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FISCAL CONSOLIDATION AND THE CURRENT ACCOUNT: OECD EVIDENCE

Christian Breuer* and Chang Woon Nam**

Abstract

We apply a “new” conventional (CAPB-based) measure of fiscal policy, which is less prone to endogeneity issues, and find that a 1-percent of GDP fiscal consolidation leads to the improvement of the current account-to-GDP ratio by approximately 0.8 percent of GDP, while previous research based on conventional measures found a relationship of only 0.1-0.3 percentage points. We suggest that previous results based on conventional measures are biased towards underestimating the twin-deficit linkage because of endogeneity issues and the failure to adjust the CAPB for cyclical effects. After adjustment, the twin-deficit effect is particularly pronounced in the case of expenditure cuts and in Eurozone countries. These findings are in line with previous evidence based on narrative measures.

Keywords: fiscal adjustment; current account; twin deficit; Eurozone countries

JEL Classification: E62, E63, H50

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1 Introduction

The twin-deficit hypothesis suggests that the government budget directly impacts on the current account. It gains political relevance against the background of the recent controversies about trade policies and current account imbalances, as for example for the case of Germany. During the recent financial crisis and later the European fiscal crisis, a number of OECD countries have been prone to both, current account as well as government budget deficits.

The basic theoretical argument of the twin-deficit hypothesis looks at national accounts balance sheets. The government and the private sector together form the domestic sector, and consequently a shift in the government balance causes a shift in the domestic balance (and negatively the external balance), if not immediately compensated by a negative shift in the private balance sheet (assuming non-Ricardian households). Moreover, a reduction of the government budget deficit leads to a depreciation of the real exchange rate and consequently causes a fall in the current account deficit, as discussed by Obstfeld and Rogoff (1996).

However, the controversies surrounding the empirical validity of the twin deficit nexus are not yet fully settled. While Bluedorn and Leigh (2011) find that a 1-percent of GDP fiscal consolidation reduces the current account deficit-to-GDP ratio by about 0.6 percentage points, other studies suggest that such a twin-deficit link is rather negligible or even non-existent. For instance, studies by Summers (1986), Alesina et al. (1991), Abbas et.al (2010), and Gagnon (2011) demonstrate that the aforementioned relationship between fiscal consolidation expressed in terms of GDP and the reduction of the current account deficit-to-GDP ratio reach only 1 percent to 0.1-0.3 percentage points. Moreover, Kim and Roubini (2008) reveal the existence of the so-called “twin divergence” in the United States, highlighting that a cut in the budget deficit leads to the growth of current account deficit. Following this view, it would be questionable whether countries may reduce excessive budget surpluses with fiscal expansionary measures.

The empirical literature on the effects of fiscal policy distinguishes between data-based and narrative approaches. Most of the previous research investigates conventional (data-based) measures of fiscal policy, where fiscal consolidations are identified as a change in the (cyclically-adjusted) primary budget balance of the general government (CAPB). This strand of literature predominantly finds that there is no or only a small twin-deficit linkage. Bluedorn and Leigh (2011) use the narrative approach (Devries et al., 2011), to identify consolidations. They highlight that – in contrast to the previous results based on conventional measures – a 1-

percentage point increase in the CAPB (fiscal consolidation) improves the current account by approximately 0.6 percentage points.

This paper aims at contributing to the empirical literature with applications of a new conventional (data-based) method to identify fiscal policy effects. We adopt this method to re-examine the twin deficit relationship and discover potential pitfalls of previous analyses. The use of conventional (data-based) methods came under criticism (Guajardo et al., 2014) due mainly to the incomplete cyclical adjustment problem, and the counter-cyclical-response problem (Perotti, 2013). Breuer (2019) focuses on the incomplete cyclical adjustment problem and shows that the results of the conventional approach (particularly the results in support expansionary austerity view, as found, for example, in Alesina and Ardagna, 2010 and 2013) disappear after controlling for the incomplete cyclical adjustment problem. He shows that the “classical” (conventional) approach pioneered by Alesina and Perotti (1995) systematically creates an incomplete cyclical adjustment problem and thus leads to distortive results, and suggests a *new* version of the “Blanchard measure” for cyclical adjustment of budget data (refer to Blanchard, 1990) or applying OECD methods as proposed by Girouard and André (1995).

In this paper we follow this idea and use a new method to adjust for cyclical effects, based on measures of CAPB as provided by the OECD Economic Outlook, No. 101. We find that the empirical results based on this measure of CAPB are in a strong contrast to the classical measures of CAPB (conventional approach), as found in earlier literature, which appears to be less surprising, given the pitfalls of the previous results as shown in Breuer (2019). Our findings, however, support the research outcomes demonstrated by Bluedorn and Leigh (2011) showing that there is a rather strong positive relationship between fiscal consolidation and the current account. In the case of adopting our new CAPB-based measure, the results are even more pronounced, which are very much in line with the outcomes based on the narrative approach: after a one-percentage point reduction of fiscal deficit, the current account improves by approximately 0.8 percentage points. Furthermore the empirical results are more pronounced for the case of expenditure cuts (1.2 percent), while the twin-deficit effect is rather weak for revenue-based consolidations.

The mismatch between our results and those computed based on the conventional approach also suggests that the results of the previous literature might be flawed towards underestimating the twin deficit linkage. For example, while previous results based on conventional methods found that investment increases with fiscal consolidation, this relationship turns out to be opposite after controlling for the incomplete cyclical adjustment problem and adopting the OECD cyclical adjustment approach. This emphasizes the fact shown

by Breuer (2019) that the evidence on expansionary austerity is affected by reverse causality, so that the (incompletely-adjusted) primary balance and investment increase in an economic upswing, while the twin-deficit literature interprets the positive correlation as an investment boom as a result of an improvement in the fiscal balance, which in turn reduces the current account balance through private deficits (S-I). Our finding that the effect of fiscal consolidation on investment is negative – rather than positive as revealed by previous measures (Bluedorn and Leigh, 2011) – suggests that the previous literature based on conventional measures is biased towards underestimating the twin-deficit relationship, caused by an incomplete cyclical adjustment problem (Perotti, 2013; Breuer, 2019). In the following section we discuss our empirical strategy, followed by the third section which provides our research findings. The final section concludes.

