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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. 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, being in a banking crisis leads to a more counter-cyclical response to negative current account shocks, partly mitigated by a stronger NFA position and a higher quality of institutions for emerging economies.

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.
- 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 countries experiencing a banking crisis display a more counter- cyclical response to negative current account shocks, while the NFA position and 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-cyclicality 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 presumed 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.[1] 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 policy circles and academic conferences have often 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 undertake policy measures – which may imply deviating from the policy reaction they

[1] 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.

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 pro-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 as a share of GDP). 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 very limited extent of asymmetry. 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, at least in some specifications 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 countries in a banking crisis display a more counter-cyclical response to negative current account shocks, while a stronger NFA position and 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

$$\sum_{j=t}^{\infty} \beta_j^j \mathbf{E}[c_{t+j}] \text{s.t.} \quad c_t + B_t R_{t-1} = y_t + B_t + g_t \tag{1}$$

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 β 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. Note that the somewhat paternalistic assumption that the preference of the government are more stable than the representative household only serves the purpose of creating a plausible counter-cyclical response of fiscal policy, but does not influence the comparison between the decentralised and centralised solutions.
In particular, we assume that

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

The presence of this equation gives rise to a pecuniary externality: more borrowing makes the same borrowing more costly.

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, i.e. not considering the pecuniary externality. 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. The government, through fiscal policy, partially compensates the premium paid.[2]

[2]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,

In the *centralised solution* (Figure 2), the government instead understands the debt externality and leans against the impatience of the private sector by carrying out a more restrictive fiscal policy (middle graph on the right side). This results in a lower interest expenditure, as shown in the lower left graph (though the difference is quantitatively very small). Note that this result builds on the same logic as imposing capital controls to correct an over-borrowing externality, see e.g. Erten et al. (2019).

(Include Tables 1 here and Figures 1 and 2 here)

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 be interpreted as a "macro-prudential" role of fiscal policy, which applies *only to deficits* (originated by shocks that lead to more impatience).[3]

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.

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so the windfall gains are spread into perpetuity.

[3]Actually, for surpluses the asymmetry goes in the opposite direction: the centralised solution is towards even more surplus than otherwise, again due to the pecuniary externality that in this case turns out to be a positive one.

4 Data

We use a sample of 70 advanced and emerging market economies, based on annual data ranging from 1980 to 2021. 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.

(Include Tables 2 and 3 here)

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 six percentage points cumulatively. More precisely, a current account *deficit* adjustment is a 6-year period in which the current account (as % of GDP) improves by more than 6pp. Similarly, in a current account *surplus* adjustment, the current account (as % of GDP) deteriorates by 6 percentage points or more. Table 4 shows the number of adjustments for the overall sample used and different country

groups.[4] The number of adjustment episodes confirms the finding by Edwards (2007) that surplus adjustments are less frequent. Note that we do not require the CA adjustment to straddle zero, in other words we are not assuming that the CA position has to be zero in the long run, in line with the idea that countries can have non-zero CA "norms".

(Include Tables 4-6 here)

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

$$y_{i,t+h} = \gamma_i + \lambda_t + \beta_h D^a_{i,h} + \varepsilon_{i,t+h} \tag{3}$$

where h$\in \{0, 1, 2, 3, 4, 5\}$, β_h is the parameter of interest, γ_i is a country fixed effect, λ_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.[5] The model is estimated by panel OLS with robust standard errors.

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 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

[4]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.

[5]See Table 3 for a detailed description of the variables. Note that for this part of the empirical exercise, data has been winsordized at 1%.

reports impulse responses derived from the coefficients β_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. 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. 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 by more than 7 percentage points and (ii) 6 year period in which the CA moves by more than 10 pp. 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.

(Include Figures 3-7 here)

6 Does fiscal policy react differently to deficits and surpluses?

This section moves beyond simple correlations during current adjustment episodes and investigates the nexus between current account (CA) 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,

$$Primary_{it} = k_i + \lambda_t + \rho Primary_{i,t-1} + \beta X_{it} + \gamma \tilde{CAshock}_t + \epsilon_{it} \tag{4}$$

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, the unemployment rate and the first lag of $Primary_{i,t}$. The independent variable is specified as a 2 period moving average[6]:

$$\tilde{CAshock}_{it} = \frac{shock_{i,t-1} + shock_{i,t-2}}{2} \tag{5}$$

where:

$$shock_{it} = \Delta_t Oilprice \times OILTB_{i,t-1} \tag{6}$$

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 γ, representing the impact of the current account shocks on the primary balance.

[6] As a robustness exercise we also present results for a 3 period moving average, defined as: $\tilde{CAshock}_{it} = \frac{shock_{i,t-1}+shock_{i,t-2}+shock_{i,t-3}}{3}$

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. In other words, a higher oil price 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.

(Include Table 7 here)

The reason why it is important to exogenise shifts in the current account position is that, in principle, causality could also 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), implying a *negative* coefficient.

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

$$Primary_{i,t} = k_i + \lambda_t + \rho Primary_{i,t-1} + \beta X_{i,t} + \gamma^{+} \tilde{CAshock}_t^{+} + \gamma^{-} \tilde{CAshock}_t^{-} + \epsilon_{i,t} \quad (7)$$

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.

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 positive for negative CA shocks at least for the 3-year moving average, indicating a counter-cyclical fiscal response to those shocks. 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. Table 10 shows results for emerging economies only, which instead points to an insignificant effects of CA shocks in all specifications.

(Include Tables 9 and 10 here)

In addition, one important question is whether country fundamentals explain to some extent the degree of fiscal policy counter-cyclicality 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,

$$Primary_{i,t} = k_i + \lambda_t + \rho Primary_{i,t-1} + \beta X_{i,t} + \gamma^{-} \tilde{CAshock}_t^{-} + \chi \tilde{CAshock}_t^{-} Z_{i,t-1} + \eta Z_{i,t-1} + \epsilon_{i,t} \tag{8}$$

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)[7], the NFA position, a dummy for emerging market economies, a dummy for whether a country is receiving an IMF program, a dummy for commodity exporters and a dummy

[7]In the empirical analysis, this variable has been standardized.

for banking crisis.[8] The inclusion of an IMF program is suggested by the fact that often such programs require a fiscal adjustment, and they are almost always given to countries with a negative and deteriorating CA position.

For this part of the analysis the focus is on the vector of coefficients χ. In particular, where χ 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 (8) are shown in Table 11. We find that, first, several potentially interesting interaction variables, such as being an emerging market, foreign exchange reserves, being a commodity exporter and being in an IMF program are statistically insignificant. Perhaps not surprisingly, we find that the fiscal policy reaction is more pronounced if the country is experiencing a banking crisis. On the other hand, a stronger initial NFA position and, in the specification with a 3-year moving average, the interaction between emerging market status and the quality of institutions as measured by the ICRG risk indicator dampen the fiscal policy reaction. The results are similar when we restrict to emerging market only, as shown in Table 12.

(Include Tables 11 and 12 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, at least in some specifications, 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 a small set of variables, notably being in a banking crisis (on the amplification side) and a stronger NFA position and quality of institutions for emerging markets (on the dampening side) mediate the effect of negative CA shocks on the stance of fiscal policy.

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

[8] We thank Katharina Bergant for providing us with the data on IMF programs. Also note that the vector Z also contains the interaction between emerging market and the ICRG financial risk rating.

