STRUCTURAL CURRENT ACCOUNT IMBALANCES: FIXED VERSUS FLEXIBLE EXCHANGE RATES?

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Abstract

This paper returns to the age-old question of fixed versus flexible exchange rate. Using a panel of 128 countries over the period 1976-2005, I find that the structural current account balances of countries with fixed exchange rates are more highly correlated with fundamental drivers (such as net foreign assets, incomes, growth rates, fiscal policy, demographics, resource endowments) than the current accounts of floaters. Furthermore, this greater sensitivity to fundamentals leads to larger current account imbalances (both deficits and surpluses) for peggers. Pegging the exchange rate is statistically associated with a 1.1 percent increase in a country's current account imbalance, relative to floating. These greater net flows of capital indicate that fixed exchange rates might facilitate international capital mobility and financial integration. Finally, there is typically no difference between peggers and floaters in terms of current account persistence and, hence, the speed of adjustment of the current account.

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1. Introduction

In the past several years, we have seen large current account imbalances in many countries around the world. High-income countries like the United States, United Kingdom, and Spain have run large current account deficits. Many of the new EU member states from Central and Eastern Europe currently have current account deficits in the double digits. On the other hand, East Asian emerging economies, major oil exporters, and some industrialized countries (Germany, Japan) have registered large current account surpluses. Figure 1 illustrates the increase in current account imbalances for 128 countries around the world (see the Appendix for the country list). The figure reports the evolution over time of the mean *absolute* value of current account balances (expressed as a percentage of GDP). It also reports the cross-section standard deviation of current account balances. Both measures of global current account imbalances have steadily increased in the past twenty years.

Current account imbalances measure the net flow of capital among countries. Countries with current account surpluses (deficits) are in effect lending to (borrowing from) the rest of the world. Thus, it is plausible that large and increasing current account imbalances reflect greater capital mobility and global financial integration. This paper will explore the impact of exchange rate regimes on current account imbalances in the medium term (after filtering out the business cycle). The main contribution of the paper is in Sections 2 and 3 which examine a broad panel of 128 countries over the period 1976-2005. These sections estimate an empirical model of medium-term current account dynamics similar to the one developed in Chinn and Prasad (2003) and in Chinn and Ito (2007). These papers show that in the medium term, a country's current account depends on its stock of net foreign assets, relative income, relative GDP growth rate, budget balance, and its relative demographic profile. By extending the Chinn-Prasad-Ito model, I find that the structural current account balances of countries with fixed exchange rates around the world are more sensitive to most of these fundamental factors than the current account balances of floaters. Furthermore, this greater sensitivity to fundamentals leads to larger current account imbalances (both larger deficits and larger surpluses). Fixing the exchange rate is statistically associated with a 1.1 percent increase in a country's current account imbalance, relative to floating. These greater net flows of capital indicate that fixed exchange rates might facilitate international capital mobility and financial integration. One could hypothesize that by unlocking countries' current account constraints fixed exchange rates facilitate the optimal allocation of consumption and investment over time and the efficient allocation of capital around the world. Finally, there is typically no difference between peggers and floaters in

terms of current account persistence and, hence, the speed of adjustment of the current account. Section 4 offers several robustness checks, while Section 5 reports the results from a counterfactual simulation, which sheds further light on the main results. Section 6 concludes.

2. The empirical model and the data

2.1. Model setup

Chinn and Prasad (2003) and Chinn and Ito (2007) offer a model of the determinants of current account balances in the medium term (after filtering out the economic cycle). Both of these papers are purely empirical. However, they are informed by theory, that is, by the intertemporal approach to the current account, which is an extension of the lifecycle theory of consumption and saving to the open economy. These papers estimate regression equations similar to this one:

$$Current\_account_{i,t} = \beta_0 + \beta_1 NFA_{i,t-1} + \beta_2 Relative\_income_{i,t} + \beta_3 Relative\_growth_{i,t} + \\ + \beta_4 Budget_{i,t} + \beta_5 Old\_dep\_ratio_{i,t} + \varepsilon_{i,t} \quad \textbf{(1)}$$

$Current\_account_{i,t}$ denotes the current account balance, as a percentage of GDP, of country *i* in period *t*. $NFA_{i,t-1}$ denotes the net foreign assets (as a percentage of GDP) of country *i* in period *t-1*. Empirical estimates of β_1 are typically positive. Since net foreign assets are computed by cumulating past current account balances, β_1 measures the persistence of a country's current account over time.[2] In other words, β_1 captures inertia, the degree to which the current account is driven by its own history. One might interpret β_1 as being inversely related to the speed of adjustment of the current account. The conventional wisdom among economists is that the current accounts of countries with fixed exchange rates are more persistent than those of floaters ($\beta_1^{Fix} > \beta_1^{Float} > 0$), and therefore the current accounts of peggers are more rigid and their speed of adjustment is lower.

$Relative\_income_{i,t}$ is country *i*'s per-capita GDP (adjusted for PPP) relative to the cross-section average in period *t*. In theory, capital should flow from high-income to low-income countries. Low-income countries tend to save less and invest more. This gives rise to current account deficits. The opposite is true of high-income countries. Therefore, I expect to find $\beta_2 > 0$.

[2] Including the current value of NFA would have been problematic since it would introduce a clearly endogenous variable on the right-hand side of equation (1).

Relative_growth$_{i,t}$ denotes country *i*'s GDP growth rate relative to the sample average in period *t*. Under the intertemporal approach to the current account, the GDP growth rate proxies for the marginal product of capital in a given country. One may also think of the GDP growth rate as a proxy for expectations of future income. Under either interpretation we expect to find $\beta_3 < 0$. That is, capital should flow from slow-growing to fast-growing countries. Fast-growing countries will be running deficits, while slow-growing ones will be running surpluses ($\beta_3 < 0$). It is important to note that what matters is a country's GDP growth rate *relative* to the cross-section average in a given period. Because the current accounts of all countries around the world must add up to zero in any given year, it is impossible for all countries to be running current account deficits at the same time, no matter how fast they are growing. The *relatively* faster-growing countries will be running deficits, while the *relatively* slower-growing ones will be running surpluses.

Budget$_{i,t}$ denotes a country's budget balance, as a percentage of its GDP. Empirical estimates of β_4 are typically positive but smaller than unity. An increase of one dollar in the budget deficit typically leads to a smaller increase in a country's current account deficit. This could be due to two reasons. First, changes in public savings might induce changes in private saving behavior, via the "Ricardian equivalence" channel. If the government decides to save less, the private sector might decide to save more in response, and therefore the reduction in national savings might be less than one dollar. Second, an increase in the budget deficit might push up the equilibrium real interest rate and crowd out domestic investment. Of course, this mechanism is at work only for countries which are large enough to be able to influence the equilibrium world real interest rate, or for countries which are imperfectly integrated into international financial markets.

Finally, *Old_dep_ratio*$_{i,t}$ denotes the share of people in country *i* aged 65 or above, relative to the cross-section average for period *t*. According to standard lifecycle theory, the higher the old-age dependency ratio, the lower a country's national saving rate and its current account balance. Therefore, β_5 is expected to turn out negative. Once again, it is important to note that what matters is a country's demographic profile *relative* to the cross-section average in a given period. Even if all countries in the sample have ageing populations, they cannot all run current account deficits simultaneously. The *relatively* older countries will be running deficits, while the *relatively* younger ones will be running surpluses.

The main hypothesis this paper wants to test is that the exchange rate regime affects the regression coefficients in equation (1), both the intercept β_0 and (more importantly) the slope

parameters β_1-β_5. In particular, this paper will test the hypothesis that fixed exchange rate regimes are more conducive to financial integration and capital mobility. If indeed fixing the exchange rate unlocks a country's current account, then we would expect the current accounts of peggers to be more tightly linked to the fundamental drivers listed above. For example, we expect to find that $\beta_2^{Fix} > \beta_2^{Float} > 0$. In other words, current account balances are positively correlated with per-capita incomes for floaters, and even more positively correlated for fixers. A country with a fixed exchange rate should have a tighter positive relationship between its current account and its relative income. The same logic should apply to all other variables. Therefore, we expect to find:

$$\beta_3^{Fix} < \beta_3^{Float} < 0$$

$$\beta_4^{Fix} > \beta_4^{Float} > 0$$

$$\beta_5^{Fix} < \beta_5^{Float} < 0$$

There are three ways to use equation (1) in order to test the above hypotheses about the impact of exchange rate regimes on current account dynamics. First, the equation could be augmented with a variable $ERR_{i,t}$ which describes the exchange rate regime of country *i* during period *t*, with *ERR = 1* for a fixed exchange rate, *ERR = 2* for an intermediate regime, and *ERR = 3* for a floating exchange rate regime. $ERR_{i,t}$ would enter equation (1) both by itself and in interaction with all the righthand-side variables, in order to see how the exchange rate regime affects the intercept and the slope parameters. The main shortcoming of this approach is that it imposes a linear, monotonic relationship between exchange rate regimes and current account balances. This is a strong assumption, which is not justified by theory. Therefore, this approach is not pursued further.