2 Data and Empirical Strategy

In order to identify changes in fiscal policy we use fiscal data of the OECD Economic Outlook database (No. 101) of June 2017. We adopt the underlying primary balance as provided by this database. Compared to previous analyses based on the conventional approach, this procedure has two advantages: first, the underlying primary balance is not affected by one-offs in the budget (Joumard et al, 2008). Guajardo et al. (2014) criticize that the conventional approach produces unreliable results because some of the “large episodes of fiscal consolidation” are influenced by one-offs. We prefer to rely on the underlying balance that excludes one-offs.

Second, Breuer (2019) has shown that previous measures of the CAPB – as used in some of the conventional approaches – suffer from an incomplete cyclical adjustment problem. In particular, the cyclical adjustment strategy applied in a large share of literature of the conventional approach, namely the so-called “Blanchard method”, pioneered by Alesina and Perotti (1995), and applied in Alesina and Ardagna (1998, 2010, and 2013), Guajardo et al. (2014) and Bluedorn and Leigh (2011) appear to be less sufficiently correct for cyclical effects in the case of government expenditures and, consequently, this measure is prone to an incomplete cyclical adjustment problem (Breuer, 2019). Unlike Bluedorn and Leigh (2011), we thus do not rely on this measure of fiscal policy, but use data provided by the OECD, cyclically adjusted with the measure as introduced in Girouard and André (2005).

On the other hand, similar to Bluedorn and Leigh (2011), we additionally take into account the data on narrative fiscal consolidations from Devries et al. (2011) and compare our

results based on the (new) conventional approach with this narrative approach. In order to investigate the relationship between fiscal policy and the current account, we apply the following regressions:

$$\Delta CA_t = \alpha + \beta \Delta F_t + \varepsilon_t \quad (1)$$

where ΔCA_t represents changes in the current account as a ratio to GDP, ΔF_t denotes changes in fiscal policy as a percentage to GDP, according to the measure chosen.

Using this measure and a large panel dataset of 23 OECD countries over the period 1970-2016, we investigate the relationship between fiscal policy and the current account with two-way fixed-effects panel regression:

$$\Delta CA_{i,t} = \alpha + \sum_{s=1}^2 \beta_s \Delta CA_{i,t-s} + \gamma \Delta F_{i,t} + \mu_i + \pi_t + \varepsilon_{i,t} \quad (2)$$

where μ_i and π_t denote for country and time fixed-effects.

We additionally consider a dynamic lagged relationship between fiscal policy and the current account:

$$\Delta CA_{i,t} = \alpha + \sum_{s=1}^2 \beta_s \Delta CA_{i,t-s} + \sum_{s=0}^2 \gamma_s \Delta F_{i,t-s} + \mu_i + \pi_t + \varepsilon_{i,t} \quad (3)$$

Since we are particularly interested in the effects of fiscal consolidation on the current account, we estimate equations (2) and (3) with three different types of fiscal indicators: the first, including all observations of the fiscal indicator (CAPB), second, after excluding all observations for which the CAPB decreases (“fiscal stimulations”) and reducing the sample to periods in which the CAPB increases (“fiscal consolidations”), and third, to compare the results with the results in earlier literature as a test for robustness we use the narrative approach, as provided by Devries et al. (2011) and replicate the results of Bluedorn and Leigh (2011) for 17 OECD countries over the period 1978-2009. Table 1 discusses the descriptive statistics of the data.

TABLE 1
DESCRIPTIVE STATISTICS

| VARIABLE | (1) OBS. | (2) MEAN | (3) STD.-DEV. | (4) MIN | (5) MAX |
|---|-------------|-------------|------------------|------------|------------|
| CURRENT ACCOUNT AS A RATIO TO GDP | 984 | 0.09 | 2.01 | -13.66 | 12.57 |
| Δ CAPB (AS A PERCENTAGE OF GDP) | 658 | 0.03 | 1.23 | -5.14 | 6.08 |
| Δ REVENUE (CYCLICALLY-ADJUSTED, AS A RATIO TO GDP) | 661 | 0.08 | 1.04 | -6.48 | 5.60 |
| Δ EXPENDITURE (CYCLICALLY-ADJUSTED, AS A RATIO TO GDP) | 671 | 0.13 | 0.93 | -7.41 | 4.37 |
| CONSOLIDATION AS A PERCENTAGE OF GDP (DEVRIES) | 544 | 0.31 | 0.70 | -0.75 | 4.74 |
| CONSOLIDATION (REVENUE) AS A PERCENTAGE OF GDP (DEVRIES) | 544 | 0.12 | 0.37 | -0.75 | 2.54 |
| CONSOLIDATION (EXPENDITURE) AS A PERCENTAGE OF GDP (DEVRIES) | 544 | 0.20 | 0.48 | -0.29 | 3.71 |

SOURCE: OECD ECONOMIC OUTLOOK No. 101; DEVRIES (2011).

3 Results

3.1 Baseline

Table 2 depicts the baseline results of equation (2). Columns (1), (2) and (3) reveal the results for fiscal consolidations at the aggregate (government budget) level, while columns (4), (5), and (6) distinguish between revenue- and expenditure-based fiscal consolidations. Column (1) indicates that there is a statistically-significant positive relationship between CAPB and the current account. The coefficient for the short-run relationship indicates that the current account improves by approximately 0.24 percentage points after a fiscal consolidation of 1 percent of GDP. Using our measure of fiscal consolidation and excluding cases in which the CAPB decreases, the estimated coefficient turns out to be even stronger. The current account increases by approximately 50 percent of the fiscal consolidation, regardless whether the adjustment takes places at the revenue or expenditure side. This indicates that most of the twin deficit linkage is indeed driven by cases of fiscal consolidation rather than expansionary policies. The results turn out to be even more evident when we distinguish between revenue- and spending-based adjustments. While the effect of revenue-based consolidations appears to be weak and statistically hardly significant in all of the three specifications, the twin-deficit link is particularly pronounced for expenditure-based consolidations. The general effect in column (4) suggests that a one-percent increase in government expenditures is associated with a 0.8-percentage point increase in the current account. This result is more significant compared to those of earlier estimations based on the conventional approach and turns out to be even more pronounced when we exclude expansionary cases of fiscal policy (in which Δ CAPB < 0) and focus on fiscal consolidation. The results in column (5) demonstrate that the current account

improves by 1.2 percentage points after an expenditure-based fiscal consolidation. These empirical findings are quite different compared to the estimates based on earlier conventional measures (Bluedorn and Leigh, 2011) and even stronger compared to the results based on the narrative approach (column 6). Since the data used in Bluedorn and Leigh (2011) is provided only for the time 1978 to 2009 (Devries et al., 2011), we restrict the sample size for the conventional method to the observations before 2010 as well, and thus exclude the observations from the Eurozone fiscal crisis, in order to examine whether different twin-deficit relationships can be identified by different samples. Yet the results shown in Table A1 in Appendix are very much in line with the results presented in Table 2.