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, does not reveal any evident trade of substantial asymmetry. 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 being in a banking crisis means that countries display a more counter-cyclical response to negative current account shocks, while the NFA position and the quality of institutions (for emerging markets) play 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-cyclicality for deficit shocks.

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Table 1: Calibrated parameters in the model.

Parameter	Value
β	0.99
σ_β	0.02
γ	0.05
B_{t-1}	0
k_g	0.1
k_b	0.001

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

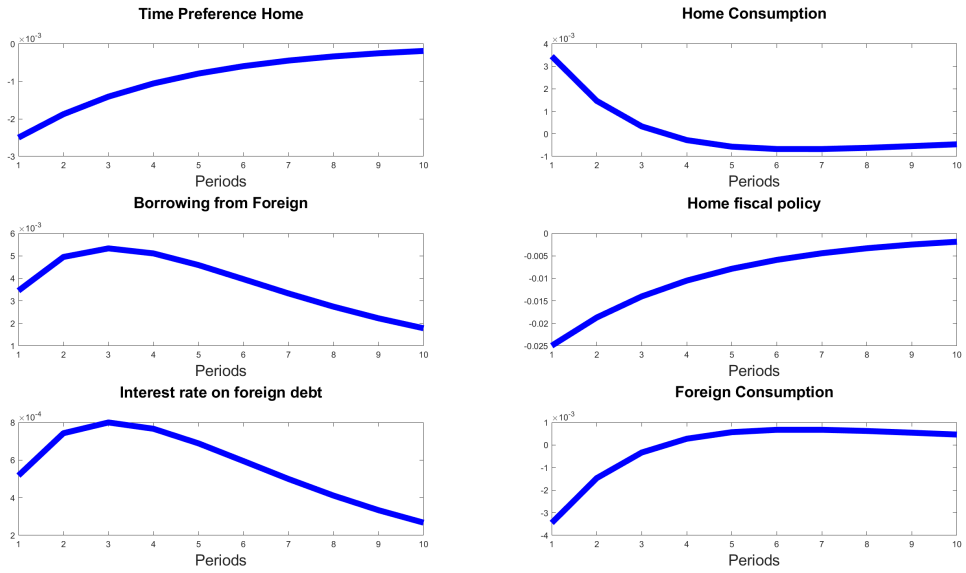

Figure 2: Impulse responses to a 1% increase in impatience for the Home consumer, decentralised solution (solid blue lines) vs. centralised solution (red dashed lines).

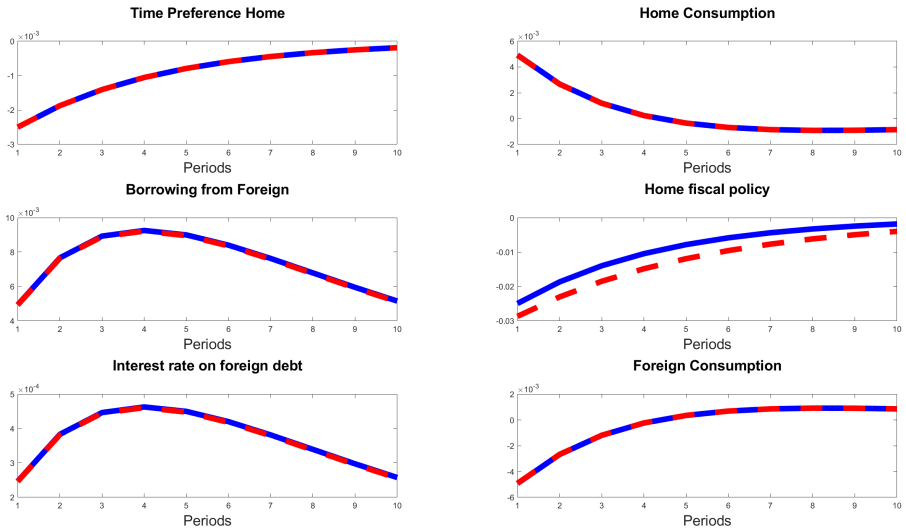

Table 2: Countries included in the sample. The source for the distinction between advanced and emerging market economies is the IMF.

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 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. The second part of the table presents the number of observations.

Variable	Mean	Std.dev	Min.	Max.	Countries	Definition	Source
Current account/GDP	-0.31	8.63	-240.52	56.70	70	Current account balance in USD adjusted by nominal GDP	IMF IFS (BPM5 and BPM6)
Reserves	60,538.86	242,561.2	28.56	3,859,168	71	Total foreign-exchange reserves minus gold	IMF
Exchange rate	1,129.645	39,168.48	.000024	2,059,940	70	US dollars per unit of national currency (EOP)	IMF IFS
Inflation	23.58	234.49	-7.63	7,600	64	Consumer Price Index (2010=100)	WEO, OECD, WDI and AMECO
Interest rate	23.46	372.4	-2	15,778.57	70	Short-term interest rate	IFS, OECD, National CBs
Imports/GDP	32.64	26.55	2.63	201.89	70	Total imports (% GDP)	IMF
Exports/GDP	29.87	25.60	2.04	183.11	70	Total exports (% GDP)	IMF
Trade balance	-2.84	12.71	-70.59	68.91	70	Exports minus imports	Authors' calculations
Net income/GDP	2.60	11.12	-216.34	62.81	69	Current account minus trade balance	Authors' calculations
Net Foreign Assets/GDP	-12.50	69.86	-645.06	615.29	68	Total (net) IIP	EWN
NFA Valuation	-12.81	67.14	-636.05	608.30	68	Net foreign assets minus current account	Authors' calculations
Investment income balance	-1.59	4.42	-26.37	49.15	69	Income on dividends, interests and capital gains	IMF
Primary balance	-0.30	6.40	-186.79	28.57	69	General government primary balance (% GDP)	IMF
ICRG financial risk	38.20	6.57	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.

Variable	dummy=0	dummy=1	Countries	Definition	Source
Banking crisis	2,944	258	69	Dummy=1 when the country is in a banking crisis	Authors' calculations based on Laeven and Valencia (2012)
Emerging dummy	1,872	1,820	70	Dummy=1 for emerging market economies, 0 otherwise	IMF
Commodity exporter	2,912	780	70	Dummy=1 if the country is a commodity exporter, 0 otherwise	IMF
IMF program	412	182	27	Dummy=1 if the country is benefiting from an IMF program	IMF
Exchange rate regime	=1: 940 =2: 968	=3: 1,313	69	=1 if peg, =2 if softpeg and =3 if floating relative to USD.	IMF

Table 4: Number of adjustment episodes. We define a current account adjustment as a 6-year period in which the current account (CA) moves by more than six percentage points (pp). More precisely, a current account *deficit* adjustment is a 6-year period in which the current account increases by more than 6pp. Similarly, in a current account *surplus* adjustment, the current account worsens by more than 6pp. 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 then 5%.

	Deficit adjustment	Surplus adjustment
Total	170	153
Euro Area	13	10
Advanced economies	64	55
Emerging economies	106	98
Peg	57	51
Soft-peg	43	50
Float	64	50

Table 5: Number of current account (as % of GDP) surplus adjustments. Current account deficit adjustment is defined as a period (with maximum 6 years) in which the current account improves by more than 6 percentage points. Last column displays the length of the adjustment in years.

