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Exchange rate regimes and current account adjustment: an empirical investigation

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Abstract

The acceleration in the formation of global imbalances in the period preceding the last financial crisis prompted a revival of the debate on whether exchange rate regimes affect the flexibility of the current account (ie its degree of mean reversion), as originally proposed by Friedman (1953). I analyse this relation systematically using a panel of 180 countries over the 1960–2007 period. In contrast to pioneering work on the subject, I find robust evidence that flexible exchange rate arrangements do deliver a faster current account adjustment among non-industrial countries. Additionally, I try to identify channels through which this effect could be taking place. Evidence suggests that exports respond to expenditure-switching behaviour by consumers when faced with changes in international relative prices. There is mixed evidence of credit acting as an additional avenue of influence.

Key words: External dynamics, exchange rate regimes, current account imbalances.

JEL classification: F31, F32, F33, F41.

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1 Introduction

The onset of the global financial crisis in 2008 focused both general public and policymakers' attention on a long-dated and persistent phenomenon: the accumulation of global imbalances, as reflected in the increasing absolute size of current account (CA) balances across countries. This policy concern, and the several solutions put forward, have brought an old and controversial question back to the frontline: do nominal exchange rate regimes affect the persistence of current account balances and, hence, the formation of global imbalances?

It is possible to trace the origins of this debate back more than sixty years. The hypothesis that flexible nominal exchange rate regimes spur a faster mean reversion of the current account (and a consequent correction of imbalances) was first elaborated by Friedman (1953). In particular, he argued that "changes in it [the nominal exchange rate] occur rapidly, automatically, and continuously and so tend to produce corrective movements before tensions can accumulate and a crisis develop." Hence Friedman advocated the advantages of easy-to-adjust exchange rates in a world of rigid nominal prices. Since then, this position has become part of the conventional wisdom in certain circles of both academics and policymakers, and has been frequently used as a basis for advice in setting reform agendas.

However, it strikes as surprising that, given the premise's prevalence and its repeated use within the context of policy recommendations, it was not until recently that its empirical validity begun to be tested. Starting with Chinn and Wei (2013), a small number of studies has attempted to assess whether Friedman's claim is borne out by the data, resulting in opposing and inconclusive results so far.

The aim of this paper is to draw from these first attempts and to improve the approach to testing the hypothesis that flexible exchange rate regimes deliver a faster mean reversion of the current account. In order to do this I follow a general AR(1) framework and allow the autoregressive pattern both to change across regimes and to be altered by relevant control variables, which differ in key dimensions from the ones used so far in the literature. By following this strategy I find evidence that strongly supports Friedman's hypothesis, as non-industrial countries under fixed exchange rate regimes consistently display a higher persistence in their current account balances. This result is robust to a battery of checks, which include alternative FX regime groupings and classifications, correction for outliers, sample selection strategies and the addressing of potential issues of simultaneity and the existence of a mechanical bias. Moreover, the difference in the degree of CA mean reversion across exchange rate regimes is not only statistically significant but also economically meaningful: the half-life[1] of a 1% shock to the current account is approximately 14 months under a flexible FX arrangement, while this figure almost doubles to 25 months when the exchange rate follows a fixed scheme.

Additionally, I try to single-out potential channels through which this effect could be working, and I find that the expenditure switching behaviour of consumers substituting between local and foreign products when facing changes in international relative prices is the most robust driver, particularly via its impact on exports. However, trade might not be the only

[1] The half-life is defined as the number of periods required for the impulse response to a unit shock to a time series to dissipate by half.

channel, as there is partial evidence of credit also affecting the degree of persistence of the current account, mainly through its effect on the financing of deficit balances, which are by far the most frequently observed episodes in the sample.

The paper is structured as follows. In Section 2 I perform a review of the relevant literature and relate my contribution to it. I then describe the data used in Section 3. In Section 4 I estimate the differential effect of exchange rate regimes on current account persistence, both varying the choice of control variables and then carrying out several robustness checks (Section 5). Finally, in Section 6 I test for potential channels behind the existence of Friedman's hypothesis, before concluding in Section 7.

2 Literature review

The empirical literature that tries to assess the impact of nominal exchange rate regimes on the speed of current account adjustment is relatively recent.[2] Chinn and Wei (2013) (CW) stand out as the first empirical study to systematically test for such a relationship. Their paper points to an absence of a strong and robust link. However, this should not be considered as a definite rejection of Friedman's hypothesis. First of all, the authors focus on the results obtained using the *de-facto* classification of exchange rate regimes by Levy-Yeyati and Sturzenegger (2005) (LYS) rather than the one elaborated by Ilzetzki et al. (2010) (IRR), which may be considered more reliable (see Section 3 for a comparison of both classifications). Moreover, the results of specifications that use the a priori relevant country and time fixed effects are not reported, making an overall assessment of their strategy more difficult. These shortcomings, together with a choice of control variables that might blur exchange rates' full effect and fail to address potentially misleading episodes such as sudden stops (see Section 4) suggest caution when interpreting their results.

A second paper focused on the topic is Ghosh et al. (2010), who outline an alternative view to that suggested by CW's results on two fronts. First, they regard as loose evidence in favour of Friedman's hypothesis both the fact that fixed exchange rate regimes typically display significantly larger current account imbalances in absolute value (suggesting a lack of corrective movements before tensions accumulate) and the observation that large and abrupt current account reversals are a lot less frequent under flexible arrangements. The authors take this as "support in favour of Friedman's contention that under fixed regimes [...] imbalances are allowed to fester and grow much more than under flexible regimes".

In order to reconcile these facts with the absence of an empirical relation in a linear framework (as found by CW and confirmed by Ghosh et al. using an alternative IMF *de-facto* classification of exchange rate regimes) they allow for non-linearities. By splitting the sample into surplus and deficit episodes and incorporating dummy variables to control for both large positive and negative balances, Ghosh et al. find that flexible exchange rate regimes are associated with faster reversion of moderate current account balances in most cases and also of

[2] However, the theoretical joint analysis of exchange rates and current account balances' determination goes a long way back in the literature, with Kouri (1976) and Dornbusch and Fischer (1980) usually highlighted as two of the first influential insights within a vast list.

large CA surpluses. On the other hand, current account balances tend to be more persistent under flexible FX arrangements in the case of large deficits.[3] This is interpreted as likely to reflect the occurrence of crisis episodes (with the associated CA reversals) under intermediate and fixed exchange rate regimes. This finding is particularly important, as it might blur the results obtained using a linear framework. At the same time, it certainly does not reflect the kind of CA flexibility sought when giving policy advice.

These results suggest the need to control for undesired crisis events which could be behind the absence of a clear-cut effect when using a *"naïve"* linear model. However, it is important to bear in mind that the size of current account imbalances might be endogenous to the exchange rate regimes themselves and consequently not a appropriate variable to control for if we want to study exchange rate arrangements' full effect on current account's mean reversion.

A third important reference is Clower and Ito (2012), which, amidst a wider study of the determinants of current account persistence, adds further support to Friedman's hypothesis by showing that fixing the exchange rate increases the probability of entering into local non-stationary episodes.[4] Their basic strategy is to use a Markov-switching specification to identify temporary high-persistence episodes in the current account series,[5] and then run a probit regression of the dummies corresponding to these cases on a set of potential determinants, which includes countries' exchange rate regimes. The main result of interest for our purposes is the fact that among emerging and developing countries, those under fixed exchange rate arrangements are more likely to enter into these non-stationary episodes, especially when experiencing negative balances. Although the nature of the question is not exactly the same, it is reassuring to find that the most robust part of their results goes in line with the ones presented here.[6]

Herrmann (2009) focuses on a more homogeneous sample by using data from emerging European economies. Rather than using a dummy variable approach to identify different exchange rate regimes, she chooses instead to rely on the degree of exchange rate volatility. Following this strategy within a general AR(1) framework she finds evidence that greater exchange rate flexibility reduces the persistence of current account balances, adding support to the empirical validity of Friedman's hypothesis. In addition, she considers the importance of potential channels behind the aggregate effect, studying the indirect effects of exchange rate regimes by assessing the influence of credit growth on current account dynamics.

Finally, Ghosh et al. (2014) have recently put forward the hypothesis that aggregate exchange rate regime classifications actually mask heterogeneous relationships between countries, and hence it is necessary to look at bilateral exchange rate arrangements and trade flows in

[3] CW also find that fixed FX regimes are associated with a faster CA mean reversion in the event of large imbalances, which moreover tend to be more frequent under their rule. When controlling for this, the "clean" mean reversion for fixed exchange rate regimes increases substantially, taking the results close to supporting Friedman's hypothesis in detriment of CW's main point.

[4] On a related note, Mu and Ye (2013) use hazard models and focus on emerging markets' data and find that fixed exchange rate regimes increase the duration of CA deficit spells and delay adjustment.

[5] They use a different panel which considers only 70 countries and uses quarterly-frequency data over a shorter time-span than the other studies (due to reduced data availability at the required frequency).

[6] The authors also try to single-out potential determinants of the degree of current account mean reversion during the identified stationary episodes, and find no effect of the nominal exchange rate regime. However, the approach is completely different from the one followed in this paper and suffers from many methodological shortcomings.

order to assess the validity of Friedman's hypothesis (given the lack of disaggregated CA data). By doing so they find that flexible bilateral exchange rates do deliver a faster mean reversion of bilateral trade balances. Although theoretically valid *a priori*, there are a number caveats to this approach. First, despite having many bilateral exchange rates, countries choose a single monetary regime and, therefore, policy-induced flexibility is multilateral, not bilateral. Additionally, it can also be argued that corrective movements in flexible exchange rates, a key step in Friedman's hypothesis, might take place at the aggregate level and not on a bilateral basis.

This paper follows CW in using a simple and general framework to analyze current account dynamics, while it also relies on a *de-facto* exchange rate regime classification. However, I focus on an alternative source for the exchange rate regime classification, and perform a different choice of control variables, as explained in Section 4. Finally, I also perform several robustness checks to address concerns that affect most of the cited references, while I innovate by carrying out an analysis of the potential channels that could be behind the link between exchange rate regimes and current account's mean reversion.