TABLE 2
EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENT OF GDP ON CURRENT-ACCOUNT-TO-GDP
(PERCENTAGE POINTS)

| PREDICTORS | (1) BASELINE: DCAPB | (2) DATA-BASED (IF DCAB >0) | (3) NARRATIVE (DEVRIES) | (4) BASELINE DCAB | (5) DATA-BASED (IF DCAB >0) | (6) NARRATIVE (DEVRIES) |
|-----------------------|---------------------------|-----------------------------------|-------------------------------|-------------------------|-----------------------------------|-------------------------------|
| CURRENT ACCOUNT (T-1) | -0.003 (0.041) | -0.010 (0.039) | 0.108 (0.075) | -0.047 (0.034) | -0.043 (0.035) | 0.102 (0.076) |
| CURRENT ACCOUNT (T-2) | -0.118 (0.074) | -0.126 (0.074) | -0.117** (0.041) | -0.136** (0.062) | -0.134** (0.061) | -0.123*** (0.040) |
| CONSOLIDATION | 0.236*** (0.066) | 0.504*** (0.116) | 0.343*** (0.079) | | | |
| REVENUE-BASED | | | | -0.204 (0.133) | 0.010 (0.178) | 0.030 (0.207) |
| SPENDING-BASED | | | | -0.825*** (0.144) | -1.181*** (0.178) | -0.553** (0.191) |
| OBSERVATIONS | 654 | 654 | 529 | 657 | 657 | 529 |
| NO. OF COUNTRIES | 23 | 23 | 17 | 23 | 23 | 17 |
| R ² WITHIN | 0.0993 | 0.116 | 0.171 | 0.250 | 0.228 | 0.175 |

NOTES: DEPENDENT VARIABLE: CHANGE IN CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. *, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.

3.2 Dynamics

We now turn to estimations of equation (3) and include lagged values of fiscal adjustments to identify a dynamic response of the current account after the fiscal adjustment.¹ Figure 1 depicts the results of baseline model, in which the dynamic responses of the current account after two different types of shocks are compared: a) an increase in the CAPB (our new conventional

¹ See also the results in the Appendix.

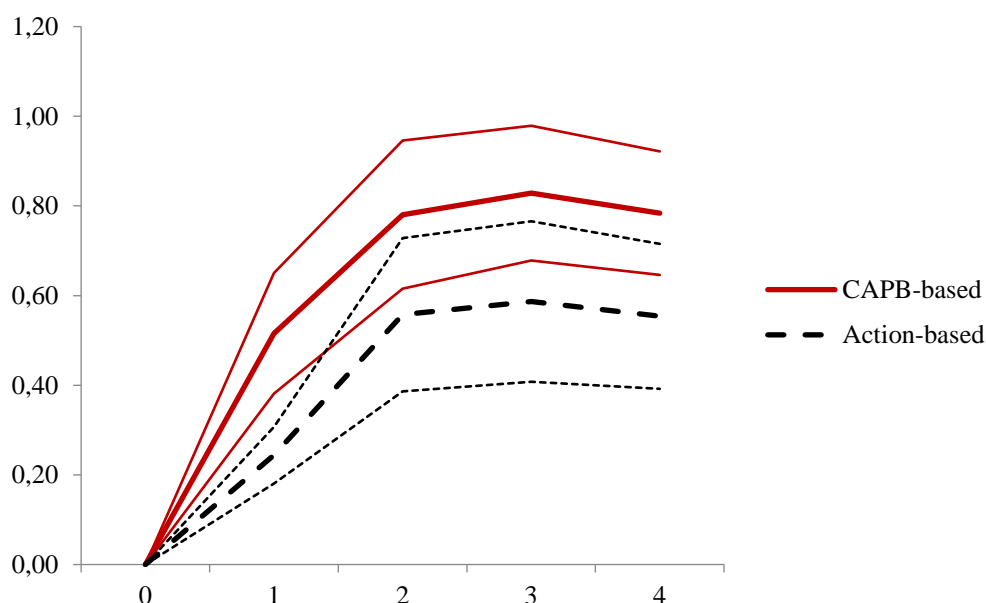
approach - by only taking into account cases in which $\Delta CAPB < 0$), and b) the narrative measure, as discussed in Bluedorn and Leigh (2011).

While the results of the narrative approach are perfect replications of the evidence provided by Bluedorn and Leigh (2011) as a reference, the conventional measure now turns out to be even more effective, compared to the narrative estimates (0.8 percent, compared to 0.6 percent after the second year), while the impact effect for both approaches reach a little lower compared to the peak after approximately 3 years.

For revenue-based fiscal consolidations, the results of both approaches are quite comparable. While the impact multiplier of the narrative approach becomes slightly more pronounced, the peak response is very similar (0.5 for the narrative measure compared to 0.4 for the new conventional approach) – see Figure 2.

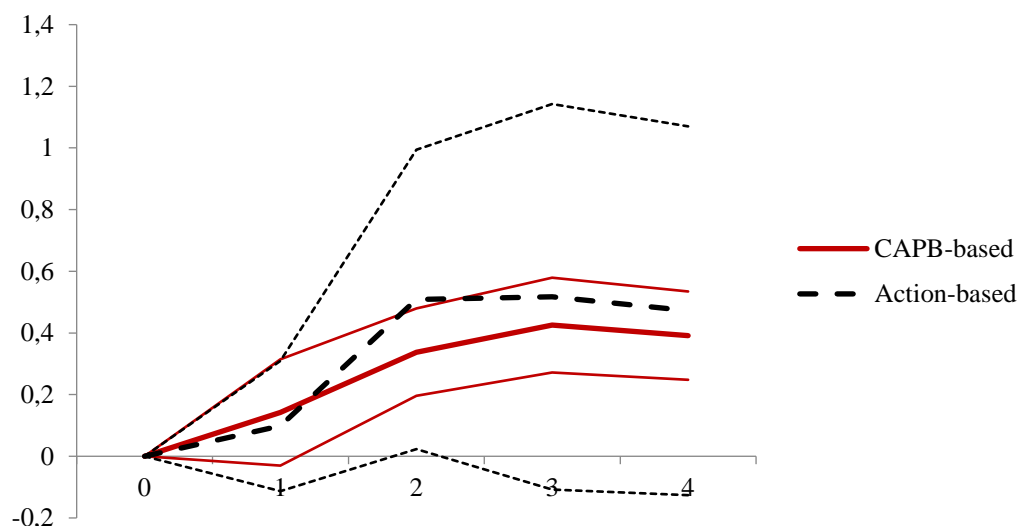
The empirical outcomes are, however, rather different for the expenditure-based consolidations: while Bluedorn and Leigh (2011) indicates that the conventional approach underestimates the twin-deficit relationship (in line with the results presented in Table 2), our results based on the new conventional method suggest that this relationship is more pronounced for the conventional method, when it comes to expenditure-based consolidations (see Figure 3).