Country	Initial year	Final year	Initial CA	Final CA	Length
Albania	1990	1993	-5.83	1.26	4
Albania	1997	1998	-12.05	-2.56	2
Albania	2008	2013	-15.63	-9.27	6
Argentina	1987	1990	-3.81	3.22	4
Argentina	1997	2002	-4.14	8.97	6
Argentina	2017	2021	-4.84	1.36	5
Australia	2015	2020	-4.22	2.68	6
Austria	1977	1982	-5.43	.99	6
Bosnia & Herzegovina	2002	2006	-17.7	-7.76	5
Bosnia & Herzegovina	2008	2009	-13.83	-6.45	2
Brazil	1982	1984	-6.01	.02	3
Bulgaria	1990	1991	-8.29	-.7	2
Bulgaria	1993	1994	-10.15	-.33	2
Bulgaria	2005	2010	-11.21	-1.9	6
Chile	1975	1976	-6.43	1.43	2
Chile	1981	1983	-13.71	-5.49	3
Chile	1985	1988	-7.98	-.89	4
Chile	2001	2006	-1.54	4.55	6
China	1985	1990	-3.69	3.32	6
China	1993	1997	-2.61	3.84	5
China	2001	2006	1.3	8.42	6
Colombia	1971	1976	-5.81	1.06	6
Colombia	1981	1986	-5.39	1.1	6
Colombia	1997	1999	-5.39	.78	3
Croatia	1997	2000	-10.49	-2.44	4
Croatia	2006	2011	-7.69	-1.66	6
Cyprus	1977	1981	-14.29	-8.24	5
Cyprus	1983	1986	-9.49	-.61	4
Cyprus	1989	1993	-5.46	1.67	5
Cyprus	1996	1998	-4.67	2.84	3
Cyprus	2008	2009	-14.44	-6.7	2
Denmark	1986	1990	-5.1	.99	5
Egypt	1979	1980	-8.36	-2.01	2
Egypt	1982	1987	-6.69	.05	6
Egypt	1989	1990	-3.29	5.41	2
Egypt	1998	2003	-3.02	4.66	6
Estonia	2004	2009	-11.27	2.68	6

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Finland	1975	1977	-7.26	-.3	3
Finland	1990	1995	-4.92	3.9	6
Germany	2000	2004	-1.67	4.53	5
Greece	2007	2012	-13.98	-2.55	6
Hong Kong	1998	2003	1.48	10.21	6
Hong Kong	2016	2021	3.95	11.33	6
Hungary	1993	1995	-10.62	-3.55	3
Hungary	2004	2009	-8.46	-.68	6
Iceland	1982	1983	-8.14	-2.02	2
Iceland	1998	2002	-6.53	1.56	5
Iceland	2005	2009	-15.72	-9.01	5
Iceland	2011	2013	-4.7	6.26	3
Indonesia	1983	1988	-7.82	-1.66	6
Indonesia	1995	1998	-3.18	4.29	4
Iran	1977	1979	3.49	13.24	3
Iran	1981	1982	-3.43	4.55	2
Iran	1989	1994	-.16	6.9	6
Iran	1996	2000	4.35	11.39	5
Ireland	1974	1975	-8.71	-1.31	2
Ireland	1979	1984	-11.46	-5.16	6
Ireland	2007	2010	-5.13	1.05	4
Ireland	2012	2015	-3.42	4.43	4
Ireland	2017	2021	1.01	14.49	5
Israel	2001	2006	-1.55	4.52	6
Italy	1974	1978	-4.15	1.92	5
Kosovo	2008	2009	-17.85	-10.41	2
Kosovo	2011	2012	-13.33	-6.16	2
Kuwait	1975	1979	49.32	56.7	5
Kuwait	1982	1984	23	29.63	3
Kuwait	1986	1989	31.37	37.58	4
Kuwait	1991	1992	-240.53	-2.27	2
Kuwait	1994	1996	13.05	22.57	3
Kuwait	1998	1999	8.54	16.63	2
Kuwait	2001	2005	23.86	37.22	5
Kuwait	2007	2011	36.05	42.93	5
Kuwait	2015	2018	7.49	17.4	4
Latvia	2004	2009	-12.21	7.8	6
Lithuania	1998	2001	-11.55	-4.69	4
Lithuania	2004	2009	-7.62	2.25	6
Lithuania	2011	2014	-3.66	3.41	4

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Lithuania	2016	2020	-1.1	7.37	5
Macedonia	2002	2005	-9.43	-2.55	4
Macedonia	2008	2010	-12.47	-2.11	3
Malaysia	1974	1976	-5.67	5.3	3
Malaysia	1981	1985	-9.87	-1.92	5
Malaysia	1993	1998	-4.47	13.2	6
Malaysia	2001	2005	7.85	13.92	5
Malta	1971	1972	.38	7.79	2
Malta	1974	1975	1.33	12.43	2
Malta	1995	1999	-10.21	-3.25	5
Malta	2001	2002	-3.67	2.37	2
Malta	2006	2008	-7.83	-.85	3
Malta	2010	2012	-4.64	1.6	3
Malta	2016	2017	-.57	5.94	2
Mexico	1979	1983	-4.02	3.76	5
Mexico	1992	1995	-6.73	-.44	4
Montenegro	2007	2009	-39.78	-27.68	3
Montenegro	2016	2021	-16.16	-9.3	6
Netherlands	2008	2012	4.09	10.67	5
New Zealand	1974	1976	-13.25	-5.84	3
New Zealand	1984	1987	-13.99	-7.21	4
Nigeria	1977	1979	-2.82	3.54	3
Nigeria	1981	1985	-3.94	3.53	5
Nigeria	1987	1990	-.14	9.23	4
Nigeria	1992	1996	4.75	21.91	5
Nigeria	1998	1999	-27.27	.85	2
Nigeria	2001	2004	3.35	12.35	4
Nigeria	2015	2017	-3.17	3.61	3
Norway	1975	1980	-7.54	1.67	6
Norway	1986	1990	-5.78	3.33	5
Norway	1995	2000	3.44	14.64	6
Norway	2016	2021	4	14.83	6
Pakistan	1996	2000	-7.01	-.1	5
Pakistan	2008	2009	-9.2	-2.37	2
Peru	1977	1979	-6.31	4.58	3
Peru	1981	1984	-7.98	-1.33	4
Peru	1986	1989	-9.14	-2.53	4
Philippines	1981	1986	-5.09	2.8	6
Philippines	1993	1998	-4.86	2.08	6
Philippines	2001	2006	-2.22	5.45	6

