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## The asymmetric adjustment of global imbalances: Myth or fact?

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Neus Dausà, Livio Stracca    The asymmetric adjustment of global imbalances: myth or fact?

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## Abstract

We revisit the so-called "secular international problem", whereby the adjustment of current account imbalances purportedly falls entirely on the shoulders of deficit countries. We introduce a stylised model to rationalise an asymmetric counter-cyclical policy reaction that is stronger for deficit countries. When considering large current account adjustments (both deficits and surpluses) in advanced and emerging economies, we find surprisingly little evidence of greater policy activism in deficit countries. However, large surplus adjustments are less frequent and are associated with export compression, whereas deficit adjustments tend to be accompanied by import contraction. Moreover, when we look at current account (terms of trade) *shocks* we do find some evidence of asymmetry in the sense that fiscal policy is tightened only in reaction to shocks leading to a larger deficit position. Finally, emerging markets display a more counter-cyclical response to negative current account shocks, partly mitigated by the quality of institutions.

**Keywords:** Current account adjustment, fiscal policy, secular international problem, John Maynard Keynes, Harry Dexter White.

**JEL:** F32, F41.

## Non-Technical Summary

We revisit the "secular international problem" in the international monetary system, whereby the adjustment of current account imbalances supposedly falls entirely on the shoulders of deficit countries. This often presumed fact has continued to be a recurrent matter of discussion since the Bretton Woods conference in many international meetings and fora, but the theoretical and empirical literature bearing on this question is relatively scant.

Our paper makes three main contributions.

- First, we propose a stylised model to rationalise an asymmetric counter-cyclical policy reaction that is stronger for deficit countries. Faced with a demand shock that increases the external debt, a policy-maker that internalises a debt externality acts in a stronger counter-cyclical way than with a shock that reduces debt or leads to a surplus.
- Second, based on a large country sample of annual data, we identify a number of large current account adjustments, both deficits and surpluses, in advanced and emerging economies. We measure the co-movement of key macroeconomic and financial variables, including monetary and fiscal policies, around these episodes, in order to see if any co-movement points to the existence of asymmetry in the adjustment process.
- Third and finally, we focus on the fiscal policy reaction to external imbalances in panel regressions. Notably, we consider exogenous current account shocks in order to disentangle the direction causality between fiscal policy and current account positions, which can go in either direction in theory.

Our model analysis suggests that the adjustment of current account deficits is accompanied by tighter fiscal policy than the adjustments of surpluses, pointing to the presence of asymmetries.

Our empirical analysis leads to two main results:

- The analysis of stylised facts around large current account adjustments reveals only a limited extent of asymmetry. One important finding, however, is that large surplus adjustments are less frequent and are associated with export compression, whereas deficit adjustments tend to be accompanied by import contraction.
- When focusing on fiscal policy in the panel regressions following exogenous current account shocks, we find that discretionary fiscal policy only reacts to shocks leading to larger deficit positions. We also find that emerging markets display a more counter-cyclical response to negative current account shocks, while the quality of institutions plays a mitigating role.

We conclude that the purported asymmetry in current account adjustment and the secular international problem are present in the data, but more nuanced than commonly assumed. The evidence is not directly visible in reduced form associations between current account adjustments and macroeconomic and policy variables. Only when focusing on exogenous current account shocks rather than headline current account figures do we find some evidence for a stronger fiscal counter-cyclical response for deficit shocks. At the same time, the fiscal response appears to be mediated by the quality of institutions and the status as a developed or emerging economy.

# 1 Introduction

The purported asymmetry of current account adjustments for surplus and deficit countries has been a permanent fixture in the debate on the international monetary system, going as far back as the divergence of views between Harry Dexter White and John Maynard Keynes in the Bretton Woods conference in 1944. The 1941 Keynes Clearing Union plan was indeed designed to create a structure that would make adjustment compulsory for *both* creditors and debtors.<sup>1</sup> The rejection of this plan in the Bretton Woods conference left global imbalances as a persistent and durable problem in the international monetary system. Since then, discussions in innumerable policy circles and academic conferences have referred to the so-called "secular international problem" whereby all the weight in the correction of external imbalances is supposedly carried by the deficit countries, while the surplus countries can just sit back and wait. This perceived asymmetry is even enshrined, for example, in the scoreboard of the European Union Macroeconomic Imbalances Procedure, where the monitoring threshold is different for surplus and deficit countries (4% for deficits and 6% for surpluses respectively). A perception of asymmetry has also thwarted global efforts, at the level of the G20, to impose similar monitoring thresholds for current account imbalances.

A common concern is that the adjustment only takes place through import compression in the deficit countries, which can be globally inefficient and contractionary. Despite the prominence of this viewpoint, there is surprisingly little empirical evidence bearing on it. This is the main focus of this paper.

Since arithmetically surplus and deficits need to match, at least in an ideal world where there is no remaining current account position at the global level (which is in practice not the case), it is not straightforward to define what the secular international problem is. In other words, current account imbalances are *relative* positions, and their adjustment cannot be referred exclusively to any of the two (or more) individual parties. For the purpose of this paper, and also in line with the discussion that typically takes place in the policy sphere, we will define the asymmetry in terms of *policy activism*. In other words, the hypothesis of the "secular international problem" is that only deficit countries need to

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<sup>1</sup>With the creation of an International Clearing Bank, creditor countries would be banned from keeping their surpluses or charging high rates to debtors, instead the surpluses would be reachable at a cheap price. Member banks could trade their own currency against foreign currencies up to an "index quota", being punished with higher rates or a currency revaluation requirement if the country exceeded the index.

undertake policy measures which may imply deviating from the policy reaction they would otherwise have shown in the absence of an external imbalance. Surplus countries, on the other hand, do not deviate.

Against this background, this paper makes three novel contributions. First, we propose a simple stylised model which underpins the idea that fiscal policy (a proxy for counter-cyclical policy more generally) needs to become more active for shocks that lead to an external deficit than to an external surplus, in the presence of a debt externality. This extra tightening of fiscal policy can be interpreted as having a "macro-prudential" role, similar to what is often argued for capital controls. Second, we establish some stylised facts by looking at episodes of large current account adjustment in advanced and emerging markets, crucially distinguishing between adjustment of deficits and of surpluses. We track the behaviour of a number of variables, not only macro outcomes but also external assets and liabilities as well as policies (notably monetary and fiscal). Third, we focus on the fiscal policy reaction to current account imbalances using OLS regressions on an external instrument for exogenous changes in the current account at country level, based on the interaction between oil prices (a global variable) and countries' sensitivity to it (the past level of the oil trade balance). We also run regressions for advanced and emerging economies separately, and exclude the United States given its special place in the international monetary system.

Overall, we find three main results. First, the model analysis suggests that a social planner solution would internalise the debt externality and the government would lean against the impatience of the private sector by implementing "extra tightening". A testable implication of the model is therefore that the adjustment of deficits is accompanied by tighter fiscal policy than the adjustments of surpluses. Second, the analysis of stylised facts around large current account adjustments reveals only a limited extent of asymmetry. In particular, large surplus adjustments are less frequent and are associated with export compression, whereas deficit adjustments tend to be accompanied by import contraction. The asymmetry in the import and export compression between surplus and deficit adjustments is noteworthy and may have aggregate implications for the world economy. In other words, a compression in global imbalances could lead to a contraction in world trade. Third, by focusing on fiscal policy in the panel regressions when considering *current account shocks* rather than headline current account positions we are better able to identify the direction of causality. We find that fiscal policy is *tightened* (the primary balance increased) only in reaction to shocks leading to a *larger deficit* current account position. This is qualitatively in line with the findings of the stylised theoretical model. We also find that emerging markets display

a more counter-cyclical response to negative current account shocks, while the quality of institutions plays a mitigating role.

The paper is structured as follows. Section 2 briefly reviews the existing literature. In Section 3 we introduce a simple theoretical model on how to think about asymmetries in the adjustment of external imbalances and in Section 4 and 5 we introduce the data and the stylized facts respectively. Section 6 focuses on fiscal policy. Section 7 concludes.

