATIONAL RESERVES	-3.884***	-4.139***	-4.66	-16.033	-13.698***	8.834	-4.812***
		[1.108]	[1.132]	[4.707]	[15.835]	[4.996]	[7.751]	[1.423]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.218***	-0.228***	-0.187***	-0.295	-0.431***	-0.188***	-0.310**
		[0.059]	[0.063]	[0.054]	[0.220]	[0.096]	[0.060]	[0.155]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.828***	-0.682***	-1.917***	-2.693***	-0.461	-1.574***	0.801***
		[0.148]	[0.169]	[0.178]	[0.713]	[0.435]	[0.354]	[0.240]
EXCESS MONEY GROWTH		0.011	0.011*	0.038*	-0.02	-0.483***	0.011*	-0.453**
		[0.006]	[0.007]	[0.022]	[0.017]	[0.153]	[0.006]	[0.175]
RELATIVE INCOME		-0.663*	-1.201***	1.252***	-4.006***	-1.828**	-4.387***	3.732***
		[0.365]	[0.439]	[0.238]	[1.093]	[0.895]	[1.047]	[0.801]
Observations		1543	1097	446	192	230	324	190
R-squared		0.6088	0.6267	0.811	0.6989	0.842	0.6508	0.8754

Table D.8.1: Country Effects and Quadratic Time trend on Log of Real Effective Exchange Rate with Lagged Terms of Trade and no Interaction Terms (time trend coefficients not shown)

DEPENDENT VARIABLE: LOG REER	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS OVER GDP							
FDI	0.177	0.268	0.999***	3.130**	-0.728	0.913	-0.567
	[0.271]	[0.262]	[0.320]	[1.377]	[1.008]	[0.724]	[0.509]
– Δ INTER. RESERVES	0.692***	0.700***	0.265	0.314	0.291	1.118**	-0.278
	[0.185]	[0.207]	[0.235]	[1.131]	[0.589]	[0.501]	[0.420]
OTHER INVESTMENT	0.135	-0.035	0.527***	0.883*	1.293***	-0.074	-0.165
	[0.170]	[0.177]	[0.154]	[0.479]	[0.370]	[0.285]	[0.328]
PORTFOLIO INVESTMENT	-0.033	-0.138	0.338*	-1.003	0.32	0.47	-1.158**
	[0.209]	[0.278]	[0.204]	[0.680]	[0.565]	[0.300]	[0.568]
SHOCKS							
Lagged TERMS OF TRADE	1.196***	0.863***	1.247***	-1.093	2.265***	1.561***	0.312
	[0.228]	[0.230]	[0.248]	[1.075]	[0.439]	[0.424]	[0.361]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $	-0.155***	-0.185***	-0.05	-0.048	-0.246**	-0.160**	-0.263
	[0.056]	[0.060]	[0.032]	[0.121]	[0.102]	[0.066]	[0.166]
ECONOMIC STRUCTURE							
TRADE OPENNESS	-0.628***	-0.671***	-1.373***	-1.802***	-0.433	-1.313***	0.196
	[0.135]	[0.159]	[0.146]	[0.588]	[0.348]	[0.341]	[0.219]
EXCESS MONEY GROWTH	0.006	0.008	0.040*	-0.02	-0.445***	0.008	-0.126
	[0.006]	[0.006]	[0.021]	[0.012]	[0.126]	[0.007]	[0.208]
RELATIVE INCOME	0.02	-0.095	1.110***	-2.269***	-0.84	-0.616	2.851***
	[0.343]	[0.423]	[0.212]	[0.857]	[0.672]	[1.036]	[0.733]
Observations	1586	1137	449	192	234	336	194
R-squared	0.5512	0.5779	0.7648	0.5712	0.7856	0.5196	0.7662

Table D.8.1: Country Effects and Quadratic Time trend on Log of Real Effective Exchange Rate with Lagged Terms of Trade and no Interaction Terms (time trend coefficients not shown)