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Poland	1993	1994	-6.03	.57	2
Portugal	1976	1979	-6.31	-.2	4
Portugal	1981	1983	-14.65	-5.99	3
Portugal	2007	2012	-9.66	-1.65	6
Romania	1990	1994	-8.34	-1.42	5
Romania	2007	2009	-13.7	-4.73	3
Russia	1994	1999	1.99	12.57	6
Saudi Arabia	1971	1972	13.53	21.62	2
Saudi Arabia	1977	1980	16.16	25.22	4
Saudi Arabia	1984	1988	-15.38	-8.31	5
Saudi Arabia	1991	1992	-20.8	-12.92	2
Saudi Arabia	1994	1996	-7.75	.43	3
Saudi Arabia	1998	1999	-8.95	.25	2
Saudi Arabia	2001	2003	5.08	13	3
Saudi Arabia	2009	2010	4.88	12.64	2
Saudi Arabia	2015	2017	-8.67	1.52	3
Saudi Arabia	2020	2021	-3.24	5.32	2
Serbia	2007	2009	-17.43	-6.2	3
Serbia	2011	2015	-10.33	-3.46	5
Singapore	1972	1975	-18.19	-10.37	4
Singapore	1980	1983	-13.14	-3.43	4
Singapore	1985	1988	-.02	7.63	4
Singapore	1990	1994	8.64	15.47	5
Singapore	1996	1998	14.54	21.57	3
Singapore	2000	2003	10.66	22.31	4
Singapore	2008	2010	15.08	22.93	3
Slovakia	1993	1994	-3.51	3.33	2
Slovakia	1998	2003	-7.12	-.6	6
Slovakia	2007	2012	-5.35	.94	6
Slovenia	2008	2012	-5.28	1.29	5
South Africa	1974	1979	-3.47	4.7	6
South Africa	1981	1985	-5.34	3.51	5
South Africa	2015	2020	-4.31	2.02	6
South Korea	1980	1983	-7.75	-1.63	4
South Korea	1985	1987	-1.49	7.29	3
South Korea	1993	1998	.76	11.12	6
Spain	2006	2011	-8.85	-2.7	6
Switzerland	2008	2010	1.32	12.93	3
Thailand	1981	1986	-7.38	.57	6
Thailand	1993	1998	-4.93	12.53	6

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Thailand	2004	2009	1.6	7.88	6
Thailand	2011	2016	2.54	10.51	6
Ukraine	1994	1999	-2.21	5.25	6
Ukraine	2001	2004	3.57	10.28	4
Ukraine	2010	2015	-2.14	5.53	6
Ukraine	2017	2020	-3.1	3.36	4
Venezuela	1970	1973	-.9	5.15	4
Venezuela	1976	1980	.81	8	5
Venezuela	1982	1983	-6.27	6.55	2
Venezuela	1985	1990	5.37	17.04	6
Venezuela	1992	1994	-6.21	4.35	3
Venezuela	1998	1999	-4.85	2.16	2
Venezuela	2001	2002	1.61	8.18	2

End of Table

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.

Country	Initial year	Final year	Initial CA	Final CA	Length
Albania	1986	1991	-.15	-15.28	6
Albania	1993	1994	1.26	-8.36	2
Albania	1996	1997	-3.35	-12.05	2
Albania	2003	2008	-7.25	-15.63	6
Argentina	1976	1980	1.27	-6.2	5
Argentina	1990	1993	3.22	-3.47	4
Argentina	2002	2004	8.97	1.95	3
Bosnia & Herzegovina	1998	2002	-8.38	-17.7	5
Bosnia & Herzegovina	2006	2008	-7.76	-13.83	3
Bulgaria	1984	1986	3.04	-4.7	3
Bulgaria	1988	1990	-1.78	-8.29	3
Bulgaria	1992	1993	-3.48	-10.15	2
Bulgaria	1997	1999	3.77	-4.79	3
Bulgaria	2001	2006	-5.67	-17.05	6
Chile	1976	1978	1.43	-6.8	3
Chile	1980	1981	-6.79	-13.71	2
Chile	2006	2008	4.55	-3.73	3
Chile	2010	2012	1.41	-5.33	3
China	1982	1985	2.77	-3.69	4
China	1991	1993	3.46	-2.61	3
China	2006	2011	8.42	1.8	6
Colombia	1976	1981	1.06	-5.39	6
Colombia	1990	1995	1.13	-4.88	6
Croatia	1996	1997	-4.1	-10.49	2
Croatia	2004	2008	-4.24	-10.58	5
Cyprus	1976	1977	-4.69	-14.29	2
Cyprus	1986	1991	-.61	-7.28	6
Cyprus	1993	1996	1.67	-4.67	4
Cyprus	1998	2000	2.84	-4.89	3
Cyprus	2003	2008	-2.01	-14.44	6
Cyprus	2015	2020	-.42	-10.22	6
Czech Republic	1993	1996	1.14	-6.13	4
Egypt	1980	1981	-2.01	-9.64	2
Egypt	1991	1994	9.01	.06	4
Egypt	2004	2009	4.98	-1.77	6
Estonia	1995	1997	-3.51	-10.9	3

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Estonia	1999	2003	-5.12	-11.29	5
Estonia	2005	2006	-8.63	-14.97	2
Finland	2007	2012	3.74	-2.28	6
Greece	2002	2007	-6.2	-13.98	6
Hong Kong	2006	2011	12.69	5.56	6
Hungary	1991	1993	1.16	-10.62	3
Hungary	2016	2021	4.55	-3.94	6
Iceland	1978	1982	.8	-8.14	5
Iceland	1993	1998	.59	-6.53	6
Iceland	2000	2005	-9.38	-15.72	6
Iceland	2007	2008	-13.47	-22.94	2
Iceland	2016	2020	8.27	1.88	5
Indonesia	1981	1983	-.66	-7.82	3
Iran	1976	1977	11.26	3.49	2
Iran	1979	1980	13.24	-2.58	2
Iran	1982	1986	4.55	-2.47	5
Iran	1989	1993	-.16	-6.61	5
Iran	1996	1998	4.35	-1.94	3
Ireland	1975	1979	-1.31	-11.46	5
Ireland	2014	2019	1.08	-11.26	6
Kuwait	1975	1977	49.32	32.27	3
Kuwait	1979	1982	56.7	23	4
Kuwait	1984	1985	29.63	22.38	2
Kuwait	1987	1991	20.39	-240.53	5
Kuwait	1995	1998	18.45	8.54	4
Kuwait	2000	2001	38.9	23.86	2
Kuwait	2005	2009	37.22	27.34	5
Kuwait	2011	2014	42.93	33.18	4
Latvia	1995	1998	-.28	-9.07	4
Latvia	2000	2004	-4.66	-12.21	5
Latvia	2009	2010	7.8	1.72	2
Latvia	2020	2021	2.73	-4.37	2
Lithuania	2002	2007	-5.05	-15.36	6
Lithuania	2020	2021	7.37	1.15	2
Luxembourg	2004	2009	11.66	5.52	6
Macedonia	1999	2002	-1.7	-9.43	4
Macedonia	2005	2008	-2.55	-12.47	4
Malaysia	1976	1980	5.3	-1.09	5
Malaysia	1986	1991	-.36	-8.51	6
Malaysia	1998	2002	13.2	7.13	5