## 2 Literature review

There exists a large previous literature on current account reversals and adjustments, but the literature is relatively scant on the more specific question of the symmetry of adjustment. On current account adjustments in general, Edwards (2004) shows that sudden stops and current account reversals are closely related, and that the negative effects of current account reversals depend on trade openness: more open countries suffer less, and also countries with flexible exchange rates. Cavallo et al. (2015) find that trade openness makes countries less vulnerable to crises, and the relation is stronger when correcting for the endogeneity of trade. Eichengreen and Adalet (2005) find that current account reversals were both less common and smaller during the Bretton Woods period, whereas they appear to be more common in the interwar period and after the early 1970s. Milesi-Ferretti and Razin (2000) provide an overview of the issues associated with current account adjustment and reversal, but do not really focus on the question of asymmetry. Edwards (2007) finds that there is an important asymmetry between current account deficits and surpluses. Large surpluses exhibit little persistence through time, and large and abrupt reductions in surpluses are comparatively rare. A small literature looks at the role of the exchange rate regime for current account adjustment, with mixed results: Chinn and Wei (2013) report no evidence on the link between exchange rate regime and the speed of current account adjustment while Ghosh et al. (2014) use a bilateral exchange rate regime database to find evidence in favour of a relationship.

Alberola et al. (2020) look at the correction of *stock* imbalances, finding that stock imbalances are stabilising only for deficit countries, whereas creditor countries' net financial assets lead to greater current account surpluses. Debtor countries re-balance their external stock position thanks to the trade balance adjustment, which more than offsets the income balance channel. Conversely, the trade balance fails to adjust in surplus countries and it



even moves in the reverse direction. They also observe that creditor and debtor positions are highly persistent over time. Related, Forbes et al. (2017) look at the characteristics of international portfolios in their role for whether a current account deficit is menacing or mitigating. Adler and Garcia-Macia (2018) focus on the role of Net Financial Asset (NFA) *returns* to stabilise NFA *positions*, finding that returns have stabilising properties especially in emerging market economies and less so in reserve issuers.

Terzi (2020) focuses on the adjustment of imbalances in the euro area specifically. His main finding is that, compared with a typical deficit adjustment, per capita GDP contracts on average 11 percentage points more in the adjustments in the euro area periphery. His findings are only partly explained by the lack of independent monetary policy for euro area countries; sharper than usual contraction in investment and fiscal austerity due to high funding costs were important drivers as well.

Finally, Kraay and Ventura (2000) build a world equilibrium model in which productivity varies across countries and international borrowing and lending take place to exploit investment opportunities. They show that in that model favorable income shocks lead to current account deficits in debtor countries and current account surpluses in creditor countries. Moreover, evidence from thirteen OECD countries is found to be broadly consistent with their theoretical predictions.

## 3 Model

### 3.1 Set up

In this section we present a simple model that is useful to think about asymmetric incentives in current account adjustment. It provides a simple and theoretically consistent justification to the common view that the correction of deficits is more pressing than that of surpluses, and provides a basis for the empirical analysis later on. Unlike Kraay and Ventura (2000), our model is focused on the incentives for policy-makers in correcting external imbalances. The model is a very stylised two-country endowment economy with flexible prices. Home consumers are subject to time preference shocks and maximize a

standard log-utility function

$$\sum_{j=t}^{\infty} \beta_j^j [c_{t+j}] \tag{1}$$

s.t.  $c_t + B_t R_{t-1} = y_t + B_t + g_t$

where  $c$  is consumption (in logs),  $y$  is the endowment,  $B$  is the net foreign debt position (vs the Foreign economy),  $R$  the gross interest rate,  $g$  a net transfer from the government and  $B$  and  $g$  are subject to adjustment costs. Negative external debt implies a risk premium to be paid by the borrower, which is the fundamental driver of the asymmetry. The time discount factor  $\beta$  is subject to time preference shocks  $\beta_j = \beta + \epsilon_j$ , where a *fall* indicates more impatience. On the contrary, the government has a constant discount factor and is more patient than citizens; the government controls net government spending and, importantly, is able to internalize the debt externality.

In particular, we assume that

$$R_t = \frac{1}{\beta} + \gamma B_t \quad \text{if } B_t > 0 \tag{2}$$

### 3.2 Decentralised and centralised solutions

Next, we solve the model under (i) a decentralized solution, (ii) a domestic social planner solution and (iii) a global social planner solution. In the global social planner solution, a "world government" chooses  $g$  and  $g^*$  simultaneously to maximise world welfare.

Table 1 shows the calibration of the different parameters in the model. Note that there is a small cost to be paid in adjusting  $B$  and  $g$ , captured respectively by the  $k_b$  and  $k_g$  parameters, which we assume to be larger for the latter. In other words, we assume that the government fiscal stance is costly to adjust, for example as it involves a complex parliamentary process.

In the *decentralised solution*, we assume that consumers take  $R$  as given. Figure 1 shows the impulse responses for a 1% time preference shock for the Home consumer. We find that Home consumers become more impatient and finance their increase in consumption by borrowing from the Foreign consumer, thereby creating a current account deficit. On impact, the interest rate on foreign debt increases as the Home consumer pays a premium.

Parameter	Value
$\beta$	0.99
$\sigma_\beta$	0.02
$\gamma$	0.05
$B_{t-1}$	0
$k_g$	0.1
$k_b$	0.001

Table 1: Calibrated parameters in the model.

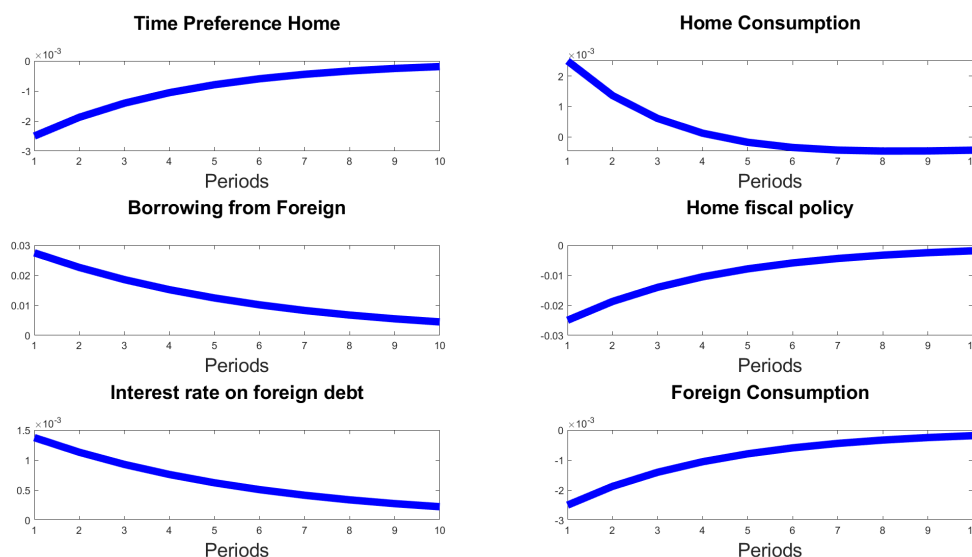


Figure 1: Impulse responses to a 1% increase in impatience for the Home consumer, decentralised solution.

The government, through fiscal policy, partially compensates the premium paid.<sup>2</sup> In the *centralised solution* (Figure 2), the government understands the debt externality and leans against the impatience of the private sector. Note that this builds on the same logic as imposing capital controls to correct an over-borrowing externality, see e.g. Erten et al. (2019).

Note that there is an "extra tightening" in the social planner solution as the blue lines deviate from the dashed red lines that refer to the decentralised solution. This can

<sup>2</sup>One could expect the Foreign consumer to consume more in subsequent periods due to the repayment of the debt as well as the windfall gains from the risk premium. However, this is an infinite horizon model, so the windfall gains are spread into perpetuity.

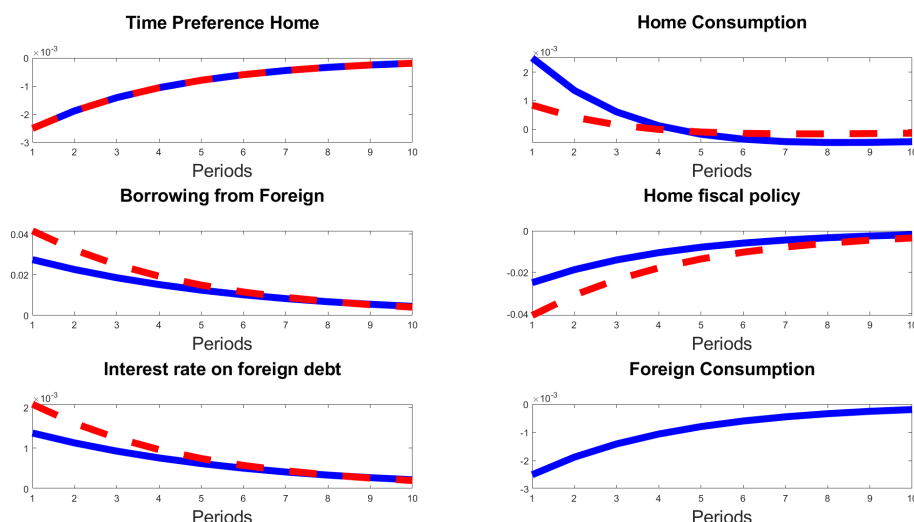


Figure 2: Impulse responses to a 1% increase in impatience for the Home consumer, decentralised solution (solid blue lines) vs. centralised solution (red dashed lines).

be interpreted as a "macro-prudential" role of fiscal policy, which applies *only to deficits* (originated by shocks that lead to more impatience).