FIGURE 1
EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENTAGE OF GDP ON CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS)



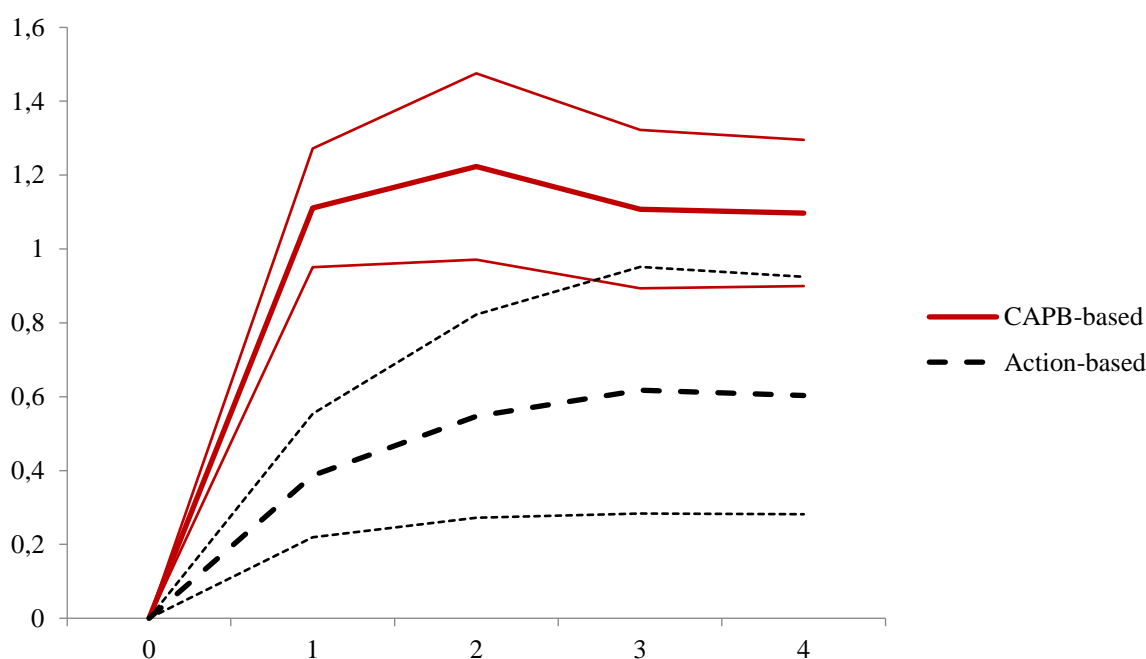
NOTES: DEPENDENT VARIABLE: CHANGE IN CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

FIGURE 2
EFFECT OF REVENUE-BASED FISCAL ADJUSTMENT OF 1 PERCENTAGE OF GDP ON CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS)



NOTES: DEPENDENT VARIABLE: CHANGE IN CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

FIGURE 3
EFFECT OF EXPENDITURE-BASED FISCAL ADJUSTMENT OF 1 PERCENTAGE OF GDP ON CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS)



NOTES: DEPENDENT VARIABLE: CHANGE IN CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