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Malaysia	2006	2010	16.1	10.06	5
Malta	1972	1974	7.79	1.33	3
Malta	1976	1980	10.42	3.12	5
Malta	1988	1993	3.02	-3.1	6
Malta	1999	2000	-3.25	-11.8	2
Malta	2002	2004	2.37	-5.54	3
Malta	2014	2016	8.53	-.57	3
Malta	2018	2020	6.43	-2.78	3
Mexico	1987	1991	2.88	-4.75	5
Montenegro	2007	2008	-39.78	-49.65	2
Montenegro	2015	2018	-10.93	-17.12	4
New Zealand	1972	1974	1.6	-13.25	3
New Zealand	1979	1984	-3.87	-13.99	6
Nigeria	1977	1978	-2.82	-10.28	2
Nigeria	1980	1981	8.07	-3.94	2
Nigeria	1989	1994	2.48	-6.29	6
Nigeria	1996	1997	21.91	3.32	2
Nigeria	2000	2001	10.69	3.35	2
Nigeria	2004	2009	12.35	4.7	6
Nigeria	2012	2015	3.81	-3.17	4
Nigeria	2017	2019	3.61	-3.05	3
Norway	1981	1986	3.35	-5.78	6
Norway	1996	1998	6.71	0	3
Norway	2011	2016	13.34	4	6
Norway	2018	2020	8	1.17	3
Pakistan	2001	2006	2.36	-4.92	6
Peru	1978	1981	-1.54	-7.98	4
Peru	1983	1988	-5.03	-11.78	6
Peru	2006	2008	3.24	-4.41	3
Philippines	1986	1990	2.8	-5.34	5
Philippines	2013	2018	4.01	-2.56	6
Poland	1990	1991	4.65	-2.51	2
Poland	1994	1999	.57	-7.34	6
Portugal	1976	1981	-6.31	-14.65	6
Portugal	1993	1998	.25	-6.76	6
Romania	1987	1990	5.32	-8.34	4
Romania	2002	2006	-3.31	-10.67	5
Russia	2000	2001	18.04	11.07	2
Russia	2005	2009	11.05	4.12	5
Saudi Arabia	1973	1978	16.86	-2.76	6

Continuation of Table 5

Country	Initial year	Final year	Initial CA	Final CA	Length
Saudi Arabia	1980	1982	25.22	4.94	3
Saudi Arabia	1986	1991	-13.55	-20.8	6
Saudi Arabia	1996	1998	.43	-8.95	3
Saudi Arabia	2004	2009	20.07	4.88	6
Saudi Arabia	2011	2014	23.62	9.75	4
Saudi Arabia	2018	2020	8.81	-3.24	3
Singapore	1977	1980	-4.46	-13.14	4
Singapore	1998	2000	21.57	10.66	3
Singapore	2003	2008	22.31	15.08	6
Singapore	2010	2013	22.93	15.71	4
Slovakia	1994	1996	3.33	-7.48	3
Slovakia	2003	2005	-.6	-8.16	3
South Africa	1978	1981	2.13	-5.34	4
South Korea	1976	1980	-1.04	-7.75	5
South Korea	1986	1991	3.84	-2.27	6
South Korea	1998	1999	11.12	4.92	2
Spain	2002	2007	-3.14	-9.45	6
Switzerland	2003	2008	12.37	1.32	6
Switzerland	2010	2011	12.93	6.16	2
Switzerland	2015	2020	8.78	1.47	6
Thailand	1986	1990	.57	-8.53	5
Thailand	1998	2001	12.53	4.24	4
Thailand	2003	2005	3.13	-4.04	3
Thailand	2007	2012	5.93	-1.23	6
Thailand	2016	2020	10.51	4.21	5
Turkey	2001	2005	1.86	-4.14	5
Turkey	2009	2011	-1.75	-8.87	3
Ukraine	2002	2006	7.22	-1.45	5
Ukraine	2009	2012	-1.43	-7.85	4
Ukraine	2015	2016	5.53	-2	2
Venezuela	1972	1977	-.72	-8.78	6
Venezuela	1979	1982	.72	-6.27	4
Venezuela	1984	1986	7.75	-3.72	3
Venezuela	1989	1992	4.96	-6.21	4
Venezuela	1994	1998	4.35	-4.85	5
Venezuela	2000	2001	10.12	1.61	2
Venezuela	2003	2007	14.11	5.84	5

End of Table

Figure 3: Results of the estimation 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 of 1,139 observations classified as 170 deficit adjustments and 153 surplus adjustments from advanced and emerging market economies.

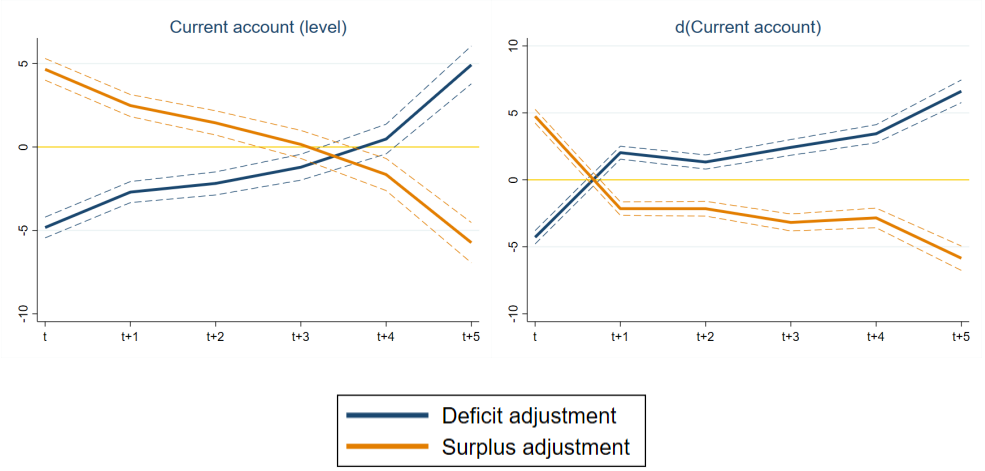

Figure 4: Results of equation (3) on the variables of interest. The sample used consists of 170 deficit adjustments and 153 surplus adjustments from advanced and emerging market economies.