How about the "global social planner" solution, where a single policy-maker sets fiscal policy for both countries and wishes to maximise aggregate welfare? Here we do not show results explicitly but will only mention its logic. The idea is that if using domestic fiscal policy (for the "extra tightening") is costly, a risk sharing arrangement between Home and Foreign fiscal authorities may be beneficial. In other words, if a demand shock hits both countries contribute with a fiscal policy reaction that corrects the deficit for the demand shock-hit country even though it is not in the interest of the other country *conditional on this particular shock*. Note that only the deficit country benefits from the risk sharing at each point in time, but both countries would benefit in a repeated game.

Overall, the main implications of the model are that, in the social planner solution that internalises the debt externality, the government leans against the impatience of the private sector by implementing an "extra tightening". Hence a testable implication of the model is that adjustment of deficits is accompanied by tighter fiscal policy than adjustments of surpluses, the "secular international problem". In the remainder of the paper we will turn to testing this hypothesis empirically. In a global social planner solution, both fiscal authorities cooperate to reduce excessive external debt, in a repeated game where both

benefits inter-temporally, even though only the deficit country benefits at each point in time.

## 4 Data

We use a sample of 70 advanced and emerging market economies, based on annual data ranging from 1980 to 2019. The country sample is shown in Table 2, and the data sources and variable definitions are in Table 3. The data cover three types of variables,

(i) *external adjustment*: current account balance, trade balance, external assets and liabilities;

(ii) *macro outcomes*: real GDP growth, CPI inflation, imports, exports, and the bilateral exchange rate vs. the US dollar;

(iii) *policies*: the primary budget as a share of GDP (proxy for the stance of fiscal policy); the short term interest rate (proxy for monetary policy).

Note that we winsorize all the data at 1% in both tails, although results are generally robust when not doing this adjustment.

Advanced economies	Emerging economies
Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, Taiwan, United Kingdom and United States.	Albania, Argentina, Bosnia and Herzegovina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Egypt, Hungary, India, Indonesia, Iran, Kosovo, Kuwait, Macedonia, Malaysia, Mexico, Montenegro, Nigeria, Pakistan, Peru, Philippines, Poland, Romania, Russia, Saudi Arabia, Serbia, South Africa, Thailand, Turkey, Ukraine, United Arab Emirates, Venezuela.

Table 2: Countries included in the sample. The source for the distinction between advanced and emerging market economies is the IMF.

## 5 Stylized facts

We start by identifying episodes of large current account adjustment and measuring the co-movement of key macro variables around these episodes. In Section 6 we then zoom in on fiscal policy specifically.

## 5.1 Identification of large current account adjustments

We define a current account adjustment as a 6-year period in which the current account (henceforth CA) changes sign and moves by more than five percentage points cumulatively. More precisely, a current account *deficit* adjustment is a 6-year period in which the current account (as % of GDP) starts at -5% or lower and during this period is above 0%. Similarly, in a current account *surplus* adjustment, the current account (as % of GDP) moves from 5% or above to below 0%. Table 4 shows the number of adjustments for the overall sample used and different country groups.<sup>3</sup> The number of adjustment episodes confirms the finding by Edwards (2007) that surplus adjustments are less frequent.

We analyze the behaviour of different variables during each period of these adjustments to reveal possible asymmetries. We define dummy variables  $D_{i,h}^a$  where  $a = \{deficit, surplus\}$ , that identify each year of the adjustment and then estimate the following model,

$$y_{i,t+h} = \gamma_i + \lambda_t + \beta_h D_{i,h}^a + \varepsilon_{i,t+h} \quad (3)$$

where  $h \in \{0, 1, 2, 3, 4, 5\}$ ,  $\beta_h$  is the parameter of interest,  $\gamma_i$  is a country fixed effect,  $\lambda_t$  is a yearly fixed effect and  $y_{i,t+h}$  is a vector of dependent variables that include the CA itself (% of GDP), exports (% of GDP), imports (% of GDP), the trade balance (% of GDP), net foreign assets, the NFA valuation, net income, the investment income balance, the bilateral exchange rate vs. the USD, foreign reserves, CPI inflation, the short term interest rate and the government primary balance.<sup>4</sup> The model is estimated by panel OLS with robust standard errors.

**(Include Table 3 here)**

## 5.2 Limited evidence of asymmetries in current account adjustment

In this section we present stylized facts on the behavior of the current account and the variables of interest during the adjustment. Figure 3 shows the level and the first difference of the current account during the adjustment period. The data suggest that the greatest

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<sup>3</sup>Results are generally robust to different values for the number of periods and for the threshold around those used here, which are to some extent arbitrary.

<sup>4</sup>See Table 3 for a detailed description of the variables.

current account correction occurs during the first years of the adjustment, with a slowdown in the third year. A positive (negative) first difference after one year of adjustment points to a rapid adjustment of the current account after reaching negative (positive) levels. Overall, the adjustment pattern is fairly similar between surplus and deficit adjustments.

Turning to the behaviour of other variables around CA adjustment episodes, Figure 4<sup>5</sup> reports impulse responses derived from the coefficients  $\beta_h$  coefficient of equation (3), with the blue lines indicating deficit adjustments, and red lines surplus adjustments. The error bands are based on robust standard errors at the 90% confidence level.

We find that the adjustment of the trade balance is an important element in the adjustment for both deficit and surplus countries, in an approximately symmetric way, but the rise (or decline) in the trade balance is associated with import compression in deficit countries, and export compression in surplus countries. In terms of the other components of the current account, we find that net income goes in the same direction of the adjustment, again in an approximately symmetric way, whereas the change in the NFA position and valuation effects tend to go in the opposite direction of the adjustment.

In terms of policies, there is significant exchange rate appreciation in surplus adjustments, as expected, while the depreciation in deficits is statistically insignificant. Countries with surplus (deficit) adjustments increase (reduce) FX reserves, which indicates that there is a considerable degree of fear of floating. Inflation tends to go up in deficit adjustments and down in surplus adjustments, likely a reflection of exchange rate developments, but the association is mostly statistically insignificant. Likewise, shorter term interest rates do not display statistically significant changes in any of the adjustments. Last but not least, the government primary balance (a measure of the stance of fiscal policy) becomes gradually tighter in surpluses and looser in deficit adjustments, a trend to which we will come back in the next section.

There may be reason to believe that the associations around current account adjustments are different in pegs (Figure 5), also in light of the results of Terzi (2020) for the euro area. The results are however largely the same as in the full sample; the exchange rate moves somewhat less and FX reserves slightly more, as can be expected, but neither difference is particularly large. It is also interesting that the main difference between surplus and deficit adjustments, namely the focus on import compression in deficits and export

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<sup>5</sup>Figure 6 and 7 present the same analysis with deficit adjustment starting at CA above 4% and 3 % respectively. The results in this section are robust to these alternative specifications.

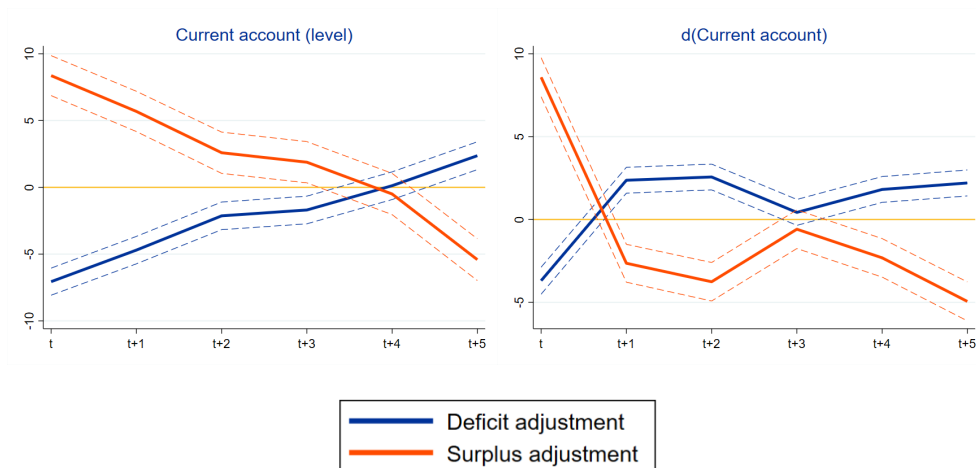


Figure 3: Results of equation (3) on the CA. The left panel presents the results on the CA level and the right panel on the CA first difference. The sample used consists on 510 observations classified as 54 deficit adjustments and 23 surplus adjustments from advanced and emerging market economies.

compression in surpluses, is even more visible within currency pegs. Finally, the NFA position plays a lesser role in pegs, possibly due to the impact of exchange rate movements on this variable in floating countries.