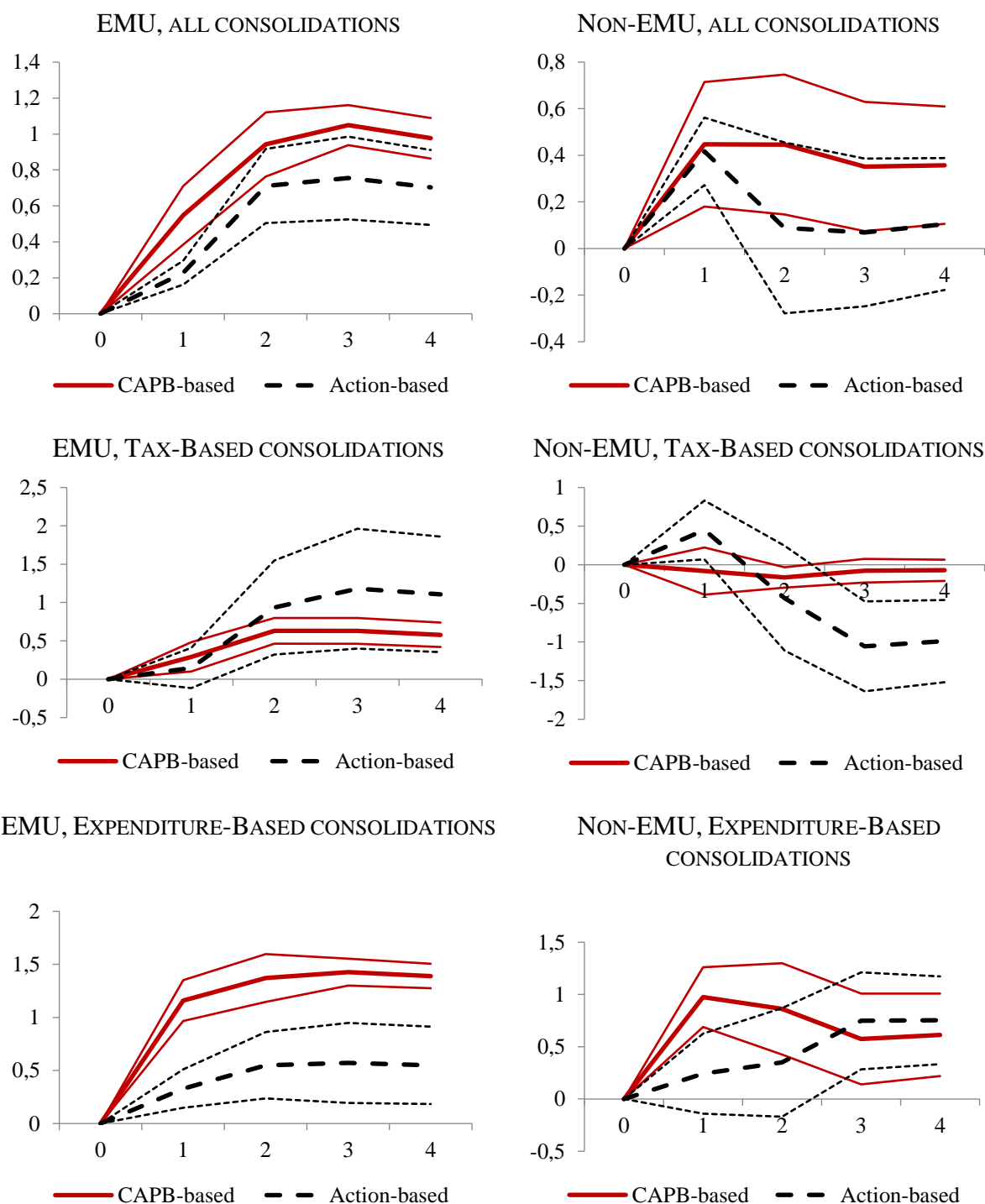
3.3 EMU and non-EMU countries

We now distinguish between Eurozone and non-Eurozone countries, where Eurozone countries are our first proxy of countries with (more or less) fixed exchange rates (at the national level), while we assume that this is not the case for most of the non-EMU countries. Therefore, we construct a Dummy variable taking the value of 1 in periods when the country was a member of the European Monetary Union and zero in periods for which this is not the case. We then run the regressions under the additional consideration of interactions of the Dummy with our measures of fiscal consolidation. In the following, again, we distinguish between revenue- and expenditure-based consolidations for both EMU and non-EMU countries.

The results are presented in Figure 4: the left-side graphs show the effect of fiscal consolidations in Eurozone countries, while the right-side ones depict the same effect for non-EMU countries. We derive the following findings: first, without differentiation between revenue- and expenditure-based consolidations, the results based on conventional and narrative measures of fiscal policy appear to be very much in line for EMU members. However, for non-EMU countries, only the impact effect appears to be similar, while the results based on the narrative approach suggest that the twin-deficit relationship disappears after a period of 2 years in contrast to the case for the conventional measure. In general, it is likely that the effect turns out to be substantially stronger for EMU countries, compared to non-EMU countries regardless of the approach applied. For example, for EMU-countries, the peak effect amounts to approximately 1 percentage point (conventional approach), while we find only an effect of 0.5 for non-EMU countries.

Second, the impact effects of revenue-based consolidations appear to be relatively small for both approaches. However, the results based on the narrative approach suggest a positive effect in EMU countries after a period of 2 years in contrast to a corresponding negative effect for non-EMU countries. Yet the results of the conventional approach do not share the similarity compared to the narrative approach case: the twin-deficit channel appears to be more pronounced in EMU countries, indicating that the exchange rate flexibility might offset or dampen the twin-deficit relation. Furthermore, the effect of expenditure cuts on the current account appears to be stronger, if we apply the new conventional method. For non-EMU countries, the dynamic relationship is almost identical for both approaches after 2 or 3 years; however, the evidence for the EMU countries reveals a more significant effect of expenditure-based consolidations, when our (new) conventional approach is applied.

FIGURE 4
EMU VS. NON-EMU AND SPENDING VS. TAX-BASED CONSOLIDATIONS:
EFFECT OF FISCAL ADJUSTMENT ON THE CURRENT-ACCOUNT-TO-GDP (PERCENTAGE POINTS)

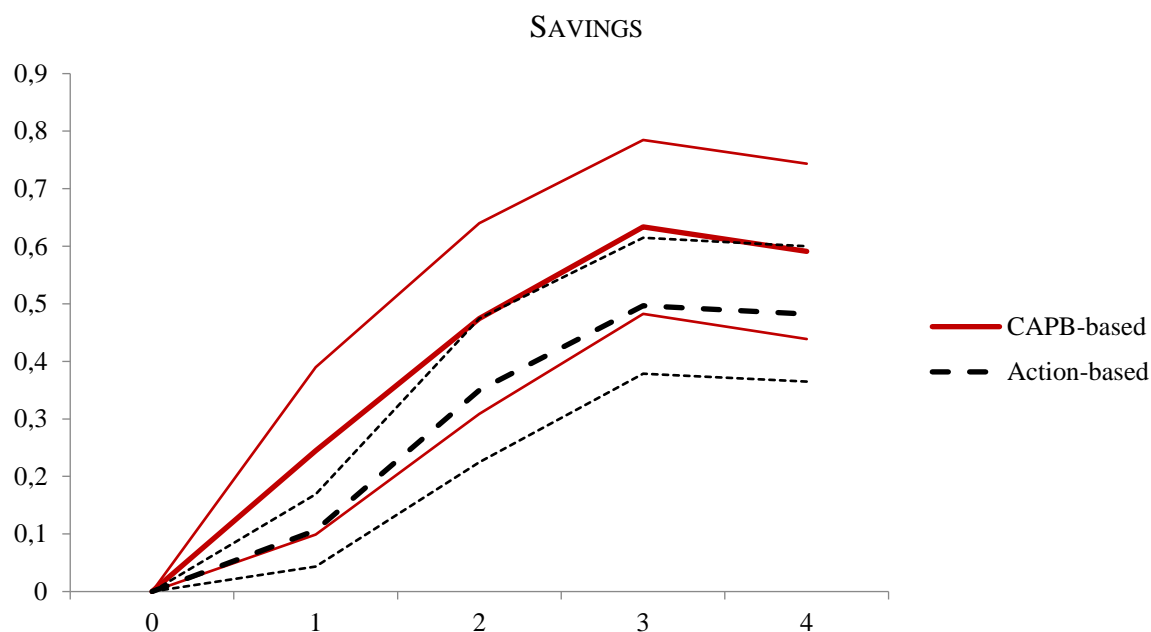


NOTES: DEPENDENT VARIABLE: CHANGE IN CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