3 Database description

In order to explore the impact of different exchange rate regimes on current account dynamics I consider an unbalanced annual panel covering 180 countries over the 1960-2010 period. However, it is worth noting that, given different data availability across variables, many of the analyses are performed using shorter periods and/or fewer countries. A full list of the data sources (and a precise definition of the variables) can be found in Appendix A.

One of the main reasons for the revival of the debate on the role of exchange rate regimes in the mean reversion of the current account is the sustained rise in global imbalances. For example, Figure 1 shows an upward trend in the absolute value of current account balances (normalized by GDP) when averaged across countries.

When it comes to the important point of identifying nominal exchange rate regimes, my main reference is IRR's *de-facto* database, which assigns country-year observations to one of fourteen categories, ranging from "freely floating" to "no separate legal tender", in increasing degree of "fixity" . This classification is performed using hard data on exchange rate movements and inflation besides countries' regime announcements (*de-jure* approach), which are not always in line with one another. For the sake of manageability, and in order to improve identification, these fourteen categories are grouped in different ways, always keeping the ordering of the original ranking.[7] The most widely used grouping throughout the paper is a "bipolar" one (i.e., dichotomous), in which the FX regime of a given country-year observation is labeled as either fixed or flexible, although a three-way alternative that leaves room for intermediate regimes will also be considered. The use of a categorical regime classification instead of a continuous alternative (as in Herrmann (2009)) to measure exchange rate flexibility responds to concerns regarding the potential endogeneity that could arise if we rely on standard continuous measures (such as FX volatility). Another dimension that has been explored in the literature is the

[7] See Appendix A for a detailed list of all categories and groupings used throughout the paper.

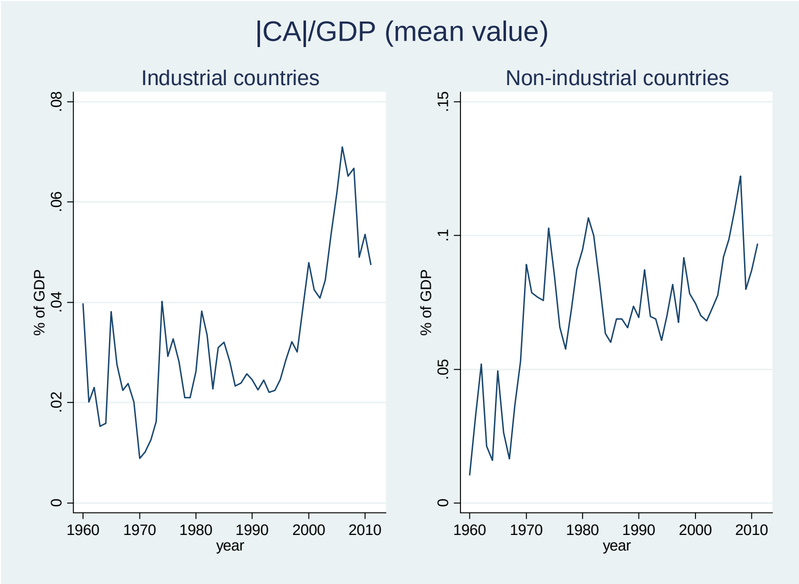

Figure 1: Current account imbalances, global average by year

disaggregation of data to come up with bilateral exchange rate regimes instead of an aggregate categorisation at the country level (Gosh et al. (2014)), although I choose to stick to the described approach on the grounds outlined in the previous section.

Robustness checks are performed using alternative *de-facto* classifications by the IMF and LYS, although several features point to the relative superiority of IRR's. Most importantly, it considers exchange rate data coming from dual or parallel markets whenever these exist (in multiple periods for some non-industrial countries), as they are both qualitative and quantitatively important (given their role as barometer of monetary and fiscal policies, and the extent of exports/imports' misinvoicing, respectively). Moreover, the separate treatment of high inflation periods (with the associated distortions and consequently particular current account dynamics) also seems suitable.

Focusing on IRR's classification, Table 1 shows that fixed exchange rate regimes are the most prevalent and floating ones the scarcest in the sample, and that this picture is similar across different country groupings.[8]

Table 1: Exchange rate regimes' prevalence (annual data, 1960-2010)

			Bipolar classif.		3-way classif.		
	Countries	Obs.	Float	Fix	Float	Interm.	Fix
All	180	6,349	23%	77%	13%	36%	51%
Industrial	22	1,112	29%	71%	23%	35%	42%
Non-industrial	158	5,237	22%	78%	10%	36%	54%

It seems to be the case that floating regimes are slightly more popular among industrial countries, which is consistent with the "fear of floating" hypothesis for developing countries put forward by Calvo and Reinhart (2002).

[8]Industrial and non-industrial countries are listed in Appendix A.

Given the fact that the core of the analysis will focus on how current account dynamics differ across exchange rate regimes, it is important to have a first snapshot of the data discriminating by the degree of fixity of the nominal exchange rate and countries' level of development. Relevant statistics include normalized current account balance (CA divided by GDP in order to make it comparable across countries), its absolute value, the conventional trade openness index (which considers the sum of exports and imports normalized by GDP), Chinn and Ito (2010)'s financial openness index[9] and an indicator of sudden stop episodes, which configures periods of unanticipated drains in foreign funding and was elaborated using data on financial account balances following a combination of standard approaches[10], as compiled in Efremidze et al. (2011).

Table 2: Data description

	All		Industrial		Non-industrial	
	Float	Fix	Float	Fix	Float	Fix
CA/GDP	-2.1%	-3.8%	-0.3%	-0.9%	-2.8%	-4.5%
$\|CA\|/GDP$	5.5%	7.7%	4.2%	3.1%	5.9%	8.7%
(X+M)/GDP	68.8%	80.1%	52.3%	54.1%	73.7%	83.5%
KA Openness	49.2%	56.1%	89.6%	88.3%	37.2%	49.9%
SS cases	50	187	11	18	39	169
Observations	1,488	4,861	324	788	1,164	4,073

Note: Figures in the first four lines are group averages. CA represents the current account balance of country-year observations, while X and M stand for exports and imports respectively. KA Openness figures correspond to the % of country-year observations of Chin and Ito (2008) Financial Account Opennes Index above the overall median. Finally, SS makes reference to sudden stop episodes

Table 2 suggests that there are important differences across exchange rate regimes and levels of development. In non-industrial countries, fixed exchange rate regimes tend to be associated with larger current account imbalances (both in gross terms and in absolute value) and greater openness, both on external trade grounds and in terms of external financial restrictions (again, this may be consistent with the "fear of floating" hypothesis, as when countries choose to float they might use capital controls).

However, among industrial countries there are not significant differences across regimes in terms of trade and financial openness and current account imbalances. The fact that there tend to be more sudden stop episodes under fixed FX regimes is robust to both groups of countries.

In general, non-industrial countries display significantly larger current account imbalances in absolute value than industrial countries, and more pronounced deficits when considering gross

[9] The index is the first principal component of four series on external transaction restrictions, which include the existence of dual foreign exchange rates, restrictions on current account transactions, restrictions on capital account transactions and restrictions on the surrender of exports proceeds.

[10] Three conditions need to be met for a sudden stop to be identified: (1) the first difference of the financial account needs to be at least two standard deviations below its mean (both the SD and the mean are computed on a rolling basis), (2) there has to have been a capital inflow in the preceding period (to avoid capturing outflow accelerations instead of proper "sudden stops"), and (3) the change in the financial account has to be negative and exceed 5% of GDP (so as the change to be large not only in relation to its own history but also in absolute terms).

balances. At the same time, they tend to be more open to international trade, but financial controls are more widespread and sudden stop episodes far more frequent.

Although results are generally reported for all country groupings, the focus of the analysis of this paper is on non-industrial countries, as they display the largest imbalances and are more prone to receive and rely on advice regarding the choice of exchange rate arrangements.

4 Exchange rate regimes and current account adjustment

4.1 Benchmark specification

In line with the relevant literature, I rely on a general framework by fitting an AR(1) process[11] to the current account time series, allowing both the intercept and the autoregressive coefficient to differ across exchange rate regimes:

$$ca_{i,t} = \sum_j \theta_{0,j} reg^j_{i,t} + \sum_j \rho_j reg^j_{i,t} ca_{i,t-1} + \epsilon_i + \zeta_{i,t} + \upsilon_{i,t} \quad (1)$$

where $ca_{i,t}$ stands for the current account-to-GDP ratio in country i and year t and $reg^j_{i,t}$ is the generic name for two different dummy variables ($j = 0, 1$), one corresponding to a country-year observation being classified as a fixed FX regime and the other one to the floating regime counterpart, according to the "bipolar" grouping of IRR's nominal exchange rate classification described before. Finally, ϵ_i and $\zeta_{i,t}$ correspond to country and time-continent fixed effects, respectively;[12] while the former allows the convergence to be measured in terms of country-specific long run values, the latter controls for continent-specific shocks, such as the Asian crisis that took place in 1997. As it can be seen, the specification allows for non-zero long term current account balances. This has been extensively discussed in the literature (see, for example, Lee et al. (2008)) and is explained in more detail in Section 5.3 and Appendix B.

The estimation is performed using an unbalanced panel of 180 countries that covers the 1960-2007 period,[13] and results can be found in Table 3.

If Friedman's hypothesis held, we would expect floating FX regimes to display a lower autoregressive coefficient, since that would imply less persistence of the current account. As it can be seen in Table 3, if anything it is the fixed exchange rate regimes that seem to deliver a faster CA mean reversion (at least for non-industrial countries and on the aggregate), although

[11] I also experimented with an AR(2) specification, finding that the second lag is not significant at the usual confidence levels for the non-industrial country group in most cases, while when it is so (with p-values close to 0.1), the coefficients attached are negligible. Moreover, incorporating this extra variable does not alter the conclusions reached using an AR(1) alternative.

[12] The presence of country fixed effects might generate a bias when estimating an autoregressive equation in a panel framework. I acknowledge that issue and address it in the robustness checks section (see Section 5).

[13] Despite the fact that the database reaches 2010, the recent financial crisis represents one of those periods in which non-quantified forces such as heightened uncertainty and shifting risk preferences might affect both the exchange rate and current account balances, generating spurious correlations. Henceforth, all the subsequent analysis focuses on the 1960-2007 period. However, I find that the results are virtually unchanged when repeating the estimation for the 1960-2010 period (last year for which we have data on exchange rate arrangements). Also, given that changing the starting point to 1972 only implies a loss of less than 2% of the observations (responding to a great amount of missing data for the 1960s), it is not surprising to see that the estimation remains virtually unchanged for the post-Bretton Woods era.