We also conduct a robustness check for the fact that we have fewer surplus than deficit adjustments in the baseline exercise. We therefore relax the requirements for surpluses in order to have a number of episodes that is comparable to that of deficit adjustments. To evaluate the robustness of our results, we use two new adjustment definitions: (i) 6 year period in which the CA moves from 4% or above to 0% or below and (ii) 6 year period in which the CA moves from 3% or above to 0% or below. We then re-estimate equation (3) and report the results in Figures 6 and 7 respectively. There does not seem to be a material difference in the results as the impulse responses are largely the same as in the baseline, qualitatively and quantitatively.

Overall, the main message arising from the analysis of the stylised facts is that in most dimensions surplus and deficit adjustments are symmetric. Surplus adjustments are less common, but this does not appear to drive the co-movement with other macroeconomic and policy variables. The most interesting asymmetry appears to be that deficit adjustments are on average accompanied by import compression, whereas surplus adjustments tend to happen through export compression.



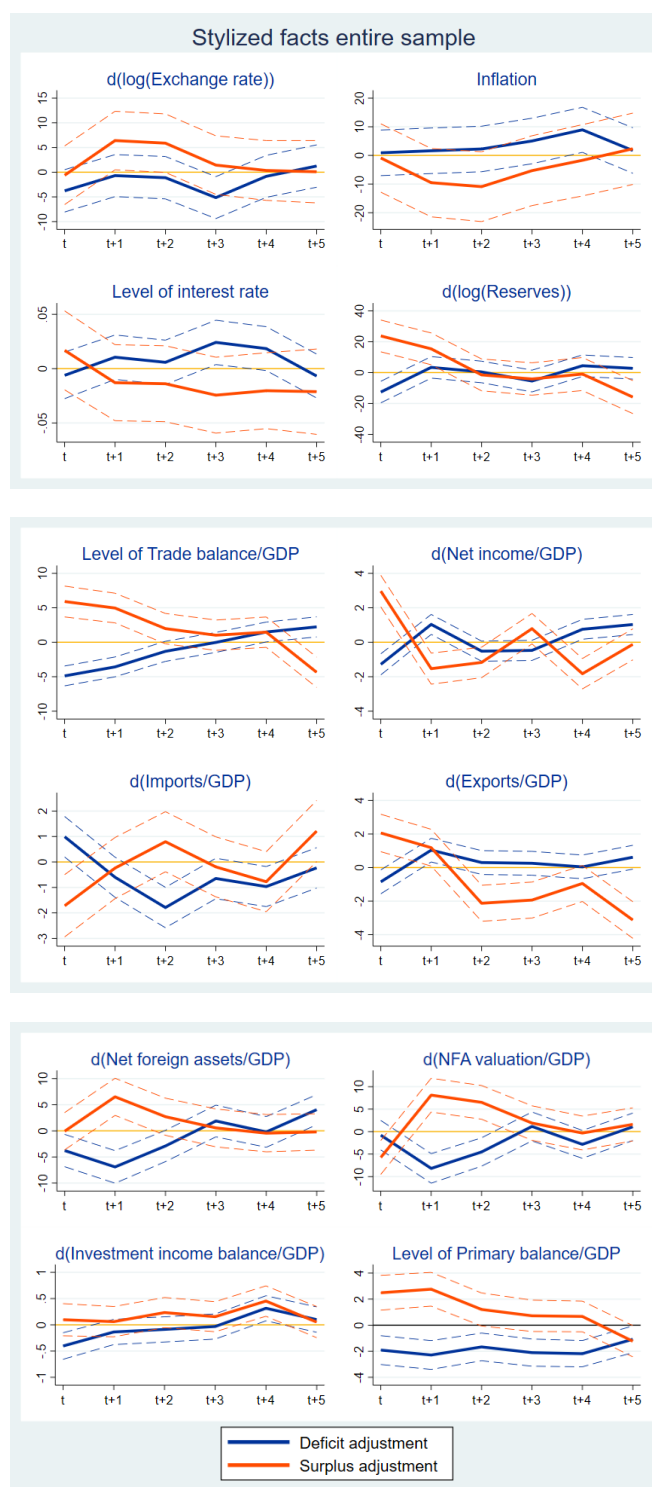


Figure 4: Results of equation (3) on the variables of interest. The sample used consists on 59 deficit adjustments and 26 surplus adjustments from advanced and emerging market economies.

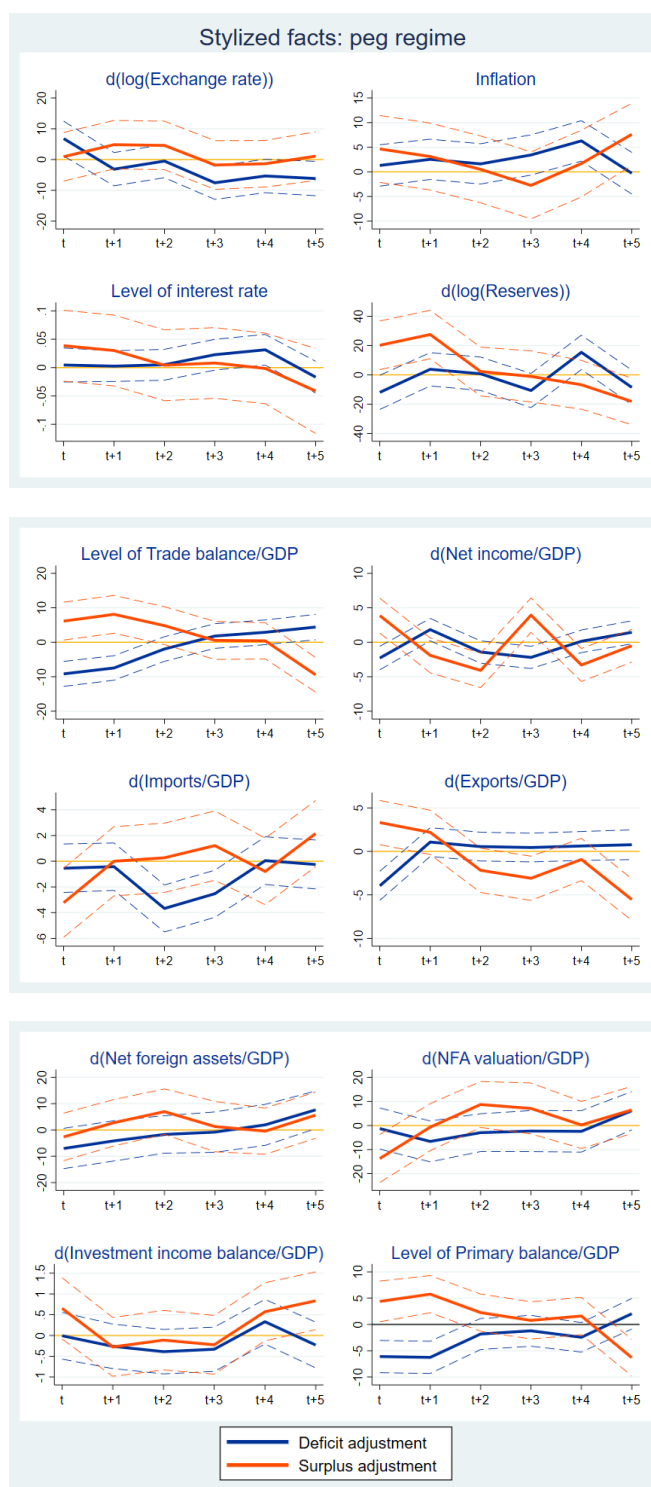


Figure 5: Results of equation (3) on the variables of interest. The sample used consists only on countries that during the first two years of adjustment had a peg exchange rate regime versus the dollar. Precisely, the sample contains 19 deficit adjustments and 9 surplus adjustments from advanced and emerging market economies.

