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Carl Grekou

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Université de Paris Ouest Nanterre La Défense
(bâtiment G)
200, Avenue de la République
92001 NANTERRE CEDEX

Tél et Fax : 33.(0)1.40.97.59.07
Email : nasam.zaroualete@u-paris10.fr

université Paris Ouest Nanterre La Défense

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Carl GREKOU*

Abstract

Relying on a panel of 73 emerging and developing countries and on *de facto* exchange rate regimes' classification —over the 1980-2012 period, we re-examine empirically the relationship between exchange rate regimes and currency misalignments. Overall our results suggest that no exchange rate regime performs better than the others as currency misalignments do not substantially and significantly differ across exchange rate regimes. This finding is in contrast to the different arguments (both theoretical and empirical) in favor or against any particular regime and instead supports the exchange regime neutrality view.

Keywords: Currency misalignments; Exchange rate regimes; Emerging and developing countries.
JEL Classification: C23, F31, F33.

*EconomiX-CNRS, Université Paris Ouest Nanterre - La Défense. 200 Avenue de la République, 92001 Nanterre Cedex, France. Email: g.grekou@u-paris10.fr
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1 Introduction

Since the last decades, the macroeconomic policy framework in emerging and developing countries has involved a certain set of features: financial crises in the 1990s and early 2000s (e.g. Mexico 1994–5, East Asia 1997–9, Russia and Brazil in the late 1990s, Argentina 2002), and more recently greater dispersion in net foreign asset positions, with several countries exhibiting current account surpluses and accumulation of large foreign exchange reserves or emerging as net debtors (Lane and Milesi-Ferretti, 2002). Relying on the evidence that real exchange rate misalignments —i.e. (sustained) departure(s) of the real exchange rate from its equilibrium value— are detrimental for macroeconomic stability and economic growth (as coined by the *Washington Consensus*; see Williamson, 1990) and that they have predictive power in explaining financial crises (Kaminsky et al., 1998; Goldfajn and Valdes, 1998), a consensus was reached —at the end of the 1990s— on the need to avoid such currency misalignments. At the end of the 2000s, concerns about excessive current account imbalances have again prompted calls to redirect macroeconomic policy towards correcting exchange rate misalignments and unsustainable current account positions (Blanchard and Milesi-Ferretti, 2011).

One of the critical questions associated with these issues is which monetary regime offers a better insulation —for open economies— to such currency misalignments. Classical models of international monetary transmission argue in favor of floating exchange rate regimes. Indeed, in these models, exchange rate movements act as a substitute for product price flexibility in fostering international relative price adjustment vis-à-vis macroeconomic shocks, in accordance with the adjustment mechanism presented by Friedman (1953). However, models based on what has started to be known as the "New Open Economy Macroeconomics" have challenged this classical view. For relative price adjustment via exchange rate to be efficient, a high pass-through on import prices and complete financial markets are required. As these assumptions are likely to be not fully met, a free float does not necessarily lead to efficient levels of exchange rates (Corsetti et al., 2010). Berka et al. (2012) also reject the Friedman argument on the grounds that the two underpinning assumptions —namely *(i)* producer currency pricing, and *(ii)* complete international immobility of capital— are clearly violated.

The importance of assessing the causal relationship between exchange rate regimes and currency misalignments has motivated surprisingly fewer research on the empirical side. Dubas (2009) derives a measure of misalignments from the estimation of a cointegrating relationship between the real effective exchange rate and a set of standard fundamentals (terms of trade, productivity, openness, government consumption, capital

flows, and excess credit) and regresses it on the exchange rate regime (ERR). Using data on 102 countries and the classification according to the International Monetary Fund (IMF) (the *de jure* regime) over the post-Bretton Woods era, he found that fixed ERR perform better than flexible ERR, while currency misalignments seem weaker in countries with intermediate ERR. However, since the contribution by Calvo and Reinhart (2002), it is well recognized that a country's actual exchange rate regime often differs from its *de jure* regime.[1] Drawing on the results of the *de jure* ERR classification can then lead to incorrect conclusions and misleading policy implications as this classification does not fairly reflect the role of actual exchange rate policies in currency misalignments. Caputo (2015) examines whether the nature of a country's nominal exchange rate regime significantly affects the adjustment process of the real exchange rate toward its equilibrium level. While he notices the importance of considering *de facto* ERR, he uses the approach by Shambaugh (2004) which ranks exchange rate arrangements on the basis of only two categories: pegs and non pegs. Using data on 54 countries (developed and developing economies) over the 1980-2011 period, he finds that fixed exchange rate regimes are associated with a lower real exchange rate adjustment in developing countries, i.e. with more persistent currency misalignments. Nevertheless, and besides the narrow definition of ERR, his empirical methodology ignores nonlinearities and threshold effects in real exchange rates' adjustment which may invalidate his results as large misalignments appear to adjust in a different fashion from small ones.

In this paper, we re-examine empirically the relationship between exchange rate regimes and currency misalignments. Rather than focusing on the speed of real exchange rates' convergence toward their equilibrium values, we examine instead the relationship between exchange rate regimes and the levels of currency misalignments. In other words, we seek to determine which ERR category performs the best in minimizing such currency misalignments in developing and emerging economies. Exchange rate regimes are defined according the two well-established *de facto* ERR classifications: *(i)* the "natural" classification proposed by Reinhart and Rogoff (2004, thereafter RR), and *(ii)* the classification of Levy-Yeyati and Sturzenegger (2003, thereafter LYS). In order to ensure that our results are robust, we perform additional checks, including controlling for other determinants of currency misalignments, for alternative assessments of currency misalignments and by investigating the possible endogeneity of exchange rate

[1]Explanations on the sources of this discrepancy include the "fear of floating", i.e. recurrent *de facto* exchange rate intervention in officially floating regimes in order to avoid a depreciation of the currency (Calvo and Reinhart, 2002) and more recently the "fear of appreciation" (Levy-Yeyati et al., 2013), i.e. interventions in Forex markets to keep the currency undervalued.

regimes.

Using data on 73 developing and emerging countries over the 1980-2012 period, our analysis failed to establish any robust relationship between currency misalignments and exchange rate regimes. This is true for developing and emerging countries, whatever the *de facto* ERR classification, when we control for financial openness, currency crises and when we account for alternative misalignments' assessments and *de facto* classifications. Our finding thus provides strong evidence that no exchange rate regime performs better than the others as currency misalignments seem not substantially and significantly affected by the nature of exchange rate regime.

The remainder of the paper is organized as follows. In the next section, we present the empirical framework —i.e. methodology and data. In Section 3, we present and discuss the results. Section 4 is devoted to robustness checks. Finally, Section 5 concludes.

2 Empirical framework

2.1 Equilibrium exchange rate and currency misalignments

We use the Behavioral Equilibrium Exchange Rate (BEER; see Clark and MacDonald, 1998) approach to assess the equilibrium exchange rates —from which we derive currency misalignments.[2] The BEER approach consists in estimating a long-run relationship between the observed real exchange rate and a set of *fundamentals*, i.e. variables influencing the real exchange rate in the long run. This set of fundamentals derives from various theoretical models. Among many, the works of Edwards (1988), Elbadawi (1994), Hinkle and Montiel (1999) and Elbadawi and Soto (2008) have provided suitable theoretical and empirical frameworks to investigate equilibrium real exchange rates and their fundamentals in developing and emerging countries. Based on this literature, we retain as fundamentals: *(i)* the terms of trade, *(ii)* the relative productivity of the tradable sector, and *(iii)* the net foreign assets position. As a result, the long-run relationship to be estimated is the following:

$$reer_{i,t} = \mu_i + \beta_1\ tot_{i,t} + \beta_2\ rprod_{i,t} + \beta_3\ nfa_{i,t} + \varepsilon_{i,t} \tag{1}$$

[2]For brevity, the BEER approach is not presented in detail. For further details and related concepts (e.g. PPP, FEER, DEER, NATREX), see Edwards and Savastano (2000) and Driver and Westaway (2005).

where $i = 1, \ldots, N$ and $t = 1, \ldots, T$ respectively indicate the individual and temporal dimensions of the panel. $reer_{i,t}$ is the real effective exchange rate (in logarithms), an increase in the index indicates a real appreciation; $tot_{i,t}$ is the logarithm of terms of trade, an increase indicates an improvement; $rprod_{i,t}$ stands for the relative productivity against country i's main trading partners (the Balassa-Samuelson effect) also expressed in logarithm; and $nfa_{i,t}$ is the net foreign asset position (in percentage of GDP). μ_i are the country-fixed effects and $\varepsilon_{i,t}$ is an error term. As documented by previous studies, an improvement in the terms of trade and in the net foreign assets position as well as an increase in the relative productivity is expected to appreciate the real effective exchange rate.

Currency misalignments are then obtained from the difference between the observed real effective exchange rate ($reer_{i,t}$) and its equilibrium level ($reer^*_{i,t}$) —i.e. the fitted value of the real effective exchange rate derived from the estimation of equation (1):

$$Mis_{i,t} = reer_{i,t} - reer^*_{i,t} \tag{2}$$

Following this definition and the definition of the real effective exchange rate, a negative sign indicates an undervaluation (i.e. $reer_{i,t} < reer^*_{i,t}$) whereas a positive sign indicates an overvaluation (i.e. $reer_{i,t} > reer^*_{i,t}$) of the real effective exchange rate.

2.2 Assessing the effects of the exchange rate regime

We then explore whether or not there is a relationship between the exchange rate regime and currency misalignments. More specifically, we define dummy variables to estimate the effect of the various categories of exchange rate regimes considered by the two *de facto* classifications. To avoid multicollinearity, we exclude one exchange rate regime which is thus considered as the reference regime. Adopting this approach, the equation of interest can be specified as follows:

$$|Mis_{i,t}| \;=\; \mu_i \;+\; \eta_t \;+\; \Phi_j \sum_{j=1}^{m-1} Dum_j * ERR_{i,t} \;+\; X_{i,t} \;+\; u_{i,t} \tag{3}$$

where $|Mis_{i,t}|$ is the absolute value of currency misalignment[3]; Dum_j is a dummy variable scoring 1 for regime$j$ (0 otherwise), and m the number of exchange rate regimes' categories considered in the *de facto* classification —i.e. the "$m - way$" classification. $ERR_{i,t}$ is the considered exchange rate regime classification and $X_{i,t)}$ is a set of control variables. μ_i and η_t represent the country fixed effects and the year fixed effects. $u_{i,t}$ is an independent and identically distributed error term.

In estimating Equation (3), we control for crises and financial openness. Indeed, these variables can act as other possible determinants of currency misalignments. Consequently, ignoring these variables could lead to a misspecification of our empirical relationship. Controlling for crises is particularly important to avoid biased estimates as crises are usually marked by considerable changes in exchange rates and thus misalignments. No less importantly, we also take into account the degree of financial openness since a high degree of financial openness —i.e. the absence of capital controls— exposes countries to massive inflows and outflows which generally translate into important exchange rate variations and therefore misalignments.

Furthermore, as exchange rate regimes' performance might be affected by several characteristics, such financial development and openness, that differ among emerging and developing economies, we also estimate Equation (3) by considering separately these two groups of countries. Finally, we take into account the frequency of changes in countries' exchange rate regimes, by splitting our sample into two sets: a sub-sample of countries that have not changed their exchange rate regimes during the whole study period (panel A), and an alternative sub-sample (panel B) composed of countries which have registered at least one change in their exchange rate regime during the period under consideration.[4]

2.3 Data: key variables

Currency misalignments, as indicated in the methodology section, are obtained from the difference between the observed real effective exchange rates and their equilibrium levels. Equilibrium exchange rates on their part correspond to the fitted values of real effective exchange rates derived from the estimation of the long-run relationship between the real effective exchange rate and the terms of trade, the net foreign asset position, and relative productivity.

Real effective exchange rate statistics are provided by the Bruegel's database and

[3]We rely on the absolute values of currency misalignments to avoid that undervaluations and overvaluations compensate each other.

[4]This is also done to avoid bias in the estimates.

correspond to the weighted average of real bilateral exchange rate against 67 trade partners. We use the same weights and trade partners for the calculation of the relative productivity, proxied here by the relative real GDP per capita (in PPP terms).[5] The terms of trade series are taken from the WDI database (World Development Indicators, World Bank). The Net foreign asset positions are extracted from the Lane and Milesi-Ferretti (2007) database and updated using information provided by IFS (*International Financial Statistics*, IMF). All the series are in logarithms, except the net external positions which are expressed as share of GDP.