Second, equation (1) could be estimated separately for peggers, floaters, and countries with intermediate exchange rate regimes. Instead of estimating equation (1) for the full sample, I will estimate it for 3 different non-overlapping sub-samples. This approach is less restrictive, but has the downside of offering less power and precision, due to the smaller sample sizes. In addition, with 3 different regression equations, it is not straight-forward to establish if the differences in regression coefficients across exchange rate regimes are statistically significant.

Third, equation (1) could be augmented with 2 dummy variables: $Floating_{i,t}$ and $Intermediate_{i,t}$. $Floating_{i,t}$ is set to 1 for each country during each period in which it maintains a flexible exchange rate. $Intermediate_{i,t}$ is defined similarly. (Obviously, countries with fixed exchange rates serve as a benchmark against which the other two groups are compared.) Both dummy variables

will enter the augmented regression equation both by themselves and in interaction with the 5 righthand-side variables (so I will have a total of 10 interaction terms). This approach should yield exactly the same coefficient estimates as the second one, but different standard errors. The main advantage of this approach is that it allows to test directly if the differences among exchange rate regimes are statistically significant. On the other hand, this approach imposes the restriction that the error term is distributed identically across exchange rate regimes. This paper will focus on the second and third approaches.

2.2. Preliminary data analysis

Equation (1) will be estimated using a panel of 128 countries over the period 1976-2005. The list of participating countries is given in the Appendix. This includes all 30 members of the Organization for Economic Cooperation and Development (OECD) and all 27 members of the European Union (the two groups overlap, of course). 128 countries turned out to be the maximum possible number of countries that could have been included. They come in all sizes, from all continents, and at all levels of development.

In constructing a panel dataset, there is always the difficult trade-off between maximizing the number of degrees of freedom and preserving the homogeneity of the data. One might argue that 128 countries amount to a rather heterogeneous panel. The results from this paper might be interpreted as describing the hypothetical "average country." Furthermore, in Section 4 I focus on more homogenous sub-samples of countries – by estimating equation (1) for high-income and low-income countries separately, and also for the period 1976-1990 versus 1991-2005 separately.

The time frequency of the underlying data is annual. However, in estimating equation (1) I use non-overlapping 5-year arithmetic means of the corresponding annual variables.[3] There are two exceptions. $Relative\_growth_{i,t}$ refers to the 5-year *geometric* mean of the corresponding annual variables. $NFA_{i,t-1}$ refers to net foreign assets in the year preceding the beginning of the current 5-year period. For example, if the current period is 2001-2005, then $NFA_{i,t-1}$ refers to net foreign assets in 2000. Five-year averages are used in order to filter out short-term business cycle fluctuations in the data, so that we can focus on the medium term.

The data source for most of the variables is the World Bank's database World Development Indicators (WDI). For $Budget_{i,t}$ data from the WDI were supplemented by data from the International

[3] Due to missing data for some periods and countries, some of the averages are based on fewer than 5 data points.

Monetary Fund's database International Financial Statistics. For $NFA_{i,t}$, I used the data compiled in Milesi-Ferretti and Lane (2007). Finally, for exchange rate regimes, I used the data compiled in Levy-Yeyati and Sturzenegger (2005).[4] They classify countries around the world into 4 groups: with fixed, intermediate, floating, and inconclusive exchange rate regimes. Since I am working with non-overlapping 5-year periods, the $ERR_{i,t}$ variable is set to 1, 2, or 3 (fixed, intermediate, or floating, respectively) only if country *i* maintained the same exchange rate regime for 4 out of the 5 years in the period.

The total sample size is 525 data points covering 128 countries, or 68 percent of the theoretical maximum of 768 data points (128 countries * 6 non-overlapping 5-year periods between 1976 and 2005). However, when I restrict the sample to only the data points for which $ERR_{i,t} = 1,2,3$, the sample size falls to 284 data points covering 104 countries, or 37 percent of the theoretical maximum.[5] The data constitute an unbalanced panel. Equation (1) is estimated by OLS with time-fixed effects. Following Chinn and Prasad (2003), Chinn and Ito (2007), and Gruber and Kamin (2007), I do not include country-specific fixed effects. Those papers argue that allowing for country-specific intercepts would distract from understanding the cross-country variation in current account balances. The country fixed effects soak up most of the cross-country variation in the data. As a result, the remaining coefficient estimates reflect the "within" (time-series) variation in the panel. If we want to explore the impact of exchange rate regimes on current account balances, then it is imperative that we capture the true sources of "between" (cross-section) variation in the data.[6]

The correlation matrix for the variables in the dataset is reported in Table 1. $Financial\_openness_{i,t}$ is the measure of international capital mobility developed by Chinn and Ito.[7] It is based on *de jure* restrictions on capital mobility which are reported to the International Monetary Fund by member countries and are compiled by the IMF in its Annual Report on Exchange Arrangements and Exchange Restrictions. $Trade\_openness_{i,t}$ stands for exports plus imports as a percentage of a country's GDP. $Financial\_depth_{i,t}$ denotes the ratio of a country's stock of M3 to its GDP, and serves as a proxy for domestic financial development. $Size_{i,t}$ is the natural log of country *i*'s share in world GDP during period *t*, measured in constant (year 2000) US dollars. This variable

[4] Another alternative – using the database compiled in Reinhart and Rogoff (2004) – is left as a possible future extension of this paper.
[5] I lose 241 data points due to the conservative definition of $ERR_{i,t}$.
[6] The argument here echoes the ones forcefully made in Quah (1995), Wacziarg (2002), and Lane (2004).
[7] The Chinn-Ito measure of financial openness is available on the authors' websites at http://www.ssc.wisc.edu/~mchinn/research.html or http://web.pdx.edu/~ito/.

enters in natural logs in order to reduce the influence of outliers (such as the United States and Japan). $Inflation_{i,t}$ is the natural log of a country's gross rate of inflation, as measured by either the CPI or the GDP deflator. It enters in natural logs in order to reduce the influence of (hyper-inflationary) outliers. $Inflation_{i,t}$ refers to the 5-year *geometric* mean of annual inflation rates.

The five panels of Table 2 report simple descriptive statistics for the variables in the dataset. Panel A describes the full sample. Panel B restricts the sample to only the countries and periods for which we have data on the exchange rate regime in place ($ERR_{i,t} = 1,2,3$). By comparing Panels A and B, we can see that they look quite similar to each other. The sub-sample described in Panel B appears to be somewhat richer, younger, and more financially open. Average inflation is also somewhat lower. But the differences are small, and the restricted sample does not look too different from the full one. Panel C, D, and E report descriptive statistics for countries with fixed, intermediate, and floating exchange rate regimes, respectively. Throughout this paper, the discussion will focus on the contrast between peggers and floaters. First, the sub-sample with intermediate exchange rate regimes is quite small (31 data points). Second, intermediate exchange rate regimes have all but been written off in recent years by academics and policymakers as too crisis-prone. This is the so-called "bipolar view" discussed in Fischer (2001). On the other hand, the debate about fixed versus flexible exchange rates is as topical as ever.

By comparing Panels C and E, we can identify multiple ways in which the two groups are systematically different from each other. Fixers tend to have larger current account deficits on average, as well as larger current account imbalances (either deficits or surpluses). Unsurprisingly, they have larger stocks of net foreign debt (more negative net foreign assets). Floaters tend to be richer. However, there seems to be no difference in average GDP growth rates or budget balances between peggers and floaters. Floaters appear to have higher old-age dependency ratios. Their financial openness tends to be higher, while their trade openness (defined as exports plus imports as a share of GDP) is lower. Peggers have lower domestic financial depth (defined as the ratio of M3 to GDP). They also tend to be smaller (*Size* is the natural log of a country's share in world GDP). Finally, peggers enjoy lower and less variable inflation rates, which is unsurprising.

3. Results

Column (1) of Table 3 reports results from estimating equation (1) for the full sample, as a benchmark.[8] The fit of the model is good, with an R^2 of 0.37. All regression coefficients have the expected signs, and all except *Relative_growth* are statistically significant at the 1 percent level. Current account balances are persistent, as shown by the coefficient on the *NFA* variable. Countries with relatively high per-capita incomes and budget surpluses tend to have current account surpluses. Countries with relatively high old-age dependency ratios tend to have current account deficits. The insignificance of *Relative_growth* is unsurprising, given the recent literature on "perverse/ upstream/ uphill capital flows" – see Gourinchas and Jeanne (2007) or Prasad, Rajan, and Subramanian (2007). Overall, the results reported here are quite similar to those in Chinn and Prasad (2003) and Chinn and Ito (2007). While we have not established anything about exchange rate regimes yet, it is good to know that the model explains structural current account balances quite well.

Column (2) looks at the restricted sample which includes only the countries and periods for which we have data on the exchange rate regime in place ($ERR_{i,t} = 1,2,3$). The results reported in column (2) are nearly identical to those in column (1). Once again, the restricted sample appears to be rather similar to the full one, even though the number of data points falls from 525 to 284, while the number of countries covered falls from 128 to 104.

Columns (3) through (5) estimate equation (1) separately for peggers, countries with intermediate exchange rate regimes, and floaters. For the reasons discussed above the discussion will focus on the contrast between fixed and flexible exchange rate regimes, that is, on columns (3) and (5). The current accounts of both peggers and floaters are persistent. However, the difference between β_1^{Fix} and β_1^{Float} appears to be too small to be statistically significant. In other words, there does not appear to be a difference between countries with fixed and flexible exchange rate regimes, as far as the speed of current account adjustment is concerned.