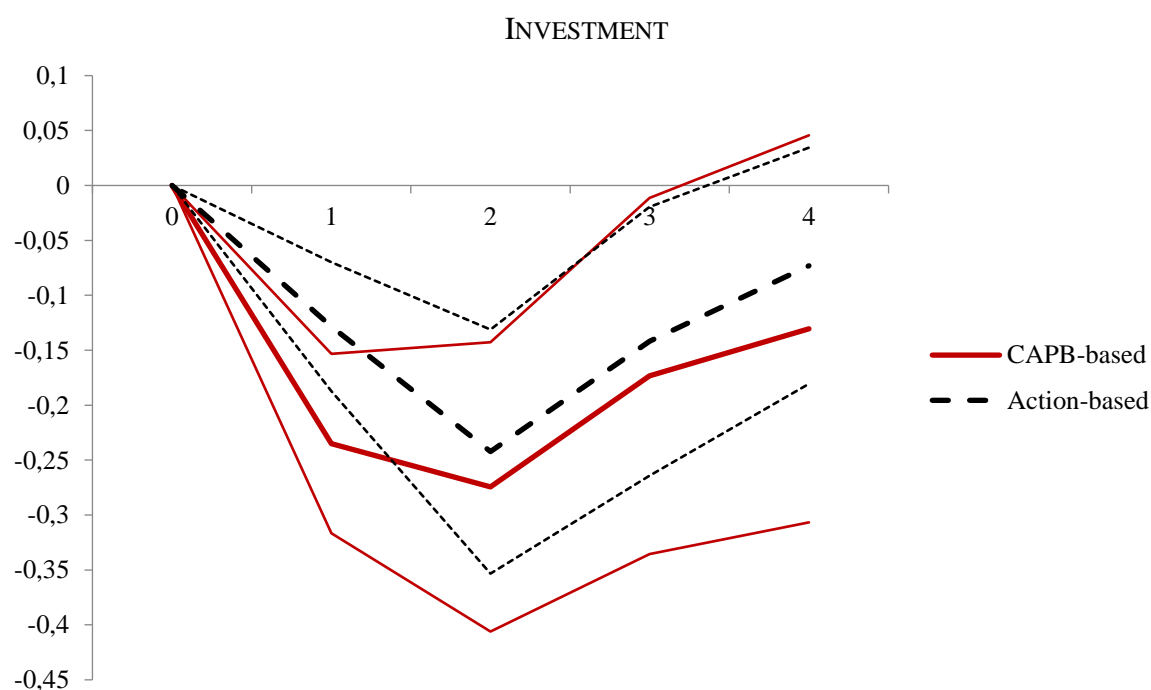
3.4 Investment vs. Savings

Figure 5 illustrates the effects of fiscal consolidation on the ratio of investment to GDP and savings per GDP. Previous research has shown that the different approaches produce rather different results when it comes to the effect on investment and savings (Bluedorn and Leigh, 2011). Whereas the effect on savings is positive with both approaches, the effect on investment appears to be negative for the narrative approach, but positive for the conventional measure. Our findings also confirm this postulation with respect to the effect on savings. However, concerning the response of investment, our findings are contrary to the estimations by Bluedorn and Leigh (2011) for the conventional approach: our results based on the new conventional measure turns out to be negative and very much in line with the narrative approach, highlighting the fact that the two approaches do not produce systematically contrary findings. The difference in the estimations discussed in Bluedorn and Leigh (2011), however, point to the specific method to compute the CAPB in previous analyses of fiscal adjustments and the incomplete cyclical adjustment problem in this literature. If the method used by Alesina and Ardagna (2010 and 2013) and Bluedorn and Leigh (2011) does not correct for cyclical effects (Breuer, 2019), the results based on this incomplete measure would entail the problems of endogeneity, which can be characterized as follows: if the economy is in an upswing and private investment increases, the (incompletely-adjusted) CAPB would improve and this seemingly results in a positive relation between CAPB and investment. However, after controlling for this endogeneity and solving the incomplete cyclical adjustment problem, the results turn out to be opposite to this become in line with the results based on the narrative approach, the fact which has demonstrated by our computation.

FIGURE 5
SAVINGS VS. INVESTMENT: EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENT OF GDP ON THE INVESTMENT-TO-GDP AND THE SAVINGS-TO-GDP RATIO (PERCENTAGE POINTS)



NOTES: DEPENDENT VARIABLE: CHANGE IN NATIONAL SAVINGS (AS A PERCENTAGE OF GDP). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.



NOTES: DEPENDENT VARIABLE: CHANGE IN INVESTMENT (AS A PERCENTAGE OF GDP). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

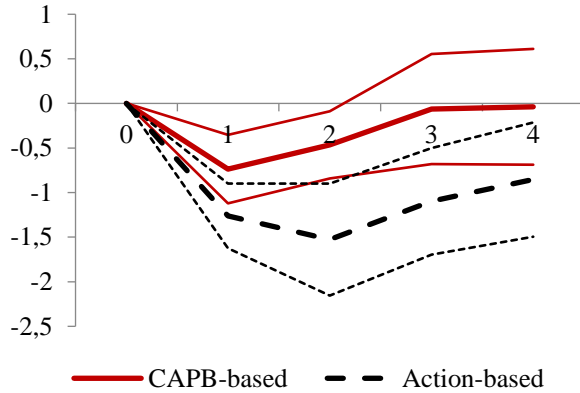
3.5 (Real) Exchange Rates

We additionally investigate the effect of fiscal adjustments on the (real) exchange rate and some other competitiveness measures (Figure 6). The first graph in Figure 6 suggests that the real exchange rate decreases after a fiscal consolidation. This effect is particularly pronounced for estimations based on narrative measures. For this measure, the effect is also significant for nominal exchange rate devaluation, indicating that fiscal consolidation leads to a currency devaluation which influences the real exchange rate in the short run. Note that there is no nominal depreciation for both measures after a lag of 2 or 3 years, and only the narrative approach demonstrates an influence of fiscal consolidations on the real exchange rate in the longer term (see the second graph in Figure 6). The same is true also for the selected measures of competitiveness. While the narrative measure suggests that both unit labor costs and domestic relative prices decrease, the new conventional measures find such reduction only for unit labour costs and only after a period of 2 or 3 years (see the third and fourth graphs in Figure 6).