Table 3: Basic equation

	All	Industrial	Non-industrial
$Fix_{i,t}*ca_{i,t-1}$	0.45***	0.84***	0.44***
	(0.131)	(0.032)	(0.136)
$Float_{i,t}*ca_{i,t-1}$	0.62***	0.84***	0.59***
	(0.072)	(0.020)	(0.089)
$H_0 : \rho_0 = \rho_1$(p-value)	0.22	0.97	0.35
Observations	3,649	733	2,916
R^2	0.57	0.86	0.56

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

the standard errors are high enough such that we cannot reject the null hypothesis of the autoregressive coefficient being the same across exchange rate regimes at the usual confidence levels (H_0 in Table 3).

The results described above coincide with the ones found by both CW and Ghosh et al. (2010) when using this simple specification. However, as explained before, this specification is too *naïve* to lead us to a definite rejection of Friedman's idea, as there are several potential factors that could be influencing both the dynamics of the current account and the prevalent exchange rate regime, potentially biasing the results and increasing the magnitude of the standard errors. I address this issue by an appropriate selection of control variables.

4.2 Complete model

I carry out a control variable selection that is different from the one that has prevailed so far in the literature, both proposing a new important control and dismissing some widely used variables on grounds that are explained below.

In the first place, I follow the standard approach in controlling for the degree of financial openness as measured by Chinn and Ito (2010)'s index,[14] which according to Table 2 seems to differ across exchange rate regimes (particularly for non-industrial countries) while at the same time it influences the persistence of the current account balance. Instead of working with the original index, which has no clear interpretation, I use the deviations from its median.

Additionally, the evidence put forward by Ghosh et al. (2010) suggests that the finding of fast current account reversion under fixed exchange rate regimes might be masking disruptive episodes, as it almost disappears when controlling for the effect of large deficits. With that in mind, I control for the occurrence of sudden stop episodes as defined in the previous section.[15]

[14] As a robustness check, and in order to be consistent with the use of a *de-facto* exchange rate regime classification, I repeat the estimations using Lane and Milesi-Ferretti (2007) *de-facto* financial openness index. It is reassuring to see that results remain virtually unchanged. A caveat to the use of this last measure is that it relies on countries' external asset and liabilities positions, which could certainly be influenced by the FX regime in place.

[15] I acknowledge that the incorporation of this control might be subject to an endogeneity problem, as sudden

A common feature of most of the previous literature is the use of control variables that could themselves be related to the exchange rate arrangements. Both the degree of trade openness, as measured by the sum of exports and imports normalized by GDP, and the absolute size of current account imbalances could fall under this category, as they are not discretional government choices and could easily be influenced by the exchange rate regime in place, and at the same time be related to the dynamics of the current account.[16] Therefore, by controlling for these variables I would be potentially muting channels through which exchange rate regimes could be affecting the persistence of the current account, which is not recommended if we want to get a full picture of the consequences of different exchange rate arrangements.

To be clear, we want to control for "choice" (discretional) variables that could be correlated with the prevalent exchange rate regime but are not its consequence. The degree of financial openness fulfills these requirements as it responds to government decisions rather than being the description of an economic aggregate.

Summarizing, I control for both sudden stop episodes and financial openness, while, in contrast to previous papers, I choose not to control for the degree of trade openness and the absolute size of current account imbalances.[17] Taking the chosen controls into consideration, I now proceed to the estimation of the following extended specification:

$$\begin{aligned} ca_{i,t} = &\sum_j \theta_{0,j} reg^j_{i,t} + \sum_j \rho_j reg^j_{i,t} ca_{i,t-1} + \sum_j \theta_{1,j} reg^j_{i,t} C_{i,t} \\ &+ \sum_j \theta_{2,j} reg^j_{i,t} ca_{i,t-1} C_{i,t} + \epsilon_i + \zeta_{i,t} + \upsilon_{i,t} \end{aligned} \tag{2}$$

where $C_{i,t}$ summarizes both $SS_{i,t}$ (sudden stop dummy variable identificator) and $KAopen_{i,t}$ (Financial Openness Index in deviations from its median), while the rest of the variables are the same as in (1). I allow the controls to have a different effect across exchange rate regimes and to impact both the intercept and the degree of mean reversion (autoregressive coefficient). The estimates can be found in Table 4, in which they are compared to a specification which considers controls that have been typically used in the literature (financial account openness,

stops are identified using information on the financial account, which is linked to the current account via the balance of payments identity. However, both the degree of freedom given by the possibility to smooth shocks using a country´s international reserves position, and the results of difference-in-Sargan tests performed during the implementiation of a 2SLS strategy in the robustness checks section point to the exogeneity of the variable.

[16] For example, we have seen in the aggregate sample and in the group of non-industrial countries that countries under fixed exchange rate regimes tend to display significantly larger trade openness, as measured by the ratio of exports and imports over GDP. This could respond, for example, to the effect of nominal exchange rates' stability in fostering trade. Additionally, it could also be argued that a country that is more open to international trade could use its advantages and find it easier to correct current account imbalances. Hence, by controlling for trade openness (at least using the described ratio), we would be "cleaning" the estimates of the impact of FX arrangements on the dynamics of CA balances from this channel. The same logic applies to controlling for the absolute size of CA imbalances and all variables that are not simply correlated to the regime choice but could potentially be a consequence of it.

[17] One could also argue that a certain degree of "exogenous" openness to trade could influence the choice of the FX regime as well as the dynamics of the current account, and hence it would be appropriate to control for it. One option is to rely on the size of the population of each country, which is found to be significantly negatively correlated with trade (as bigger countries are more auto sufficient). However, by including an interaction of the lagged current account balance with population size in the main regression I find that this term is not significant and it does not alter the main results.

trade openness and the absolute size of current account balances).

Table 4: Complete model

	Complete specification			Standard specification		
	All	Industrial	Non-industrial	All	Industrial	Non-industrial
$Fix_{i,t}{*}ca_{i,t-1}$	0.73***	0.66***	0.72***	0.54**	0.57***	0.51**
	(0.051)	(0.050)	(0.053)	(0.230)	(0.156)	(0.238)
$Float_{i,t}{*}ca_{i,t-1}$	0.59***	0.79**	0.57***	0.53***	0.19	0.48***
	(0.046)	(0.077)	(0.049)	(0.124)	(0.369)	(0.165)
$Fix_{i,t}{*}SS_{i,t}{*}ca_{i,t-1}$	−0.42***	-0.06	−0.40***			
	(0.084)	(0.097)	(0.087)			
$Float_{i,t}{*}SS_{i,t}{*}ca_{i,t-1}$	-0.10	−0.28**	-0.06			
	(0.100)	(0.107)	(0.113)			
$Fix_{i,t}{*}KAopen_{i,t}{*}ca_{i,t-1}$	−0.04***	0.06***	−0.04***	-0.02	0.06***	-0.03
	(0.010)	(0.015)	(0.010)	(0.017)	(0.018)	(0.018)
$Float_{i,t}{*}KAopen_{i,t}{*}ca_{i,t-1}$	0.05***	0.03**	0.06***	0.04**	0.11*	0.03
	(0.011)	(0.010)	(0.014)	(0.017)	(0.056)	(0.022)
$Fix_{i,t}{*}Open_{i,t}{*}ca_{i,t-1}$				0.22	0.16	0.22
				(0.199)	(0.176)	(0.201)
$Float_{i,t}{*}Open_{i,t}{*}ca_{i,t-1}$				0.07***	0.65	0.10**
				(0.028)	(0.426)	(0.043)
$Fix_{i,t}{*}\|ca_{i,t}\|{*}ca_{i,t-1}$				−0.21***	-0.65	−0.19***
				(0.049)	(0.873)	(0.056)
$Float_{i,t}{*}\|ca_{i,t}\|{*}ca_{i,t-1}$				-0.25	1.77**	-0.17
				(0.334)	(0.761)	(0.414)
$H_0^1 : \rho_0 = \rho_1$ (p-value)	0.029	0.213	0.018	0.956	0.291	0.868
$H_0^2 : \rho_0 + \theta_{2,0} = \rho_1 + \theta_{2,1}$ (p-value)	0.124	0.374	0.158			
Observations	3,459	690	2,769	3,434	690	2,744
R^2	0.58	0.87	0.57	0.59	0.87	0.58

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. The first null corresponds to the hypothesis of equal speed of mean reversion under no sudden stop, while the second one is the analog for sudden stop cases.

As it can be seen in Table 4, the picture changes significantly: both in the aggregate and in non-industrial countries, fixed exchange rate regimes are associated with a lower speed of CA mean reversion, while the difference of the autoregressive coefficients across exchange rate arrangements is significant at high confidence levels (H_0^1 in Table 4). When considering industrial countries we are no longer able to reject the null hypothesis of an equal degree of CA mean reversion across exchange rate regimes. The contrast is worth noting: we do not see these results when considering the standard specification, in line with findings by CW. In this respect, it is interesting to see that the intuition that sudden stops could potentially mask fixed exchange rate regimes' slow current account mean reversion is borne out by the data. That is, focusing on the complete specification, while the autoregressive coefficient (ρ_j) points to a significantly faster reversion of the current account under floating FX regimes (H_0^1 in Table 4), if we consider mean reversion during sudden stop episodes ($\rho_j + \theta_{2,j}$) we see that coefficients are not significantly different (H_0^2 in Table 4) and that fixed exchange rate regimes are associated with less persistent current account balances.

Regarding control variables, and focusing on non-industrial countries, sudden stops display the expected negative sign: they prompt a faster current account mean reversion, especially for countries under fixed exchange rate regimes. In contrast, the degree of financial openness has different effects on the CA across exchange rate regimes: it spurs a faster current account adjustment under fixed regimes, while it increases the persistence of CA balances under floating regimes. This difference might respond to the relative strength of two opposing effects: on the one hand, allowing for greater financial openness could increase the exposure to global shocks (given the ease with which foreign investors can unwind positions) and hence result in a faster mean reversion of the current account. However, increased access to foreign markets might also allow agents to decouple investment from local savings, increasing the likelihood of developing persistent external imbalances.