Compared to floaters, peggers have current account balances which are more positively correlated with relative incomes and budget balances, and more negatively correlated with old-age dependency ratios. For countries with fixed exchange rates, the coefficient estimates on net foreign assets, relative incomes, budget balances, and dependency ratios are statistically significant at the 5 percent level, or better. For countries with floating exchange rates, only the coefficient estimate on NFA is statistically significant. The insignificance of all the other coefficients suggests that the

[8] All regressions reported in this paper were estimated using Stata.

current accounts of countries with flexible exchange rate are decoupled from fundamental factors (other than history/inertia). As hypothesized earlier, a fixed exchange rate regime increases the correlation of current account balances with most of their fundamental drivers. The intertemporal approach to the current account seems to apply better to countries with fixed exchange rates. This is the main result of this paper.

How do fixed exchange rate regimes accomplish this? One might hypothesize that fixed exchange rates boost macroeconomic credibility by limiting the independence of national currencies and the ability to run a discretionary monetary policy. They might facilitate the development of deeper and more liquid domestic financial markets. For these reasons, fixed exchange rates might be more conducive to financial integration and international capital mobility. That is why they might lead to a tighter link between current accounts and fundamental drivers. The only two flies in the ointment are the coefficients on *Relative_growth*, which are statistically insignificant and have the wrong signs, for both fixers and peggers.[9]

The comparison between columns (3) and (5) of Table 3 is indicative. However, we still do not know if the differences between peggers and floaters are statistically significant. Column (1) of Table 4 helps resolve that issue. Table 4 estimates an augmented version of equation (1):

$$\begin{aligned} Current\_account_{i,t} = {} & \beta_0 + \beta_1 Floating_{i,t} + \\ & + \beta_2 NFA_{i,t-1} + \beta_3 (NFA_{i,t-1} * floating_{i,t}) + \\ & + \beta_4 Relative\_income_{i,t} + \beta_5 (relative\_income_{i,t} * floating_{i,t}) + \\ & + \beta_6 Relative\_growth_{i,t} + \beta_7 (relative\_growth_{i,t} * floating_{i,t}) + \\ & + \beta_8 Budget_{i,t} + \beta_9 (budget_{i,t} * floating_{i,t}) + \\ & + \beta_{10} Old\_dep\_ratio_{i,t} + \beta_{11} (old\_dep\_ratio_{i,t} * floating_{i,t}) + \\ & + \varepsilon_{i,t} \end{aligned} \qquad \textbf{(2)}$$

Equation (1) is augmented with the *Floating* dummy variable.[10] It enters the augmented regression equation both by itself and in interaction with the 5 righthand-side variables (so there is a total of 5 interaction terms). Countries with fixed exchange rates serve as a benchmark against which we

[9] As one can see from column (4), the negative sign on *Relative_growth* in the full samples in columns (1) and (2) is driven by countries with intermediate exchange rate regimes.

[10] Since the number of data points corresponding to countries and periods with intermediate exchange rate regimes is rather small, from now on those 29 observations will be excluded from the sample. The remainder of this paper will focus on the differences between peggers and floaters.

compare floaters. Note that the estimate of the interaction between *Floating* and *NFA* is statistically insignificant. There is no evidence that the current accounts of countries with fixed exchange rates are significantly more persistent than those of floaters. This is important because it means that the speed of current account adjustment does not differ across the two types of exchange rate regimes. This goes against conventional wisdom which holds that the current accounts of peggers are more rigid and this constitutes a serious shortcoming of fixed exchange rate regimes.[11] The insignificance of (*NFA* * *Floating*) means that there is no evidence that flexible exchange rates are superior to fixed ones in facilitating current account adjustment.

The current accounts of floaters are less sensitive to relative incomes and budget balances than those of peggers, and the differences are statistically significant at the 10 percent and 12 percent levels, respectively. The current accounts of countries with flexible exchange rates are less connected to demographic structure, but that difference is not significant.

4. Four robustness checks

4.1. High-income versus low-income countries

Given the potential criticism that the full sample of 128 countries is rather heterogeneous, columns (2) and (3) of Table 4 report results from re-estimating equation (2) separately for high-income and for low-income countries. Column (2) limits the sample to the richest 49 countries. Column (3) limits the sample to the poorest 50 countries. By doing this, I want to investigate if the impact of exchange rate regimes on current account balances is different at different levels of economic development.

For high-income countries, the results are clean and strong. Among these countries, peggers have current account balances which are (significantly) positively correlated with relative incomes and with budget balances. For floaters, both of these correlations are not statistically different from zero. The difference between peggers and floaters is statistically significant in both cases. Among high-income countries, peggers have current account balances which are (significantly) negatively correlated with old-age dependency ratios. For floaters, that correlation is again around zero. The difference between peggers and floaters is again statistically significant. Furthermore, peggers have

[11] A very similar result is reported in Chinn and Wei (2008). They label the assertion that flexible exchange rate regimes facilitate current account adjustment a "faith-based initiative."

current account balances which are (insignificantly) negatively correlated with growth rates. For floaters, that correlation is around zero. However, the difference between peggers and floaters is statistically insignificant. Finally, there is no evidence that the current accounts of peggers are any more or less persistent than those of floaters, among high-income countries.

For low-income countries, the results are weaker and less clear-cut. Among these countries, peggers have current account balances which are (significantly) positively correlated with relative incomes and with budget balances. For floaters, both of these correlations are not statistically different from zero. The difference between peggers and floaters is not statistically significant in both cases. There is strong evidence that the current accounts of floaters are less persistent than those of peggers, among low-income countries. It could be the case that current account adjustment poses more of a challenge for low-income countries with fixed exchange rate regimes than it does for high-income peggers.

4.2. 1976-1990 versus 1991-2005

Another way to check the robustness of the main results is to compare and contrast 1976-1990 versus 1991-2005, in order to investigate if the impact of exchange rate regimes on current account balances has evolved over time. Columns (4) and (5) of Table 4 report results from re-estimating the equation (2) separately for the two periods. Column (4) limits the sample to 1976-1990. Column (5) limits the sample to 1991-2005. The regression results in columns (4)-(5) are broadly supportive of the main results, and there does not seem to be a sharp difference in the impact of exchange rate regimes on current account balances between the two periods. In both periods, there is no significant evidence that the current accounts of fixers are more persistent than those of floaters. In both periods, the current accounts of floaters are less correlated with relative incomes and with demographic structure (but the difference is statistically significant only in the early period for both variables). In both periods, the current accounts of floaters are less correlated with budget balances (but this time the difference is statistically significant only for 1991-2005).

4.3. Endogenizing the treatment

One possible criticism of the empirical strategy adopted with equations (1) and (2) is that it is too reduced-form. In particular, the regressions reported in those tables assume that exchange rate regimes are strictly exogenous. The “treatment” of a particular exchange rate regime is assumed to be

assigned at random to countries. In fact, the opposite might very well be the case – the choice of an exchange rate regime is endogenous. Countries self-select into receiving the treatment. In other words, there might be omitted variables which affect the decision to have a floating exchange rate. A possible solution to this problem is to develop a "treatment effects" model, as follows. An unobserved latent variable determines the binary decision whether to obtain the treatment or not (have a floating exchange rate or not):

$$Z_{i,t} = \begin{cases} 1, & if \quad Z^*_{i,t} > 0 \\ 0, & otherwise \end{cases}, \qquad \textbf{(3)}$$

where Z is the (now endogenous) dummy variable *Floating*. Z^* is the unobserved latent variable and it is modeled as a linear function of covariates:

$$Z^*_{i,t} = \gamma_0 + \gamma_1 W_{i,t} + u_{i,t} \qquad \textbf{(4)}$$

The endogenous binary treatment Z then enters the primary equation:

$$Y_{i,t} = \beta_0 + \beta_1 X_{i,t} + \beta_2 Z_{i,t} + \beta_3 \left(X_{i,t} Z_{i,t} \right) + \varepsilon_{i,t}, \qquad \textbf{(5)}$$

which is identical to equation (2). Finally, the error terms of the treatment equation and the primary equation are correlated with each other:

$$\begin{bmatrix} u_{i,t} \\ \varepsilon_{i,t} \end{bmatrix} \sim N\left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \Sigma \right) \qquad \textbf{(6)}$$

Three variables were included as covariates for the treatment equation (4): $Financial\_openness_{i,t}$, $Trade\_openness_{i,t}$, and $Size_{i,t}$. First, perhaps the choice between fixed and flexible exchange rates depends on the openness of the country's capital account – the more financially open a country, the less likely it is to float (and the more likely it is to peg). Second, perhaps countries that trade a lot with the rest of the world are less likely to have floating exchange rates (and more likely to peg). Third, it is possible that country size matters – larger countries are more likely to float (while smaller countries are more likely to peg).

Table 5 presents the results from estimating the treatment effects model presented in equations (3)-(6) using the maximum likelihood estimator.[12] A Wald test of independent equations strongly rejects the null hypothesis (at the 1 percent level of significance) that the error terms of the treatment and primary equations are uncorrelated. For the treatment equation, the coefficient signs on

[12] The maximum likelihood estimator for the treatment effects model was developed in Maddala (1983). The treatment effects model is a close relative of the Heckman selection model.

all three covariates turn out according to expectations. Two of the three are significant at the 5 percent level, or better. Only *Trade_openness* is statistically insignificant.