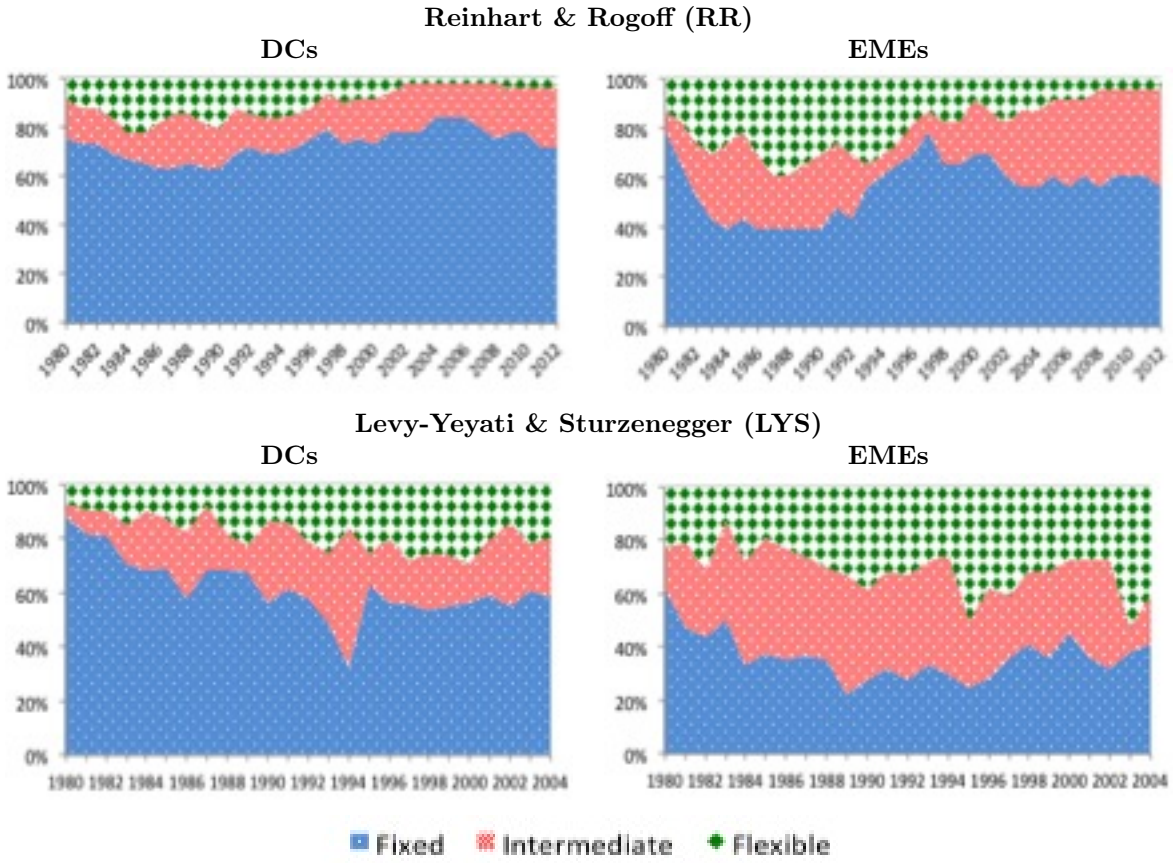

Figure 1 — Three-way *de facto* regime distributions over time (in % of annual observations)

The exchange rate regime variables come from the two traditional *de facto* classifications, i.e. the Reinhart and Rogoff (2004; thereafter RR) "Natural" classification and the Levy-Yeyati and Sturzenegger (2003; thereafter LYS) classification. We opt to work with both classification schemes as they have much disagreement over how to classify a given country in a given year (see Figure 1). Indeed, the LYS classification relies on

[5]Due to a lack of available data at the sectoral level, PPP GDP per capita are usually used to approximate the relative productivity differentials between sectors and countries.

a cluster analysis based on changes in the exchange rate, its volatility (standard deviation), and changes in official reserves. The RR classification also relies on exchange rate's variations but improves the LYS methodology by taking into account the existence of nonunified exchange rate markets (multiple exchange rates and parallel markets), which have concerned a large number of the countries —namely EMEs— during the 1980s and 1990s.

The RR (coarse) index range from 1 to 6, from more to less fixity, while the LYS index ranges from 1 to 5, from less to more fixity. For these two classifications, we also use a more usual index, by aggregating the series into three categories: fixed, intermediate, and flexible ERR.[6] Both *six-* and *three-way* RR classifications cover the 1980-2012 period while the LYS classifications cover the 1980-2004 period.[7]

Regarding control variables, we construct a $Crisis$ dummy variable —that scores 1 for crisis years; 0 otherwise— based on data from Laeven and Valencia (2012). We restrict the cases of crisis to systemic banking, currency and sovereign debt crises. The proxy for financial openness is the Chinn-Ito $KAOPEN$ index (Chinn and Ito, 2008). This latter is measured on a scale from 0 to 1; 1 being the highest financial openness degree.[8]

Finally, our panel consists of 73 countries grouped as developing and emerging countries.[9] All data are annual and cover the 1980-2012 period —1980-2004 for the analyses using the LYS classification.[10]

[6]The category "1" in the LYS classification corresponds to inconclusive determination. This latter category exists only in the 5-way classification.

[7]We extend/fill the gaps in the RR classification using Ilzetzki, Reinhart and Rogoff (2011) and various issues of the *Annual Report on Exchange Rate Arrangements and Exchange Restrictions* (IMF). The details regarding the RR and LYS classifications are reported in Tables A.3 and A.4 —Appendix A.

[8]We focus only on these two control variables ($Crisis$ and financial openness) to minimize endogeneity and simultaneity problems.

[9]See Table A.2. for the list of countries. We followed the IMF classification as Gosh et al. (2014).

[10]The sources and definitions of the data are provided in Appendix A.1.

3 Results

3.1 Estimating equilibrium exchange rates and assessing currency misalignments

We rely on the Cross Sectionally Augmented Pooled Mean Group (CPMG; see Pesaran, 2006; Binder and Offermanns, 2007) procedure to estimate the long-run relationship between the real effective exchange rate and its fundamentals. This latter procedure presents very appealing features such as the consistency of the estimates in presence of cross-sectional dependencies and the better consideration of the heterogeneity among the countries —compared to the DOLS and FMOLS procedures.[11] Results are reported in Table 1.

Table 1 — Estimation of the long-run relationship

Long-run dynamic			***Short-run dynamic***		
	Coef.	Z		Coef.	Z
$rprod$	0.332***	7.28	$\Delta rprod$	-0.026	-0.23
tot	0.141***	3.82	Δtot	-0.075	-1.53
nfa	0.231***	7.44	Δnfa	0.198***	5.17
$L.\overline{reer}$	0.622***	4.31	$\Delta\overline{reer}$	0.261***	3.38
$\overline{rprod}$	-0.438***	-4.00	$\Delta\overline{rprod}$	0.077	1.62
$\overline{tot}$	0.673***	3.18	$\Delta\overline{tot}$	-0.081	-0.91
$\overline{nfa}$	0.040	0.83	$\Delta\overline{nfa}$	0.021	0.62
			$ec.$	-0.188***	-8.43
			$Constant$	-0.493***	-8.21
Specification test				11.43	
Joint Hausman test [a]				[$p.value$=0.12]	
No. Countries / No. Observations:				73 / 2360	

Notes: Symbols ***, **, and * denote significance at 1%, 5%, and at 10%. "Δ" (resp. "$L.$") is the difference operator (resp. the lag operator); "$ec.$" is the error correction term. The bars over the variables indicate the cross-sectional averages of these variables.
a: Null of long-run homogeneity

According to the Hausman test —examining the panel heterogeneity, the long run homogeneity restriction is not rejected for individual parameters and jointly in all regressions. The CPMG estimates are thus consistent and efficient (see Cavalcanti et al. 2012). Results are in line with the equilibrium approach to exchange rates since

[11] Even if the CPMG estimator can deal with both I(0) and I(1) variables, we performed unit root and cointegration tests. The results —not reported here to save space but available upon request— indicate that our series are I(1) and cointegrated.

regression coefficients have the expected signs. Indeed, the real effective exchange rate appreciates in the long-run with the increase in the relative productivity per capita, the improvement in the terms of trade and in the net foreign asset position.

Using estimates in Table 1, the equilibrium exchange rate ($reer^*_{i,t}$) is obtained by feeding the estimated model with the permanent components of the fundamentals (estimated with the Hodrick-Prescott filter). Currency misalignments are then calculated as the difference between the observed real effective exchange rates and their equilibrium value, as indicated by Equation (2).[12]

3.2 Does the exchange rate regime matter for currency misalignments?

We present in Tables 2 and 3 the results of the econometric analysis based on the RR and the LYS classifications. Flexible regimes are the excluded category, so that the coefficients on fixed and intermediate regimes should be interpreted as the misalignments differential relative to a flexible exchange rate regime.

In Table 2, the RR classification is used to categorize the regimes. In the first two columns of Table 2, pertaining to the full sample, the effect on misalignments is negative under the fixed regime and becomes insignificant as the regime gets progressively more flexible. Thus, compared to flexible ERR, fixed ERR seems to be associated with lower currency misalignments. However, the differential is rather weak: the estimated parameter around 0.15 suggests 0.15% less misalignment in fixed ERR than in flexible one. The intermediate ERR is not significantly different from the flexible regime (for both panels A and B). However, looking at the two categories of countries (DCs and EMEs), the coefficient of the intermediate ERR, for the DCs group, become significant with a negative sign meaning lower currency misalignments associated with this ERR —compared to flexible ERR. The coefficients are however weaker than those associated with the fixed ERR (around 0.13) and are only significant at 10%. Thus, for the DCs, fixed ERR seem to perform the best, followed by intermediate ERR and then flexible ERR.[13] Looking at the EMEs group, none of the coefficients associated to the ERRs are statistically significant. It seems therefore that for these countries currency misalignments do not differ significantly between the three categories of ERR.

[12]Figures C.1 and C.2 in Appendix C display the evolution of the real effective exchange rates (observed and equilibrium levels) and the corresponding misalignments.

[13]Note however that the statistical significance is low.

Table 2 — Currency misalignments and exchange rate regimes (*RR classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Six-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	1.1	1.2	1.3	1.4	1.5	1.6		1.7	1.8	1.9	1.10	1.11	1.12
ERR													
Fixed	-0.159**	-0.135*	-0.165**	-0.161**	-0.105	-0.089	*RR* 1	-0.103	-0.092	-0.258**	-0.291**	0.234	0.268
	(-2.12)	(-1.79)	(-2.04)	(-2.00)	(-0.66)	(-0.49)		(-1.17)	(-0.79)	(-1.96)	(-2.12)	(0.72)	(0.72)
Interm.	0.094	0.111	-0.127*	-0.131*	0.389	0.397	*RR* 2	-0.212*	-0.203*	-0.223*	-0.248*	-0.304	-0.286
	(0.52)	(0.53)	(-1.80)	(-1.68)	(0.90)	(0.88)		(-1.89)	(-1.82)	(-1.66)	(-1.74)	(-0.96)	(-0.89)
Flexible	—	—	—	—	—	—	*RR* 3	0.080	0.082	-0.197*	-0.233*	0.489	0.528
								(0.40)	(0.36)	(-1.64)	(-1.75)	(0.94)	(0.93)
							RR 4	-0.041	-0.104	-0.179	-0.313	0.667	0.782
								(-0.29)	(-0.59)	(-1.01)	(-1.40)	(0.92)	(0.91)
							RR 5	—	—	—	—	—	—
							RR 6	-0.102	-0.147	-0.132	-0.197	0.614	0.746
								(-0.82)	(-0.82)	(-093)	(-1.11)	(0.91)	(0.92)
Control variables													
Crisis	0.058**	0.060*	0.050**	0.057*	0.091	0.085		0.056**	0.055	0.046**	0.048	0.112	0.111
	(2.24)	(1.64)	(2.23)	(1.72)	(0.94)	(0.77)		(2.14)	(1.54)	(2.08)	(1.52)	(1.08)	(0.97)
kaopen	-0.260	-0.261	-0.028	-0.061	-0.548	-0.614		-0.252	-0.253	-0.022	-0.031	-0.484	-0.514
	(-0.99)	(-0.99)	(-0.56)	(-0.73)	(-0.92)	(-0.88)		(-0.98)	(-0.98)	(-0.47)	(-0.49)	(-0.87)	(-0.82)
Constant	0.713***	0.801***	0.485***	0.452***	1.133**	1.284**		0.697***	0.807***	0.562***	0.557***	1.014**	1.156**
	(3.37)	(3.13)	(7.82)	(8.00)	(2.09)	(2.11)		(4.11)	(3.64)	(5.40)	(5.69)	(2.41)	(2.41)
R-Sq.	0.04	0.05	0.10	0.15	0.08	0.09		0.04	0.05	0.12	0.19	0.09	0.09
Obs./ Countries	2366/73	1398/43	1580/49	777/24	786/24	621/19		2366/73	1398/43	1580/49	777/24	786/24	621/19