Hence, I find that floating exchange rate schemes consistently deliver a faster current account mean reversion among non-industrial countries. This supports the validity of the so-called Friedman's hypothesis, while it is compatible with the (also supportive) evidence that fixed exchange rate regimes tend to display larger current account imbalances and are more prone to suffer abrupt and costly CA reversals. Moreover, the magnitude of the difference in persistence of CA balances across FX arrangements is not negligible: the half-life of a 1% shock to the current account is approximately 14 months under flexible exchange rate regimes, while this figure almost doubles to around 25 months under fixed exchange rate arrangements.

Therefore, my results challenge the pioneering work by CW, which claims that there is not a significant link between the exchange rate regime and the persistence of current account imbalances.

5 Robustness checks

5.1 Alternative exchange rate regimes groupings and classifications

I repeat the estimation of (2) both using alternative "bipolar" groupings of exchange rate regimes and considering three-way classifications. This should facilitate comparisons with the rest of the literature, and address concerns that results might be driven by a particular exchange rate regime grouping.

I begin by re-estimating the main specification using the exact three-way grouping of IRR's exchange rate regime classification proposed by CW to show that results do not respond to an arbitrary splitting of the "grey zone" of intermediate regimes but is driven by the most "polar" cases, which are more confidently labeled as floating or fixed FX regimes (See Appendix A1 for details). The specification to be estimated is exactly the same as in (2), with the only difference that now there is an additional dummy variable corresponding to the so-called "intermediate" exchange rate arrangements. The results can be found in Table 5, column (1).

We see that coefficients are ordered in a monotonic way, such that higher exchange rate "fixity" is associated with an increased persistence of the current account. It is still the case that the persistence of the current account under floating exchange rate regimes is significantly lower than under alternative arrangements (as shown by the rejection of the corresponding null hypothesis, (H_0 in Table 5)). This supports Friedman's hypothesis and addresses concerns that my main results might have been driven by intermediate exchange rate regimes instead of "pure" fixed/floating ones.

Table 5: Alternative regime groupings and classification, non-industrial countries

	3-way (1)	Interm. fix (2)	Interm. float (3)	Interm. drop (4)	IMF bipolar (5)	IMF 3-way (6)	LYS (7)
$Fix_{i,t}{*}ca_{i,t-1}$	0.73***	0.72***	0.74***	0.73***	0.67***	0.66***	0.54***
	(0.072)	(0.051)	(0.068)	(0.079)	(0.054)	(0.060)	(0.051)
$Interm_{i,t}{*}ca_{i,t-1}$	0.69***					0.69***	
	(0.059)					(0.097)	
$Float_{i,t}{*}ca_{i,t-1}$	0.53***	0.53***	0.60***	0.51***	0.47***	0.47***	0.44***
	(0.058)	(0.058)	(0.033)	(0.059)	(0.035)	(0.035)	(0.042)
$H_0 : \rho_0 = \rho_1$ (p-value)	0.029	0.013	0.046	0.032	0.025	0.014	0.114
Observations	2,769	2,769	2,769	1,483	3,170	3,170	2,560
R^2	0.57	0.57	0.57	0.68	0.51	0.52	0.55

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. LYS stands for Levy-Yeyati & Sturzenegger. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

A second robustness check in this line repeats the estimation of (2) using alternative bipolar exchange rate regime classifications. The bipolar categorization used so far groups together the extremes of IRR's coarse classification (which has four relevant categories, see Appendix A1). I now explore different possibilities, assigning all intermediate categories to either the fixed or the floating poles. The results, displayed in columns (2) and (3) of Table 5, continue to display a significantly faster current account mean reversion under flexible exchange rate regimes. The dropping of the intermediate category in order to perform a direct "poles" comparison yields the same result yet again (see column (4) in Table 5).

When re-estimating (2) using data on exchange rate regimes from IMF's AREAR[18] I find that floating FX regimes continue to be associated with a significantly faster CA mean reversion among non-industrial countries, both when using a bipolar and a three-way grouping of the FX regime categories (see columns (5) and (6) in Table 5). It is also worth noting that the autoregressive coefficient of the current account decreases under both regimes with respect to the previous estimation, suggesting a lower persistence of current account imbalances in general, although the difference between floating and fixed regimes remains highly significant (H_0 in Table 5). These findings add to our confidence in the results presented in Section 4.2.

Finally, when looking at LYS' classification I find that floating exchange rate regimes continue to be associated with a faster current account adjustment if I group the four relevant FX categories in a bipolar fashion.[19] However, this result is sensitive to aggregation, as it disappears when considering three and four-way category groupings. We also continue to observe a lower persistence in current account balances across all FX regimes when compared to IRR's database (as it was the case with IMF's data), although now the difference between autoregressive coefficients is narrower (see column (7) in Table 5).

[18] See Appendix A for a description of the database and of the alternative groupings of FX arrangements.

[19] The authors classify country-year observations as belonging to one of four categories: "float", "dirty float", "dirty/crawling peg" and "fix". In the "bipolar" classification I group the first two categories under "floating" regimes, while the remaining two are labelled as "fixed".

5.2 Correction for outliers and sample selection

I now check the robustness of the results to the exclusion of outliers. I alternatively consider the distribution of current account balances and the existence of special countries that could have particular dynamics on their own. In the first case, I repeat the estimation of equation (2) after having Winsorized[20] the tails of the distribution of current account balances in order to "correct" for both the lowest and highest 0.5% of observations. In column (1) of Table 6 we can see that despite the fact that the persistence of the CA balances under fixed FX regimes decreases as expected,[21] the difference with respect to the dynamics under flexible arrangements remains consistent with Friedman's hypothesis.

Additionally, I alternatively drop observations corresponding to both main oil exporters (given the extreme dependence of their current account balances on volatile oil prices) and small countries as measured by their average GDP[22] (given the outstanding importance to their external positions of foreign aid or coordinated debt relief programs, for example). We see in columns (2) and (3) in Table 6 that results remain in line with Friedman's hypothesis.[23]

Table 6: Outliers' correction and sample selection, non-industrial countries

	Winsorized $ca_{i,t}$	Ex- oil	Ex- small
	(1)	(2)	(3)
$Fix_{i,t}{*}ca_{i,t-1}$	0.66***	0.69***	0.73***
	(0.032)	(0.062)	(0.059)
$Float_{i,t}{*}ca_{i,t-1}$	0.57***	0.60***	0.56***
	(0.046)	(0.027)	(0.052)
$H_0 : \rho_0 = \rho_1$ (p-value)	0.122	0.149	0.015
Observations	2,769	2,580	2,569
R^2	0.71	0.68	0.53

Note: Dependent variable: $ca_{i,t}$ (winsorized at the 0.5% tails in column (1)); only selected coefficients displayed. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

[20] The Winsorization strategy deals with outliers by assigning all data above (below) certain percentile the value of the observation corresponding to that particular percentile. It is sometimes preferred to trimming as it does not result in a loss of observations.

[21] By "correcting" large CA deficits/surpluses we are not considering what tend to be high persistence episodes once sudden stops are controlled for. Since they are more likely to take place under fixed FX regimes (at least for non-industrial countries, as seen in Section 3), it was expected that the speed of mean reversion of the CA balances would increase.

[22] We drop the smallest 18 countries (10% of our 180-country sample) ranked by their historic GDP average and the top 15 current oil exporters given the lack of reliable historical data. See Appendix A for the relevant country lists.

[23] We can see that the p-value of the test for different speeds of CA adjustment across FX regimes increases marginally when excluding the oil exporting countries, such that we no longer reject an equal degree of mean reversion at the usual confidence levels. However, it is reassuring to see that point estimates are only slightly different to those obtained in the main specification, and hence the increase in the p-values responds mostly to the expected increase in standard errors that results from dropping about 7% of the observations.

5.3 Alleviating the mechanical bias

The standard estimation of autoregressive specifications in a panel-data context might produce biased coefficients given the mechanical correlation in the errors induced by the presence of fixed effects. In order to address this concern, I will follow two strategies: I will re-estimate the main specification both by re-writing the model in first differences (and using a 2SLS approach), and, alternatively, I will discard the fixed effects while trying to control for country-specific "equilibrium" current account balances (which in the hypothetical case of perfect identification would work as the fixed effects themselves).

In the first case the relevant specification becomes:[24]

$$\Delta ca_{i,t} = \rho \Delta ca_{i,t-1} + \theta_2 \Delta(SS_{i,t} ca_{i,t-1}) + \theta_3 \Delta(KAopen_{i,t} ca_{i,t-1}) + \zeta_{i,t} + \Delta \upsilon_{i,t} \quad (3)$$

where Δ is a first-difference operator and variables maintain the meaning given before. This equation is be estimated separately for observations under each of the exchange rate regimes in order not to overload the specification with additional interactions. Again, there is a mechanical correlation between the three regressors, which contain the lag of the current account balance, and the error term, which has the corresponding residual as a component. Therefore, I rely on internally generated instruments in order to estimate the relevant coefficients appropriately; in this case I will use the information given by $ca_{i,t-2}$, $KAopen_{i,t-1}{*}ca_{i,t-2}$, $SS_{i,t-1}{*}ca_{i,t-2}$, Δ $(KAopen_{i,t-1}{*}ca_{i,t-3})$ and Δ $ca_{i,t-2}$. The results can be found in Table 7.

Table 7: Equation in first differences, 2SLS estimation

	All		Industrial		Non-Industrial	
	Float	Fix	Float	Fix	Float	Fix
$ca_{i,t-1}$	0.87***	0.77***	0.93*	0.74***	0.59***	0.76***
	(0.286)	(0.090)	(0.475)	(0.172)	(0.175)	(0.092)
$SS_{i,t}{*}ca_{i,t-1}$	-0.19	−0.28*	0.22	−0.21***	-0.11	−0.28*
	(0.175)	(0.165)	(0.175)	(0.034)	(0.147)	(0.165)
$KAopen_{i,t}{*}ca_{i,t-1}$	0.05	−0.06***	−0.67***	-0.15	-0.16	−0.07***
	(0.225)	(0.022)	(0.235)	(0.121)	(0.143)	(0.022)
Observations	876	2,316	247	397	629	1,919
J-Hansen test (p-value)	0.828	0.237	0.176	0.055	0.289	0.289
C-Test (p-value)	0.540	0.958	0.144	0.057	0.388	0.862

Note: Dependent variable: $\Delta ca_{i,t}$; only selected coefficients displayed. Instruments used: $ca_{i,t-2}$, $KAopen_{i,t-1}{*}ca_{i,t-2}$, Δ $(KAopen_{i,t-1}{*}ca_{i,t-2})$, $SS_{i,t-1}{*}ca_{i,t-2}$ and Δ $ca_{i,t-2}$. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. C-Test null hypothesis is that $SS_{i,t-1}{*}ca_{i,t-2}$ is an exogenous instrument assuming the rest are so.