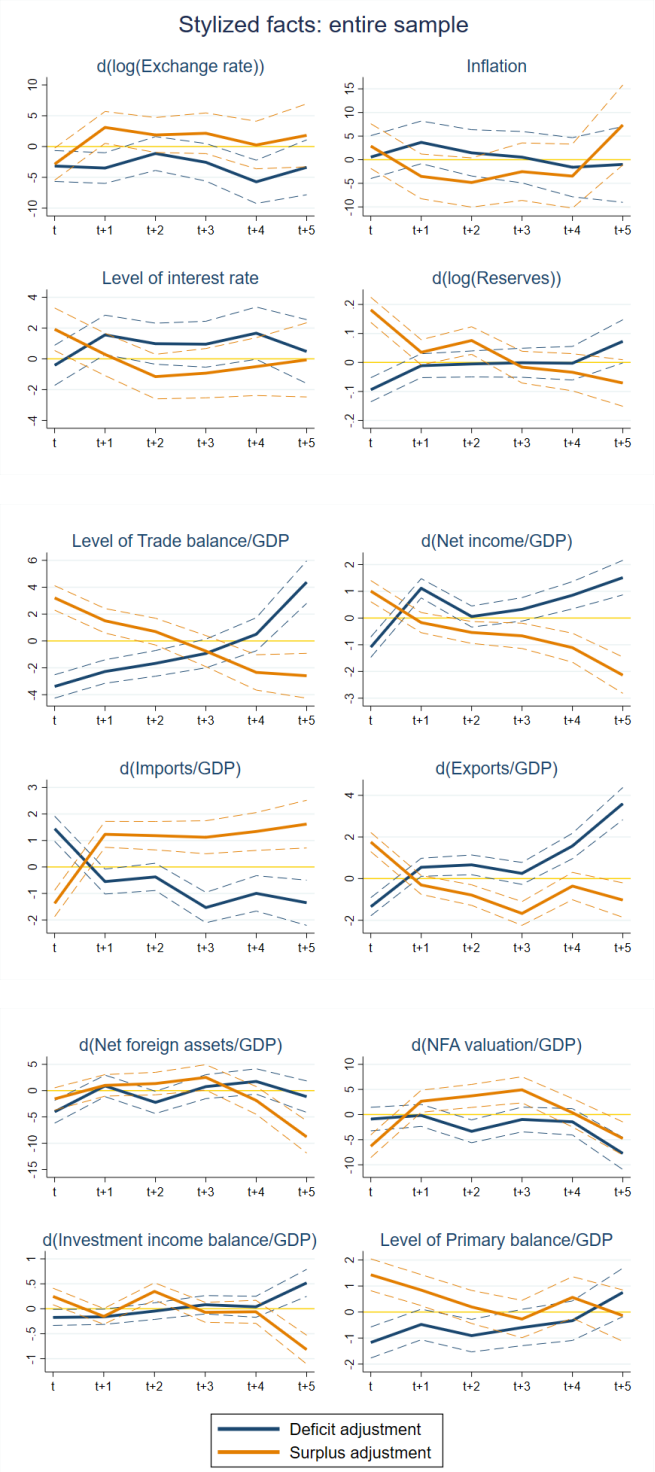

Figure 5: Results of the estimation of equation (3) on the variables of interest. The sample used consists only on countries that during the first two years of adjustment had a peg exchange rate regime versus the dollar. Precisely, the sample contains 57 deficit adjustments and 51 surplus adjustments from advanced and emerging market economies.

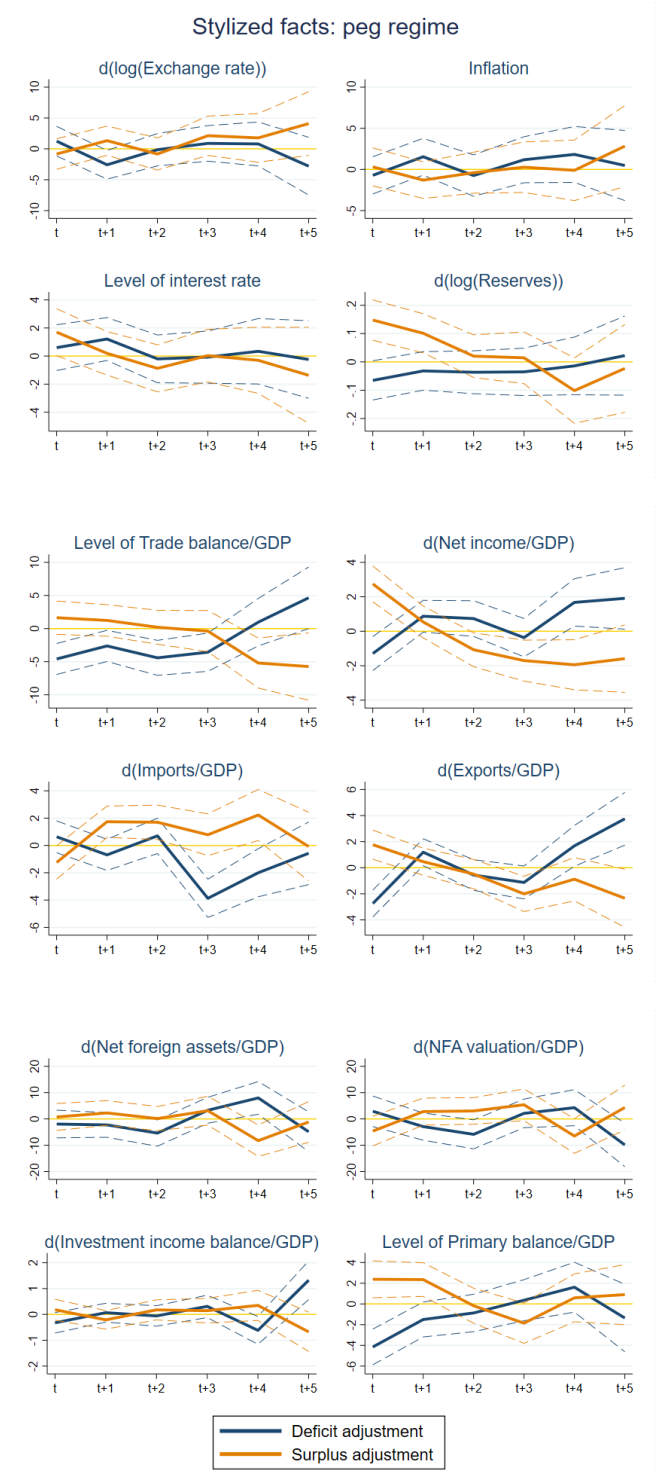

Figure 6: Results of the estimation of equation (3) on the variables of interest. Deficit adjustment is defined as a 6 year period in which the current account increases by more than 7 percentage points. Similarly, surplus adjustment is a 6 year period in which the CA falls by more than 7 pp. With this modification, the sample consists of 140 deficit adjustment episodes and 131 surplus episodes.

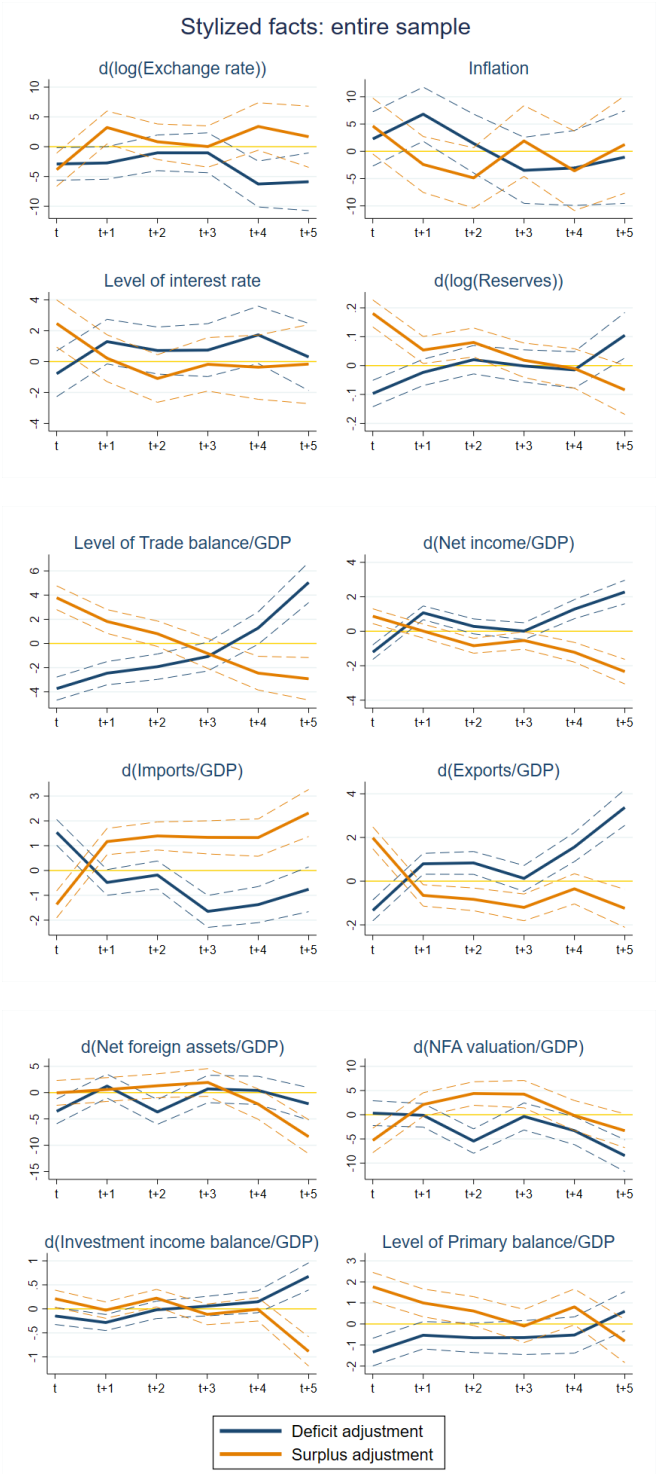

Figure 7: Results of the estimation of equation (3) on the variables of interest. Deficit adjustment is defined as a 6 year period in which the current account increases by more than 10 percentage points. Similarly, surplus adjustment is a 6 year period in which the CA falls by more than 10 pp. With the new thresholds, the sample has 86 deficit adjustment episodes and 70 surplus episodes.