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table 3 — Currency misalignments and exchange rate regimes (*LYS classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Five-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	2.1	2.2	2.3	2.4	2.5	2.6		2.7	2.8	2.9	2.10	2.11	2.12
ERR													
Flexible	—	—	—	—	—	—	*LYS* 1	-0.007	-0.007	-0.014	-0.013	-0.501	-0.503
								(-0.10)	(-0.09)	(-0.41)	(-0.38)	(-1.54)	(-1.53)
Interm.	0.043	0.041	0.011	0.010	0.037	0.022	*LYS* 2	—	—	—	—	—	—
	(0.70)	(0.68)	(0.37)	(0.34)	(0.30)	(0.20)							
Fixed	0.301	0.296	-0.014	-0.015	1.070	1.071	*LYS* 3	0.121	0.117	0.070**	0.068**	0.099	0.083
	(0.98)	(0.99)	(-0.46)	(-0.50)	(1.05)	(1.05)		(1.10)	(1.09)	(2.18)	(2.15)	(0.56)	(0.51)
							LYS 4	4E-4	-0.002	-0.021	-0.021	0.013	4E-4
								(0.01)	(-0.04)	(-0.57)	(-0.58)	(0.12)	(0.00)
							LYS 5	0.305	0.301	-0.006	-0.007	1.076	1.077
								(0.99)	(1.00)	(-0.20)	(-0.24)	(1.05)	(1.05)
Control variables													
Crisis	0.095*	0.100*	0.059*	0.063*	0.123	0.169		0.087*	0.092*	0.053*	0.056*	0.117	0.164
	(1.84)	(1.79)	(1.84)	(1.84)	(1.05)	(1.09)		(1.83)	(1.78)	(1.67)	(1.67)	(1.04)	(1.09)
kaopen	-0.019	0.009	-0.135*	-0.123*	-0.101	-0.108		-0.014	0.013	-0.123*	-0.111*	-0.086	-0.093
	(-0.24)	(0.10)	(-1.96)	(-1.75)	(-0.47)	(-0.46)		(-0.18)	(0.14)	(-1.98)	(-1.75)	(-0.41)	(-0.40)
Constant	0.329**	0.361***	0.358***	0.364***	0.485*	0.640***		0.324**	0.356***	0.348***	0.354***	0.514**	0.673***
	(2.31)	(2.83)	(9.62)	(9.36)	(1.96)	(3.72)		(2.24)	(2.74)	(9.43)	(9.14)	(2.11)	(3.91)
R-Sq.	0.04	0.04	0.09	0.09	0.11	0.11		0.04	0.04	0.10	0.10	0.11	0.12
Obs./ Countries	1376/60	1253/55	920/41	847/38	456/19	406/17		1399/60	1276/55	939/41	866/38	460/19	410/17

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Regarding the control variables, only the variable Crisis appears to be statistically significant except for the EMEs subsample and is associated with increased currency misalignments. The degree of financial openness (*kaopen*) is not significant, regardless of the considered sample. This last finding is not surprising since financial openness can produce ambiguous effects on currency misalignments. Indeed, one might expect that as a high degree of financial openness —i.e. the absence of capital controls— makes countries more exposed to massive inflows and outflows, it is associated with important exchange rate variations and therefore with higher misalignments. Hence —and in this regard, a positive sign can be expected. On the other hand, a high degree of financial openness can also make easier monetary adjustments and thus reduces exchange rate misalignments. The lack of statistical significance of *kaopen* can thus be explained by the combination of these two antagonistic effects.

Looking now at the RR six-way classification, we observe, when considering the whole sample (panels A and B), that only the regime 2 —which includes "Pre announced and *de facto* crawling peg"; and "Pre announced and *de facto* crawling band (narrower than or equal to +/-2%)"— has a negative and significant coefficient —although not very robust. These negative signs also hold for the other regimes—except regime 3— but the associated coefficients are not statistically significant. Thus, considering the six-way classification and the whole sample, it seems that there are no statistically significant differences in estimated levels of misalignments across exchange rate regimes. As in the three-way classification case, this is also true for the EMEs group. For the DCs, the picture is however different. Indeed, regimes 1 and 2 (both corresponding to fixed ERR in the three-way classification), and 3 (intermediate ERR) exhibit negative and significant coefficients. This last finding therefore confirms the general pattern found for the three-way classification: in developing countries, the more rigid the regime is, the lower the misalignment levels seem.[14] For EMEs, the exchange rate regime doesn't seem to matter.

To check if our results are sensitive to the measure of *de facto* regimes, Table 3 reports the results using the LYS classification of exchange rate regimes. When the three-way classification is used, none of the coefficients on the EER is statistically significant. In other words, there are no statistically significant differences in exchange rate regimes.[15] Considering the five-way classification leads to similar results. Indeed, when

[14]Caution is called given the statistical significance level.

[15]Differences in the results cannot be attribute to the reduction of the panel dimensions (both temporal and individual). Indeed, we have also rerun the equation using the RR classification over the 1980-2004 period for the sample of country covered by the LYS classification. We obtain similar patterns to those in Table 2. It is therefore clear that these results are not driven by the reduction of the

considering the whole sample or the EMEs group, we still not find any significant relationship between currency misalignments and exchange rate regimes. For the developing countries group however, the regime 3 (LYS 3: "dirty float") has a significant positive and rather small coefficient (around 0.07) meaning that this regime is associated with slightly higher (0.07%) currency misalignments. Interestingly, for the DCs group, the *kaopen* index becomes "significant" with a negative sign.

Overall, our results suggest that, except for the DCs group for which we have premises of significance, the choice of the exchange rate regime does not influence currency misalignments. Indeed, even with the three-way classifications —likely to bring consensual results/conclusions— both RR and LYS *de facto* ERR classifications lead to diverging conclusions. The bottom line of this section is therefore a clear absence of a strong relationship between currency misalignments and exchange rate regimes.

4 Robustness checks

The results reported so far suggest that there is no robust relationship between currency misalignments and nominal exchange rate regimes. The RR classification (three-way) barely suggests that fixed ERR perform the best in limiting currency misalignments —at least for developing countries, but the LYS classification invalidates this finding. For the EMEs however, the ERR choice does not seem to matter at all. This absence of clear-cut results could either reflect the "truth" or could be due to methodological limitations. To tackle this last point, we conduct a variety of additional tests. Those include *(i)* the use of another exchange rate regime classification; *(ii)* the use of an alternative measure of currency misalignments; *(iii)* estimations including inflation as a potential important control variable; and *(iv)* the issue of the exchange rate regime endogeneity.

4.1 An alternative exchange rate regime classification

The lack of a robust relationship between currency misalignments and the exchange rate regime could stem in part from the diverging results provided by the RR and the LYS —three-way— classifications. In order to account for this possibility, we re-estimate Equation (3) by using a third exchange rate regime classification, the Obstfeld, Shambaugh, and Taylor (2010; thereafter OST) *de facto* classification. Originally designed to

dimensions of the panel. Results are reported in Table B.1 —Appendix B.

account for monetary policies depending of the ERR, the OST classification mobilizes a different methodology and divides *de facto* regimes into the three following categories: peg, soft peg, and non-peg. The categories being mutually exclusive, this classification fits the usual three-way classification, i.e. fixed, intermediate, and flexible ERR. Figure A.1 in Appendix A displays the distribution of these three regimes over time. As it can be seen, the OST classification leads to a different distribution of ERRs —compared to the RR and LYS classifications— with especially a greater share to flexible ERR. In all these respects, the OST classification appears relevant for our analysis and also important to check if our results are robust with respect to the use of this alternative *de facto* classification. As before, we also use a finer classification by disaggregating the three-way classification into a seven-way classification, thanks to both peg and soft peg types.[16] Results of the analysis based on the OST classification are reported in Table B.2 —Appendix B.

Looking first at the three-way classification, we note a clear absence of statistical significance in the misalignments-ERR relationship. None of the coefficients appears significant, regardless of the considered sample. Thus, this finding tends to support those of the LYS classification. Turning to the seven-way classification, no regime appears with a significant coefficient except regimes 4 and 5 —both classified as soft pegs— and only for the DCs group. Regime 4 (resp. 5) is associated with a negative (resp. positive) sign suggesting that, compared to the other regimes, it exhibits lower (resp. higher) misalignments. Nevertheless, these results are only significant at 10% and only the finding associated to the regime 4 is robust to the considered panel (i.e. A and B).

Overall, results reported in Table B.2 tend to support our previous conclusions. Once again, we fail to establish any significant/robust relationship between currency misalignments and exchange rate regimes.[17]

[16] See Table A.5 in Appendix A for the details of the classification. The data cover the 1980-2012 period.

[17] Although not exhaustive, our analysis could appear robust to other *de facto* exchange rate regime classifications. Indeed, given the correlation between the *de facto* ERR classifications used in this paper —which are themselves due to the differences in the way to classify countries, analyses based on other *de facto* classifications would lead to conclusions more or less close to those highlighted by one of the classifications used here. This is namely the case for the IMF *de facto* classification which would give results close —if not similar— to those of the RR classification thanks to their high correlation.

4.2 An alternative measure of exchange rate misalignments

As the accuracy of our results may also depend of our measure of currency misalignments, we now consider an alternative measure of currency misalignments. As Aghion et al. (2009), we resort to the Atheoretical Permanent Equilibrium Exchange Rate (APEER) approach to derive alternative equilibrium exchange rates series —and therefore misalignments. In this approach a filter (Hodrick-Prescott in our case) is used to obtain the permanent component of the real exchange rate —which is considered as the equilibrium exchange rate. The real exchange rate misalignment is then computed as the deviation of the real exchange rate from its permanent equilibrium level. Results based on the APEER misalignments are reported in Tables B.3 (RR classification) and B.4 (LYS classification) —see Appendix B.[18]

Looking first at the RR three-way classification, we surprisingly observe that the coefficient associated to fixed ERR is negative and significant in all the regressions, regardless the considered sample. The results are then consistent with those previously obtained for the full sample and for the DCs group while they differ for the EMEs group. Note however that the effect of fixed ERR for the DCs is more than twice greater than that of the EMEs. Indeed, for DCs, the coefficient associated with fixed ERR varies between -0.12 and -0.13 while for EMEs the estimated coefficient is around -0.05. Results also indicate that the coefficient associated to the intermediate ERR now displays a negative sign in all the regressions, while being not significant. Thus, to sum up, the fixed exchange rate regime tends to be associated with lower misalignments compared to the flexible ERR. The intermediate ERR falls between the two.

Looking at the six-way classification, results appear slightly different from those reported in Table 2. Indeed, here, compared to regime 5 (the reference regime), regime 2 is associated with significantly lower misalignments followed by regime 1 then regime 3 for the DCs group. For the EMEs group, only regimes 1 and 2 seem to matter. However, the effects associated with these regimes are only significant at 10%. Overall, the only notable effect is attributed to regime 2 —when considering the whole sample and the DCs sample. For the EMEs, this strong significance vanishes. As before, results indicate again a lack of a clear pattern for the EMEs group between the ERR and currency misalignments.

Turning now to the LYS classification (Table B.4), results are more or less in ac-

[18]Note that we also tried to derive PPP-based currency misalignments —à la Rodrik (2008). No significant effects were observed. This result could stem from the too short time dimension of the analysis. Results are not reported in the paper to save space but are available upon request.

cordance with those of the benchmark analysis. Indeed, looking at the three-way classification, the results are identical to those reported in Table 3 as we still not observe any significant effect of the ERR on the level of currency misalignments. Considering the five-way classification, regime 3 is still the only regime with a significant coefficient. This latter is now significant for the DCs group and the whole sample. Note however that despite its high significance, the coefficient associated to regime 3 is rather weak, ranging from 0.05 for the whole sample to 0.06 for the DCs subsample.

Then using an alternative measure of currency misalignments does not modify the general patterns noted hitherto. Our previous conclusions appear therefore robust to an alternative measure of currency misalignments.[19]

4.3 Inflation

We now investigate the issue of the omitted variable bias. While our analyses are based on two-way fixed effects models —which control for the possibility that there are omitted variable(s) affecting both the degree of currency misalignments and the ERR choice, it could be interesting to directly address this issue. Given that countries that choose fixed exchange rates are better able to achieve lower inflation and that countries with low inflation are also more prone to have lower currency misalignments, we test the robustness of our results by including inflation in our regressions. We therefore augment the model with the variable $inflation$ measured as the log difference in the CPI (Consumer price Index).

Results, displayed in Tables B.5 and B.6, indicate that the inclusion of inflation leaves the story largely unchanged. Indeed, looking at the RR classifications (both three- and six-way), we observe results similar to those reported in Table 2. Looking at the LYS three-way classification, exchange rate regimes still do not display any significant impact on currency misalignments. However, when considering the five-way classification, regime 3 now no longer exhibits a significant coefficient. Thus, taking into account $inflation$, the LYS classification (both three- and five-way) definitely rejects the existence of a relationship between currency misalignments and exchange rate regimes. Besides, $inflation$ appears always significant in the LYS classification with an expected positive sign for the DCs group. The estimated coefficient is equal to 0.019 indicating that a 1% increase in the inflation rate is associated with 0.019% higher currency misalignments levels. In the RR classification this latter is only significant when considering

[19]We also performed the same robustness check for the OST classification. Results —not reported here to save space but available upon request— remain unchanged compared to those in Table B.2.

the three-way classification and the DCs group (panel B).[20] All in all, controlling for inflation does not reverse the above conclusion.[21]

4.4 Endogeneity

So far, we have considered the exchange rate regime choice as exogenous with respect to currency misalignments. Hence, it makes sense to examine the robustness of the results to a possible endogeneity of the exchange rate regime. Indeed, one can reasonably presume a reverse causality between currency misalignments and the exchange rate regime: currency misalignments may be function of the exchange rate regime, but the reverse may hold true since currency misalignments themselves may motivate the exchange rate regime choice. This may be particularly true in currency crises times as currency crises are usually followed by switch of the exchange rate regime. We perform the Wu-Hausman test of exogeneity to see whether or not the ERR exogeneity assumption holds. Results reported in Table B.7 indicate rejection in almost all cases of the null of exogeneity and confirm the relevance of allowing for endogeneity of regime choice. To address this concern, we adopt two approaches. The first relies on the use of the one-year lagged exchange rate regime instead of the actual exchange rate regime. The second approach is a two-stage procedure consisting in estimating in a first stage a multinomial probit model, then replace, in the second stage regressions, each ERR dummy by its fitted value from the multinomial probit model.[22]

Results of the regressions including the one-year lagged exchange rate regime are reported in Tables B.8 and B.9. As can be seen, we obtain the same patterns highlighted in Tables 2 and 3. On the one hand, the RR classification barely suggests the same relationship between the ERR and the currency misalignments: the lower the flexibility of the currency regime, the lower is the currency misalignment. But again statistical significance levels are low and coefficients not robust to countries' sample. On the other hand, when considering the LYS classification, exchange rate regimes still do not display a statistically significant impact on misalignments.