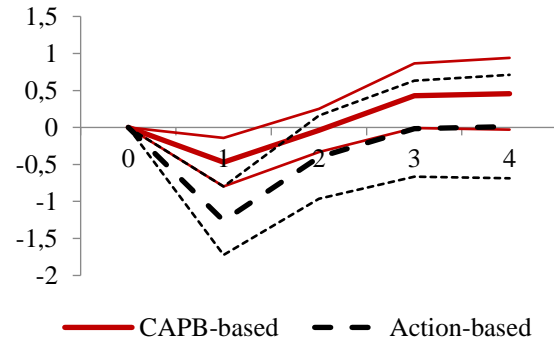
FIGURE 6

EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENT OF GDP ON REAL EXCHANGE RATE CHANGE, NOMINAL EXCHANGE RATE, RELATIVE PRICES, AND UNIT LABOR COSTS (PERCENT)

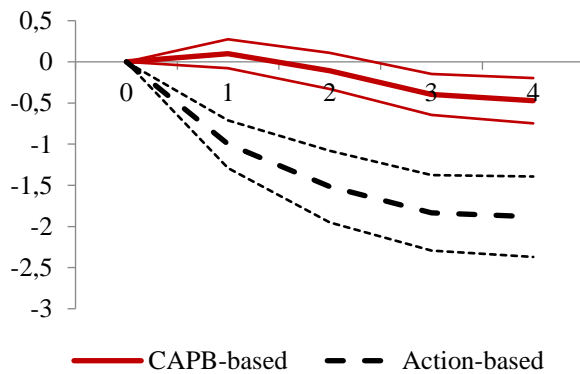
Real exchange rate



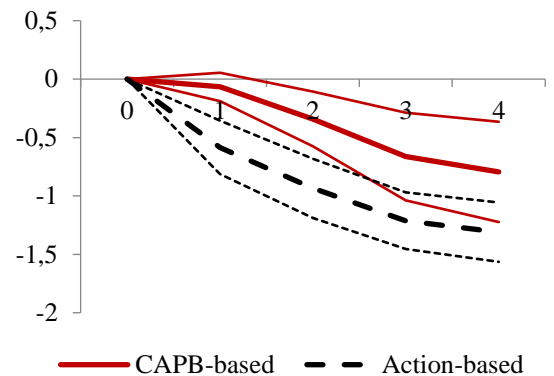
Nominal exchange rate



Domestic relative price



Unit labor cost



NOTES: DEPENDENT VARIABLE: CHANGE IN REAL EXCHANGE RATE, NOMINAL EXCHANGE RATE, DOMESTIC RELATIVE PRICES, AND UNIT LABOUR COSTS (PERCENT). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

3.6 Exports and Imports

We now turn to the effect of fiscal adjustments on exports, and imports and distinguish between price and quantity effects (Figure 7). First of all the short-run twin-deficit effect on the trade balance is not driven by an immediate increase in nominal exports. While imports (as a ratio to GDP) decrease already in the first (impact) year after a fiscal consolidation (with both approaches), exports (as a ratio to GDP) tend to increase only after a lag of 2 or 3 years. This

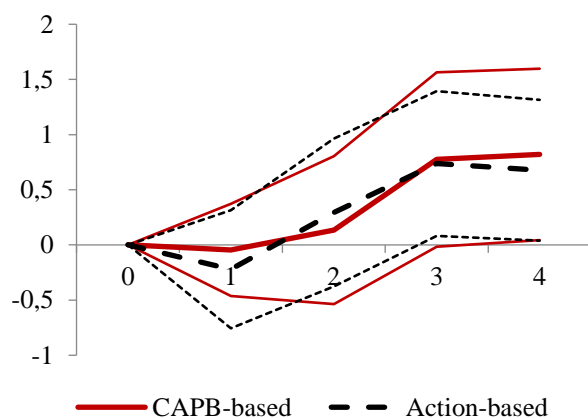
corresponds to the lagged response of improved indicators of competitiveness (Figure 6). Yet the deflator of exports does not depict this effect – the deflators for exports as well as those for imports increase slightly for both approaches.

When the effects on imports and exports are separated, the results appear to be mixed: on the one hand, both approaches indicate that the impact effect on imports is negative, suggesting that the strong impact effect for the twin-deficit relationship is particularly driven by a decline in imports. On the other hand, the conventional approach does not reveal any significant effect on exports, whereas the narrative approach clearly does, indicating that the positive effect on exports may explain the reason why the results based on the narrative approach are quantitatively a little smaller, when compared to those with the new conventional method. Summarizing, the results based on both approaches demonstrate that the strong twin-deficit relationship is primarily triggered by reductions in imports, while the effect on exports remains rather ambiguous and perhaps sensible to sample and specification.

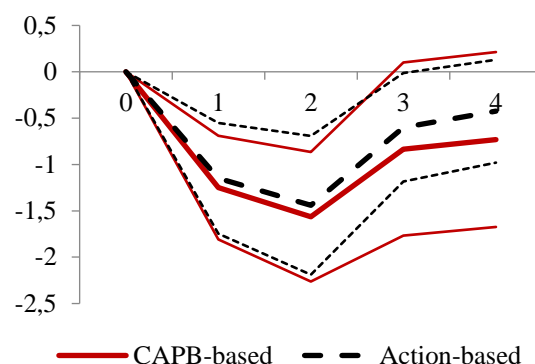
FIGURE 7

EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENT OF GDP ON IMPORTS AND EXPORTS: EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENT OF GDP ON IMPORTS AND EXPORTS (PERCENT)