The results from estimating the primary equation (5) are quite similar to the OLS estimates reported in column (1) of Table 4, which assumed the "treatment" to be exogenous. First, note that the estimate of the interaction between *Floating* and *NFA* is statistically significant now. This supports the claim that the current accounts of countries with fixed exchange rates are significantly more persistent than those of floaters. This finding is important because it means that the speed of current account adjustment does indeed differ across the two types of exchange rate regimes. The results here support the conventional wisdom which holds that the current accounts of peggers are more rigid. However, note that in almost all other regressions this coefficient is statistically insignificant.

Furthermore, the current accounts of floaters are less sensitive to incomes and demographic factors than those of peggers, and the differences are statistically significant at the 5 percent level, or better. The current accounts of countries with flexible exchange rates are less connected to budget balances, but that difference is not significant.

4.4. Omitted variables

Another possible criticism of the empirical strategy adopted with equation (2) is that there might exist omitted variables, other than the exchange rate regime, which affect the current account dynamics of a given country. In other words, perhaps the fact that a country's current account is more (or less) correlated with fundamentals has nothing to do with its exchange rate regime, but is driven by other factors (which might themselves be correlated with the exchange rate regime). Some plausible omitted variables are discussed below.

First, perhaps countries with more open capital accounts are more likely to peg their exchange rates and to also have current accounts which are more correlated with fundamentals. Second, perhaps countries that trade a lot with the rest of the world are more likely to have a fixed exchange rate regime and to have current accounts which are more correlated with fundamental drivers. Third, nations with deeper, more liquid, more developed domestic financial markets are more likely to have current accounts which are more correlated with fundamental factors. Fourth, it is possible that country size matters – smaller countries are more likely to give up their monetary sovereignty and also to have current accounts which are more correlated with fundamentals. Fifth, perhaps a current

account which is more correlated with fundamentals is the by-product of low inflation. Perhaps what really matters is the country's monetary policy framework. Perhaps international financial integration is facilitated by monetary credibility and transparency. As long as a country has a low inflation rate, it will have a current account which is more correlated with fundamentals. It does not matter how the low inflation rate is achieved: via a fixed exchange rate, inflation-targeting combined with a floating exchange rate, or some other monetary policy framework *cum* exchange rate regime. As long as a country achieves low inflation, this will boost the correlation of its current account with fundamental factors. By including the inflation rate, we are asking the question: do fixed exchange rate regimes matter above and beyond achieving a low inflation rate?

To take into account all these possibilities, equation (2) is augmented with five additional variables: $Financial\_openness_{i,t}$, $Trade\_openness_{i,t}$, $Size_{i,t}$, $Financial\_depth_{i,t}$, and $Inflation_{i,t}$. The five columns of Table 6 report results from estimating equation (2), which is further augmented with the 5 variables listed above. In the five columns of that table, the five extra variables are introduced one by one. In each column, one of those 5 extra variables enters the estimation both by itself and in interaction with the 5 fundamental drivers of the current account (see equation (1)) in order to see how they affect the intercept and the slope terms. More importantly, I am interested in whether these five extra variables would knock out the interactions between the fundamental drivers and the *Floating* dummy. After including these five variables, I am able to conduct the following thought experiment: take two countries which are identical in every other respect (same degree of financial and trade openness, same degree of domestic financial development, same economic size and rate of inflation). Will the country with a fixed exchange rate still have a current account which is more correlated with fundamentals compared to the country with a floating exchange rate? Table 6 reports the results, and the answer is broadly in the affirmative.

In all 5 columns, the regression coefficients on net foreign assets, relative incomes, budget balances, and old-age dependency ratios almost always retain the correct signs, and they are almost always statistically significant. The current accounts of floaters are less correlated with relative incomes in all 5 columns of Table 6, and the difference between peggers and floaters is always statistically significant. Furthermore, the current accounts of floaters are less correlated with budget balances and with demographic factors in all 5 columns of Table 6. However, the difference between peggers and floaters is statistically significant in 2 or 3 out of 5 cases. We may conclude that countries with fixed exchange rates have current accounts which do tend to be more tightly correlated

with fundamental drivers than countries with floating exchange rates. This is the case even after allowing for a diverse set of potential omitted variables. Finally, except for column (2), there is no evidence that the current accounts of peggers are more persistent than those of floaters.

Regarding the five omitted variables, the interaction terms with the fundamental drivers are almost never statistically significant. We find statistical evidence that trade openness reduces the persistence of current account balances and increases their sensitivity to relative incomes. Larger economies have current accounts which are less persistent. But the vast majority of coefficients on the interaction terms between the 5 omitted variables and the 5 fundamental drivers (22 out of 25) are statistically insignificant.[13]

5. A counterfactual simulation exercise

Table 7 reports the results from a counterfactual simulation, which sheds further light on the main results. The table focuses only on those countries and periods for which *ERR = 1*, that is, the peggers in the sample. The table has 189 rows, involving 77 different countries. The fourth column of the table reports fitted values for current account balances which are based on the coefficient estimates in column (3) of Table 3. The difference between the third and fourth column tells us how well the model matches the data. The fifth column of Table 7 computes fitted values for current account balances under the counterfactual assumption that *ERR = 3* (while, in reality, *ERR = 1*). Those counterfactual values are based on the coefficient estimates reported in Column (5) of Table 3. In other words, I compute the current account balance for a hypothetical country with the same level of net foreign assets, income, GDP growth rate, budget balance, and demographic structure. The only difference is the exchange rate regime: it is flexible rather than fixed. One may interpret the difference between the fourth and fifth column as a measure of the impact of floating the exchange rate on the current account balance of the particular pegging country.

The *un*-shaded rows in the table correspond to those countries and periods for which the ratio of the fourth to the fifth column is *greater* than unity. Intuitively, these are all the cases in which a fixed exchange rate regime is associated with a larger current account imbalance (either a larger deficit or a larger surplus), compared to the counterfactual under which the exchange rate is floating. It turns out that this is the case for 139 out of the 189 data points in the table (or 74 percent). The

[13] Results from a regression including all 5 omitted variables simultaneously and the associated large set of interaction terms are available from the author upon request. They are consistent with the results reported here, and are omitted in order to conserve space.

typical story is one of a larger current account deficit under fixed exchange rates, although there are several cases of larger current account surpluses as well.

For example, for Bulgaria over 2001-2005, the model predicts a current account deficit of 5.1 percent of GDP (while the actual deficit was 6.1 percent). With a floating exchange rate, the model predicts that a country with features identical to Bulgaria's would have run a current account deficit of only 2.7 percent. Thus, Bulgaria's currency board is statistically associated with an increase in the current account deficit of 2.3 percent of GDP during 2001-2005.

For Belgium over 2001-2005, the model predicts a current account surplus of 2.3 percent of GDP. The model further predicts that a floater with a profile identical to Belgium's would have run a surplus of only 0.4 percent over that same period. For Luxembourg over 2001-2005, the model predicts a current account balance of +12.4 percent of GDP. With a flexible exchange rate, the model predicts that a country with features identical to Luxembourg's would have run a current account balance of only +3.6 percent.

Finally, the sixth column of Table 7 reports the increase in the current account imbalance (either a larger deficit or a larger surplus) under "Fitted" relative to "Counterfactual." An increase in the imbalance is reported with a positive sign, while a decrease in the imbalance or a switch in sign is reported with a negative sign. It turns out that a fixed exchange rate regime is associated with a 1.1 percent increase in a country's current account imbalance, on average, relative to a floating exchange rate regime. In conclusion, a fixed exchange rate not only links a country's current account more tightly to fundamental drivers, but it is also associated with greater current account imbalances.

6. Concluding remarks

This paper explored a particular dimension of the age-old question of fixed versus flexible exchange rates. Using a panel of 128 countries over the period 1976-2005, I find that the structural current account balances of fixers are more highly correlated with fundamental drivers than the current accounts of floaters. These results survive several robustness checks: they hold in various sub-samples, after allowing for a diverse set of potential omitted variables, and after allowing for the possibility that the treatment itself is endogenous. Furthermore, this greater sensitivity to fundamentals leads to larger current account imbalances (both deficits and surpluses) for peggers relative to floaters. Pegging the exchange rate is statistically associated with a 1.1 percent increase in a country's current account imbalance, relative to floating. There is typically no difference between

peggers and floaters in terms of current account persistence and, hence, the flexibility of the current account. In other words, there is no evidence that floating exchange rates are superior to fixed ones in speeding up current account adjustment.