[20]The statistical significance of inflation only for the DCs group reflects the fact that exchange rate pass-through to domestic prices tends to be larger in those countries because of their low income levels, the predominance of fixed ERR and to their macroeconomic and political environments (see Razafimahefa, 2012).

[21]This observation holds true for the OST classification. Similar results are also observed when we split the sample by the inflation's level —i.e. *low inflation* vs. *high inflation*. For brevity, results are available upon request.

[22]In estimating probit models, we used as regressors the initial foreign reserves (in % of GDP), the GDP in PPP terms, the land area, and a dummy variable for islands (see Levy-Yeyati and Sturzenegger, 2003; Chinn and Wei, 2013). Results of the probit models are not reported to save space but are available upon request.

Looking now at the results of the second method —reported in Tables B.10 and B.11, one can see that our conclusion that there is no significant relationship between the ERRs and currency misalignments is robust to the use of predicted ERRs. Moreover results based on the RR classification indicate much less significance in the relationship than before. Looking at the three-way classification, only the coefficients associated with the fixed regime appear significant —at 10% in almost all cases— and negative but only for the whole sample and the DCs group. Looking at the EMEs group, there is no remarkable effect of the ERRs. Turning to the six-way classification, results confirm this lower significance level. Except regime 1 —in the DCs group— no regime exerts a noticeable effect. When considering the LYS classification, we again fail to discern a strong association between exchange rate regimes and currency misalignments. Our results appear therefore robust to a potential endogeneity of exchange rate regimes.

All in all, despite all our robustness checks, we failed to establish a strong and significant relationship between exchange rate regimes and currency misalignments. We can therefore conclude from this section that there is no robust and systematic association between a country's nominal exchange rate regime and the level of currency misalignments.[23]

5 Conclusion

The aim of this paper was to investigate the relationship between exchange rate regimes and currency misalignments. Relying on a panel of 73 developing and emerging countries over the 1980-2012 period, we examine this issue and found that there is no robust possible association between the currency misalignments and the exchange rate regimes. This finding has proven to be robust to various robustness checks namely the use of alternative exchange rate regime classification and the potential endogeneity of regime choice. It seems therefore that internal and external imbalances —reflected into currency misalignments— are not very different from one regime to another thus suggesting that there is no a single appropriate exchange rate regime in minimizing currency misalignments. In other words, the adjustment capacities of the different exchange rate regimes are more or less equivalent.

[23]We performed various other robustness analyses (e.g. grouping of countries depending on their trade openness, money supply —M2—; outliers; transitory changes in the ERR) and found again no strong relationship between the currency misalignments and the exchange rate regime. Results are not presented here to save space but available upon request.

This result can then be seen as an extension of the "neutrality of exchange rate regimes" view. The exchange rate regime seems not only neutral regarding its effects on the volatility of real exchange rates but also regarding its effects on real exchange rates misalignments.

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Appendices

A. Data appendix

Table A.1 — Data sources and definitions

Variables & Definitions	Sources
Exchange rate regimes	
RR: Reinhart & Rogoff de facto classification.	Ilzetzki, Reinhart & Rogoff (2011)
LYS: Levy-Yeyati & Sturzenegger *de facto* classification.	Levy-Yeyati & Sturzenegger (2005)
OST: Obstfeld, Shambaugh & Taylor de facto classification	Obstfeld, Shambaugh & Taylor (2010)
Macroeconomic indicators	
reer: Real Effective Exchange Rate (67 trading partners)	Bruegel
tot: Terms of trade index (2000 = 100), expressed in logarithm	WDI
nfa: Net Foreign Asset position (%GDP)	Lane & Milesi-Ferretti [a,b]
rprod: Relative productivity: measured by the ratio of GDP per capita (PPP) in the country and the trade-weighted average GDP per capita PPP of the top 67 partner countries.	Author calculations
inflation: Changes in the consumer price index (in logarithm)	WEO
kaopen: financial openness measured on a scale from 0 to 1, 1 being the highest financial openness degree.	Chinn & Ito
GDP (PPP): GDP based on purchasing-power-parity	WDI
Reserves: Total reserves minus gold (%GDP)	WDI
Land area: Country's total area.	WDI

WDI: *World Development Indicators* (World Bank)

WEO: *World Economic Outlook* (International Monetary Fund)

a: http://www.philiplane.org/EWN.html

b: completed using informations provided by the IFS (*International Financial Statistics*, IMF)

Table A.2 – List of the countries (73)

Algeria^{E}	Costa Rica^{E}	Kenya	Rwanda
Angola	Cote d'Ivoire	Lesotho	Sao Tome & Principe.
Argentina^{E}	Dominican Rep.^{E}	Madagascar	Senegal
Bangladesh	Ecuador^{E}	Malawi	South Africa^{E}
Benin	Egypt.	Malaysia^{E}	Sri Lanka^{E}
Bolivia	El Salvador	Mali	Sudan
Botswana	Ethiopia	Mauritania	Swaziland
Brazil^{E}	Fiji	Mauritius	Tanzania
Burkina Faso	Gabon	Mexico^{E}	Thailand^{E}
Burundi	Gambia	Morocco^{E}	Togo
Cabo Verde	Ghana	Mozambique	Tunisia^{E}
Cameroon	Guatemala	Nicaragua	Turkey^{E}
Central African. Rep	Guinea	Niger	Uganda
Chad	Guinea-Bissau	Nigeria	Uruguay^{E}
China^{E}	Haiti	Pakistan	Venezuela, RB^{E}
Colombia^{E}	Honduras	Panama^{E}	Zambia
Comoros	India^{E}	Paraguay	
Congo Dem. Rep.	Indonesia^{E}	Peru^{E}	
Congo Rep.	Jordan^{E}	Philippines^{E}	

Note: "E" indicates the countries classified as "*emerging markets*"(see Gosh et al., 2014).

Table A.3 — Reinhart & Rogoff *de facto* classification

Six-way classification		***Three-way classification***
Regime	**Code**	**Regime**
No separate legal tender	1	
Pre announced peg or currency board arrangement	1	
Pre announced horizontal band that is narrower than or equal to +/-2%	1	
De facto peg	1	Fixed ERR
Pre announced crawling peg	2	
Pre announced crawling band that is narrower than or equal to +/-2%	2	
De facto crawling peg	2	
De facto crawling band that is narrower than or equal to +/-2%	2	
Pre announced crawling band that is wider than or equal to +/-2%	3	
De facto crawling band that is narrower than or equal to +/-5%	3	
Moving band that is narrower than or equal to +/-2% (i.e., allows for both appreciation and depreciation over time)	3	Intermediate ERR
Managed floating	3	
Freely floating	4	
Freely falling	5	Flexible ERR
Dual market in which parallel market data is missing	6	

Table A.4 — Levy-Yeyati & Sturzenegger *de facto* classification

Five-way classification		***Three-way classification***
Regime	**Code**	**Regime**
Inconclusive determination	1	
Free float	2	Flexible ERR
Dirty float	3	Intermediate ERR
Dirty float/Crawling peg	4	
Fix	5	Fixed ERR

Table A.5 — Obstfeld, Shambaugh & Taylor *de facto* classification

Seven-way classification		***Three-way classification***
Regime	**Code**	**Regime**
0% change in the exchange rate	1	
Change in the exchange rate lesser or equal to +/-1%	2	
Change in the exchange rate lesser or equal to +/-2%	3	Pegs (Fixed ERR)
Fluctuation band that is narrower than or equal to 5% with monthly changes lesser than 1%	4	
Fluctuation band that is narrower than or equal to 5% with monthly changes lesser than 2 %	5	Soft pegs (Intermediate ERR)
Fluctuation band that is wider than 5% but monthly changes lesser than 2%	6	
Fluctuation band that is wider than 5% with monthly changes greater than 2%	7	Nonpegs (Flexible ERR)

Table A.6 — ERR classifications correlation matrix

		RR		***LYS***		***OST***	
		3w	***6w***	***3w***	***5w***	***3w***	***7w***
RR	***3w***	1.0000					
	6w	0.9404	1.0000				
LYS	***3w***	-0.2444	-0.3550	1.0000			
	5w	-0.2424	-0.3450	0.9796	1.0000		
OST	***3w***	0.4966	0.5879	-0.5986	-0.5872	1.0000	
	7w	0.4699	0.5946	-0.6354	-0.6147	0.9338	1.0000

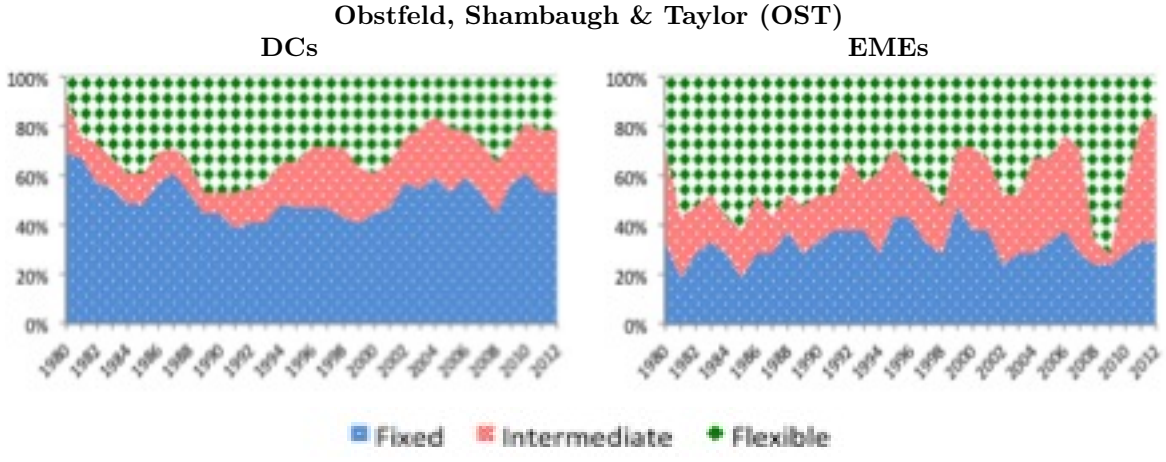

Figure A.1 — OST classification: distributions over time, by development level (in % of annual observations)

B. Additional results

Table B.1 — Currency misalignments and exchange rate regimes (*RR classification*; 1980-2004)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Six-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.1.1	B.1.2	B.1.3	B.1.4	B.1.5	B.1.6		B.1.7	B.1.8	B.1.9	B.1.10	B.1.11	B.1.12
ERR													
Fixed	-0.339	-0.379	-0.204**	-0.223**	-0.532	-0.649	*RR* 1	-0.218*	-0.236*	-0.336**	-0.347**	0.127	0.108
	(-1.53)	(-1.48)	(-2.31)	(-2.58)	(-1.02)	(-1.02)		(-1.94)	(-1.68)	(-2.20)	(-2.39)	(0.43)	(0.29)
Interm.	0.169	0.180	-0.148**	-0.155*	0.763	0.810	*RR* 2	-0.421	-0.461	-0.300*	-0.301*	-0.707	-0.826
	(0.66)	(0.65)	(-2.05)	(-1.98)	(1.01)	(1.00)		(-1.56)	(-1.49)	(-1.90)	(-1.97)	(-1.08)	(-1.08)
Flexible	—	—	—	—	—	—	*RR* 3	0.164	0.183	-0.261*	-0.258*	1.014	1.155
								(0.54)	(0.55)	(-1.96)	(-1.90)	(1.06)	(1.07)
							RR 4	-0.059	-0.044	-0.332	-0.357	1.218	1.515
								(-0.27)	(-0.16)	(-0.44)	(-1.29)	(0.98)	(0.98)
							RR 5	—	—	—	—	—	—
							RR 6	0.022	0.063	-0.205	-0.218	1.191	1.503
								(0.12)	(0.27)	(-1.34)	(-1.34)	(0.98)	(0.99)
Control variables													
Crisis	0.031	0.029	0.039	0.038	0.015	0.005		0.029	0.027	0.028	0.027	0.087	0.107
	(1.21)	(0.71)	(1.32)	(0.94)	(0.16)	(0.04)		(1.13)	(0.64)	(0.94)	(0.66)	(0.88)	(0.85)
kaopen	0.173	0.452	-0.069	-0.053	0.634	0.969		0.189	0.470	-0.057	-0.034	0.696	1.145
	(0.83)	(0.97)	(-1.52)	(-0.65)	(1.07)	(1.10)		(0.87)	(0.97)	(-1.63)	(-0.57)	(1.11)	(1.18)
Constant	0.745***	0.798***	0.527***	0.505***	1.090**	1.292**		0.693***	0.761***	0.647***	0.611***	0.813***	0.957***
	(4.03)	(4.92)	(8.88)	(8.68)	(2.80)	(2.97)		(6.43)	(7.37)	(5.22)	(6.18)	(4.40)	(4.28)
R-Sq.	0.05	0.07	0.12	0.15	0.11	0.13		0.05	0.07	0.15	0.19	0.13	0.16
Obs./ Countries	1472/60	860/35	997/41	510/21	475/19	350/14		1472/60	860/35	997/41	510/21	475/19	350/14