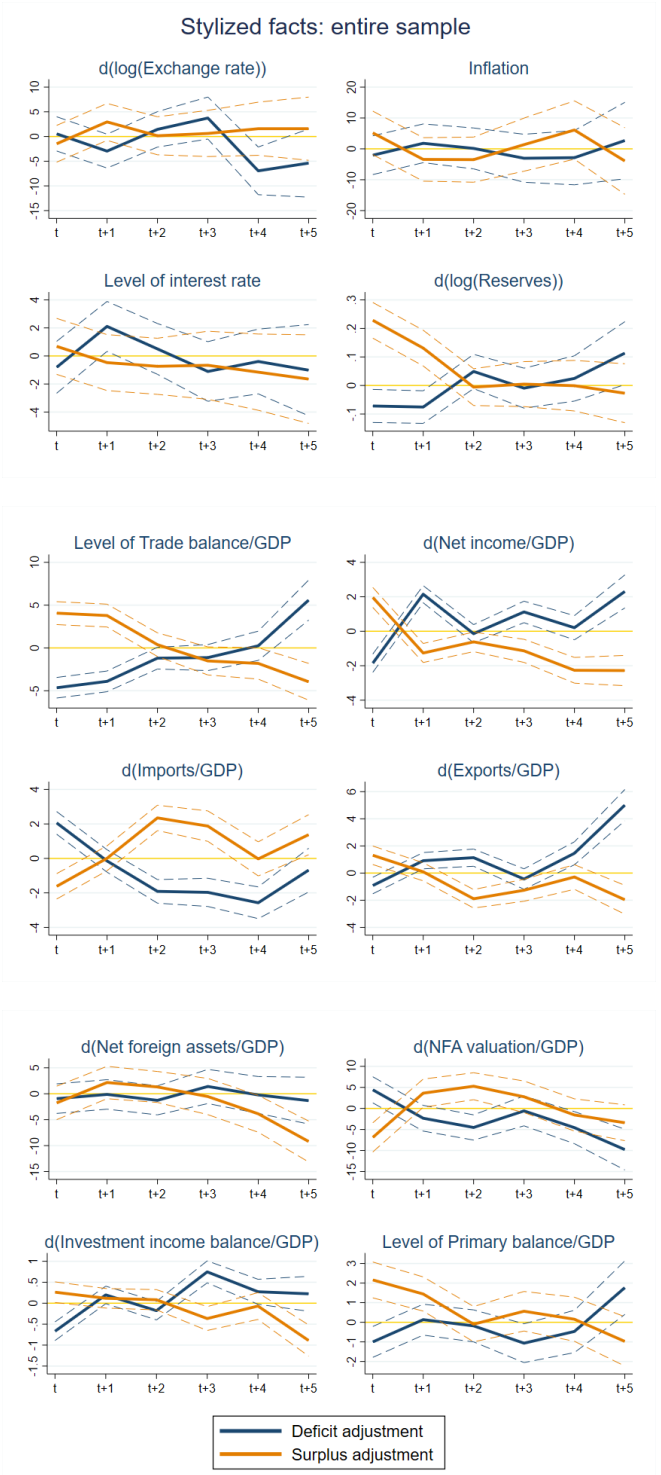

Table 7: OLS with time and fixed effects of CA on the CA shock. The first column presents the results of regressing the level of CA on the shock (as defined in 6). The second column shows the same exercise with the CA moving average (of t and t-1) as the dependent variable and the 2 period CA shock moving average as the independent. Finally last column extends by 1 period the CA mov.avg as well as the CA shock mov.avg. *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses.

	CA	CA mov.avg. (t,t-1)	CA mov.avg. (t,t-1,t-2)
CA shock	0.94***		
	(0.10)		
CA sh.mov.avg (t-1,t-2)		1.38***	
		(0.17)	
CA sh.mov.avg (t-1, t-2, t-3)			1.86***
			(0.25)
R-squared	0.09	0.12	0.15
F-statistic	65.79	86.94	39.68

Table 8: Results of equation 4 and 7 with different specifications of the CA shock (As defined in (5)) as independent variable. Columns 1 and 3 present the results for the 2 period moving average of the CA shock (level and square) and columns 2 and 4 report the 3 period moving average. From column 5 to 8 the explanatory variables are the 2 and 3 period moving average of the CA respectively. *Positive CA mov.avg.* is defined as the CA mov.avg. when this is positive and 0 otherwise. Likewise, *negative CA mov.avg.= CA mov.avg.* when this is negative and 0 otherwise. Current and first lag of inflation, growth rate of real GDP and unemployment rate as well as first lag of primary balance (% GDP) 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)	0.14		0.10					
	(0.10)		(0.13)					
CA shock mov.avg.(t-1,t-2,t-3)		0.11		0.03				
		(0.13)		(0.16)				
CA shock mov.avg.square(t-1,t-2)			-0.01					
			(0.01)					
CA shock mov.avg.square(t-1,t-2,t-3)				-0.04				
				(0.03)				
CA mov.avg.(t,t-1)					0.02			
					(0.02)			
Positive CA mov.avg.(t-1,t-2)						0.00		
						(0.03)		
Negative CA mov.avg.(t-1,t-2)						0.04		
						(0.03)		
CA mov.avg.(t,t-1,t-2)							0.03*	
							(0.02)	
Positive CA mov.avg.(t-1,t-2,t-3)								0.01
								(0.03)
Negative CA mov.avg.(t-1,t-2,t-3)								0.05***
								(0.02)
R-squared	0.61	0.61	0.61	0.61	0.61	0.61	0.61	0.61
Observations	1,690	1,671	1,690	1,671	1,665	1,665	1,654	1,654

Table 9: Results of equation 4 and 7 with different specifications of the CA shock (as defined in (5)) as independent variable and the primary balance as a share of GDP as the dependent variable. In this table the United States is excluded from the sample. See notes to Table 8 for additional explanations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CA shock mov.avg.(t-1,t-2)	0.14		0.10					
	(0.10)		(0.13)					
CA shock mov.avg.(t-1,t-2,t-3)		0.11		0.03				
		(0.13)		(0.16)				
CA shock mov.avg.square(t-1,t-2)			-0.01					
			(0.01)					
CA shock mov.avg.square(t-1,t-2,t-3)				-0.04				
				(0.03)				
CA mov.avg.(t,t-1)					0.02			
					(0.02)			
Positive CA mov.avg.(t-1,t-2)						0.00		
						(0.03)		
Negative CA mov.avg.(t-1,t-2)						0.04		
						(0.03)		
CA mov.avg.(t,t-1,t-2)							0.03*	
							(0.02)	
Positive CA mov.avg.(t-1,t-2,t-3)								0.01
								(0.03)
Negative CA mov.avg.(t-1,t-2,t-3)								0.05***
								(0.02)
R-squared	0.61	0.61	0.61	0.61	0.60	0.60	0.60	0.61
Observations	1,670	1,651	1,670	1,651	1,645	1,645	1,634	1,634