We see that although standard errors increase, we continue to observe a faster mean reversion of the current account under flexible exchange rate regimes in non-industrial countries, while the difference between point estimates across FX regimes remains quantitatively important.

[24] We no longer allow the controls to affect the intercept given that their interaction was not significant in the standard estimation [Equation (2)] and considering the need to stick to a parsimonious specification.

Another point worth mentioning is the rejection of the null hypothesis of endogeneity of the instrument containing the sudden stop identificator (C-Test in Table 7), which alleviates the concerns surrounding this issue.

As explained above, while I usually control for unobserved cross-sectional heterogeneity by including country fixed-effects, this strategy might create a bias in the estimation. However, we can think of these fixed-effects as country-specific equilibrium long run values towards which current account balances revert to. Hence, one possible strategy is to try and estimate this equilibrium balances as a function of countries' structural characteristics, and use these fitted values as a control in the main specification while dismissing the country dummies that capture the fixed effects and create a bias in the estimation.

At this stage I draw from Lee et al. (2008), who outline the main drivers of equilibrium current account balances, which, as commented before, do not need to be zero. The authors point to several determinants, of which I pick the ones that are structural or that move slowly: old-age dependency ratio (the quotient of people over 65 years-old to those over 15), population growth, relative per capita PPP-adjusted GDP in relation to that of the US, "ageing rate" (expected change in the old-age dependency ratio between t and $t + 20$, proposed by Lane and Milesi-Ferretti (2012)) and a dummy variable for financial centers (See Appendix B for a detailed description of the rationale behind each variable and the outcome of the first step estimation). All variables are considered using 5-year blocks (in order to drive business cycle fluctuations away) and, when appropriate, are taken in deviations from the weighted average of main trading partners' values, as we need relative variations in order for a relative variable by definition such as the current account balance to change. After obtaining the fitted values for the country-specific equilibrium current account balances corresponding to these blocks I take the average across the whole time series and control for it in the main specification (while dismissing the country fixed-effects).[25] The estimates are displayed in Table 8.

Focusing on the group of non-industrial countries we can see that the fitted values for equilibrium current account balances are highly significant. In addition, we see that the ordering of the CA series' autoregressive coefficients discriminated by exchange rate regime remains consistent with Friedman's hypothesis (and their difference highly significant, as shown by the row corresponding to H_0 in Table 8).

5.4 Simultaneity and reverse causality

I carry out two additional exercises that address the possibility of the existence of a third variable driving changes in both the exchange rate regime and the dynamics of current account balances. In order to do so I re-estimate the main specification by (alternatively) incorporating country-specific time trends to the current account time series and, last, by devising a method to control for common unobservable shocks.

As can be seen in Table 9, the inclusion of country-specific time trends does not alter neither the ordering of the coefficients of CA mean reversion discriminated by FX regimes nor the high

[25] In another specification I allow these estimates to be time-varying, using the equilibrium CA values by blocks. Results do not change substantially with respect to the reported specification.

Table 8: Controlling for equilibrium CA

	All	Industrial	Non-industrial
ca^{eq}	0.20***	0.05	0.19***
	(0.042)	(0.086)	(0.050)
$Fix_{i,t}*ca_{i,t-1}$	0.88***	0.69***	0.88***
	(0.055)	(0.042)	(0.057)
$Float_{i,t}*ca_{i,t-1}$	0.69***	0.88***	0.67***
	(0.038)	(0.115)	(0.041)
$Fix_{i,t}*SS_{i,t}*ca_{i,t-1}$	−0.59***	-0.09	−0.57***
	(0.047)	(0.091)	(0.052)
$Float_{i,t}*SS_{i,t}*ca_{i,t-1}$	-0.14	−0.28***	-0.11
	(0.095)	(0.119)	(0.119)
$Fix_{i,t}*KAopen_{i,t}*ca_{i,t-1}$	−0.04***	0.06***	−0.05***
	(0.013)	(0.015)	(0.012)
$Float_{i,t}*KAopen_{i,t}*ca_{i,t-1}$	0.4***	0.3**	0.4***
	(0.009)	(0.011)	(0.011)
$H_0 : \rho_0 = \rho_1$ (p-value)	0.003	0.177	0.002
Observations	3,165	690	2,475
R^2	0.54	0.87	0.52

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

significance of the difference between them. At the same time, the value of the coefficients drops significantly and evenly across all FX regimes, suggesting a faster mean-reversion of current account balances when measuring them in deviations from country-specific time trends, as it could be expected in the first place.

When it comes to the control for common unobservable shocks the strategy pursued is the following: I first select variables which behavior could help identify countries that share exposure to certain shocks. I focus on terms of trade, the trade openness index and the financial openness index.[26] After elaborating rankings that sort countries along these dimensions,[27] I generate dummy variables that signal the belonging to "bins" defined by the stratification of the mentioned rankings (I alternatively use specifications with 10 and 20 bins). The underlying idea is that countries belonging to the same "bin" share characteristics that make them prone to

[26]Similar changes in terms of trade can group countries with similar composition of exports/imports, which results in a common exposure to proper terms of trade shocks, weather shocks and resource exhaustion trends, among others. At the same time, countries with comparable degrees of trade openness are prone to suffer global trade booms/disruptions in a similar way, while the same is true for countries undergoing trade liberalizations or increased protectionism (as captured by the change in the trade openness index). Finally, a similar degree of financial openness implies common exposure to global financial shocks, such as global fund trends and flight-to-quality episodes (again, the process of capital account liberalization/closing could also indicate similar exposure to global shocks). All of the mentioned common shocks (or common degrees of exposure to a global magnitude shock) certainly affect current account dynamics while they could also have an impact on exchange rates' movements.

[27]I consider the growth rate for the terms of trade and both changes and levels for the openness indexes, both using the whole sample and five-year blocks.

Table 9: Country specific time trends

	All	Industrial	Non-industrial
$Fix_{i,t}{*}ca_{i,t-1}$	0.61***	0.61***	0.61***
	(0.051)	(0.063)	(0.054)
$Float_{i,t}{*}ca_{i,t-1}$	0.46***	0.76***	0.44***
	(0.050)	(0.104)	(0.055)
$Fix_{i,t}{*}SS_{i,t}{*}ca_{i,t-1}$	−0.30***	-0.05	−0.28***
	(0.072)	(0.094)	(0.075)
$Float_{i,t}{*}SS_{i,t}{*}ca_{i,t-1}$	-0.06	−0.33***	0.01
	(0.094)	(0.110)	(0.107)
$Fix_{i,t}{*}KAopen_{i,t}{*}ca_{i,t-1}$	−0.05***	0.06***	−0.05***
	(0.001)	(0.018)	(0.001)
$Float_{i,t}{*}KAopen_{i,t}{*}ca_{i,t-1}$	0.01	0.01	-0.01
	(0.014)	(0.017)	(0.021)
$H_0 : \rho_0 = \rho_1$ (p-value)	0.015	0.302	0.009
Observations	3,459	690	2,769
R^2	0.61	0.88	0.60

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

suffer similar shocks. Finally, I re-estimate the main specification replacing the continent-year fixed effects for interactions between year dummies and the generated dummy variables that indicate similarities, in the spirit of controlling for these shared shocks.

I report the results of this exercise in Table 10. It can be seen that results are robust to this last check: autoregressive coefficients of the CA time series continue to be ordered in the expected way across FX arrangements, and the difference between them continues to be significant (see row corresponding to H_0).

Finally, I repeat the estimation of Equation (2) dropping the observations for which there has been a change in the exchange rate regime with respect to the previous year. In principle this could help address concerns of simultaneity and of potential cases of reverse causality in which a change in the current account position could prompt a revision of the FX regime. Once more, it is reassuring to see that results are virtually unchanged with respect to the main specification.

Overall, it can be seen that the main finding that floating exchange rate regimes are associated with a significantly faster CA mean reversion in non-industrial countries is robust to a battery of checks. This increases the confidence in the empirical validity of Friedman's hypothesis among this group of countries.

Table 10: Contemporaneous shocks' control, non-industrial countries

$Fix_{i,t}{*}ca_{i,t-1}$	0.65***	0.75***	0.73***	0.71***	0.74***	0.74***	0.73***
	(0.047)	(0.051)	(0.047)	(0.052)	(0.055)	(0.053)	(0.058)
$Float_{i,t}{*}ca_{i,t-1}$	0.51***	0.61***	0.62***	0.53***	0.56***	0.57***	0.57***
	(0.065)	(0.056)	(0.071)	(0.044)	(0.046)	(0.055)	(0.049)
$H_0 : \rho_0 = \rho_1$ (p-value)	0.038	0.061	0.133	0.008	0.005	0.023	0.011
Observations	1,805	2,758	2,769	2,712	2,765	2,769	2,714
R^2	0.79	0.64	0.64	0.68	0.59	0.62	0.56
Common variable	ToT	Open	Open	Open	KA open	KA open	KA open
Format	g	level	level	g	level	level	g
Sample	5 yr-blocks	5 yr-blocks	Whole	5 yr-blocks	5 yr-blocks	Whole	5 yr-blocks

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. Number of 'bins' used: 20. ToT stands for Terms of Trade and g does so for growth rate. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively. Regressions using 10 bins available upon request.

6 Channels

Having found strong evidence linking flexible exchange rate regimes to a faster adjustment of current account balances in non-industrial countries, it is interesting to study potential channels through which this could be taking place. The idea put forward by Friedman is that flexible FX regimes partially unwind the rigidity of nominal prices, relying on international trade as the adjustment mechanism. This responds to an expenditure-switching logic: changes in the nominal exchange rate alter the relative prices of foreign and home-produced goods, spurring corrective substitution by consumers both locally and abroad[28] which pushes trade balances towards zero.