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.2 — Robustness check: Currency misalignments and exchange rate regimes (*OST classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Seven-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.2.1	B.2.2	B.2.3	B.2.4	B.2.5	B.2.6		B.2.7	B.2.8	B.2.9	B.2.10	B.2.11	B.2.12
ERR													
Fixed	0.111	0.111	0.025	0.024	0.432	0.439	*OST* 1	0.415	0.421	0.043	0.047	1.532	1.532
	(1.07)	(1.07)	(0.92)	(0.85)	(0.95)	(0.95)		(1.05)	(1.06)	(0.89)	(0.95)	(1.00)	(1.00)
Interm.	-0.013	-0.011	0.001	0.001	0.023	0.030	*OST* 2	0.177	0.180	0.030	0.33	0.461	0.465
	(-0.54)	(-0.46)	(0.05)	(0.06)	(0.36)	(0.43)		(1.06)	(1.06)	(1.03)	(1.09)	(0.87)	(0.87)
Flexible	—	—	—	—	—	—	*OST* 3	-0.202	-0.201	0.032	0.033	-0.515	-0.510
								(-0.95)	(-0.95)	(1.47)	(1.50)	(-1.04)	(-1.04)
							OST 4	-0.059	-0.059	-0.127*	-0.129*	-0.103	-0.099
								(-1.06)	(-1.03)	(-1.78)	(-1.79)	(-0.48)	(-0.46)
							OST 5	-0.036	-0.037	0.032*	0.031	-0.086	-0.084
								(-0.62)	(-0.63)	(1.71)	(1.62)	(-0.61)	(-0.59)
							OST 6	0.006	0.007	-0.228	-0.230	0.093	0.095
								(0.08)	(0.09)	(-1.59)	(-1.57)	(0.53)	(0.53)
							OST 7	—	—	—	—	—	—
Control variables													
Crisis	0.080**	0.076**	0.064***	0.068**	0.113	0.112		0.060***	0.060***	0.061**	0.065**	0.041	0.048
	(2.57)	(2.34)	(2.67)	(2.17)	(1.10)	(1.03)		(3.02)	(2.87)	(2.61)	(2.60)	(0.58)	(0.63)
kaopen	-0.331	-0.304	-0.078	-0.077	-0.775	-0.758		-0.259	-0.250	-0.056	-0.048	-0.847	-0.839
	(-1.14)	(-1.12)	(-1.15)	(-0.89)	(-0.99)	(-0.99)		(-1.11)	(-1.09)	(-1.07)	(-0.90)	(-1.01)	(-1.01)
Constant	0.571***	0.625***	0.332***	0.304***	1.095**	1.165**		0.416***	0.422***	0.310***	0.292***	0.877***	0.937***
	(3.69)	(3.16)	(8.67)	(7.01)	(2.20)	(2.20)		(7.75)	(7.55)	(6.16)	(5.80)	(2.89)	(2.88)
R-Sq.	0.04	0.04	0.08	0.10	0.08	0.08		0.05	0.05	0.10	0.10	0.13	0.14
Obs./ Countries	2300/71	1773/55	1580/49	1119/35	720/22	654/20		2300/71	2168/67	1580/49	1481/46	720/22	687/21

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.3 — Robustness check: Currency misalignments and exchange rate regimes (*RR classification*; APEER misalignments)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Six-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.3.1	B.3.2	B.3.3	B.3.4	B.3.5	B.3.6		B.3.7	B.3.8	B.3.9	B.3.10	B.3.11	B.3.12
ERR													
Fixed	-0.087***	-0.083***	-0.131**	-0.122**	-0.051**	-0.052**	*RR* 1	-0.056**	-0.056**	-0.096*	-0.097*	-0.043*	-0.044*
	(-2.92)	(-2.74)	(-2.48)	(-2.27)	(-2.19)	(-2.11)		(-2.19)	(-2.14)	(-1.86)	(-1.87)	(-1.91)	(-1.89)
Interm.	-0.046	-0.044	-0.081	-0.076	-0.011	-0.001	*RR* 2	-0.106***	-0.103***	-0.158***	-0.160***	-0.055*	-0.055*
	(-1.63)	(-1.45)	(-1.59)	(-1.37)	(-0.54)	(-0.40)		(-3.00)	(-2.99)	(-2.69)	(-2.75)	(-1.76)	(-1.74)
Flexible	—	—	—	—	—	—	*RR* 3	-0.045*	-0.045*	-0.092*	-0.093*	-0.009	-0.009
								(-1.66)	(-1.64)	(-1.84)	(-1.85)	(-0.40)	(-0.38)
							RR 4	-0.012	-0.011	-0.057	-0.061	0.016	0.019
								(-0.37)	(-0.33)	(-1.31)	(-1.27)	(0.87)	(0.93)
							RR 5	—	—	—	—	—	—
							RR 6	0.044	0.043	0.061	0.063	-0.018	-0.015
								(0.32)	(0.32)	(0.27)	(0.28)	(-0.93)	(-0.73)
Control variables													
Crisis	0.045***	0.038**	0.046**	0.042	0.034	0.028		0.045***	0.042**	0.044**	0.040*	0.034	0.033
	(3.29)	(2.05)	(2.38)	(1.48)	(1.43)	(0.99)		(3.31)	(2.55)	(2.37)	(1.69)	(1.43)	(1.27)
kaopen	-0.049	-0.039	-0.096	-0.065	0.026	0.021		-0.044	-0.035	-0.086	-0.066	0.027	0.029
	(-0.99)	(-0.60)	(-1.25)	(-0.57)	(0.88)	(0.57)		(-0.92)	(-0.58)	(-1.14)	(-0.66)	(0.92)	(0.85)
Constant	0.242***	0.266***	0.308***	0.351***	0.149***	0.161***		0.230***	0.251***	0.297***	0.332***	0.147***	0.158***
	(5.76)	(5.22)	(4.66)	(4.09)	(4.60)	(4.23)		(5.74)	(5.55)	(4.40)	(4.36)	(4.46)	(4.56)
R-Sq.	0.12	0.14	0.15	0.18	0.15	0.15		0.14	0.14	0.17	0.18	0.15	0.15
Obs./ Countries	2407/73	1419/43	1615/49	792/24	792/24	627/19		2407/73	1749/53	1615/49	1056/32	792/24	693/21

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.4 — Robustness check: Currency misalignments and exchange rate regimes (*LYS classification*; APEER misalignments)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Five-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.4.1	B.4.2	B.4.3	B.4.4	B.4.5	B.4.6		B.4.7	B.4.8	B.4.9	B.4.10	B.4.11	B.4.12
ERR													
Flexible	—	—	—	—	—	—	*LYS* 1	0.017	0.017	0.004	0.004	0.055	0.057
								(0.81)	(0.82)	(0.17)	(0.16)	(1.40)	(1.44)
Interm.	0.017	0.017	0.016	0.016	0.018	0.017	*LYS* 2	—	—	—	—	—	—
	(1.33)	(1.29)	(0.84)	(0.83)	(0.88)	(0.84)							
Fixed	0.012	0.012	0.003	0.002	0.013	0.013	*LYS* 3	0.049***	0.049***	0.063***	0.063***	0.023	0.022
	(0.93)	(0.90)	(0.15)	(0.14)	(0.59)	(0.58)		(3.42)	(3.36)	(3.16)	(3.17)	(0.94)	(0.88)
							LYS 4	4E-4	2E-4	-0.008	-0.008	0.015	0.015
								(0.03)	(0.01)	(-0.33)	(-0.32)	(0.76)	(0.74)
							LYS 5	0.016	0.016	0.010	0.010	0.013	0.013
								(1.28)	(1.24)	(0.58)	(0.56)	(0.92)	(0.59)
Control variables													
Crisis	0.051***	0.050***	0.059**	0.058**	0.024	0.026		0.048**	0.047***	0.055**	0.054**	0.024	0.026
	(3.21)	(2.98)	(2.60)	(2.41)	(0.97)	(0.99)		(3.02)	(2.79)	(2.42)	(2.23)	(0.92)	(0.95)
kaopen	-0.092	-0.091	-0.157	-0.151	0.017	0.018		-0.088	-0.086	-0.148	-0.142	0.019	0.020
	(-1.36)	(-1.30)	(-1.54)	(-1.45)	(0.54)	(0.54)		(-1.37)	(-1.30)	(-1.55)	(-1.45)	(0.60)	(0.61)
Constant	0.161***	0.167***	0.203***	0.209***	0.081*	0.085*		0.159***	0.165***	0.195***	0.201***	0.084**	0.089*
	(4.46)	(4.42)	(3.90)	(3.86)	(1.94)	(1.84)		(4.52)	(4.48)	(3.89)	(3.85)	(2.11)	(2.02)
R-Sq.	0.08	0.08	0.11	0.11	0.06	0.07		0.08	0.09	0.12	0.12	0.06	0.07
Obs./ Countries	1397/60	1274/55	941/41	868/38	456/19	406/17		1420/60	1297/55	960/41	887/38	460/19	410/17

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.5 — Robustness check: Currency misalignments and exchange rate regimes (*RR classification*; with *inflation*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Six-way classification*							
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs		
Panel	A	B	A	B	A	B		A	B	A	B	A	B	
	B.5.1	B.5.2	B.5.3	B.5.4	B.5.5	B.5.6		B.5.7	B.5.8	B.5.9	B.5.10	B.5.11	B.5.12	
ERR														
Fixed	-0.144*	-0.093	-0.144**	-0.089**	-0.118	-0.101	*RR* 1	-0.083	-0.079	-0.218**	-0.233***	0.222	0.266	
	(-1.94)	(-1.21)	(-2.44)	(-2.05)	(-0.72)	(-0.54)		(-1.11)	(-0.92)	(-2.63)	(-2.81)	(0.70)	(0.74)	
Interm.	0.106	0.148	-0.111**	-0.070	0.377	0.385	*RR* 2	-0.188*	-0.173*	-0.181**	-0.189**	-0.316	-0.264	
	(0.59)	(0.73)	(-2.02)	(-1.45)	(0.89)	(0.87)		(-1.79)	(-1.80)	(-2.24)	(-2.38)	(-0.98)	(-0.91)	
Flexible	—	—	—	—	—	—	*RR* 3	0.101	0.111	-0.160**	-0.168**	0.478	0.520	
								(0.53)	(0.53)	(-2.19)	(-2.27)	(0.93)	(0.94)	
							RR 4	-0.008	0.006	-0.125	-0.130	0.657	0.745	
								(-0.08)	(0.05)	(-1.09)	(-1.12)	(0.91)	(0.91)	
							RR 5	—	—	—	—	—	—	
							RR 6	-0.072	-0.069	-0.083	-0.106	0.602	0.684	
								(-0.66)	(-0.50)	(-0.87)	(-0.89)	(0.90)	(0.91)	
Control variables														
Inflation	0.005	0.013	0.007	0.019*	-0.005	-0.004		0.005	0.005	0.006	0.006	-0.004	-0.004	
	(0.80)	(1.39)	(0.89)	(1.83)	(-0.75)	(-0.66)		(0.81)	(0.85)	(0.89)	(0.90)	(-0.61)	(-0.55)	
Crisis	0.055**	0.066*	0.047**	0.081**	0.094	0.088		0.054**	0.049	0.044**	0.038	0.114	0.111	
	(2.06)	(1.66)	(2.00)	(2.07)	(0.96)	(0.79)		(2.01)	(1.57)	(1.97)	(1.30)	(1.09)	(1.01)	
kaopen	-0.248	-0.224	-0.009	0.014	-0.556	-0.623		-0.241	-0.235	-0.007	-0.020	-0.491	-0.551	
	(-0.94)	(-0.83)	(-0.24)	(0.25)	(-0.92)	(-0.88)		(-0.94)	(-0.92)	(-0.17)	(-0.36)	(-0.87)	(-0.86)	
Constant	0.696***	0.754***	0.463***	0.371***	1.149**	1.299**		0.675***	0.733***	0.521***	0.517***	1.027**	1.090**	
	(3.21)	(2.80)	(7.97)	(4.69)	(2.06)	(2.08)		(3.89)	(3.60)	(8.30)	(8.34)	(2.38)	(2.38)	
R-Sq.	0.04	0.06	0.16	0.36	0.07	0.08		0.04	0.05	0.17	0.22	0.09	0.09	
Obs./ Countries	2366/73	1398/43	1580/49	777/24	786/24	621/19		2366/73	1716/53	1580/49	1029/32	786/24	687/21	