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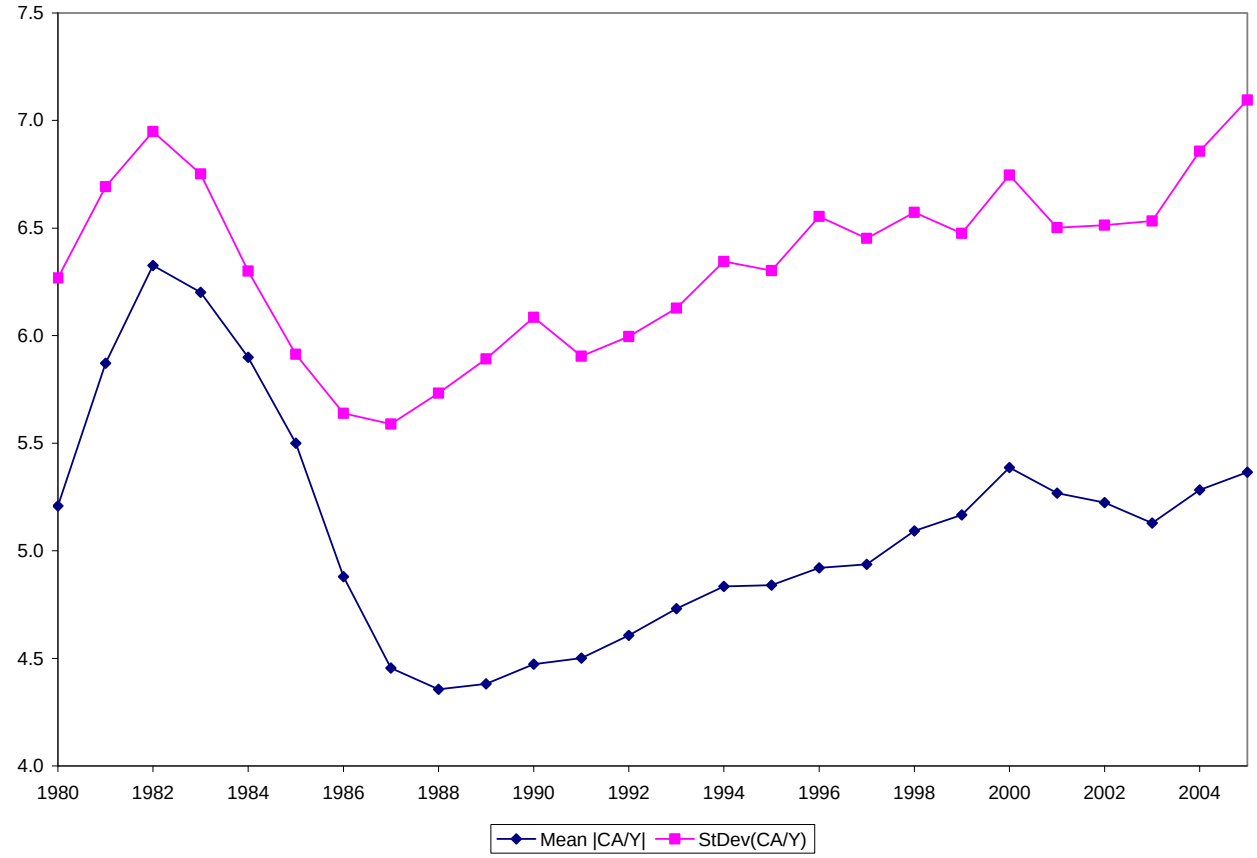
APPENDIX: LIST OF THE 128 COUNTRIES COVERED IN THE DATASET

1. Albania
2. Algeria
3. Argentina
4. Armenia
5. Australia
6. Austria
7. Azerbaijan
8. Bahrain
9. Bangladesh
10. Belarus
11. Belgium
12. Benin
13. Bolivia
14. Botswana
15. Brazil
16. Bulgaria
17. Burkina Faso
18. Cambodia
19. Cameroon
20. Canada
21. Chad
22. Chile
23. China
24. Colombia
25. Republic of Congo
26. Costa Rica
27. Côte d'Ivoire
28. Croatia
29. Cyprus
30. Czech Republic
31. Denmark
32. Dominican Republic
33. Ecuador
34. Egypt
35. El Salvador
36. Estonia
37. Ethiopia
38. Fiji
39. Finland
40. France
41. Gabon
42. Georgia
43. Germany
44. Ghana
45. Greece
46. Guatemala
47. Guinea
48. Haiti
49. Honduras
50. Hungary
51. Iceland
52. India
53. Indonesia
54. Iran
55. Ireland
56. Israel
57. Italy
58. Jamaica
59. Japan
60. Jordan
61. Kazakhstan
62. Kenya
63. Korea
64. Kyrgyzstan
65. Latvia
66. Lebanon
67. Lithuania
68. Luxembourg
69. Macedonia
70. Madagascar
71. Malawi
72. Malaysia
73. Mali
74. Malta
75. Mauritius
76. Mexico
77. Moldova
78. Morocco
79. Namibia
80. Nepal
81. Netherlands
82. New Zealand
83. Nicaragua
84. Niger
85. Nigeria
86. Norway
87. Oman
88. Pakistan
89. Panama
90. Papua New Guinea
91. Paraguay
92. Peru
93. Philippines
94. Poland
95. Portugal
96. Romania
97. Russia
98. Rwanda
99. Saudi Arabia
100. Senegal
101. Singapore
102. Slovakia
103. Slovenia
104. South Africa
105. Spain
106. Sri Lanka
107. Sudan
108. Swaziland
109. Sweden
110. Switzerland
111. Syria
112. Tajikistan
113. Tanzania
114. Thailand
115. Togo
116. Trinidad and Tobago
117. Tunisia
118. Turkey
119. Uganda
120. Ukraine
121. United Kingdom
122. United States
123. Uruguay
124. Venezuela
125. Vietnam
126. Yemen
127. Zambia
128. Zimbabwe

Figure 1: Summary statistics on current account balances for a cross-section of 128 countries (percentage of GDP, 5-year rolling averages)



Note: See Appendix.
Source: The World Bank's World Development Indicators

Table 1: Correlation matrix

	Current_ account	NFA	Relative_ income	Relative_ growth	Budget	Old_dep_ ratio	Financial_ openness	Trade_ openness	Financial_ depth	Size	Inflation
Current_account	1.000										
NFA	0.445	1.000									
Relative_income	0.273	0.318	1.000								
Relative_growth	0.024	0.020	-0.081	1.000							
Budget	0.315	0.065	0.094	0.204	1.000						
Old_dep_ratio	0.136	0.233	0.780	-0.086	0.079	1.000					
Financial_openness	0.128	0.157	0.492	-0.021	0.172	0.372	1.000				
Trade_openness	0.087	0.077	0.074	0.148	0.140	0.083	0.178	1.000			
Financial_depth	0.221	0.264	0.452	0.071	-0.062	0.346	0.256	0.275	1.000		
Size	0.336	0.243	0.594	-0.018	-0.016	0.456	0.264	-0.346	0.370	1.000	
Inflation	-0.169	-0.163	-0.089	-0.196	-0.346	-0.048	-0.245	-0.187	-0.166	0.062	1.000

Table 2: Descriptive statistics

A. Full dataset

Variable	Number of observations	Mean	Standard deviation	Min	Max
Current_account	670	-0.026	0.056	-0.297	0.208
|Current_account|	670	0.046	0.040	0.000	0.297
ERR = 1	369	0.710	0.454	0.000	1.000
ERR = 2	369	0.084	0.278	0.000	1.000
ERR = 3	369	0.206	0.405	0.000	1.000
NFA	657	-0.388	0.573	-6.546	1.568
Relative_income	694	1.003	0.986	0.057	5.074
Relative_growth	706	1.001	0.035	0.767	1.125
Budget	577	-0.031	0.043	-0.355	0.227
Old_dep_ratio	768	1.000	0.646	0.248	2.744
Financial_openness	658	0.088	1.488	-1.767	2.603
Trade_openness	705	0.724	0.410	0.132	4.048
Financial_depth	633	0.464	0.334	0.010	2.322
Size	726	-2.397	1.978	-5.795	3.446
Inflation	703	0.172	0.344	-0.057	3.180

B. Restricted dataset (*ERR = 1,2,3*)

Variable	Number of observations	Mean	Standard deviation	Min	Max
Current_account	354	-0.027	0.060	-0.297	0.147
|Current_account|	354	0.050	0.043	0.000	0.297
ERR = 1	369	0.710	0.454	0.000	1.000
ERR = 2	369	0.084	0.278	0.000	1.000
ERR = 3	369	0.206	0.405	0.000	1.000
NFA	358	-0.372	0.642	-6.546	1.388
Relative_income	359	1.123	1.095	0.060	5.074
Relative_growth	360	1.003	0.028	0.910	1.125
Budget	299	-0.029	0.044	-0.269	0.227
Old_dep_ratio	369	0.959	0.672	0.248	2.437
Financial_openness	357	0.324	1.530	-1.767	2.603
Trade_openness	363	0.725	0.424	0.140	2.709
Financial_depth	327	0.452	0.347	0.087	2.322
Size	364	-2.341	2.201	-5.758	3.446
Inflation	362	0.119	0.250	-0.045	2.156

C. Fixed exchange rate regime (*ERR = 1*)

Variable	Number of observations	Mean	Standard deviation	Min	Max
Current_account	249	-0.031	0.066	-0.297	0.147
|Current_account|	249	0.057	0.045	0.000	0.297
NFA	252	-0.425	0.717	-6.546	1.388
Relative_income	253	0.985	1.056	0.070	5.074
Relative_growth	254	1.004	0.029	0.910	1.125
Budget	202	-0.028	0.045	-0.189	0.227
Old_dep_ratio	262	0.855	0.660	0.248	2.423
Financial_openness	252	0.271	1.502	-1.767	2.603
Trade_openness	258	0.809	0.447	0.148	2.709
Financial_depth	229	0.388	0.268	0.087	2.132
Size	258	-3.035	1.771	-5.758	1.770
Inflation	256	0.076	0.086	-0.045	0.989