However, the effect of the exchange rate regime on the dynamics of the current account need not be limited to this "trade channel". For example, deciding between a fixed and a floating exchange rate regime could have an impact on the financing of deficit balances, directly affecting their persistence. The large number of CA deficit balances under fixed FX arrangements suggests that a "credit channel" could be a potential second mechanism through which Friedman's hypothesis might be working.

I now proceed to describe the underlying logic of the proposed channels and of the proxies used to quantify them.

The trade channel basically reflects the substitution carried out by local and foreign consumers when facing changing international relative prices. I split this effect into a "home" expenditure switching channel (which captures the substitution in consumption decisions taking place in the "home" country) and a "foreign" expenditure switching channel (which captures the same type of substitution spurred on the rest of the world).

- *Home expenditure switching* ($proxy_{i,t} = \left| g^{Cnt}_{i,t} - g^{M}_{i,t} \right|$, where $g^{Cnt}_{i,t}$ represents the growth rate of non-tradable goods' consumption and $g^{M}_{i,t}$ the growth rate of imports):

[28] Countries running a CA deficit (surplus) might be expected to experience a depreciation (appreciation) of their currency if they allow this to float, causing a change in international relative prices that should boost (reduce) exports and reduce (boost) imports, generating the needed correction of CA balances.

when a currency depreciates, locally-produced goods become cheaper in relation to foreign alternatives, and consumers tend to substitute in favour of the former, reducing imports and increasing the trade balance. This mechanism tends to generate corrective movements under floating exchange rate regimes, but it is less important in fixed ones.

I proxy for this effect by measuring the absolute value of the difference between imports' growth and the growth rate of the consumption of non-tradables, which tries to proxy for the consumption of home-produced substitutes of imported goods.[29] The idea is that these two variables would move hand-in-hand with a fixed arrangement (absent any inflation differentials), but would otherwise display different growth rates when substitution is taking place in the event of a movement in the nominal exchange rate. Hence, we expect larger values of the proxy to be associated to a faster CA mean-reversion, as more substitution should result in less persistence of existing imbalances.

- *Foreign expenditure switching* ($proxy_{i,t} = \left| g_{i,t}^{PX} - g_{i,t}^{X} \right|$, where $g_{i,t}^{PX}$ stands for the growth rate of "predicted exports" and $g_{i,t}^{X}$ for the growth rate of actual exports):

  this channel is the external counterpart of the mechanism described above. Movements in the nominal exchange rate also alter the price of a country's exports in relation to other foreign suppliers and the importer's home-produced goods. This affects the international demand for the exporter's goods and, hence, its trade balance.

  I proxy for this effect by measuring the absolute value of the difference between exports growth and the growth rate of "predicted exports", that is, a proxy of the expected foreign sales a country would realize in case its international competitiveness did not change (as it would be the case, at least nominally, in a world of fixed exchange rates). This figure is obtained by computing the weighted average of a country's trading partners' import behavior once the exports from the country in consideration have been excluded. I use the trading shares of the exporting country's foreign sales as weights: $g_{i,t}^{PX} \equiv \sum_{j} share_{i,t-1}^{j}$ $g_{j,t}^{M}$.[30] Therefore, if a depreciation of the home currency took place we would expect the resulting increase in competitiveness to generate a growth in exports above expectations (and the opposite in case of an appreciation). In terms of the proxy, we would expect an increase in the absolute value of the difference in the event of an expenditure switching behavior by the rest of the world. Hence, we expect larger values of the proxy to be correlated with a faster mean-reversion of the current account (relying on the same logic outlined above).

The "credit channel" reflects the potential effect that an exchange rate regime might have

[29] Ideally, we would like to compare the behaviour of imports to the consumption of home-produced tradable goods, which would be a closer substitute of the imported foreign goods. However, given the lack of consumption data disaggregated by its origin, we use data on non-tradables consumption, as it should react in a similar fashion to the consumption of home-produced tradable goods against movements in "home" (domestic) demand. The consumption categories labeled as non-tradable are specified in a note to Table 13.

[30] I use lagged shares in order to avoid them being affected by the contemporaneous import behaviour they are actually weighting. Index j identifies country i's different trading partners, which import behaviour at time t excluding trade with i is quantified by $g_{j,t}^{M}$. Analogously, $share_{i,t-1}^{j}$ represents country i's exports to j as a share of its external sales (all considered in time $t-1$ as explained above).

on the cost of financing current account deficits. This channel might be empirically important given the large share of negative balances in our sample. I split this mechanism into a "credit demand" channel and a "credit supply" channel (notice that both terms are used very loosely).

- *Credit demand channel* ($proxy_{i,t} = \sigma^2_{ri,t}$, where $\sigma^2_{ri,t}$ represents the standard deviation of the real interest rate on loans):

  a higher volatility of real interest rates raises the cost of incurring in debts by increasing the uncertainty regarding the repayment burden (Fernandez-Villaverde et al (2011)). Therefore, a higher real interest rate volatility could be associated to a lower persistence of current account deficits, as its financing would become more expensive.

  I proxy for this effect by using the annual standard deviation of real interest rates on loans for country-year data points for which I have information covering 6 months or more, and expect larger values of the proxy to be associated with a faster current account adjustment.

- *Credit supply channel* ($proxy_{i,t} = yield_{i,t}$, where $yield_{i,t}$ stands for the yield of the generic 5-year sovereign bond denominated in local currency):

  a higher borrowing cost makes the financing of current account deficits more expensive, which could potentially reduce their persistence.

  In order to proxy for this I use data on yields of local-currency-denominated generic 5-year sovereign bonds. We could expect higher yields to be correlated to a faster mean-reversion of the current account, as higher financing costs could result in a decreased persistence of deficit balances.

In terms of the estimation, I use the same strategy as before: I (alternatively) interact lags of current account balances with the proxies specified above, analyzing whether they affect the persistence of the CA. For those channels with a significant effect on the dynamics of the current account, I proceed to a second step in which I analyze the extent to which these proxies vary across exchange rate regimes.

Algebraically, the first step deals with the estimation of Equation 4:

$$ca_{i,t} = \rho_0 + \rho_1 ca_{i,t-1} + \theta_1 proxy_{i,t} + \rho_2 proxy_{i,t} ca_{i,t-1} + \epsilon_i + \zeta_{i,t} + \upsilon_{i,t} \quad (4)$$

where $proxy_{i,t}$ represents the proxy quantification of the channels to be tested [31] while the rest of the variables keep their usual meaning. Results can be found in Table 11.

Coefficients display the expected (negative) sign in all cases, and their significance varies across channels and country groups. There is strong evidence of a "foreign" expenditure switching behaviour for all country groups, while an analogue "home" expenditure switching behaviour

[31] In the case of the channels' proxies we use winsorized data at the 1% and 99% tails (except for the high-precision and scarce bond yield data).

Table 11: Channels' first step

Industrial				
	HES	FES	Credit D	Credit S
$proxy_{i,t} * ca_{i,t-1}$	-0.61	-1.00^{**}	-0.17^{**}	-0.02
	(0.992)	(0.425)	(0.062)	(0.012)
R^2	0.91	0.79	0.86	0.94
Observations	359	556	471	345
Non-industrial				
	HES	FES	Credit D	Credit S
$proxy_{i,t} * ca_{i,t-1}$	-0.31	-0.33^{***}	0.00	-0.03^{**}
	(0.393)	(0.076)	(0.005)	(0.012)
R^2	0.89	0.43	0.59	0.95
Observations	391	2,394	2,318	129

Note: Dependent variable: $ca_{i,t}$; only selected coefficients displayed. HES (FES) stands for Home (Foreign) Expenditure Switching. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

does not seem to take place. When it comes to the credit channels, there is a significant effect of "credit demand" on current account dynamics among industrial countries, while the "credit supply" seems to have a significant impact on the mean reversion of current account balances of non-industrial countries and in the aggregate.[32]

Therefore, there is evidence of an influence of the proposed channels on the dynamics of the current account. It now remains to be seen whether these proxies differ significantly across exchange rate regimes, as we would expect if they were the channels behind the findings supportive of Friedman's hypothesis that were presented in Section 4.

As regards priors, we would expect flexible regimes to display a higher expenditure switching (both "home" and "foreign"), as explained in the description of the channels. At the same time, the reduction in exchange rate risk and the potential link with fiscal responsibility could lead fixed exchange rate regimes to access foreign credit at lower rates (higher "credit supply"; that is, lower yields). The exchange rate stability under a fixed FX regime could decrease the volatility of interest rates as their component that is linked to the expected depreciation of the domestic FX rate should be compressed and less variable.[33]

In order to test for this second stage the following equation will be estimated:

$$proxy_{i,t} = \sum_j \theta_{1,j} reg^j_{i,t} + \theta_2 C_{i,t} + \epsilon_i + \zeta_{i,t} + \upsilon_{i,t} \quad (5)$$

[32] It should be noted that estimates of channels' first and second steps could be subject to selection biases given the fall in the number of observations with respect to the estimation of Equation (2). A priori it looks as if this issue was not as important for the foreign expenditure switching and "credit demand" channels.

[33] Actually this last prior is not as strong as the previous ones since one could also make the case that given an absence of capital controls/FX intervention, the open economies' trilemma tells us that monetary independence is lost as policy rates need to adjust to defend the exchange rate peg in the face of shocks (potentially increasing the volatility of interest rates).

where main variables correspond to their previous definitions and $C_{i,t}$ stands for the degree of financial openness (as controlled for in Equation (2)), which is only present in the estimation of the credit channels. I control for this because while we have already seen that the degree of financial openness varies across exchange rate regimes, it is also expected to affect both the bond yields (which should incorporate any potential difficulty to unwind positions) and the volatility of interest rates (given the well-known open economies trilemma), acting as a potential source of bias. Its lack of link with the trade channels suggests that I should not control for it in the corresponding equations.