DEPENDENT VARIABLE: LOG REER	INTERACTION TERMS	ALL	DEVELOPING COUNTRIES	INDUSTRIAL COUNTRIES	MANUFACTURES EXPORTERS.	COMMODITIES EXPORTERS	LATAM	ASIA
CAPITAL INFLOWS								
FDI		-0.427	0.012	3.977**	-10.008	6.101	-5.805**	4.324*
		[0.821]	[0.950]	[1.569]	[6.179]	[3.820]	[2.580]	[2.330]
	TRADE OPENNES	0.695	0.294	-7.362**	29.862**	-15.207	20.164**	-4.705**
		[0.740]	[0.854]	[3.530]	[11.942]	[9.742]	[8.048]	[1.882]
– Δ INTER. RESERVES		1.922***	1.580***	-1.168	1.624	-2.4	-1.938	0.605
		[0.465]	[0.507]	[1.311]	[2.553]	[2.421]	[2.121]	[1.290]
	TRADE OPENNES	-2.228***	-1.644**	3.482	-0.573	6.178	8.313	-0.867
		[0.696]	[0.743]	[3.263]	[4.875]	[5.365]	[6.128]	[1.272]
OTHER INVESTMENT		0.589*	0.3	1.412**	5.779***	-0.898	1.165	1.752**
		[0.317]	[0.356]	[0.599]	[1.271]	[2.341]	[0.753]	[0.784]
	TRADE OPENNES	-0.950*	-0.762	-2.605*	-9.691***	4.563	-4.177*	-2.252***
		[0.568]	[0.597]	[1.460]	[2.298]	[6.005]	[2.168]	[0.735]
PORTFOLIO INVESTMENT		-1.119	-2.494	4.911***	15.171**	-4.743	-6.504**	5.621
		[2.061]	[2.947]	[1.522]	[6.390]	[3.060]	[2.757]	[6.254]
	TRADE OPENNES	0.014	0.027	-0.047***	-0.145**	0.052*	0.074***	-0.058
		[0.021]	[0.030]	[0.016]	[0.062]	[0.031]	[0.027]	[0.057]
SHOCKS								
Lagged TERMS OF TRADE		1.787***	1.465***	1.250***	-0.469	3.805***	0.791	1.185**
		[0.329]	[0.334]	[0.423]	[1.611]	[0.717]	[0.801]	[0.596]
	STOCK OF INTERNATIONAL RESERVES	-4.203***	-4.062***	0.223	-15.305	-17.861***	9.294	-2.97
		[1.132]	[1.135]	[4.185]	[13.009]	[4.985]	[9.537]	[2.126]
NOMINAL EXCHANGE RATE APPRECIATION AGAINST US $		-0.162***	-0.191***	-0.038	-0.031	-0.377***	-0.175***	-0.19
		[0.057]	[0.062]	[0.032]	[0.108]	[0.091]	[0.060]	[0.144]
ECONOMIC STRUCTURE								
TRADE OPENNESS		-0.641***	-0.691***	-1.418***	-2.091***	-0.204	-1.762***	0.406*
		[0.135]	[0.161]	[0.148]	[0.598]	[0.344]	[0.361]	[0.224]
EXCESS MONEY GROWTH		0.006	0.008	0.025	-0.01	-0.481***	0.009	-0.302
		[0.006]	[0.007]	[0.023]	[0.014]	[0.144]	[0.006]	[0.190]
RELATIVE INCOME		-0.339	-0.545	1.362***	-3.094***	-1.602*	-1.299	2.733***
		[0.356]	[0.450]	[0.232]	[0.955]	[0.891]	[1.151]	[0.697]
Observations		1543	1097	446	192	230	324	190
R-squared		0.5656	0.5916	0.7759	0.6442	0.8155	0.5539	0.792