D. Intermediate exchange rate regime (*ERR = 2*)

Variable	Number of observations	Mean	Standard deviation	Min	Max
Current_account	31	-0.014	0.063	-0.199	0.127
|Current_account|	31	0.047	0.044	0.003	0.199
NFA	30	-0.178	0.547	-1.105	1.089
Relative_income	31	1.209	1.076	0.099	3.638
Relative_growth	31	1.002	0.034	0.940	1.075
Budget	30	-0.040	0.064	-0.269	0.122
Old_dep_ratio	31	1.041	0.671	0.301	2.255
Financial_openness	29	-0.161	1.371	-1.767	2.603
Trade_openness	30	0.578	0.279	0.150	1.104
Financial_depth	29	0.573	0.442	0.128	1.621
Size	31	-1.312	1.759	-5.036	1.419
Inflation	31	0.445	0.700	0.002	2.156

E. Flexible exchange rate regime (*ERR = 3*)

Variable	Number of observations	Mean	Standard deviation	Min	Max
Current_account	74	-0.020	0.028	-0.119	0.037
|Current_account|	74	0.027	0.021	0.001	0.119
NFA	76	-0.273	0.305	-1.218	0.242
Relative_income	75	1.552	1.132	0.060	3.665
Relative_growth	75	1.001	0.021	0.942	1.074
Budget	67	-0.027	0.028	-0.112	0.022
Old_dep_ratio	76	1.282	0.610	0.373	2.437
Financial_openness	76	0.684	1.621	-1.767	2.603
Trade_openness	75	0.498	0.263	0.140	1.344
Financial_depth	69	0.615	0.457	0.135	2.322
Size	75	-0.378	2.363	-5.381	3.446
Inflation	75	0.129	0.172	-0.015	1.030

Table 3: The impact of exchange rate regimes on current account dynamics – part I (panel regressions, OLS with time-fixed effects)

Dependent variable: Current_account	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
Sample	**Full**	**Restricted**	**Fixed**	**Intermediate**	**Floating**
Independent variables		(***ERR=1,2,3***)	(***ERR=1***)	(***ERR=2***)	(***ERR=3***)
Constant	**0.086**	**0.020**	**-0.034**	**0.419**	**-0.071**
	(0.075)	*(0.112)*	*(0.136)*	*(0.532)*	*(0.272)*
NFA	**0.039*****	**0.035*****	**0.034*****	**-0.018**	**0.027****
	(0.007)	*(0.008)*	*(0.010)*	*(0.058)*	*(0.013)*
Relative_income	**0.018*****	**0.020*****	**0.026*****	**0.077***	**0.005**
	(0.005)	*(0.006)*	*(0.008)*	*(0.042)*	*(0.007)*
Relative_growth	**-0.073**	**-0.028**	**0.021**	**-0.423**	**0.060**
	(0.074)	*(0.112)*	*(0.136)*	*(0.539)*	*(0.278)*
Budget	**0.319*****	**0.299*****	**0.338*****	**0.326**	**0.136**
	(0.065)	*(0.084)*	*(0.111)*	*(0.231)*	*(0.129)*
Old_dep_ratio	**-0.019*****	**-0.019****	**-0.025****	**-0.076***	**-0.006**
	(0.007)	*(0.008)*	*(0.011)*	*(0.038)*	*(0.011)*
Number of observations	**525**	**284**	**189**	**29**	**66**
Number of countries	**128**	**104**	**77**	**21**	**34**
R^2	**0.37**	**0.37**	**0.39**	**0.60**	**0.23**

Notes: Columns (1)-(5) estimate equation (1) in the main text of the paper. Column (2) limits the sample to only the countries and periods for which there are data about their exchange rate regime (*ERR = 1,2,3*). Column (3) limits the sample to only the countries and periods for which *ERR = 1*, that is, there was a *fixed* exchange rate regime in place. Column (4) limits the sample to only the countries and periods for which *ERR = 2*, that is, there was an *intermediate* exchange rate regime in place. Column (5) limits the sample to only the countries and periods for which *ERR = 3*, that is, there was a *floating* exchange rate regime in place. All regressions report standard errors which are heteroscedasticity-consistent, as well as robust to clustering. Standard errors are reported in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10% level, respectively. All regressions include time-fixed effects (coefficients not reported).

Table 4: The impact of exchange rate regimes on current account dynamics – part II (panel regressions, OLS with time-fixed effects)

Dependent variable: Current_account	(1)	(2)	(3)	(4)	(5)
Sample	Full	Rich	Poor	1976-1990	1991-2005
Independent variables					
Constant	-0.037	0.114	-0.159	-0.083	0.188
	(0.135)	*(0.212)*	*(0.175)*	*(0.131)*	*(0.316)*
Floating	-0.037	-0.107	0.223	-0.107	-0.138
	(0.283)	*(0.291)*	*(0.413)*	*(0.338)*	*(0.409)*
NFA	0.033***	0.019	0.039***	0.024	0.037***
	(0.010)	*(0.019)*	*(0.010)*	*(0.018)*	*(0.011)*
(NFA * floating)	-0.005	0.029	-0.037*	-0.006	-0.011
	(0.016)	*(0.026)*	*(0.021)*	*(0.024)*	*(0.017)*
Relative_income	0.026***	0.028***	0.056**	0.040***	0.019**
	(0.008)	*(0.009)*	*(0.026)*	*(0.015)*	*(0.010)*
(relative_income * floating)	-0.020*	-0.031***	-0.014	-0.042**	-0.013
	(0.010)	*(0.011)*	*(0.063)*	*(0.018)*	*(0.012)*
Relative_growth	0.024	-0.126	0.134	0.076	-0.185
	(0.134)	*(0.208)*	*(0.167)*	*(0.132)*	*(0.314)*
(relative_growth * floating)	0.035	0.124	-0.220	0.074	0.131
	(0.282)	*(0.285)*	*(0.420)*	*(0.338)*	*(0.407)*
Budget	0.342***	0.243***	0.492**	0.187**	0.675***
	(0.111)	*(0.071)*	*(0.221)*	*(0.085)*	*(0.207)*
(budget * floating)	-0.250°	-0.272°	-0.262	-0.358	-0.450*
	(0.152)	*(0.164)*	*(0.275)*	*(0.246)*	*(0.250)*
Old_dep_ratio	-0.025**	-0.031***	0.021	-0.035*	-0.023*
	(0.011)	*(0.011)*	*(0.040)*	*(0.020)*	*(0.012)*
(old_dep_ratio * floating)	0.018	0.028*	-0.048	0.066***	0.007
	(0.015)	*(0.015)*	*(0.045)*	*(0.024)*	*(0.016)*
Number of observations	255	139	116	113	142
Number of countries	99	49	50	63	78
R^2	0.38	0.31	0.39	0.30	0.47

Notes: Columns (1)-(5) estimate equation (2) in the main text of the paper. Column (1) covers the full sample of 99 countries. Column (2) limits the sample to the richest 49 countries. Column (3) limits the sample to the poorest 50 countries. Column (4) limits the sample to the period 1976-1990. Column (5) limits the sample to the period 1991-2005. All regressions report standard errors which are heteroscedasticity-consistent, as well as robust to clustering. Standard errors are reported in parentheses. ***, **, *, ° denote statistical significance at the 1%, 5%, 10%, 12% level, respectively. All regressions include time-fixed effects (coefficients not reported).

Table 5: The impact of exchange rate regimes on current account dynamics – part III (treatment effects model, maximum likelihood)

A. Treatment equation

Dependent variable: Floating	
Sample	Full
Independent variables	
Constant	0.293
	(0.187)
Financial_openness	-0.150**
	(0.069)
Trade_openness	-0.503
	(0.346)
Size	0.310***
	(0.061)
Number of observations	253
Number of countries	97

B. Primary equation

Dependent variable: Current_account	
Sample	Full
Independent variables	
Constant	-0.067
	(0.118)
Floating	0.160
	(0.270)
NFA	0.036***
	(0.006)
(NFA * floating)	-0.032**
	(0.013)
Relative_income	0.025***
	(0.006)
(relative_income * floating)	-0.035***
	(0.011)
Relative_growth	0.048
	(0.117)
(relative_growth * floating)	-0.104
	(0.267)
Budget	0.316***
	(0.108)
(budget * floating)	-0.054
	(0.155)
Old_dep_ratio	-0.028***
	(0.009)
(old_dep_ratio * floating)	0.036**
	(0.015)
Number of observations	253
Number of countries	97

Notes: This table estimates the treatment effects model (equations (3)-(6)) in the main text of the paper. The table reports standard errors which are heteroscedasticity-consistent, as well as robust to clustering. Standard errors are reported in parentheses. ***, **, * denote statistical significance at the 1%, 5%, 10%, respectively. The primary equation includes time-fixed effects (coefficients not reported).