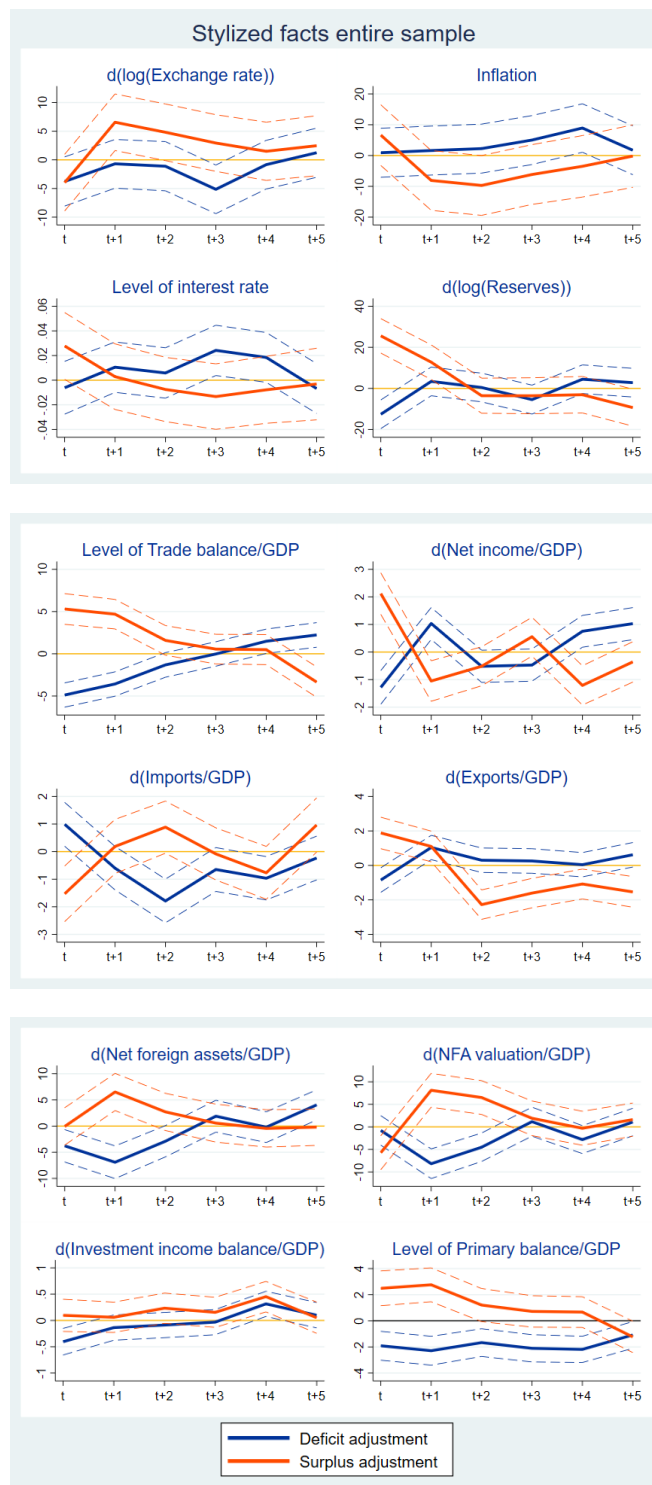


Figure 6: Results of equation (3) on the variables of interest. Deficit adjustment is defined as previously. Surplus adjustment is defined as a 6 year period in which the CA moves from 4% or above to 0% or below. With this modification, the sample increases the number of surplus adjustments to 38 episodes and as before it has 59 deficit adjustments.

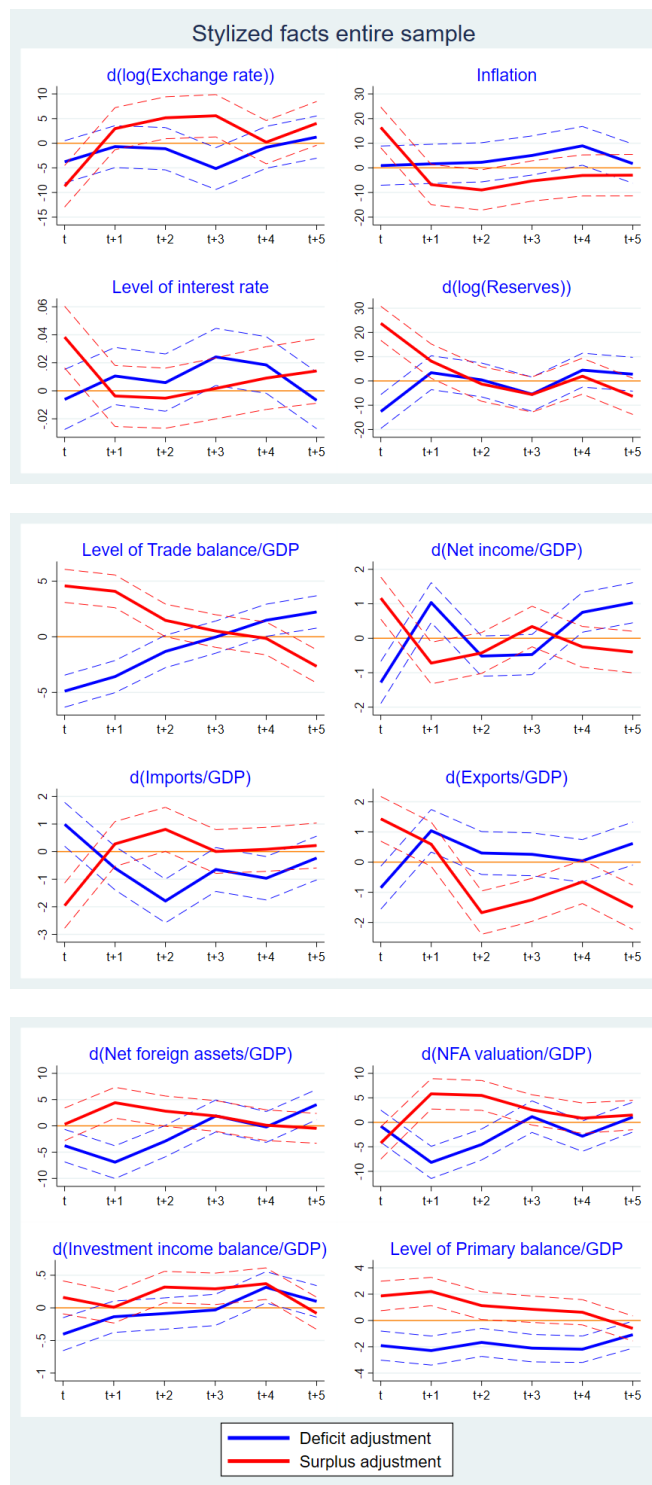


Figure 7: Results of equation (3) on the variables of interest. Deficit adjustment is defined as previously. Surplus adjustment is defined as a 6 year period in which the CA moves from 3% or above to 0% or below. With this modification, the sample increases the number of surplus adjustments to 58 episodes and as before it has 59 deficit adjustments.

## 6 Does fiscal policy react differently to deficits and surpluses?

This section attempts at going beyond simple correlations during current adjustment episodes and investigates the nexus between current account positions and the fiscal stance. Indeed, one important finding of our model simulations is that countries faced with a shock leading to a current account deficit should implement a tighter fiscal policy, i.e. impose a (net) tax from citizens, than for the same-size shock leading to a surplus. We therefore test this hypothesis empirically by estimating the following regression,

$$Primary_{it} = k_i + \lambda_t + \rho Primary_{i,t-1} + \beta X_{it} + \gamma CA\tilde{shock}_t + \epsilon_{it} \quad (4)$$

where *Primary* is the primary balance as a share of GDP, *X* is a vector of controls including current and lagged real GDP growth, CPI inflation and the unemployment rate as well as dummies for banking and currency crises  $CA\tilde{shock}_{it} = \frac{shock_{i,t-1} + shock_{i,t-2}}{2}$  is a moving average of the current account shock and  $shock_{it} = \Delta_t Oilprice \times OILTB_{i,t-1}$ . By considering two-year moving averages we smooth out transitory shocks in the CA that in principle do not require a policy response. The main parameter of interest is  $\gamma$ , representing the impact of the current account shocks on the primary balance.