Table 10: Results of equation 4 with different specifications of the CA shock (As defined in (5)) as independent variable and the primary balance as a share of GDP as the dependent variable. In this table the sample only includes emerging economies. See notes to Table 8 for additional explanations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CA shock mov.avg.(t-1,t-2)	0.15		0.11					
	(0.10)		(0.13)					
CA shock mov.avg.(t-1,t-2,t-3)		0.10		-0.00				
		(0.13)		(0.17)				
CA shock mov.avg.square(t-1,t-2)			-0.01					
			(0.01)					
CA shock mov.avg.square(t-1,t-2,t-3)				-0.04				
				(0.04)				
CA mov.avg.(t,t-1)					-0.02			
					(0.03)			
Positive CA mov.avg.(t-1,t-2)						-0.03		
						(0.05)		
Negative CA mov.avg.(t-1,t-2)						-0.02		
						(0.04)		
CA mov.avg.(t,t-1,t-2)							0.00	
							(0.02)	
Positive CA mov.avg.(t-1,t-2,t-3)								-0.02
								(0.03)
Negative CA mov.avg.(t-1,t-2,t-3)								0.02
								(0.02)
R-squared	0.59	0.59	0.59	0.60	0.59	0.59	0.59	0.59
Observations	776	764	776	764	750	750	745	745

Table 11: Results of equation 8. 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 and it has been standardized. Added to the controls mentioned in Table 8, lagged CA, lagged NFA, lagged ICRG financial risk, lagged government debt, lagged reserves, lagged dummies for emerging economies if the country was benefiting from an IMF program, banking crisis and commodity exporter are used but not reported for brevity. See notes to Table 8 for additional explanations.

	(1)	(2)	(3)	(4)
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2)		0.07		
		(0.05)		
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2)		0.01*		
		(0.01)		
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2)		-1.74		
		(1.05)		
Neg. CA shock.mov.avg*Gov.debt(t-1,t-2)		0.01		
		(0.02)		
Neg. CA shock.mov.avg*Reserves/GDP(t-1,t-2)		-0.00		
		(0.07)		
Neg. CA shock.mov.avg*Emerging(t-1,t-2)		0.28		
		(1.19)		
Neg. CA shock.mov.avg*Comm.export.(t-1,t-2)		-0.21		
		(0.74)		
Neg. CA shock.mov.avg*IMF prog.(t-1,t-2)		0.55		
		(1.02)		
Neg. CA shock.mov.avg*banking(t-1,t-2)		-2.75**		
		(1.31)		
Neg. CA shock.mov.avg*emerging*ICRG risk(t-1,t-2)		1.87		
		(1.18)		
ICRG risk*emerging (t-1)		-0.44		-0.46
		(0.50)		(0.46)
Negative CA shock mov.avg.(t-1,t-2)	0.12***	0.40		
	(0.04)	(1.06)		
Positive CA shock mov.avg.(t-1,t-2)	0.17	-0.15		
	(0.21)	(0.49)		
Negative CA shock mov.avg.(t-1,t-2,t-3)			0.44***	-0.41
			(0.08)	(2.16)
Positive CA shock mov.avg.(t-1,t-2,t-3)			-0.30	-0.53
			(0.27)	(0.65)
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2,t-3)				0.05
				(0.06)
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2,t-3)				0.03**
				(0.01)
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2,t-3)				-3.12
				(1.91)
Neg. CA shock.mov.avg*Gov.debt(t-1,t-2,t-3)				0.05*
				(0.03)
Neg. CA shock.mov.avg*Reserves/GDP(t-1,t-2,t-3)				0.07
				(0.07)
Neg. CA shock.mov.avg*Emerging(t-1,t-2,t-3)				-0.12
				(2.07)
Neg. CA shock.mov.avg*Comm.export.(t-1,t-2,t-3)				0.19
				(1.07)
Neg. CA shock.mov.avg*IMF prog.(t-1,t-2,t-3)				-0.26
				(1.23)
Neg. CA shock.mov.avg*banking(t-1,t-2,t-3)				-4.96**
				(2.28)
Neg. CA shock.mov.avg*emerging*ICRG risk(t-1,t-2,t-3)				4.10**
				(1.98)
R-squared	0.61	0.59	0.61	0.60
Observations	1,690	395	1,671	393

Table 12: Results of equation 8. Sample consists of emerging markets only. The dependent variable is the government primary balance scaled by GDP; ICRG risk refers to ICRG financial risk and it has been standardized. Added to the controls mentioned in Table 6, lagged CA, lagged NFA, lagged ICRG financial risk, lagged government debt, lagged reserves and lagged dummies for banking crisis if the country was benefiting from an IMF program, and commodity exporter are used but not reported for brevity. See notes to Table 8 for additional explanations.

	(1)	(2)	(3)	(4)
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2)		0.08		
		(0.07)		
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2)		0.04**		
		(0.02)		
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2)		-0.71		
		(0.60)		
Neg. CA shock.mov.avg*Gov.debt(t-1,t-2)		0.01		
		(0.01)		
Neg. CA shock.mov.avg*Reserves/GDP(t-1,t-2)		0.03		
		(0.08)		
Neg. CA shock.mov.avg*Comm.export.(t-1,t-2)		-0.81		
		(0.70)		
Neg. CA shock.mov.avg*IMF prog.(t-1,t-2)		0.65		
		(0.89)		
Neg. CA shock.mov.avg*banking(t-1,t-2)		-1.90**		
		(0.89)		
Negative CA shock mov.avg.(t-1,t-2)	0.14***	1.30		
	(0.04)	(0.79)		
Positive CA shock mov.avg.(t-1,t-2)	0.15	-0.40*		
	(0.24)	(0.22)		
Negative CA shock mov.avg.(t-1,t-2,t-3)			0.47***	-0.52
			(0.10)	(1.43)
Positive CA shock mov.avg.(t-1,t-2,t-3)			-0.41	-0.59
			(0.31)	(0.38)
Neg. CA shock.mov.avg*CA/GDP(t-1,t-2,t-3)				0.13*
				(0.07)
Neg. CA shock.mov.avg*NFA/GDP(t-1,t-2,t-3)				0.01
				(0.03)
Neg. CA shock.mov.avg*ICRG risk(t-1,t-2,t-3)				1.13
				(0.95)
Neg. CA shock.mov.avg*Gov.debt(t-1,t-2,t-3)				0.02
				(0.02)
Neg. CA shock.mov.avg*Reserves/GDP(t-1,t-2,t-3)				0.07
				(0.10)
Neg. CA shock.mov.avg*Comm.export.(t-1,t-2,t-3)				0.30
				(0.82)
Neg. CA shock.mov.avg*IMF prog.(t-1,t-2,t-3)				-0.01
				(1.24)
Neg. CA shock.mov.avg*banking(t-1,t-2,t-3)				-2.56*
				(1.38)
R-squared	0.59	0.66	0.60	0.67
Observations	776	284	764	282

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