Table 6: The impact of exchange rate regimes on current account dynamics – part IV (panel regressions, OLS with time-fixed effects)

Dependent variable: Current_account	(1)	(2)	(3)	(4)	(5)
Omitted_variable	Financial	Trade	Financial	Size	Inflation
Independent variables	openness	openness	depth		
Constant	-0.061	-0.320	0.102	0.101	-0.205
	(0.140)	*(0.256)*	*(0.213)*	*(0.216)*	*(0.174)*
Omitted_variable	0.051	0.339	-0.366	0.028	1.966
	(0.101)	*(0.341)*	*(0.370)*	*(0.067)*	*(1.367)*
Floating	0.004	0.126	-0.031	-0.057	-0.158
	(0.285)	*(0.272)*	*(0.294)*	*(0.238)*	*(0.287)*
NFA	0.034***	0.080***	0.036***	-0.010	0.023**
	(0.009)	*(0.010)*	*(0.012)*	*(0.021)*	*(0.012)*
(NFA * omitted_variable)	-0.002	-0.054***	0.000	-0.010**	0.026
	(0.005)	*(0.009)*	*(0.034)*	*(0.005)*	*(0.021)*
(NFA * floating)	-0.005	-0.025*	-0.016	-0.002	0.002
	(0.017)	*(0.014)*	*(0.017)*	*(0.018)*	*(0.017)*
Relative_income	0.033***	0.019	0.039***	0.019**	0.029***
	(0.010)	*(0.013)*	*(0.011)*	*(0.008)*	*(0.009)*
(relative_income * omitted_variable)	0.000	0.015*	-0.036	-0.001	0.010
	(0.004)	*(0.009)*	*(0.022)*	*(0.002)*	*(0.053)*
(relative_income * floating)	-0.022*	-0.021*	-0.020*	-0.033***	-0.022**
	(0.012)	*(0.012)*	*(0.011)*	*(0.011)*	*(0.011)*
Relative_growth	0.052	0.320	-0.111	-0.092	0.187
	(0.138)	*(0.253)*	*(0.203)*	*(0.215)*	*(0.173)*
(relative_growth * omitted_variable)	-0.055	-0.347	0.370	-0.026	-1.909
	(0.101)	*(0.337)*	*(0.356)*	*(0.065)*	*(1.327)*
(relative_growth * floating)	-0.014	-0.136	0.019	0.039	0.157
	(0.284)	*(0.272)*	*(0.292)*	*(0.236)*	*(0.288)*
Budget	0.340***	0.248	0.208	0.114	0.413*
	(0.106)	*(0.262)*	*(0.216)*	*(0.182)*	*(0.217)*
(budget * omitted_variable)	0.031	0.123	0.450	-0.074	-0.532
	(0.084)	*(0.329)*	*(0.403)*	*(0.062)*	*(1.394)*
(budget * floating)	-0.268*	-0.218	-0.313*	-0.056	-0.184
	(0.154)	*(0.171)*	*(0.172)*	*(0.156)*	*(0.147)*
Old_dep_ratio	-0.029**	-0.011	-0.056***	-0.028**	-0.026**
	(0.012)	*(0.019)*	*(0.021)*	*(0.011)*	*(0.011)*
(old_dep_ratio * omitted_variable)	0.000	-0.025	0.067	0.004	-0.031
	(0.005)	*(0.016)*	*(0.048)*	*(0.003)*	*(0.082)*
(old_dep_ratio * floating)	0.025°	0.019	0.023°	0.041***	0.021
	(0.016)	*(0.016)*	*(0.015)*	*(0.014)*	*(0.016)*
Number of observations	253	255	230	255	255
Number of countries	97	99	89	99	99
R^2	0.38	0.43	0.39	0.44	0.40

Notes: Columns (1)-(5) estimate equation (2) in the main text of the paper. All regressions report standard errors which are heteroscedasticity-consistent, as well as robust to clustering. Standard errors are reported in parentheses. ***, **, *, ° denote statistical significance at the 1%, 5%, 10%, 12% level, respectively. All regressions include time-fixed effects (coefficients not reported).

Table 7: A counterfactual simulation exercise

Country	Period	Actual CA balance (% of GDP)	Fitted CA balance (% of GDP)	Counterfactual CA balance (floating ERR) (% of GDP)	Increase in CA imbalance under "Fitted" relative to "Counterfactual" (% of GDP)
Argentina	1991-1995	-2.5	-1.6	-1.8	-0.1
Argentina	1996-2000	-3.8	-2.3	-2.9	-0.6
Austria	1991-1995	-0.9	-0.4	-1.7	-1.3
Austria	2001-2005	0.0	0.0	-1.8	-1.8
Bahrain	1981-1985	6.7	3.9	1.0	2.9
Bahrain	1986-1990	-1.3	6.8	4.4	2.5
Bahrain	1991-1995	-7.5	4.9	2.0	2.9
Bahrain	1996-2000	0.2	4.7	1.2	3.5
Bahrain	2001-2005	4.1	5.0	1.9	3.1
Belgium	2001-2005	3.8	2.3	0.4	1.9
Benin	1976-1980	-6.7	-3.1	-1.2	1.8
Bolivia	1976-1980	-7.0	-5.7	-3.0	2.8
Botswana	1976-1980	-10.5	-5.8	-2.5	3.3
Botswana	1981-1985	-9.3	4.2	0.7	3.4
Botswana	1986-1990	12.5	5.0	2.2	2.7
Botswana	1991-1995	6.8	5.2	1.8	3.4
Botswana	1996-2000	9.3	3.6	1.0	2.7
Botswana	2001-2005	7.1	3.0	1.3	1.7
Bulgaria	2001-2005	-6.1	-5.1	-2.7	2.3
Burkina Faso	1976-1980	-4.1	-3.2	-1.1	2.0
Burkina Faso	1981-1985	-3.1	-4.2	-2.2	1.9
Burkina Faso	1986-1990	-0.7	-2.3	-0.8	1.4
Burkina Faso	1991-1995	-1.5	-3.4	-2.1	1.4
Burkina Faso	1996-2000	-12.3	-3.6	-3.0	0.6
Burkina Faso	2001-2005	-10.3	-4.6	-3.0	1.6
Cameroon	1976-1980	-3.9	-3.4	-1.5	1.9
Cameroon	1981-1985	-5.2	-3.9	-2.1	1.8
Cameroon	1986-1990	-4.5	-2.4	-1.3	1.2
Cameroon	1991-1995	-2.0	-4.0	-3.1	0.9
Cameroon	1996-2000	-3.4	-5.2	-4.8	0.4
Chad	1976-1980	-1.5	-4.5	-2.4	2.1
Chad	1981-1985	0.4	-4.7	-2.6	2.2
Chad	1986-1990	-2.4	-2.6	-1.1	1.5
Chad	1991-1995	-4.8	-6.0	-3.4	2.6
China	1996-2000	2.3	-3.2	-2.4	0.8
China	2001-2005	3.5	-3.2	-1.6	1.6
Congo, Republic of	1976-1980	-12.9	-7.1	-3.7	3.4
Congo, Republic of	1981-1985	-11.1	-8.1	-4.7	3.4
Congo, Republic of	1991-1995	-26.2	-11.9	-8.0	3.9
Congo, Republic of	1996-2000	-6.9	-14.7	-11.6	3.1
Congo, Republic of	2001-2005	9.1	-6.4	-5.7	0.7
Costa Rica	1976-1980	-11.3	-5.1	-2.9	2.2
Cote d'Ivoire	1991-1995	-6.4	-7.9	-5.9	2.0
Cote d'Ivoire	1996-2000	-1.6	-6.0	-5.5	0.5
Denmark	1976-1980	-2.1	-1.5	-1.5	-0.0
Denmark	1981-1985	-3.4	-3.7	-3.1	0.5
Denmark	1986-1990	-1.8	1.3	-0.6	-1.9
Denmark	1991-1995	2.2	-0.6	-2.2	-1.6
Denmark	1996-2000	0.8	1.4	-2.0	-3.4
Dominican Republic	1976-1980	-5.9	-3.3	-1.8	1.5