The logic behind this definition of a *current account shock* is the following: a world oil supply shock pushes the oil price higher, which hits oil importers more than oil exporters.<sup>6</sup> In other words, a negative oil supply shock is a *negative terms of trade shock* for oil importers, who experience a larger current account deficit or a smaller surplus. Over time, the current account of oil importers (exporters) needs to converge back to a sustainable equilibrium, as described for example in Bodenstein et al. (2011). Importantly, the source of the fluctuations in each country's individual CA is *exogenous* for the country itself and its policies, being determined by a combination of (i) a global factor and (ii) a pre-determined country-level sensitivity to it. Table 7 (which essentially reports first stage regressions) shows that current account shocks have large explanatory power for current account positions, with positive and strongly significant coefficients and sufficiently high F statistics.

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<sup>6</sup>The oil supply shocks are derived from the Kilian and Murphy (2014) VAR model, updated with the most recent data.

**(Include Table 7 here)**

The reason why it is important to exogenise shifts in the current account position is that, in principle, causality could conceivably run from the fiscal variable to the current account, in spite of the lag structure, exemplified by the "twin deficits" literature (see, e.g., Constantine (2014) for a recent analysis). The direction of the bias is towards finding a *positive* link between the primary balance and the current account; ceteris paribus, a tighter stance of fiscal policy (i.e, more public saving) should lead to a current account surplus, if the direction of causality were to run from fiscal policy to the external imbalance, in line with the twin deficits literature. On the other hand, a tighter fiscal stance (a higher primary balance) should be associated with current account deficits if policy-makers care about not accumulating external imbalances (a larger current account deficit).

In order to study possible asymmetries, we also consider an expanded version of the equation specified as follows,

$$Primary_{i,t} = k_i + \lambda_t + \rho Primary_{i,t-1} + \beta X_{i,t} + \gamma^+ CA\tilde{shock}_t^+ + \gamma^- CA\tilde{shock}_t^- + \epsilon_{i,t} \quad (5)$$

where respectively  $\tilde{CA}_{t-1}^-$  and  $\tilde{CA}_{t-1}^+$  are the negative and positive values of the moving average of the current account. We only estimate this extended version of the model by OLS.

The results for the baseline OLS regressions for the primary balance are reported in Table 8. In the symmetric specification in the first column (two-year average), the CA shock is positive but insignificant. When we consider an asymmetric specification in the second column, however, we find that the coefficient is strongly and statistically significantly negative for negative CA shocks, indicating a counter-cyclical fiscal response to those shocks. Note that this holds even after controlling for banking and currency crises. The third and fourth columns in the table report the same results for three-year averages, finding the same results, as do the regressions for developed economies only. Finally, the last column in the table reports results from regressions including only the CA position, not the CA shock, where all estimated coefficients are insignificant. This highlights the need to use exogenous CA shocks to identify the true reaction of fiscal authorities.

**(Include Table 8 here)**

It is also interesting to consider whether results change if we exclude the United States from the sample, on account on the special nature of this economy and the US dollar which

has been emphasised in countless contributions in the literature. Those results are shown in Table 9 and remain practically unchanged compared with the baseline. We conclude that the baseline results are not driven by the special case of the US.

**(Include Table 9 here)**

Additionally, one important question is whether country fundamentals explain to some extent the degree of fiscal policy counter-cyclicity in reaction to negative CA shocks. It can be surmised, for example, that countries with better institutions have less to fear from a current account deficit and have less incentive to correct it. We therefore augment the regression (5) as follows,

$$Primary_{i,t} = k_i + \lambda_t + \rho Primary_{i,t-1} + \beta X_{i,t} + \gamma^- CA\tilde{shock}_t^- + \chi CA\tilde{shock}_t^- Z_{i,t-1} + \eta Z_{i,t-1} + \epsilon_{i,t} \quad (6)$$

where  $Z$  is a vector of variables including past current account positions (for example, a negative CA shock may be more serious if the country is starting already from a deficit position pre-shock), a measure of the quality of institutions (the ICRG financial risk rating), the NFA position, and a dummy for emerging market economies. Here the focus of the analysis is on the vector of coefficients  $\chi$ . In particular, where  $\chi$  is statistically significant and negative then the variable in the  $Z$  vector is associated to a more strongly counter-cyclical fiscal policy reaction to shocks leading to current account deficits, and vice versa for positive coefficients.

The results of the estimation of equation (6) are shown in Table 10. We find that, first, emerging market economies are more likely to behave in a counter-cyclical way towards current account shocks. This can be expected because these countries are normally more exposed to shocks and to market pressure in terms of exchange rate depreciation. This is also confirmed by the positive  $\chi$  coefficient for the interaction between the emerging markets dummy and the quality of institutions index, which is positive indicating less counter-cyclicity. Surprisingly, however, the past NFA and CA position enters with a *negative* sign, indicating that a negative current account shock leads to tighter fiscal policy in countries with a better starting position. This is only marginally significant for the NFA position, but it is significant for all countries and for developed countries only for the CA position.

**(Include Table 10 here)**

Overall, based on these results we conclude that when looking at current account *shocks*, as opposed to the simple current account positions, we find some evidence of asymmetry in the sense that fiscal policy is tightened (the primary balance increased) only in reaction to shocks leading to larger deficit positions. This is qualitatively in line with the findings of our stylised theoretical model. We also find that emerging markets display a more counter-cyclical response to negative current account shocks, while the quality of institutions plays a mitigating role. The starting position in terms of NFA or current account when exposed to the shock plays an amplifying role, contrary to what might be expected (namely that negative shocks are more important when hitting countries that are already in a deficit position).

Finally, we are interested in assessing whether different exchange rate regimes are associated with different mechanisms. We find evidence that for emerging economies with a peg regime, low quality institutions lead to a tighter fiscal balance. For softpeg countries, this relation is only significant when is accompanied by a negative current account *shock*. Economies with floating regimes face a tightening of their fiscal balances after a currency crisis and a period of negative current account *shocks* with increases in the current account. Overall, we do not find evidence of a common set of explanatory variables across different exchange rate regimes.

**(Include Table 11 here)**

## 7 Conclusions

In this paper we have focused on the "secular international problem" in the international monetary system, whereby the adjustment of current account imbalances supposedly falls entirely on the shoulders of deficit countries. This presumed fact has continued to be a recurrent matter of discussion since the Bretton Woods conference in many international meetings and fora, but the theoretical and empirical literature bearing on this question is relatively scant. Our contribution is threefold. First, we propose a stylised model to rationalise an asymmetric counter-cyclical policy reaction that is stronger for deficit countries. Faced with a demand shock that increases external debt, a policy-maker that internalises a debt externality acts in a stronger counter-cyclical way than with a shock that reduces debt or leads to a surplus. Second, based on a large cross-country panel, we identify a number of large current account adjustments, both deficits and surpluses, in advanced and



emerging economies. We measure the co-movement of key macroeconomic and financial variables, including monetary and fiscal policies, around these episodes, in order to see if any co-movement points to the existence of asymmetry in the adjustment process. Finally, we focus on the fiscal policy reaction to external imbalances in panel regressions.

Our empirical analysis leads to three main conclusions. From the model analysis, we learn that the adjustment of current account deficits is accompanied by tighter fiscal policy than the adjustments of surpluses, pointing to the presence of asymmetries. Second, the analysis of stylised facts around large current account adjustments, a reduced form analysis of the co-movement between the current account and other interesting variables, reveals only a limited extent of asymmetry. One important finding, however, is that large surplus adjustments are less frequent and are associated with export compression, whereas deficit adjustments tend to be accompanied by import contraction. Third, when focusing on fiscal policy in the panel regressions after exogenous current account shocks (rather than headline current account positions) we find that fiscal policy is only in reaction to shocks leading to larger deficit positions. We also find that emerging markets display a more counter-cyclical response to negative current account shocks, while the quality of institutions plays a mitigating role.

Together, we conclude that the evidence for the purported asymmetry in current account adjustment and the secular international problem is present but less glaring and more nuanced than commonly assumed. It is not directly visible in reduced form associations between current account adjustments and macroeconomic and policy variables. Only when focusing on exogenous current account shocks rather than headline current account figures do we find some evidence for a stronger fiscal counter-cyclicity for deficit shocks, although the response appears to be mediated by the quality of institutions and the status as a developed or emerging economy.