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.6 — Robustness check: Currency misalignments and exchange rate regimes (*LYS classification*; with *inflation*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Five-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.6.1	B.6.2	B.6.3	B.6.4	B.6.5	B.6.6		B.6.7	B.6.8	B.6.9	B.6.10	B.6.11	B.6.12
ERR													
Flexible	—	—	—	—	—	—	*LYS* 1	-0.013	-0.012	-0.018	-0.017	-0.500	-0.502
								(-0.16)	(-0.15)	(-0.55)	(-0.52)	(-1.53)	(-1.51)
Interm.	0.035	0.033	0.015	0.015	0.041	0.026	*LYS* 2	—	—	—	—	—	—
	(0.57)	(0.54)	(0.49)	(0.47)	(0.34)	(0.24)							
Fixed	0.301	0.296	-0.002	-0.003	1.072	1.072	*LYS* 3	0.083	0.080	0.042	0.041	0.115	0.098
	(0.98)	(0.99)	(-0.07)	(-0.10)	(1.05)	(1.05)		(0.76)	(0.75)	(1.22)	(1.18)	(0.68)	(0.63)
							LYS 4	0.008	0.006	8E-4	8E-4	0.014	0.001
								(0.21)	(0.16)	(0.02)	(0.02)	(0.13)	(0.01)
							LYS 5	0.303	0.298	0.002	0.001	1.079	1.080
								(0.99)	(0.99)	(0.09)	(0.05)	(1.05)	(1.05)
Control variables													
Inflation	0.015	0.015	0.019*	0.019*	-0.002	-0.002		0.015	0.015	0.019*	0.019*	-0.004	-0.004
	(1.62)	(1.64)	(1.88)	(1.88)	(-0.48)	(-0.46)		(1.54)	(1.58)	(1.86)	(1.87)	(-0.84)	(-0.76)
Crisis	0.100*	0.106	0.069*	0.071*	0.123	0.169		0.096*	0.101*	0.066*	0.068*	0.116	0.162
	(1.88)	(1.83)	(1.99)	(1.96)	(1.05)	(1.08)		(1.91)	(1.85)	(1.88)	(1.86)	(1.03)	(1.07)
kaopen	0.052	0.084	-0.038	-0.024	-0.112	-0.120		0.051	0.087	-0.034	-0.020	-0.104	-0.111
	(0.58)	(0.79)	(-0.83)	(-0.49)	(-0.52)	(-0.51)		(0.57)	(0.77)	(-0.78)	(-0.44)	(-0.49)	(-0.48)
Constant	0.305**	0.336**	0.318***	0.323***	0.488*	0.643***		0.304**	0.336**	0.314***	0.318***	0.518**	0.677***
	(2.08)	(2.54)	(6.69)	(6.44)	(1.94)	(3.68)		(2.06)	(2.51)	(6.70)	(6.44)	(2.11)	(3.89)
R-Sq.	0.05	0.05	0.32	0.32	0.11	0.11		0.05	0.05	0.32	0.33	0.11	0.12
Obs./ Countries	1376/60	1253/55	920/41	847/38	456/19	406/17		1399/60	1276/55	939/41	866/38	460/19	410/17

Notes: The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.7 — Wu-Hausman test results

ERR classifications		Sample					
		Whole sample		LDCs		EMEs	
		A	B	A	B	A	B
RR	*Three-way*	12.50	18.10	9.56	4.73	3.05	1.98
		(0.00)	(0.00)	(0.00)	(0.01)	(0.05)	(0.13)
	Six-way	20.67	20.38	15.14	4.11	24.76	19.48
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LYS	*Three-way*	20.71	24.19	2.11	1.45	79.68	68.18
		(0.00)	(0.00)	(0.12)	(0.23)	(0.00)	(0.00)
	Five-way	27.39	32.82	6.03	3.51	51.61	45.65
		(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
OST	*Three-way*	11.77	13.69	13.36	17.47	14.24	19.62
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	Seven-way	23.69	21.59	9.65	8.15	25.32	25.58
		(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Notes: *p*.values are reported in parentheses. Null: exogeneity of the exchange rate regimes.

Table B.8 — Robustness check: Currency misalignments and exchange rate regimes (One-year lagged ERR; *RR classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Six-way classification*							
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs		
Panel	A	B	A	B	A	B		A	B	A	B	A	B	
	B.8.1	B.8.2	B.8.3	B.8.4	B.8.5	B.8.6		B.8.7	B.8.8	B.8.9	B.8.10	B.8.11	B.8.12	
ERR														
l.Fixed	-0.101*	-0.086	-0.154**	-0.164**	-0.006	0.018	*l.RR* 1	-0.071	-0.078	-0.257**	-0.283**	0.267	0.311	
	(-1.85)	(-1.20)	(-1.98)	(-2.17)	(-0.05)	(0.10)		(-0.63)	(-0.65)	(-2.03)	(-2.28)	(0.73)	(0.76)	
l.Interm.	0.105	0.111	-0.118*	-0.137*	0.411	0.433	*l.RR* 2	-0.132*	-0.123	-0.227*	-0.242**	-0.137	-0.093	
	(0.53)	(0.50)	(-1.73)	(-1.90)	(0.87)	(0.85)		(-1.85)	(-1.63)	(-1.81)	(-1.97)	(-0.65)	(-0.47)	
l.Flexible	—	—	—	—	—	—	*l.RR* 3	0.096	0.100	-0.202*	-0.217*	0.512	0.555	
								(0.42)	(0.42)	(-1.78)	(-1.91)	(0.91)	(0.92)	
							l.RR 4	-0.023	-0.007	-0.205	-0.210	0.715	0.801	
								(-0.15)	(-0.04)	(-1.22)	(-1.22)	(0.98)	(0.98)	
							l.RR 5	—	—	—	—	—	—	
							l.RR 6	-0.088	-0.084	-0.219	-0.250	0.649	0.723	
								(-0.65)	(-0.52)	(-1.35)	(-1.39)	(0.98)	(0.98)	
Control variables														
Crisis	0.082**	0.089**	0.074**	0.094**	0.079	0.067		0.081***	0.084**	0.075***	0.086**	0.078	0.060	
	(2.62)	(2.11)	(2.57)	(2.03)	(0.95)	(0.67)		(2.66)	(2.34)	(2.67)	(2.38)	(0.98)	(0.73)	
kaopen	-0.278	-0.276	-0.043	-0.065	-0.562	-0.633		-0.274	-0.267	-0.036	-0.045	-0.510	-0.568	
	(-1.02)	(-1.00)	(-0.75)	(-0.69)	(-0.92)	(-0.90)		(-1.02)	(-1.00)	(-0.67)	(-0.59)	(-0.89)	(-0.88)	
Constant	0.875**	1.217**	0.479***	0.517***	0.418**	1.265**		0.873**	1.076**	0.563***	0.611***	1.582	1.760	
	(2.25)	(2.04)	(6.62)	(8.54)	(2.35)	(2.10)		(2.44)	(2.25)	(4.78)	(6.60)	(1.55)	(1.52)	
R-Sq.	0.04	0.05	0.11	0.16	0.07	0.08		0.04	0.04	0.13	0.18	0.08	0.09	
Obs./ Countries	2303/73	1361/43	1539/49	757/24	764/24	604/19		2303/73	1670/53	1539/49	1002/32	764/24	668/21	

Notes: The prefix " *l.* " indicates the one-year lagged variable. The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.9 — Robustness check: Currency misalignments and exchange rate regimes (One-year lagged ERR; *LYS classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Five-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.9.1	B.9.2	B.9.3	B.9.4	B.9.5	B.9.6		B.9.7	B.9.8	B.9.9	B.9.10	B.9.11	B.9.12
ERR													
l.Flexible	—	—	—	—	—	—	*l.LYS* 1	-0.093	-0.094	-0.041	-0.041	-0.623	-0.637
								(-1.36)	(-1.35)	(-0.97)	(-0.97)	(-1.60)	(-1.60)
l.Interm.	-0.015	-0.016	-0.019	-0.020	-0.063	-0.070	*l.LYS* 2	—	—	—	—	—	—
	(-0.55)	(-0.58)	(-0.67)	(-0.68)	(-0.83)	(-0.85)							
l.Fixed	0.285	0.279	0.038	0.038	0.896	0.879	*l.LYS* 3	0.045	0.044	-0.016	-0.017	0.012	0.009
	(1.10)	(1.10)	(1.31)	(1.28)	(1.04)	(1.04)		(0.51)	(0.51)	(-0.42)	(-0.45)	(0.09)	(0.07)
							l.LYS 4	-0.049	-0.051	-0.021	-0.021	-0.092	-0.101
								(-1.59)	(-1.57)	(-0.70)	(-0.71)	(-1.05)	(-1.04)
							l.LYS 5	0.291	0.285	0.041	0.040	0.901	0.885
								(1.10)	(1.11)	(1.36)	(1.33)	(1.04)	(1.04)
Control variables													
Crisis	0.083**	0.089*	0.086*	0.091*	-0.086	-0.052		0.091**	0.098*	0.087*	0.092*	-0.040	-0.001
	(2.02)	(1.98)	(1.76)	(1.77)	(-0.57)	(-0.40)		(2.02)	(1.97)	(1.79)	(1.80)	(-0.32)	(-0.01)
kaopen	0.022	0.053	-0.079*	-0.067	-0.071	-0.070		0.027	0.057	-0.081*	-0.068	-0.047	-0.044
	(0.27)	(0.53)	(-1.98)	(-1.59)	(-0.41)	(-0.38)		(0.30)	(0.53)	(1.97)	(-1.59)	(-0.28)	(-0.24)
Constant	0.157	0.181	0.249***	0.263***	1.229**	1.452*		0.333***	0.366***	0.297***	0.307***	1.211**	1.432**
	(0.80)	(0.93)	(6.91)	(7.00)	(2.33)	(2.07)		(3.34)	(4.30)	(6.97)	(6.82)	(2.39)	(2.11)
R-Sq.	0.04	0.04	0.11	0.12	0.10	0.11		0.04	0.04	0.12	0.12	0.10	0.11
Obs./ Countries	1325/60	1205/55	888/41	816/38	437/19	389/17		1347/60	1227/55	906/41	834/38	441/19	393/17

Notes: The prefix " *l.* " indicates the one-year lagged variable. The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.10 — Robustness check: Currency misalignments and exchange rate regimes (Predicted ERR; *RR classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Six-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.10.1	B.10.2	B.10.3	B.10.4	B.10.5	B.10.6		B.10.7	B.10.8	B.10.9	B.10.10	B.10.11	B.10.12
ERR													
$Fixed^P$	-0.204**	-0.161*	-0.229*	-0.221*	-0.103	-0.060	$RR\ 1^P$	-0.407	-0.412	-0.655*	-0.724**	0.495	0.658
	(-2.36)	(-1.67)	(-1.93)	(-1.86)	(-0.47)	(-0.23)		(-1.53)	(-1.39)	(-1.84)	(-2.04)	(0.56)	(0.62)
$Interm.^P$	0.158	0.186	-0.168	-0.169	0.665	0.676	$RR\ 2^P$	-0.322	-0.285	-0.551	-0.587	-0.239	0.085
	(0.53)	(0.55)	(-1.64)	(-1.48)	(0.89)	(0.88)		(-1.23)	(-0.96)	(-1.48)	(-1.60)	(-0.37)	(0.13)
$Flexible^P$	—	—	—	—	—	—	$RR\ 3^P$	0.010	0.023	-0.491	-0.521	1.298	1.421
								(0.02)	(0.05)	(-1.51)	(-1.59)	(0.85)	(0.85)
							$RR\ 4^P$	-0.263	-0.251	-0.489	-0.516	2.968	3.319
								(-0.65)	(-0.58)	(-1.08)	(-1.11)	(0.90)	(0.89)
							$RR\ 5^P$	—	—	—	—	—	—
							$RR\ 6^P$	-0.426	-0.461	-0.425	-0.491	2.362	2.686
								(-1.34)	(-1.27)	(-1.23)	(-1.40)	(0.87)	(0.87)
Control variables													
Crisis	0.059**	0.063*	0.051**	0.058*	0.090	0.088		0.059**	0.054*	0.048**	0.045*	0.105	0.101
	(2.22)	(1.66)	(2.25)	(1.75)	(0.94)	(0.79)		(2.11)	(1.76)	(2.21)	(1.69)	(1.04)	(0.95)
kaopen	-0.267	-0.273	-0.029	-0.062	-0.533	-0.603		-0.307	-0.319	-0.022	-0.046	-0.623	-0.705
	(-0.99)	(-0.98)	(-0.58)	(-0.74)	(-0.92)	(-0.89)		(-0.99)	(-1.00)	(-0.51)	(-0.72)	(-0.94)	(-0.94)
Constant	0.703***	0.788***	0.482***	0.445***	1.104**	1.252**		0.738***	0.794***	0.587***	0.576***	1.046**	1.127**
	(3.63)	(3.32)	(7.46)	(7.58)	(2.16)	(2.18)		(4.32)	(3.93)	(4.62)	(5.48)	(2.34)	(2.31)
R-Sq.	0.04	0.05	0.10	0.15	0.07	0.09		0.03	0.04	0.13	0.17	0.07	0.08
Obs./ Countries	2366/73	1398/43	1580/49	777/24	786/24	621/19		2366/73	1716/53	1580/49	1029/32	786/24	687/21

Notes: The superscript " P " indicates the predicted dummy. The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

Table B.11 — Robustness check: Currency misalignments and exchange rate regimes (Predicted ERR; *LYS classification*)