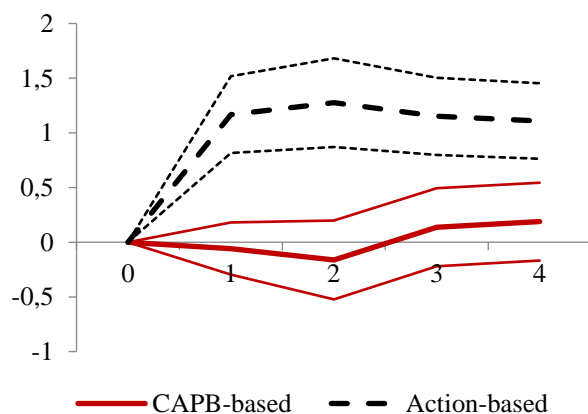
Exports, nominal



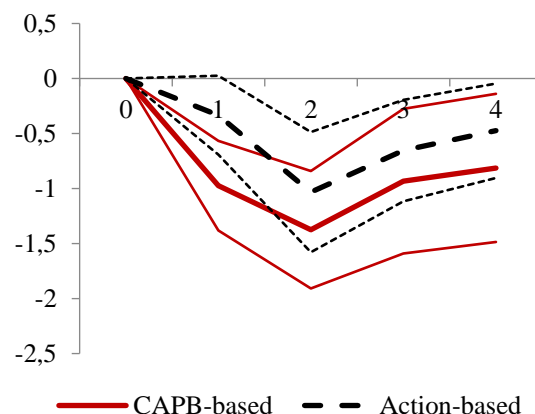
Imports, nominal



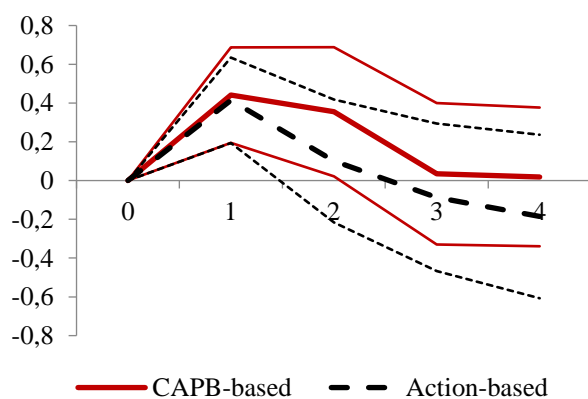
Exports, real



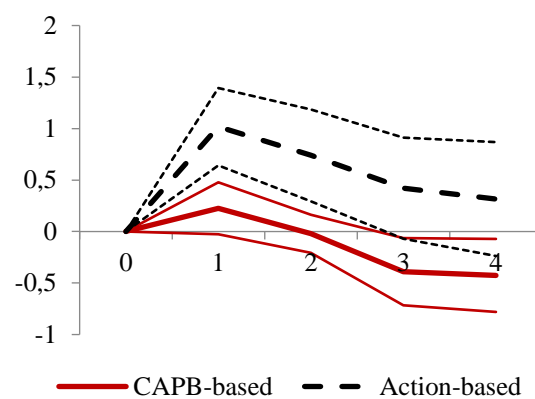
Imports, real



Exports, deflator



Imports, deflator



NOTES: DEPENDENT VARIABLE: CHANGE IN IMPORTS AND EXPORTS (NOMINAL, REAL, AND PRICES), IN PERCENT. EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. T=1 DENOTES YEAR OF FISCAL CONSOLIDATION. FIGURE REPORTS IMPACT OF 1 PERCENT OF GDP FISCAL CONSOLIDATION, AND ONE STANDARD ERROR BANDS.

4 Conclusion

The empirical literature on the twin-deficit hypothesis has not yet found a consensus as to whether or not (and if so, to what extent) fiscal consolidations result in a current account improvement. While one stream of literature finds that there is no or only a weak twin-deficit relationship (which is mainly based on the so-called conventional approach), another type of research based on the narrative approach suggests that there is a strong and statistically significant relationship (Bluedorn and Leigh, 2011).

We use the conventional approach to investigate changes in fiscal policy but apply a “new” strategy to adjust for cyclical effects, because previous analyses based on the conventional approach have been assessed to be biased due to the incomplete cyclical adjustment problems (Breuer, 2019). Based on this new strategy, in line with previous research based on narrative fiscal measures (but contrary to previous evidence based on conventional measures), we find empirical evidence supporting the twin-deficit hypothesis. Our baseline specification implies that a 1-percent of GDP fiscal consolidation reduces the external current account deficit-to-GDP ratio by about 0.8 percentage points within two years. Therefore, reducing the current account deficit by 1 percent of GDP would require a fiscal consolidation of about 1.25 percent of GDP ($1/0.8$). The twin-deficit relationship appears to be even more significant for the EMU countries and in the case for expenditure-based consolidations. We also find that a contraction in investment plays a key role in the adjustment process, the fact that has not been clear in earlier analyses with the conventional approach due to the inadequate consideration of an incomplete cyclical adjustment problem and misinterpretation of reversed causality (Breuer, 2019).

More specifically, while both, investment and the CAPB (if not corrected for cyclical effects), increase in an upswing, the conventional methods would find a positive relationship between fiscal consolidation and investment. However, this effect is based on the reverse causality, if the CAPB entails an incomplete cyclical adjustment problem (Breuer, 2019). After controlling for the incomplete cyclical adjustment problem in previous analyses based on the conventional approach, we find a negative effect of consolidation on investment. This endogeneity problem explains the large difference between the earlier analyses based on conventional measures of fiscal policy and the ones based on narrative measures (shown in Bluedorn and Leigh, 2011). In the case of controlling for this incomplete cyclical adjustment problem, the effect of fiscal consolidation on investment appears to be negative and the twin-

deficit relationship turns out to be much stronger, which is in line with the empirical evidence found by Bluedorn and Leigh (2011) based on the narrative approach.

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APPENDIX: SAMPLE RESTRICTED TO PRE-2010 (DEVRIES)

TABLE A1
EFFECT OF FISCAL ADJUSTMENT OF 1 PERCENT OF GDP ON CURRENT-ACCOUNT-TO-GDP
(PERCENTAGE POINTS)

| PREDICTORS | (1) BASELINE: DCAPB | (2) DATA-BASED (IF DCAB >0) | (3) NARRATIVE (DEVRIES) | (4) BASELINE DCAB | (5) DATA-BASED (IF DCAB >0) | (6) NARRATIVE (DEVRIES) |
|-----------------------|---------------------------|-----------------------------------|-------------------------------|-------------------------|-----------------------------------|-------------------------------|
| CURRENT ACCOUNT (T-1) | 0.034 (0.034) | 0.032 (0.033) | 0.108 (0.075) | -0.018 (0.030) | -0.015 (0.047) | 0.102 (0.076) |
| CURRENT ACCOUNT (T-2) | -0.149* (0.075) | -0.152* (0.075) | -0.117** (0.041) | -0.139** (0.059) | -0.126** (0.058) | -0.123*** (0.040) |
| CONSOLIDATION | 0.106 (0.075) | 0.311* (0.156) | 0.343*** (0.079) | | | |
| REVENUE-BASED | | | | -0.306* (0.156) | -0.180 (0.216) | 0.030 (0.207) |
| SPENDING-BASED | | | | -0.704*** (0.219) | -0.988*** (0.316) | -0.553** (0.191) |
| OBSERVATIONS | 493 | 493 | 529 | 496 | 496 | 529 |
| NO. OF COUNTRIES | 23 | 23 | 17 | 23 | 23 | 17 |
| R ² WITHIN | 0.0834 | 0.0903 | 0.171 | 0.221 | 0.179 | 0.175 |

NOTES: DEPENDENT VARIABLE: CHANGE IN CURRENT-ACCOUNT-TO-GDP RATIO (PERCENTAGE POINTS). EXPLANATORY VARIABLES ARE LAGGED ENDOGENOUS, AND MEASURES OF FISCAL CONSOLIDATIONS. DRISCOLL AND KRAAY (1998) STANDARD ERRORS IN PARENTHESES. *, **, AND ***INDICATE SIGNIFICANCE AT THE 10, 5, AND 1% LEVEL.