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Variable	Mean	Std.dev	Min.	Max.	Countries	Definition	Source
Current account/GDP	-0.35	6.54	-15.78	26.14	70	Current account balance in USD adjusted by nominal GDP	IMF IFS (BPM5 and BPM6)
Reserves	40,685.38	100,931.7	80.53	725,292	71	Total foreign-exchange reserves minus gold	IMF
Exchange rate	47.92	310.47	0.0001	2,666.67	70	US dollars per unit of national currency	IMF IFS
Inflation	13.02	38.82	-1.28	333.33	64	Consumer Price Index (2010=100)	WEO, OECD, WDI and AMECO
Interest rate	0.08	0.11	-0.004	0.81	70	Short-term interest rate	IFS, OECD, National CBs
Imports/GDP	32.19	25.30	5.48	156.64	70	Total imports (% GDP)	IMF
Exports/GDP	29.37	24.35	3.90	144.15	70	Total exports (% GDP)	IMF
Trade balance	-2.97	11.93	-44.07	36.09	70	Exports minus imports	Authors' calculations
Net income/GDP	2.70	9.67	-24.03	37.09	69	Current account minus trade balance	Authors' calculations
Net Foreign Assets/GDP	-12.76	53.76	-137.26	232.46	68	Total (net) IIP	EWN
NFA Valuation	-13.29	50.04	-138.15	217.82	68	Net foreign assets minus current account	Authors' calculations
Investment income balance	-1.6	3.45	-12.76	14.06	69	Income on dividends, interests and capital gains	IMF
Primary balance	0.0015	0.04	-0.11	0.16	69	General government primary balance (% GDP)	IMF
Banking and currency crisis ( <i>Crisis</i> )	0.095	0.294	0	1	69	Dummy=1 when the country is in a banking crisis and/or is the first on period of a currency crisis	Authors' calculations based on Laeven and Valencia (2012)
ICRG financial risk	38.191	6.673	9	50	67	Measure of country's ability to finance itself (public and private sectors). The lower the index, the higher the risk.	ICRG-PRS group.
Emerging dummy	0.493	0.500	0	1	70	Dummy=1 for emerging market economies, 0 otherwise	IMF

Table 3: Variables used in the empirical analysis: summary statistics and data sources. Some variables are transformed in the empirical analysis. The results in the present table are computed on variables in levels.

	Deficit adjustment	Surplus adjustment
Total	54	25
Euro Area	5	0
Advanced economies	24	5
Emerging economies	30	20
Peg	18	8
Soft-peg	12	7
Float	23	10

Table 4: Number of adjustment episodes. We define a current account adjustment as a 6-year period in which the current account (CA) changes sign and moves by more than five percentage points. More precisely, a current account *deficit* adjustment is a 6-year period in which the current account (as % of GDP) starts at -5% or lower and during this period is above 0%. Similarly, in a current account *surplus* adjustment, the current account (as % of GDP) moves from 5% or above to below 0%. Sources: IMF-WEO for the distinction between advanced and emerging market economies and ECB staff calculation for the exchange rate regime. Precisely, we define currency to be pegged to the dollar if the maximum appreciation or depreciation has been of less than 2% and soft peg if it has been of less than 5%.

Country	Initial year	Final year	Initial CA	Final CA	Length of adjustment
Albania	1990	1993	-5.83	1.26	3
Austria	1977	1982	-5.43	.99	5
Brazil	1980	1984	-5.46	.02	4
Bulgaria	1993	1996	-10.15	.13	3
Bulgaria	2006	2011	-15.78	.48	5
Colombia	1971	1976	-5.81	1.06	5
Colombia	1981	1986	-5.39	1.1	5
Colombia	1997	1999	-5.39	.78	2
Croatia	2008	2013	-10.65	.98	5
Cyprus	1989	1993	-5.46	1.67	4
Denmark	1986	1990	-5.1	.99	4
Egypt	1982	1987	-6.69	.05	5
Estonia	2004	2009	-11.27	2.66	5
Finland	1975	1978	-7.26	1.88	3
Finland	1991	1994	-5.33	1.07	3
Hungary	2005	2010	-9.9	.26	5
Iceland	1982	1986	-8.13	.4	4
Iceland	1998	2002	-6.53	1.56	4
Iceland	2008	2013	-15.78	5.77	5
Ireland	2007	2010	-5.13	1.04	3
Israel	1981	1985	-5.32	3.59	4
Kuwait	1991	1993	-15.78	10.44	2
Latvia	2004	2009	-12.27	7.84	5
Lithuania	2004	2009	-7.61	2.25	5
Malaysia	1974	1976	-5.67	5.3	2
Malaysia	1982	1987	-13.37	8	5
Malaysia	1994	1998	-6.07	13.2	4
Malta	1997	2002	-6.13	2.37	5
Malta	2009	2012	-6.54	1.64	3
Mexico	1980	1983	-5.08	3.76	3
Nigeria	1994	1996	-6.29	21.91	2
Norway	1975	1980	-7.54	1.67	5
Norway	1986	1989	-5.78	.21	3
Pakistan	1979	1983	-5.64	.15	4
Pakistan	1996	2001	-7.01	2.36	5
Peru	1977	1979	-6.31	4.57	2
Peru	1983	1985	-5.03	.62	2
Philippines	1981	1986	-5.78	3.19	5
Philippines	1993	1998	-5.55	2.14	5
Portugal	1981	1985	-14.65	1.4	4
Portugal	2008	2013	-11.9	1.64	5
Saudi Arabia	1991	1996	-15.78	.43	5
Saudi Arabia	2015	2017	-8.67	1.52	2
Singapore	1981	1986	-10.37	1.72	5
Slovakia	2007	2012	-5.36	.94	5
Slovenia	2008	2012	-5.3	1.29	4
South Africa	1975	1977	-6.29	.59	2
South Africa	1981	1985	-5.83	3.83	4
South Korea	1981	1986	-5.38	3.84	5
Spain	2007	2012	-9.46	.06	5
Thailand	1981	1986	-7.38	.57	5
Thailand	1994	1998	-5.49	12.53	4
Ukraine	2011	2015	-6.27	5.53	4
Venezuela	1977	1979	-8.78	.72	2

Table 5: Number of current account (as % of GDP) deficit adjustments. Current account deficit adjustment is defined as a period (with maximum 6 years) in which the current account starts at -5% or lower and during this period it becomes positive. Last column displays the length of the adjustment in years.

Country	Initial year	Final year	Initial CA	Final CA	Length of adjustment
Egypt	1990	1995	5.41	-.42	5
Iran	1976	1980	11.26	-2.58	4
Iran	1994	1998	6.9	-1.94	4
Kuwait	1986	1991	26.14	-15.78	5
Latvia	2009	2011	7.84	-3.31	2
Malaysia	1976	1980	5.3	-1.09	4
Malaysia	1987	1990	8	-1.98	3
Malta	1978	1983	9.2	-.43	5
Malta	2014	2016	8.77	-.58	2
Nigeria	1990	1993	9.23	-2.81	3
Nigeria	1996	1998	21.91	-15.78	2
Romania	1987	1990	5.32	-8.34	3
Saudi Arabia	1973	1978	16.86	-2.76	5
Saudi Arabia	1979	1983	9.12	-13.05	4
Saudi Arabia	2010	2015	12.64	-8.67	5
Slovenia	1992	1995	7.47	-.35	3
South Africa	1979	1981	5.14	-5.83	2
South Korea	1987	1990	7.29	-.49	3
Thailand	2000	2005	7.37	-4.04	5
Thailand	2007	2012	5.93	-1.23	5
Ukraine	2002	2006	7.49	-1.5	4
Venezuela	1973	1977	5.15	-8.78	4
Venezuela	1980	1982	8	-6.27	2
Venezuela	1990	1992	17.04	-6.21	2
Venezuela	1996	1998	12.64	-4.85	2

Table 6: Number of current account (as % of GDP) surplus adjustments. Current account surplus adjustment is defined as a period (with maximum 6 years) in which the current account starts at 5% or above and during this period it becomes negative. Last column displays the length of the adjustment in years.

	(1)	(2)	(3)
CA shock	0.709*** (0.211)		
CA shock mov. avg. (2-period)		1.053*** (0.315)	
CA shock mov. avg. (3-period)			1.424*** (0.415)
R-squared	0.138	0.163	0.190
F-statistic	11.31	7.56	7.87

Table 7: OLS with time and fixed effects of CA on the CA shock. The first column presents CA in levels and shock in levels; second column uses a 2 period moving average of both and 3rd column presents a 3 period moving average. The dependent variable is the primary balance as a share of GDP. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. Robust standard errors in parentheses.