Dependent variable: $|Mis_{i,t}|$

	Three-way classification						*Five-way classification*						
	Whole sample		LDCs		EMEs			Whole sample		LDCs		EMEs	
Panel	A	B	A	B	A	B		A	B	A	B	A	B
	B.11.1	B.11.2	B.11.3	B.11.4	B.11.5	B.11.6		B.11.7	B.11.8	B.11.9	B.11.10	B.11.11	B.11.12
ERR													
$Flexible^P$	—	—	—	—	—	—	$LYS\ 1^P$	0.892	0.940	0.104	0.136	-12.79	-12.89
								(0.29)	(0.30)	(0.11)	(0.14)	(-1.30)	(-1.29)
$Interm.^P$	-0.010	-0.012	-0.029	-0.029	0.037	0.018	$LYS\ 2^P$	—	—	—	—	—	—
	(-0.09)	(-0.10)	(-0.45)	(-0.44)	(0.12)	(0.06)							
$Fixed^P$	1.502	1.497	-0.064	-0.067	2.641	2.627	$LYS\ 3^P$	2.489	2.465	2.848*	2.803*	3.252	3.095
	(1.02)	(1.02)	(-0.57)	(-0.59)	(1.03)	(1.03)		(0.72)	(0.72)	(1.92)	(1.89)	(0.58)	(0.57)
							$LYS\ 4^P$	-1.199	-1.237	-0.881	-0.844	-2.090	-2.444
								(-0.85)	(-0.86)	(-1.27)	(-1.19)	(-0.52)	(-0.58)
							$LYS\ 5^P$	15.643	15.58	0.209	0.189	25.63	25.69
								(1.02)	(1.02)	(0.12)	(0.10)	(0.99)	(0.99)
Control variables													
Crisis	0.112*	0.117*	0.062*	0.065*	0.108	0.149		0.098*	0.103*	0.060*	0.063*	0.065	0.104
	(1.74)	(1.71)	(1.81)	(1.81)	(1.02)	(1.07)		(1.88)	(1.82)	(1.76)	(1.76)	(0.75)	(0.93)
kaopen	-0.053	-0.029	-0.134**	-0.121*	-0.028	-0.029		-0.043	-0.016	-0.125*	-0.114*	-0.002	-0.011
	(-0.67)	(-0.33)	(2.02)	(-1.80)	(-0.14)	(-0.13)		(-0.67)	(-0.22)	(-1.97)	(-1.75)	(-0.02)	(-0.08)
Constant	0.404***	0.421***	0.352***	0.357***	0.716***	0.801***		0.447***	0.460***	0.341***	0.346***	0.865***	0.954***
	(5.31)	(5.42)	(9.99)	(9.48)	(6.56)	(6.33)		(8.97)	(8.51)	(9.44)	(8.95)	(4.79)	(4.35)
R-Sq.	0.05	0.05	0.09	0.09	0.11	0.11		0.04	0.05	0.09	0.10	0.10	0.10
Obs./ Countries	1376/60	1253/55	920/41	847/38	456/19	406/17		1399/60	1276/55	939/41	866/38	460/19	410/17

Notes: The superscript " P " indicates the predicted dummy. The bar indicates the reference regime. Robust t-statistics in parentheses. *** Significant at 1%; ** Significant at 5%; * Significant at 10%.

C. Figures

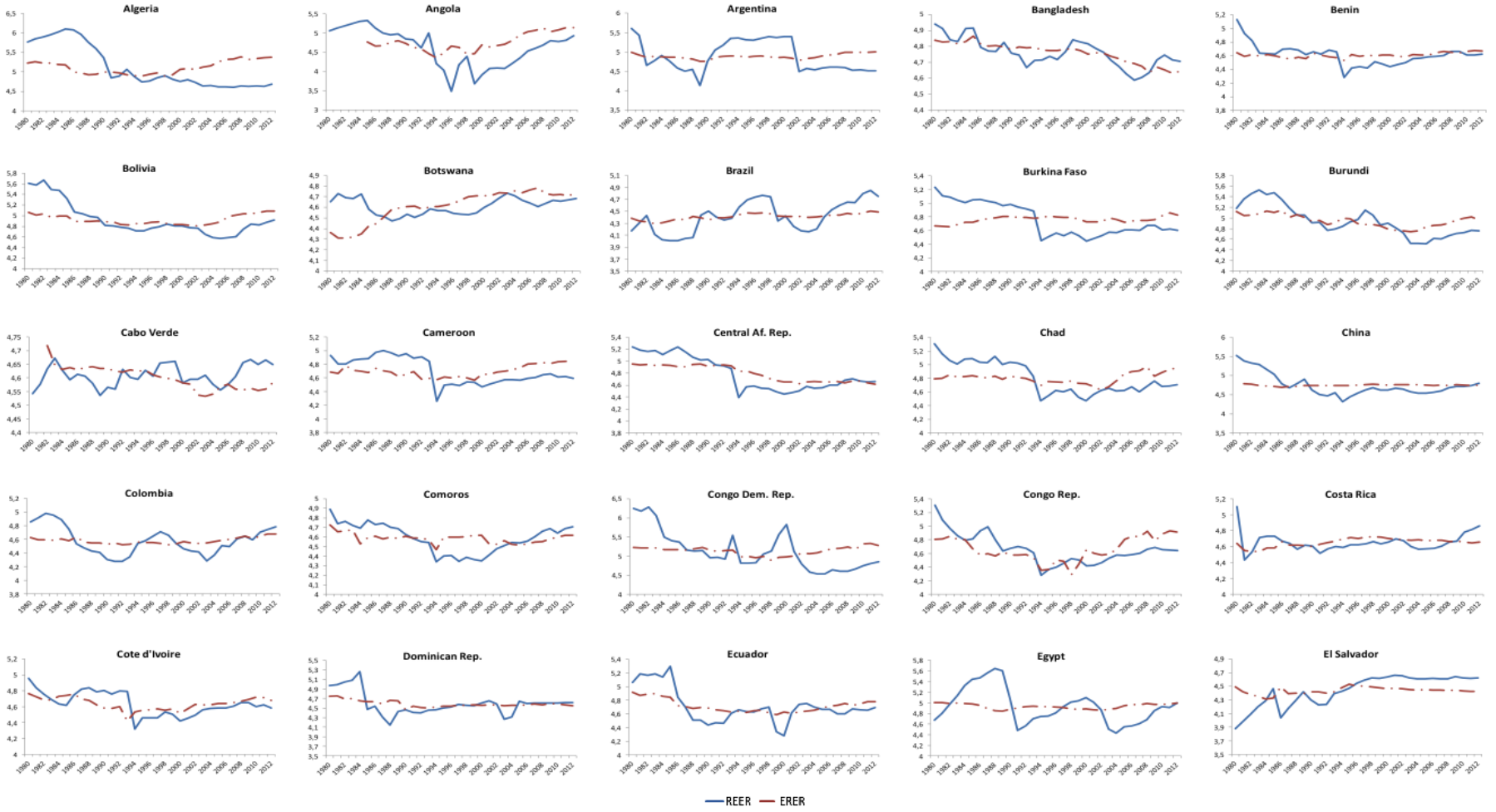

Figure C.1 — Real and Equilibrium Effective Exchange Rate (REER and ERER)
Note: An increase (resp. decrease) of the real effective exchange rate indicates an appreciation (resp. depreciation).

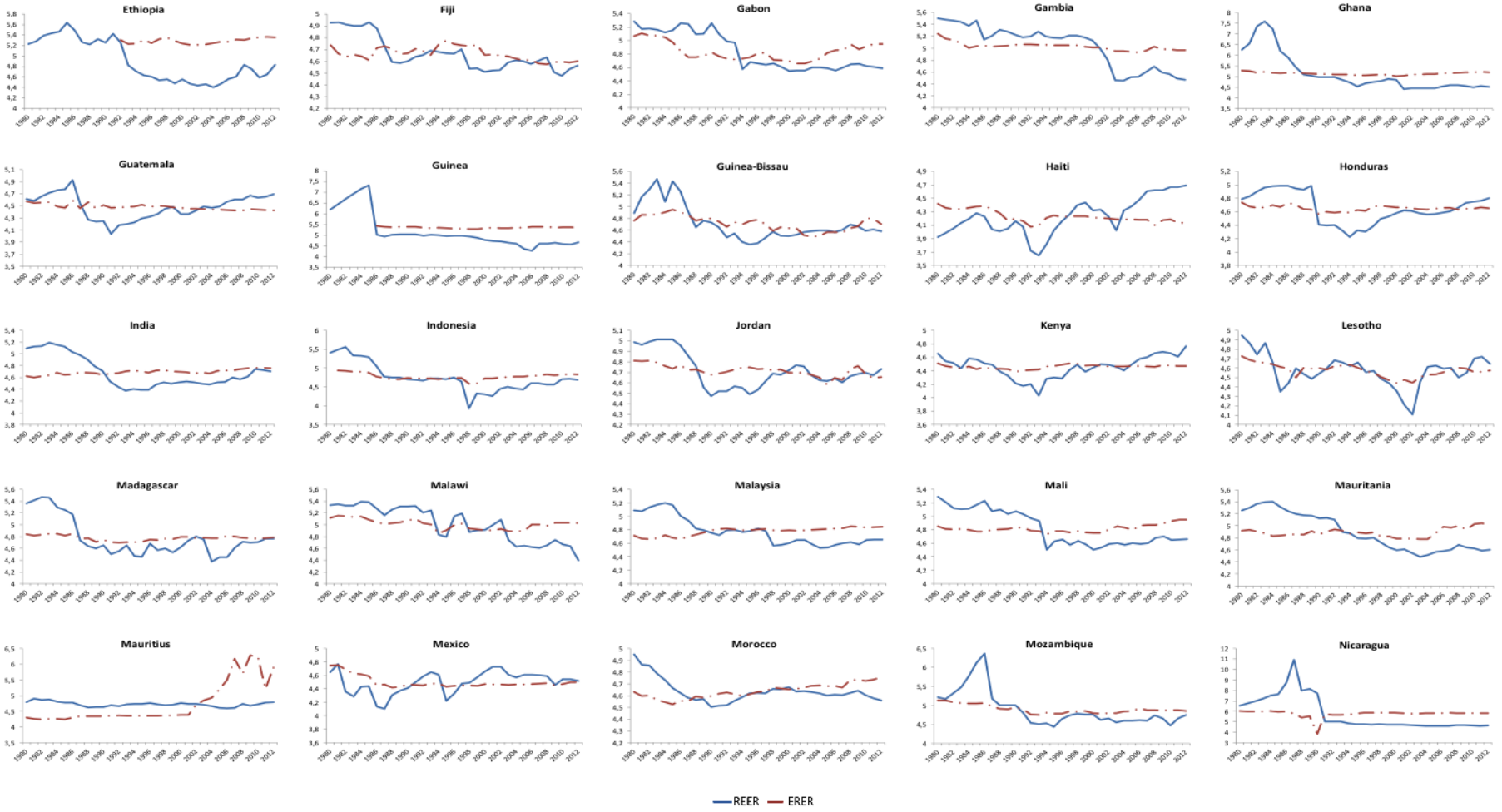

Figure C.1 — *Continued.*

Note: An increase (resp. decrease) of the real effective exchange rate indicates an appreciation (resp. depreciation).

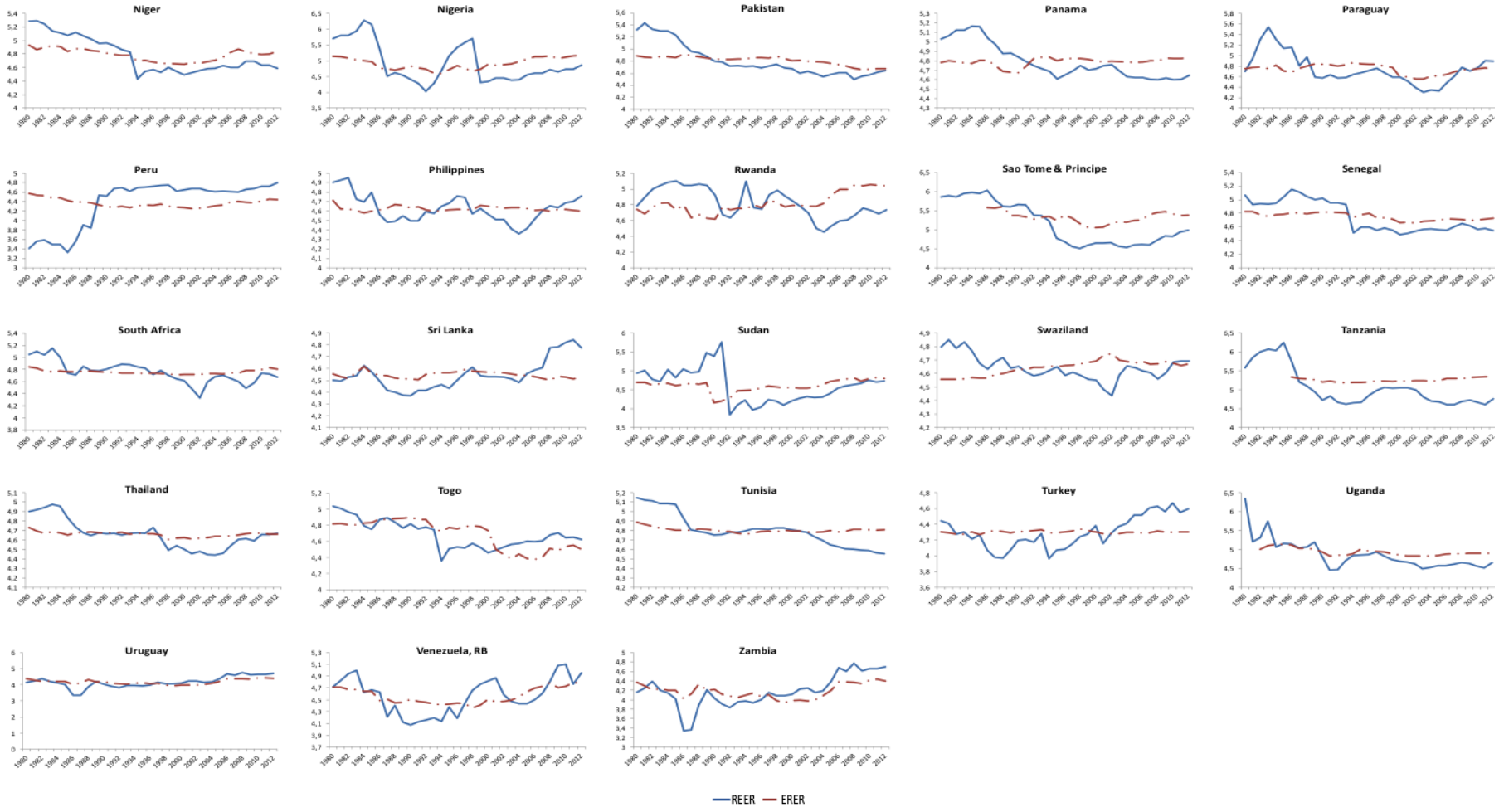

Figure C.1 — *Continued.*

Note: An increase (resp. decrease) of the real effective exchange rate indicates an appreciation (resp. depreciation).