Table 12: Channels' second step

Industrial				
	HES	FES	Credit D	Credit S
Constant	0.48***	0.05**	1.78	6.33***
	(0.014)	(0.022)	(1.138)	(1.333)
$Fixed_{i,t}$	-0.01	-0.03^{*}	-0.94	4.26
	(0.009)	(0.014)	(1.107)	(2.696)
R^2	0.76	0.33	0.51	0.94
Observations	374	694	485	346
Non-industrial				
	HES	FES	Credit D	Credit S
Constant	0.33***	0.05	2.51***	10.94***
	(0.042)	(0.040)	(0.386)	(0.935)
$Fixed_{i,t}$	-0.004	-0.04^{**}	0.06	-1.51
	(0.025)	(0.018)	(0.395)	(1.204)
R^2	0.54	0.31	0.41	0.93
Observations	392	2,726	2,107	134

Note: Dependent variable: $proxy_{i,t}$; only selected coefficients displayed. HES (FES) stands for Home (Foreign) Expenditure Switching. Country-clustered standard errors in parentheses. The symbols *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Table 12 reports the coefficients of the fixed exchange rate regime dummy, which acts as a differential with respect to the intercept that captures the estimated effect of floating exchange rate regimes. We can see that coefficients display the expected sign for all relevant cases:[34] foreign expenditure switching behaviour decreases under fixed exchange rate regimes, suggesting a decreased degree of substitution, while both the volatility of real interest rates and the yield of sovereign bonds are lower under fixed exchange rate arrangements. As regards significance, the foreign expenditure switching behaviour seems to be statistically higher under flexible FX regimes for all country groupings, while credit channels' standard errors are high enough so as to result in non-significant coefficients at the usual confidence levels, potentially reflecting the small number of observations from which they are identified.

Overall, we can conclude that there is evidence among non-industrial countries that flexible FX arrangements prompt corrective changes in CA balances (decreasing their persistence) via

[34] Those found to be significant in the first stage.

their effect on external trade (Friedman's hypothesis). Additionally, we cannot disregard credit acting as a potential further channel through which exchange rate arrangements might influence the persistence of current account imbalances.

7 Conclusions

The acceleration in the formation of the so-called global imbalances (the increasing absolute value of current account balances across countries) has put the question of whether exchange rate regimes affect the adjustment of the current account back into the frontline. However, far from settling disputes, recent empirical attempts to assess this issue have displayed opposing and non-definite results.

This paper contributes to the debate by showing that recent evidence against Friedman (1953)'s hypothesis, which asserts that flexible exchange rate regimes should deliver a faster mean reversion of current account balances, is not robust. In particular, I consider an alternative exchange rate regime classification, I dismiss the control for factors that could be "muting" exchange rate regimes' full effect on CA balances, and, most importantly, I address the existence of sudden stop episodes that could blur overall results in a linear framework. By doing so, I find strong evidence that current account persistence increases under fixed exchange rate arrangements for non-industrial countries. This result is robust to a battery of robustness checks. Additionally, I try to single out potential channels through which exchange rate arrangements could be influencing current account dynamics, and find that the expenditure switching effect that affects exports in the face of changing international relative prices under flexible regimes is the most robust, in line with the logic exposed by Friedman in his 1953 paper. However, trade seems not to be the only relevant channel, as I find partial evidence suggesting that credit could act as another potential avenue of influence.

As Ghosh et al. (2010) point out, it might be true that confidence in the adjustment properties of flexible exchange rate arrangements was a "faith-based initiative" for a long time (CW), but that faith seems to be ultimately confirmed by the data.

References

[1] Anderson, Harald (2008), "Exchange Policies Before Widespread Floating (1945-89)," mimeo, International Monetary Fund.

[2] Calvo, Guillermo A. and C. M. Reinhart (2002), "Fear Of Floating," *Quarterly Journal of Economics*, vol. 107 (2), pages 379-408.

[3] Chinn, Menzie D. and S.J. Wei (2013), "A Faith-based Initiative Meets the Evidence: Does a Flexible Exchange Rate Regime Really Facilitate Current Account Adjustment?," *Review of Economics and Statistics,* vol. 95(1), pages 168-184.

[4] Chinn, Menzie D. and H. Ito (2008) "A New Measure of Financial Openness," *Journal of Comparative Policy Analysis* , vol. 10 (3), pages 309 - 322. Database used corresponds to 2010 update.

[5] Clower, Erica and H. Ito (2012), "The Persistence of Current Account Balances and its Determinants: The Implications for Global Rebalancing,", ADBI Working Papers 400, Asian Development Bank Institute.

[6] Dornbusch, Rudiger and S. Fischer (1980), "Exchange Rates and the Current Account", *The American Economic Review*, Vol. 70 (5), pages 960-971.

[7] Efremidze, Levan, S. M. Schreyer and O. Sula (2011), "Sudden stops and currency crises," *Journal of Financial Economic Policy*, Emerald Group Publishing, vol. 3 (4), pages 304-321.

[8] Fernandez-Villaverde, Jesús, P. Guerron-Quintana, J. F. Rubio-Ramirez and M. Uribe, (2011), "Risk Matters: The Real Effects of Volatility Shocks," *American Economic Review*, American Economic Association, vol. 101(6), pages 2530-61.

[9] Friedman, Milton (1953), "The Case for Flexible Exchange Rates," in M. Friedman, *Essays in Positive Economics* (Chicago: The University of Chicago Press): pages 157-203.

[10] Ghosh, R. Atish , M. Terrones, and J. Zettelmeyer (2010), "Exchange Rate Regimes and External Adjustment: New Answers to an Old Debate," *The new international monetary system: Essays in honor of Alexander Swoboda*, C. Wyplosz, ed., Routledge, March 2010.

[11] Ghosh. R. Atish , M. S. Qureshi and C. G. Tsangarides (2014), "Friedman Redux: External Adjustment and Exchange Rate Flexibility," IMF Working Paper 14/146.

[12] Herrmann, Sabine (2009), "Do we really know that flexible exchange rates facilitate current account adjustment? Some new empirical evidence for CEE countries," Discussion Paper Series 1: Economic Studies 2009, 22, Deutsche Bundesbank, Research Centre.

[13] Kouri, Pentti (1976), "The Exchange Rate and the Balance of Payments in the Short Run and in the Long Run: A Monetary Approach," *Scandinavian Journal of Economics,* vol. 78, pages 280-304.

[14] Lane, Philip R. and G.M. Milesi-Ferretti (2007), "The external wealth of nations mark II: Revised and extended estimates of foreign assets and liabilities, 1970-2004," *Journal of International Economics*, Elsevier, vol. 73 (November), pages 223-250. Data used corresponds to an updated version covering 1970-2011.

[15] Lane, Philip R. and G.M. Milesi-Ferretti (2012), "External adjustment and the global crisis," *Journal of International Economics*, Elsevier, vol. 88(2), pages 252-265.

[16] Lee, Jaewoo, G.M. Milesi-Ferretti, J.D. Ostry, A.Prati and L. Ricci (2008), "Exchange rate assessments: CGER methodologies," IMF Occasional Paper No. 261.

[17] Levy-Yeyati, Eduardo and F. Sturzenegger (2005), "Classifying exchange rate regimes: Deeds vs. words," *European Economic Review*, Elsevier, vol. 49 (6), pages 1603-1635.

[18] Mu, Xiaoyi and H. Ye (2013), "Current Account Adjustment in Developing Countries : The Role of Exchange Rate Regimes," *Economic Inquiry*, Vol. 51 (2), pages 1566-1581.

[19] Reinhart, Carmen M. and K. Rogoff (2004), "The Modern History of Exchange Rate Arrangements: A Reinterpretation," *Quarterly Journal of Economics* 119(1), pages 1-48. Database updated in Ilzetzki, Ethan, C. M. Reinhart and K. S. Rogoff (2010) "Exchange Rate Arrangements Entering the 21st Century: Which Anchor Will Hold?"

8 Appendix

A Data and variables

A.1 Variables and sources

Table 13 contains a list of relevant variables used along the paper, together with their definition and data source. WDI makes reference to World Bank's World Development Indicators

database, UNPD stands for United Nations Population Division and UNSD for the Statistics counterpart. Finally, IFS makes reference to IMF's International Financial Statistics database, while PWT stands for Penn World Tables.

Figure 2 displays all categories used by IRR, as well as the two main groupings used throughout the current paper. The authors also provide a "coarse" classification which comprises four categories (see Figure 2 for reference): group 1, associated to harder pegs (from "No separate legal tender" to "De facto peg"), group 2, associated to softer pegs (from "Pre announced crawling peg" to "De facto crawling band that is narrower than or equal to +/- 2%"), group 3, associated to "dirty" floats (from "Pre announced crawling band that is wider than or equal to +/- 2%" to "Managed floating"), and group 4, which comprises the "Freely floating" category.

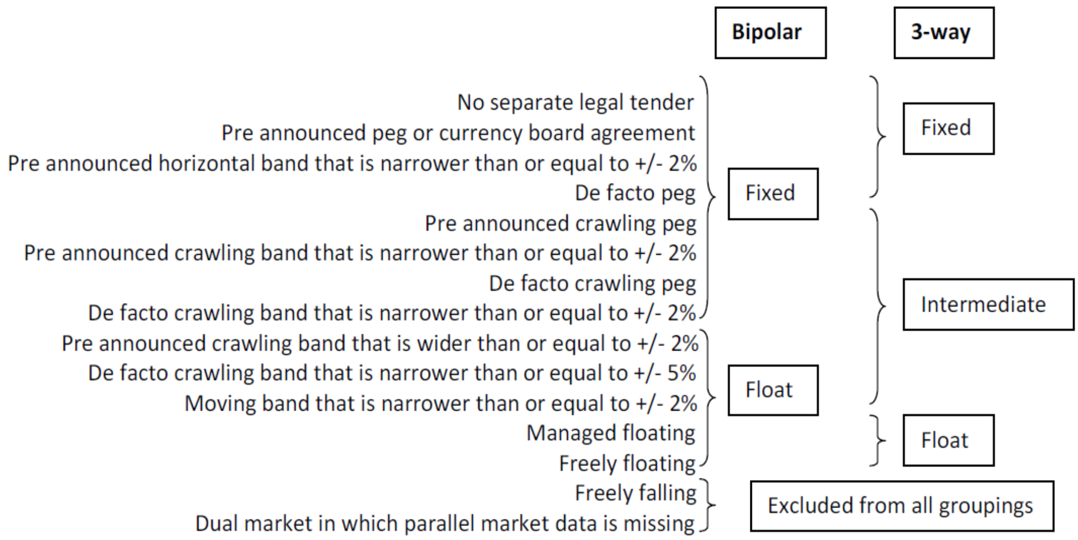

Figure 2: IRR exchange rate regimes' classification: original categories and used groupings.