Dominican Republic	1981-1985	-3.9	-4.0	-3.0	1.1
Ecuador	1976-1980	-5.2	-4.0	-2.0	2.0
Ecuador	2001-2005	-2.3	-6.4	-4.7	1.7
Egypt	1976-1980	-5.5	-9.0	-3.4	5.5
Egypt	1981-1985	-5.8	-8.9	-4.9	3.9
El Salvador	2001-2005	-3.4	-4.4	-3.0	1.4
Estonia	1996-2000	-7.9	-3.6	-2.5	1.1
Estonia	2001-2005	-10.5	-4.1	-2.6	1.4
Ethiopia	1981-1985	-1.7	-5.8	-3.2	2.6
Ethiopia	1986-1990	-2.2	-3.2	-1.2	2.1
Finland	1981-1985	-1.3	-1.7	-2.1	-0.4
Finland	1986-1990	-3.1	2.2	0.3	2.0
Finland	1991-1995	-1.3	-3.9	-3.4	0.5
Finland	1996-2000	5.7	-0.7	-2.8	-2.1
Finland	2001-2005	7.4	-3.8	-5.1	-1.2
France	1991-1995	0.3	-0.6	-1.7	-1.1
France	2001-2005	0.3	0.2	-1.2	-1.4
Gabon	1976-1980	6.7	-5.1	-3.4	1.7
Gabon	1981-1985	4.0	-3.5	-2.9	0.7
Gabon	1986-1990	-12.5	-1.5	-1.2	0.3
Gabon	1991-1995	3.0	-3.6	-3.2	0.4
Germany	2001-2005	2.4	-1.0	-1.7	-0.7
Ghana	1976-1980	-0.5	-6.0	-2.8	3.2
Ghana	1996-2000	-7.5	-5.2	-4.5	0.8
Greece	1996-2000	-5.5	-4.0	-3.2	0.7
Greece	2001-2005	-7.3	-5.1	-3.4	1.7
Guatemala	1976-1980	-2.5	-2.7	-1.2	1.5
Guatemala	1981-1985	-4.0	-4.2	-2.8	1.5
Haiti	1976-1980	-4.3	-4.5	-1.9	2.6
Haiti	1981-1985	-6.8	-5.6	-3.3	2.3
Haiti	1986-1990	-1.7	-2.2	-1.0	1.2
Honduras	1976-1980	-8.9	-3.7	-1.8	1.9
Honduras	1981-1985	-8.3	-7.3	-4.4	2.9
Honduras	1986-1990	-3.3	-3.3	-1.9	1.4
Iceland	1991-1995	-0.6	-0.2	-2.5	-2.3
Iceland	1996-2000	-5.4	1.6	-2.3	-4.0
Iceland	2001-2005	-6.9	1.3	-2.0	-3.3
Indonesia	1986-1990	-2.6	-1.6	-0.5	1.2
Iran	1981-1985	0.2	-3.4	-1.9	1.5
Iran	1986-1990	-1.1	-1.0	-0.2	0.9
Iran	1991-1995	1.4	-0.3	-0.7	-0.4
Iran	1996-2000	4.7	-1.6	-2.2	-0.5
Ireland	1986-1990	-1.1	-2.6	-2.1	0.5
Ireland	1991-1995	2.1	-1.5	-2.2	-0.8
Ireland	1996-2000	1.2	2.2	-1.4	-3.6
Ireland	2001-2005	-0.9	4.1	-0.2	-4.3
Italy	1996-2000	1.5	-1.0	-2.5	-1.4
Italy	2001-2005	-0.9	-2.0	-2.1	-0.1
Jamaica	1976-1980	-3.9	-11.5	-6.1	5.5
Jamaica	1981-1985	-11.4	-11.9	-6.7	5.2
Jordan	1976-1980	-0.1	-4.4	-0.9	3.5
Jordan	1981-1985	-5.2	-3.8	-2.0	1.8
Jordan	1996-2000	0.6	-4.5	-4.3	0.1
Jordan	2001-2005	-0.2	-3.3	-2.5	0.8
Kenya	1976-1980	-7.0	-5.1	-2.2	2.9
Korea	1976-1980	-3.6	-3.4	-1.8	1.6

Latvia	1996-2000	-6.8	-4.3	-2.7	1.6
Latvia	2001-2005	-9.6	-5.0	-2.6	2.4
Lebanon	2001-2005	-19.1	-8.8	-5.0	3.8
Lithuania	1996-2000	-9.5	-4.4	-3.0	1.4
Lithuania	2001-2005	-6.3	-4.4	-2.6	1.9
Luxembourg	2001-2005	10.1	12.4	3.6	8.9
Malawi	1976-1980	-18.0	-7.1	-3.3	3.8
Mali	1976-1980	-6.0	-4.7	-2.4	2.4
Mali	1981-1985	-10.2	-6.8	-4.1	2.8
Mali	1986-1990	-11.0	-5.3	-3.2	2.2
Mali	1991-1995	-8.7	-5.8	-4.1	1.7
Mali	1996-2000	-9.1	-6.0	-4.9	1.0
Mali	2001-2005	-7.7	-7.0	-4.8	2.2
Mexico	1991-1995	-5.0	-0.4	-1.6	-1.3
Namibia	1991-1995	3.5	-1.8	-1.6	0.1
Namibia	1996-2000	5.5	-1.4	-1.9	-0.5
Nepal	1976-1980	-0.6	-3.8	-1.4	2.5
Netherlands	1991-1995	3.8	2.1	-0.5	-2.5
Netherlands	2001-2005	5.4	0.8	-1.6	-2.4
New Zealand	1976-1980	-4.1	-3.0	-2.3	0.7
New Zealand	1981-1985	-8.0	-4.1	-3.2	0.9
New Zealand	1991-1995	-3.3	-1.3	-2.5	-1.2
New Zealand	1996-2000	-5.4	-2.2	-4.2	-2.0
Nicaragua	1991-1995	-29.7	-22.8	-19.0	3.8
Nicaragua	1996-2000	-23.0	-12.1	-10.5	1.7
Niger	1976-1980	-7.6	-3.9	-1.5	2.3
Nigeria	1996-2000	3.2	-7.5	-6.2	1.3
Norway	1981-1985	3.5	-1.0	-2.1	-1.0
Norway	1991-1995	3.5	1.0	-1.3	-2.3
Norway	1996-2000	6.8	3.7	-0.9	-4.6
Oman	1976-1980	8.0	0.0	-0.1	-0.1
Oman	1981-1985	6.6	-1.7	-1.0	0.7
Oman	1986-1990	1.0	0.4	-0.1	-0.5
Oman	1991-1995	-5.7	-0.3	-1.1	-0.7
Oman	1996-2000	-1.8	-0.1	-2.2	-2.0
Pakistan	1976-1980	-4.8	-6.9	-3.1	3.9
Panama	1976-1980	-8.9	-9.5	-5.8	3.6
Panama	1981-1985	-3.0	-8.6	-5.8	2.8
Panama	1986-1990	5.8	-4.1	-3.1	1.0
Panama	1991-1995	-3.0	-3.4	-3.4	-0.1
Panama	1996-2000	-6.5	-3.7	-3.9	-0.1
Papua New Guinea	1981-1985	-13.5	-4.8	-3.1	1.8
Papua New Guinea	1986-1990	-5.9	-3.4	-2.4	1.0
Papua New Guinea	1991-1995	7.3	-5.6	-4.2	1.4
Paraguay	1976-1980	-4.7	-2.6	-0.9	1.7
Portugal	1986-1990	0.4	-3.9	-2.1	1.8
Portugal	1991-1995	-0.6	-3.4	-2.4	0.9
Portugal	1996-2000	-7.3	-2.7	-2.8	-0.1
Portugal	2001-2005	-8.0	-4.0	-3.2	0.9
Rwanda	1976-1980	0.1	-2.8	-0.7	2.1
Rwanda	1981-1985	-4.3	-3.9	-2.0	1.9
Rwanda	1986-1990	-4.5	-2.2	-0.8	1.4
Saudi Arabia	1996-2000	-0.1	2.1	-0.6	-2.7
Senegal	1976-1980	-8.3	-4.3	-2.1	2.2
Senegal	1981-1985	-13.4	-6.7	-3.9	2.8
Slovenia	1996-2000	-1.2	-1.2	-2.0	-0.7

Slovenia	2001-2005	-0.8	-2.1	-1.9	0.2
South Africa	1976-1980	1.4	-2.7	-2.2	0.5
Spain	1996-2000	-1.7	-1.8	-2.7	-0.9
Spain	2001-2005	-4.7	-1.3	-2.0	-0.7
Swaziland	1976-1980	-11.7	-3.0	-1.4	1.7
Swaziland	1981-1985	-16.0	-5.9	-3.8	2.1
Swaziland	1986-1990	8.8	0.2	0.0	-0.3
Swaziland	1991-1995	-1.4	-0.7	-1.0	-0.3
Swaziland	1996-2000	-3.8	-0.4	-1.4	-1.0
Swaziland	2001-2005	2.5	-0.9	-0.5	0.4
Syria	1976-1980	2.0	-4.6	-1.8	2.9
Syria	1981-1985	-3.7	-5.3	-3.1	2.2
Syria	1986-1990	3.8	-1.7	-1.1	0.6
Syria	1991-1995	-0.2	-3.9	-3.2	0.6
Syria	1996-2000	2.2	-4.8	-4.8	-0.1
Thailand	1976-1980	-5.4	-3.7	-1.3	2.3
Togo	2001-2005	-10.3	-6.6	-4.8	1.8
Trinidad and Tobago	1976-1980	4.6	0.2	-0.4	-0.6
Trinidad and Tobago	1981-1985	-4.1	-3.7	-2.7	1.0
Uganda	1996-2000	-5.0	-4.0	-3.4	0.6
Uganda	2001-2005	-4.8	-4.2	-2.7	1.5
Venezuela	1976-1980	-2.3	-0.3	-0.1	0.1
Venezuela	1981-1985	3.9	-2.1	-2.1	-0.0
Yemen	1991-1995	-9.3	-6.6	-4.0	2.6
Zambia	1976-1980	-7.0	-9.2	-4.6	4.6
Zambia	1996-2000	-12.9	-11.5	-9.2	2.4
Zimbabwe	1991-1995	-5.5	-3.6	-2.7	0.9
Average		**-3.1**	**-3.1**	**-2.5**	**1.1**

Notes: The fitted values for current account balances reported in column (4) are based on the coefficient estimates reported in Column (3) of Table 3. The counterfactual values for current account balances reported in column (5) are based on the coefficient estimates reported in Column (5) of Table 3. The shaded rows in the table correspond to those countries and periods for which the ratio of column (4) to column (5) is *less* than unity.