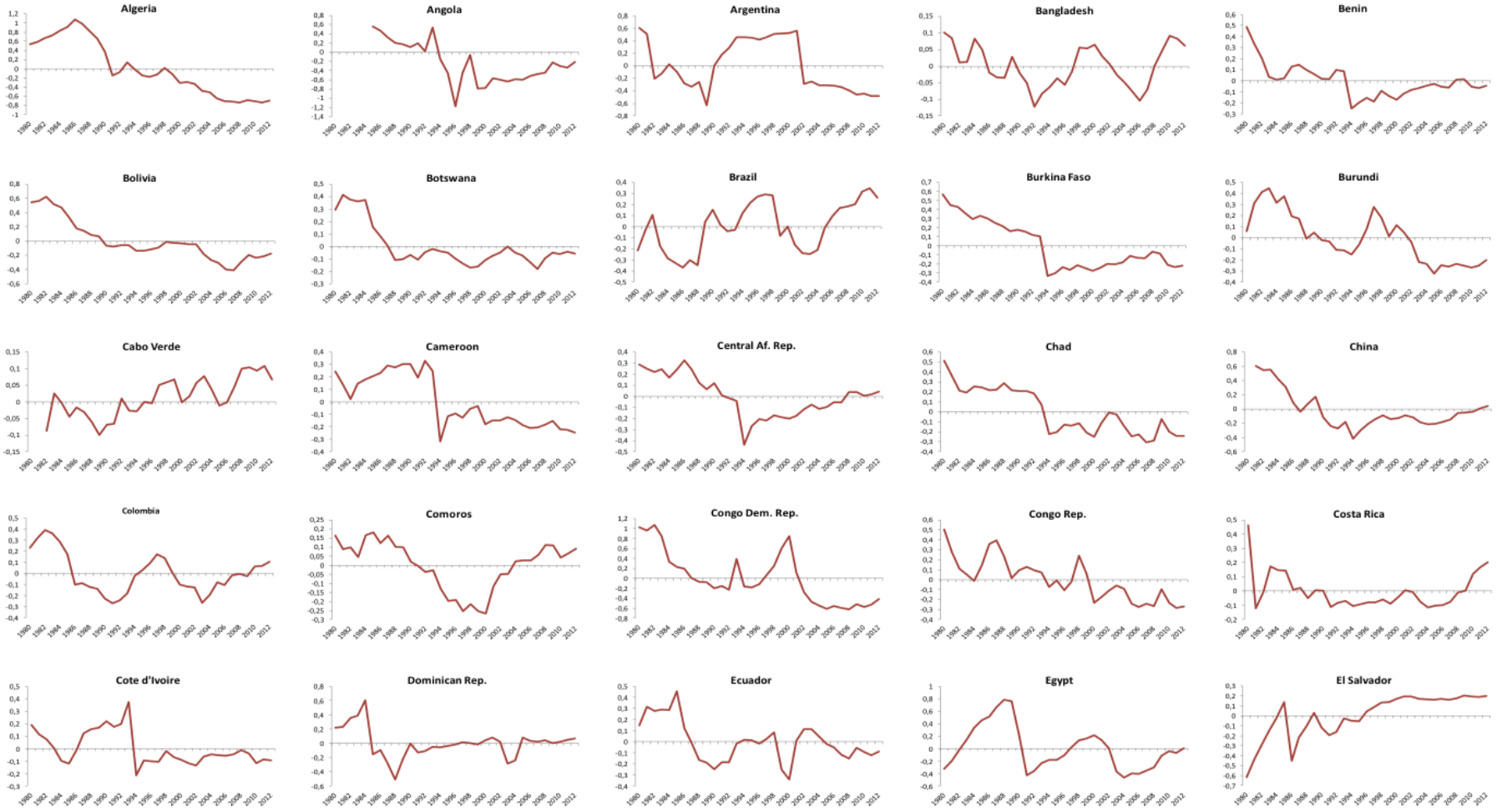

Figure C.2 — Currency misalignments (Mis)

Note: A positive (resp. negative) value corresponds to an overvaluation (resp. undervaluation)

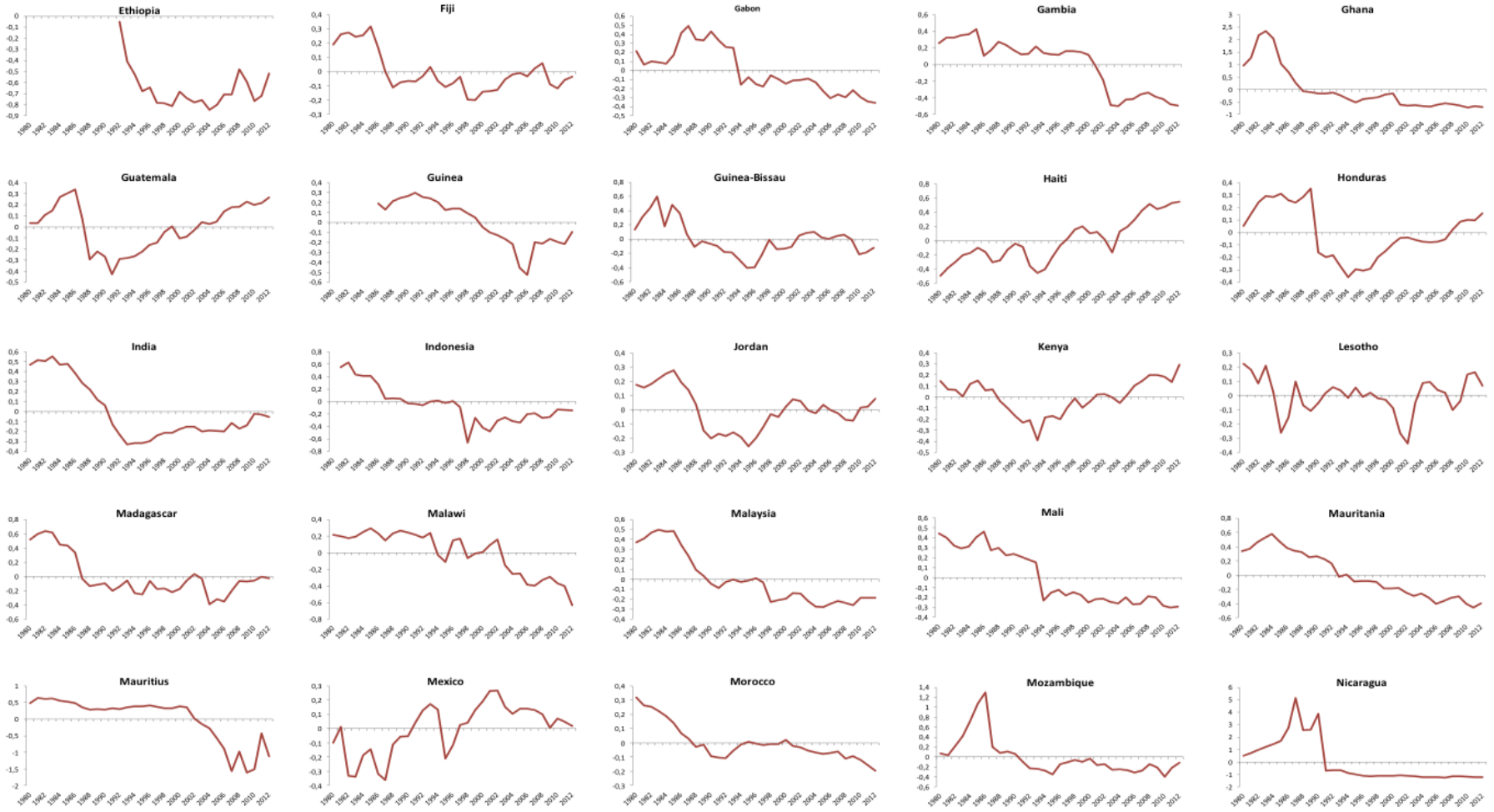

Figure C.2 — *Continued.*

Note: A positive (resp. negative) value corresponds to an overvaluation (resp. undervaluation)

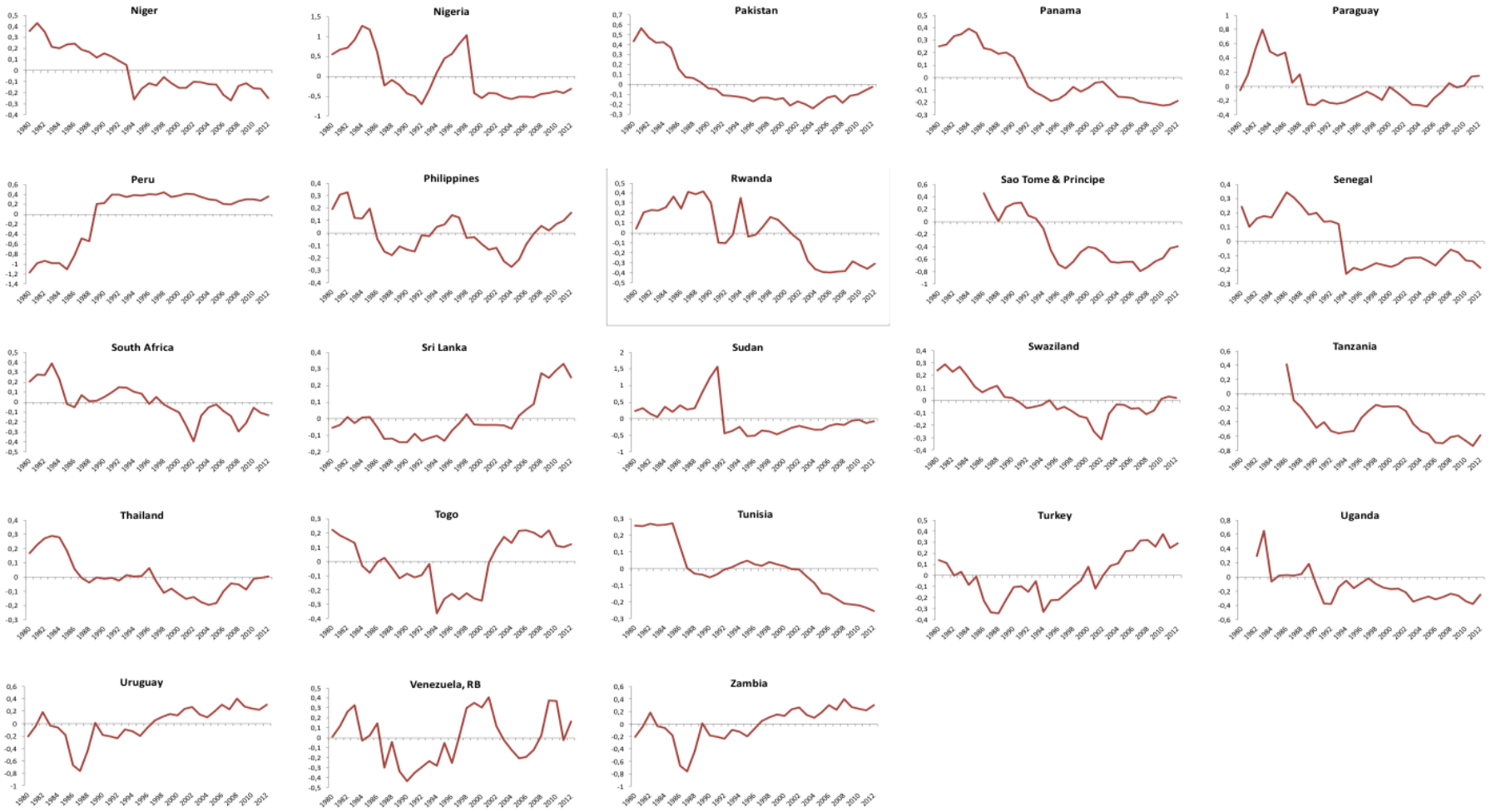

Figure C.2 — *Continued.*

Note: A positive (resp. negative) value corresponds to an overvaluation (resp. undervaluation)