Appendix E: The Relationship between REER volatility and International Reserves

Dependent Variable: REER Volatility	Reserves	SE	Constant	SE	Observations	R-squared
All	-9.612***	[3.155]	4.935***	[0.395]	1292	0.215
Industrial Countries	0.384	[2.291]	2.139***	[0.163]	429	0.147
Developing Countries	-10.419***	[3.429]	6.106***	[0.528]	863	0.178
East/South Asia	-7.557***	[1.830]	5.338***	[0.399]	286	0.278
Latin America	-29.861***	[6.570]	7.197***	[0.725]	280	0.121
Natural Resource Countries	-9.172	[9.394]	5.810***	[1.127]	360	0.204
Manufactures Countries	-9.862***	[3.317]	3.142***	[0.293]	139	0.232

Robust standard errors in brackets
* Significant at 10%; ** significant at 5%; *** significant at 1%

Definitions:

REER Volatility: Standard Deviation of the Real Effective Exchange Rates over the 12 months of each year

Reserves: Average yearly stock of International Reserves

List of Countries Included:

Industrial	Developing		S/E Asia	Latin America	Natural Resource	Manufactures
Australia	Argentina	Israel	China	Argentina	Australia	Finland
Canada	Brazil	Korea	Honk Kong	Brazil	Canada	Japan
Denmark	Bulgaria	Kuwait	India	Chile	Chile	Korea
Finland	Chile	Malaysia	Indonesia	Colombia	Kuwait	Sweden
Hungary	China	Mexico	Japan	Ecuador	Mexico	
Japan	China	Morocco	Korea	Mexico	Nigeria	
New Zealand	Colombia	Nigeria	Malaysia	Peru	Norway	
Norway	Czech Republic	Pakistan	Philippines	Venezuela	Russia	
Spain	Ecuador	Peru	Singapore		Saudi Arabia	
Sweden	Egypt	Philippines	Thailand		South Africa	
Switzerland	Euro Area	Poland			Venezuela	
United Kingdom	India	Romania				
United States	Indonesia	Russia				
		Saudi Arabia				
		Singapore				
		Slovenia				
		South Africa				
		Thailand				
		Turkey				
		Venezuela				

Appendix F: The effect of changes in the levels of Terms of Trade, Stock of International Reserves and Domestic Liquidity on the Real Effective Exchange Rates

Table F1: The Effect of Log ETOT and Stock of Reserves on the Log of REER

	All	Developing Countries	Industrial Countries	Asia	LATAM	Commodity Exporters	Manufactures Exporters
Log Effective Terms of Trade	1.384***	1.358***	1.137***	-0.415	1.644***	3.220***	0.581
	[0.181]	[0.195]	[0.355]	[0.406]	[0.482]	[0.434]	[1.006]
Stock of International Reserves over GDP	-1.084***	-1.254***	0.520**	-2.727***	0.179	-2.315***	-1.990***
	[0.126]	[0.137]	[0.217]	[0.301]	[0.602]	[0.470]	[0.641]
Observations	1863	1217	646	202	343	253	271
R-squared	0.4689	0.4461	0.6021	0.3212	0.3905	0.6603	0.4307

Robust standard errors in brackets,
* significant at 10%; ** significant at 5%; *** significant at 1%

Table F2: The Effect of Log ETOT, Stock of Reserves and Domestic Liquidity on the Log of REER

	All	Developing Countries	Industrial Countries	Asia	LATAM	Commodity Exporters	Manufactures Exporters
Log Effective Terms of Trade	1.450***	1.410***	1.180***	-0.398	1.614***	3.150***	-0.593
	[0.191]	[0.204]	[0.412]	[0.337]	[0.468]	[0.424]	[2.236]
Stock of International Reserves over GDP	-1.070***	-1.143***	0.785**	0.535	0.363	-2.280***	-4.343**
	[0.142]	[0.153]	[0.306]	[0.593]	[0.736]	[0.454]	[1.764]
Level of M2 over GDP	-0.12	-0.278*	0.125	-2.146***	-0.23	0.628**	0.858
	[0.113]	[0.149]	[0.118]	[0.376]	[0.340]	[0.293]	[0.895]
Observations	1511	1156	355	202	343	252	94
R-squared	0.4685	0.4488	0.6193	0.4109	0.3917	0.6682	0.4505

Robust standard errors in brackets,
* significant at 10%; ** significant at 5%; *** significant at 1%