	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CA shock mov. avg.(t-1,t-2)	0.19 (0.12)							
Positive CA shock mov. avg.(t-1,t-2)		0.56* (0.30)						
Negative CA shock mov. avg.(t-1,t-2)		-0.93*** (0.17)						
Dummy crisis*neg. mov. avg. CA shock (t-1,t-2)		-0.75 (0.56)						
Dummy for banking crisis		-0.60**		-0.56** (0.28)		-0.13 (0.32)		
Dummy for currency crisis		-0.75 (1.33)		-0.77 (1.34)		-4.79* (2.83)		
CA shock mov. avg.(t-1,t-2,t-3)			0.18 (0.18)		0.27** (0.13)			
Positive CA shock mov. avg.(t-1,t-2,t-3)				0.49 (0.30)		0.72*** (0.23)		
Negative CA shock mov. avg.(t-1,t-2,t-3)				-1.91* (1.05)		-1.74** (0.72)		
Dummy crisis*neg. mov. avg. CA shock (t-1,t-2,t-3)				-1.19 (1.30)		0.13 (1.27)	0.02 (0.02)	-0.01 (0.05)
CA mov. avg.(t-1,t-2)								0.04 (0.03)
Positive CA mov. avg.(t-1,t-2)								
Negative CA mov. avg.(t-1,t-2)								
R-squared	0.61	0.62	0.61	0.62	0.70	0.75	0.61	0.60
Sample	Full	Full	Full	Full	Developed	Developed	Full	Full

Table 8: Results of equation 4 with CA shock as independent variable. CA shock is calculated as  $\Delta$  oil price \* lagged Oil trade balance. Columns 1 to 4 and 7-8 use the full sample and columns 5 and 6 use only developed countries. Columns 1 and 2 present the results for the 2 period moving average and columns 3 to 6 report the 3 period moving average. Columns 7 and 8 use current account normalized by GDP as the independent variable. Current, first lag and second lag of inflation, growth rate of real GDP and unemployment rate are used as controls and are not reported for brevity. The dependent variable is the primary balance as a share of GDP. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CA shock mov.avg. (t-1,t-2)	0.19 (0.12)							
Positive CA shock mov.avg. (t-1,t-2)		0.56* (0.30)						
Negative CA shock mov.avg. (t-1,t-2)		-0.92*** (0.17)						
Dummy crisis*CA shock neg.mov.avg. (t-1,t-2)		-0.79 (0.57)						
Dummy for banking crisis		-0.59** (0.28)		-0.56* (0.29)		-0.12 (0.33)		
Dummy for currency crisis		-0.75 (1.33)		-0.77 (1.35)		-4.83* (2.84)		
CA shock mov.avg. (t-1,t-2,t-3)			0.18 (0.18)		0.26** (0.13)			
Positive CA shock mov.avg. (t-1,t-2,t-3)				0.49 (0.30)		0.70*** (0.23)		
Negative CA shock mov.avg. (t-1,t-2,t-3)				-1.90* (1.06)		-1.67** (0.71)		
Dummy crisis*CA shock neg.mov.avg. (t-1,t-2,t-3)				-1.27 (1.31)		0.01 (1.30)		
CA mov. avg. (t-1,t-2)							0.02 (0.02)	
Positive CA mov. avg. (t-1,t-2)								-0.01 (0.05)
Negative CA mov. avg. (t-1,t-2)								0.04 (0.03)
R-squared		0.61 Full	0.62 Full	0.61 Full	0.62 Full	0.69 Developed countries	0.74 Developed countries	0.61 Full
Sample								Full

Table 9: The dependent variable is the government primary balance scaled by GDP; in this table **the United States is excluded** from the sample. See notes to Table 6 for additional explanations.

	(1)	(2)	(3)	(4)	(5)	(6)
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2)		-1.24 (1.04)				
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2)		0.41 (0.60)				
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2)		0.09 (0.20)				
Neg. CA shock.mov.avg*emerging(t-1,t-2)		-7.36 (7.82)				
Neg. CA shock.mov.avg*emerging*ICRG risk(t-1,t-2)		0.15 (0.20)				
Neg. CA shock.mov.avg*gov.debt(t-1,t-2)		-0.18 (2.16)				
Neg. CA shock.mov.avg*reserves/GDP(t-1,t-2) <sup>2</sup>		0.00 (0.05)				
ICRG risk*emerging		-0.01 (0.06)		-0.00 (0.06)		
Dummy for banking crisis		-0.77** (0.30)		-0.71** (0.30)		-0.20 (0.36)
Dummy for currency crisis		-3.45 (2.96)		-3.47 (2.94)		-4.49 (3.52)
Positive CA shock mov.avg. (t-1,t-2)		0.75*** (0.25)				
Negative CA shock mov.avg. (t-1,t-2)		-3.60 (8.47)				
Dummy crisis*neg.mov.avg.CA shocks(t-1,t-2)		-3.28** (1.31)				
CA shock mov.avg. (t-1,t-2)	0.29 (0.18)					
CA shock mov.avg. (t-1,t-2,t-3)			0.27 (0.27)		0.40** (0.19)	
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2,t-3)				-0.53 (1.24)		-1.74 (2.07)
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2,t-3)				-1.11 (0.77)		-1.83 (1.68)
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2,t-3)				0.04 (0.25)		0.45 (0.27)
Neg. CA shock.mov.avg*emerging(t-1,t-2,t-3)				-22.73** (10.04)		
Neg. CA shock.mov.avg*emerging*ICRG risk(t-1,t-2,t-3)				0.54** (0.26)		
Neg. CA shock.mov.avg*gov.debt/GDP(t-1,t-2,t-3)				-0.89 (2.42)		1.65 (2.90)
Neg. CA shock.mov.avg*reserves/GDP(t-1,t-2,t-3)				0.03 (0.06)		0.12 (0.08)
Positive CA shock mov.avg. (t-1,t-2,t-3)				0.36 (0.36)		0.87* (0.45)
Negative CA shock mov.avg. (t-1,t-2,t-3)				-1.77 (10.52)		-22.42** (10.61)
Dummy crisis*neg.mov.avg CA shock (t-1,t-2,t-3)				-3.07* (1.78)		0.16 (1.69)
R-squared	0.61	0.67	0.61	0.67	0.70	0.75
Sample	Full	Full	Full	Full	Developed	Developed

Table 10: The dependent variable is the government primary balance scaled by GDP; emerging refers to a dummy for emerging market economies; ICRG risk refers to ICRG financial risk. The variables shock, CA and NFA have been standardized. Added to the controls mentioned in Table 6, lagged CA, lagged NFA, lagged ICRG financial risk, lagged government debt, lagged reserves and emerging dummy are used but not reported for brevity. See notes to Table 6 for additional explanations.

	(1)	(2)	(3)
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2)	-0.13 (4.26)	1.05 (10.36)	1.01 (1.53)
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2)	-2.42 (1.97)	3.56 (7.08)	-3.86** (1.63)
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2)	2.00 (1.20)	3.42** (1.34)	0.21 (0.35)
Neg. CA shock.mov.avg*emerging(t-1,t-2)	18.20 (31.23)	162.19** (72.23)	-8.17 (13.00)
Neg. CA shock.mov.avg*emerging*ICRG risk(t-1,t-2)	-0.56 (0.83)	-4.03** (1.85)	0.19 (0.34)
Neg. CA shock.mov.avg*gov.debt/GDP(t-1,t-2)	-0.63 (7.32)	-15.06 (20.42)	-0.21 (2.53)
Neg. CA shock.mov.avg*reserves/GDP(t-1,t-2) <sup>2</sup>	-0.20 (0.28)	-0.43 (0.35)	-0.07 (0.07)
ICRG risk*emerging	-0.93** (0.41)	-0.34 (0.48)	0.06 (0.11)
Dummy for banking crisis	5.25*** (1.58)	-0.79 (1.76)	-0.22 (0.41)
Dummy for currency crisis			-9.47*** (2.83)
Positive CA shock mov.avg(t-1,t-2)	0.48 (0.59)	2.75 (2.53)	3.50 (2.09)
Negative CA shock mov.avg (t-1,t-2)	-72.98 (47.10)	-124.29** (57.60)	-8.72 (14.11)
Dummy crisis*neg.mov.avg CA shock (t-1,t-2)			-2.31 (1.75)
R-squared	0.94	0.80	0.77
Sample	Peg	Softpeg	Floating

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 11: Results for peg, softpeg and floating exchange rate regimes. The dependent variable is the government primary balance scaled by GDP; emerging refers to a dummy for emerging market economies; ICRG risk refers to ICRG financial risk. The variables shock, CA and NFA have been standardized. Added to the controls mentioned in Table 6, lagged CA, lagged NFA, lagged ICRG financial risk, lagged government debt, lagged reserves and emerging dummy are used but not reported for brevity. See notes to Table 6 for additional explanations.

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