IMF's *de-facto* exchange rate regime classification is part of its Annual Review on Exchange Arrangements and Exchange Restrictions (AREAR). I use a version with augmented coverage due to a backwards extension carried over by Anderson (2008). Figure 3 displays all categories used by the IMF and the two main groupings used in Section 5.

Table 13: Variables' definition and sources

Variable	Definition	Source
$CA_{i,t}$	Current account balance, current USD	WDI
$GDP_{i,t}$	Gross domestic product, current USD	WDI
$reg^{j}_{i,t}$	Dummy variable corresponding to any of the exchange rate regime categories used	IRR/LYS/IMF
$x_{i,t}$	Total exports as share of GDP	WDI
$m_{i,t}$	Total imports as share of GDP	WDI
$Open_{i,t}$	$(X_{i,t}+M_{i,t})/GDP_{i,t}$	WDI
$KAopen_{i,t}$	Financial Openness Index	Chinn & Ito (2010)
$SS_{i,t}$	Sudden stops identificator	Own calculation using IFS' financial account data
$CA^{eq}_{i,t}$	CA "equilibrium" value	Own calculation following Lee et al. (2008)
$dep_{i,t}$	Old-age dependency ratio: population +65 years old divided by population +15 years old	UNPD
$g^{pop}_{i,t}$	Population growth	UNPD
$aging_{i,t}$	Expected change in $dep_{i,t}$ between t and $t+20$	UNPD
$relatgdp^{p.c}_{i,t}$	Relative per capita GDP in relation to US', in PPP-adjusted terms	WDI
$financial_{i}$	Dummy variable identifying financial centers	Lee et al. (2008)
$ToT_{i,t}$	Terms of trade index, 2000=1	Own calculation using WDI data
$C^{NT}_{i,t}$	Households' non-tradable goods' consumption in USD, PPP-adjusted (See note for details)	Own calculation using UNSD and PWT data
$share^{j}_{i,t}$	Country j imports from country i as a percentage of country i total exports	Own calculation using NBER-UN trade data
$\sigma^{2}_{ri,t}$	Annual standard deviation of monthly data on loans' real interest rates	Own calculation using IFS data
$yield_{i,t}$	Yield of the generic 5-year sovereign bond denominated in local currency	Bloomberg

Note: The categories included as non-tradable goods are selected sub-categories of the following: Housing, water, electricity and other fuels, Health, Transport, Communication, Recreation and culture, Education, and Restaurants and hotels.

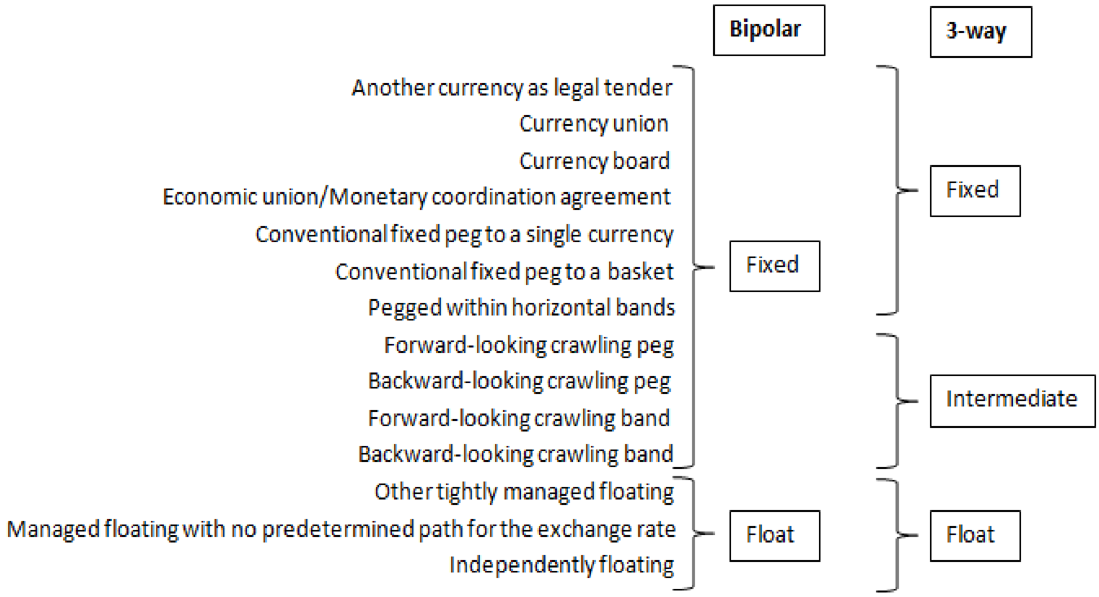

Figure 3: IMF exchange rate regimes' classification: original categories and used groupings.

A.2 Country lists

Table 14 contains a list of the countries used in the estimations, discriminating them by degree of development and also tagging them as "small" and "oil exporter" when appropriate (see Section 5 for the use of these categories).

Table 14: Country lists

Industrial countries				
Australia	Finland	Ireland	Norway**	United Kingdom
Austria	France	Italy	Portugal	United States
Belgium	Germany	Japan	Spain	
Canada	Greece	Netherlands	Sweden	
Denmark	Iceland	New Zealand	Switzerland	
Non-industrial countries				
Afghanistan	Comoros*	India	Moldova	Solomon Is.*
Albania	Congo, Rep.	Indonesia	Mongolia	Somalia*
Algeria**	Costa Rica	Iran**	Morocco	South Africa
Angola**	Cote d'Ivoire	Iraq**	Mozambique	Sri Lanka
Antigua & B.	Croatia	Israel	Myanmar*	St. Kitts & N.*
Argentina	Cyprus	Jamaica	Namibia	St. Lucia
Armenia	Czech Rep.	Jordan	Nepal	St. Vincent*
Aruba	Djibouti	Kazakhstan**	New Caledonia	Sudan
Azerbaijan**	Dominica*	Kenya	Nicaragua	Surinam
Bahamas	Dominican Rep.	Kiribati*	Niger	Swaziland
Bahrain	Ecuador	Korea, Rep.	Nigeria**	Syria
Bangladesh	Egypt	Kuwait**	Oman**	Tajikistan
Barbados	El Salvador	Kyrgyz Rep.	Pakistan	Tanzania
Belarus	Eq. Guinea	Lao PDR	Panama	Thailand
Belize*	Eritrea	Latvia	Papua N. G.	Togo
Benin	Estonia	Lebanon	Paraguay	Tonga*
Bolivia	Etiopia	Lesotho	Peru	Trinidad & T.
Bosnia & H.	Faroe Islands	Liberia*	Philippines	Tunisia
Botswana	Fiji	Libya**	Poland	Turkey
Brazil	French Polynesia	Lithuania	Romania	Uganda
Brunei D.	Gabon	Luxembourg	Russian Fed.	Ukraine
Bulgaria	Gambia*	Macao	Rwanda	Uruguay
Burkina F.	Georgia	Macedonia	Samoa*	Vanuatu*
Burundi	Ghana	Madagascar	Sao Tome & P.*	Venezuela*
Cambodia	Guatemala	Malawi	Saudi Arabia**	Vietnam
Cameroon	Guinea	Malaysia	Senegal	W. B. & Gaza
Cape Verde	Guinea-Bissau*	Maldives	Serbia	Yemen
Central Afr. Rep.	Guyana	Mali	Seychelles*	Zambia
Chad	Haiti	Malta	Sierra Leone	Zimbabwe
Chile	Honduras	Mauritania	Singapore	
China	Hong Kong	Mauritius	Slovak Rep.	
Colombia	Hungary	Mexico	Slovenia	

Note: * and ** refer to countries labeled as "small" and "oil exporters", respectively

B CA^{eq} computation

The rationale behind the use of the variables considered as potential determinants of the equilibrium CA balances is the following:

- *Demographic variables*: a higher share of economically dependent population (both old –dependency ratio- and very young –population growth-) reduces national savings and, hence, the current account balance. When it comes to the ageing variable, we expect countries where the population is getting old more rapidly to save more and display higher current account balances.
- *Relative level of PPP-adjusted per capita GDP*: this acts as a proxy for the marginal product of capital and it is meant to capture the convergence process. The idea behind it is that a low per capita GDP should be associated with high capital returns, the resulting heavy borrowing and, consequently, current account deficits.
- *Financial centers*: there exists measurement error in tracking net capital flows for centers of international wholesale asset trade, such that the computation of current account balances is affected.

As explained in the main text, country-specific ca^{eq} values are obtained by estimating the following equation:

$$\begin{aligned} ca_{i,t} = -&\underset{(0.020)}{0.07}\, dep_{i,t} - \underset{(0.002)}{0.002}\, g^{pop}_{i,t} + \underset{(0.005)}{0.01}\, aging_{i,t} + \underset{(0.027)}{0.12}\, relatgdp^{p.c}_{i,t} + \underset{(0.014)}{0.03}\, financial_i + v_{i,t} \end{aligned} \tag{6}$$

where $ca_{i,t}$ represents the normalized current account balance, $dep_{i,t}$ stands for the old-age dependency ratio, $g^{pop}_{i,t}$ for population growth, $aging_{i,t}$ for the ageing variable (see main text or Appendix A) and $relatgdp^{p.c}_{i,t}$ for the relative per capita GDP in relation to that of US, in PPP-adjusted terms. Finally, $financial_i$ identifies centers for international finance. As mentioned in Section 5, all variables are considered using 5-year blocks (to drive business cycle fluctuations away), while the demographic ones are measured in deviations from a weighted average of a country's trading partners (since we need changes in comparison to others if we want a relative variable such as the current account to change). The results of this first step computation can be seen in Equation (6)'s coefficients,[35] while the resulting fitted values for each country are used as a control in the main equation when dismissing country fixed-effects in Section 5.3.

[35] Country-clustered standard errors in parentheses, 886 observations considered.