

Solving the Twin Deficit Puzzle: Evidence from a Panel of OECD Countries

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Abstract

Recent research is less than conclusive when it comes to the empirical test of the twin-deficit hypothesis. While the results based on the action-based approach support this hypothesis, those based on conventional measures find little or no evidence of a twin-deficits linkage. 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 ca 0.8 percent of GDP, while previous research based on conventional measures found a relationship of only 0.1-0.3 percentage points. The key difference compared to previous findings is the effect of investment, suggesting that previous results based on conventional measures are biased towards underestimating the twin-deficit link. The twin-deficit effect is particularly pronounced in the case of expenditure cuts, while – in line with economic theory - tax increase might have arbitrary effects on the current account, depending on the tax structure. The results are in-line with previous evidence based on narrative measures of fiscal policy and suggest that the twin-deficit link is particularly significant in Eurozone countries.

Keywords: fiscal adjustment; current account; twin deficit

JEL Classifications: E 62, E 63, H 50

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1. Introduction

The twin-deficit hypothesis - suggesting that the government budget balance impacts on the balance of payments – gains political relevance against the background of the recent political controversies about current account adjustments, for example for the case of Germany.

Particularly during the recent financial crisis and the European fiscal crisis, a number of OECD countries have been prone to both, current account, as well as government budget deficits. These issues came on the table in the European fiscal crisis when deficit countries in Southern Europe tried to tackle twin deficits with various fiscal consolidation programs.

Unfortunately, until now there is no comprehensive analysis of how these programs have been effective in adjusting the current account. Yet suggestive evidence for Southern Europe demonstrates that the current account deficit has been shrinking in the aftermaths of the fiscal crisis.

The basic theoretical explanation of the twin-deficit hypothesis is simple: a reduction of government budget deficit leads to a depreciation of the real exchange rate and consequently causes a fall in the current account deficit. “Such a prediction emerges from the Mundell-Fleming model under flexible exchange rates, and from calibrated open-economy general equilibrium models with non-Ricardian features, such as overlapping generations, as discussed by Obstfeld and Rogoff (1996)” (Bluedorn and Leigh, 2011, p. 583). However, the controversies surrounding its empirical validity 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, many other recent studies suggest that such a twin-deficit link is rather negligible or even nonexistent. For instance, studies by Summers (1986), Alesina et al. (1991), Abbas et.al (2010), and Gagnon (2011) demonstrate that the aforementioned relationship between the degree of 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. More seriously Kim and Roubini (2008) reveals the existence of the so-called ‘twin divergence’ in the United States, highlighting their empirical findings that a cut in the budget deficit leads to the growth of current account deficit. 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.

While the use of conventional (data-based) methods came under criticism (Guajardo et al., 2014), of which a large share mainly refers to two problems: the incomplete cyclical adjustment problem, and the countercyclical-response problem (Perotti, 2013). Breuer (2017) focuses on the incomplete cyclical adjustment problem and shows that some of the results presented by the literature based on the conventional approach (particularly the expansionary austerity view, found, for example, in Alesina and Ardagna, 2010 and 2013) disappears after controlling for the incomplete cyclical adjustment problem of the “classical” (conventional) approach pioneered by Alesina and Perotti (1995). Breuer (2017) suggests a *new* version of the “Blanchard measure” for cyclical adjustment of government budget data (Blanchard, 1990) or applying OECD methods proposed by Girouard and André (1995).

In this paper we follow this suggestion and use a more reliable 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 with the classical measures of CAPB (conventional approach), as found in earlier literature, whereas they support the results presented by Bluedorn and Leigh (2011) that there is a rather strong positive relationship between fiscal consolidation and the current account. In the case of adopting our CAPB-based measure, the results are even more pronounced, which are comparable to the findings based on the narrative approach: after a one-percentage point reduction of fiscal deficit, the current account improves by approximately 0.8 percentage points. The results are particularly pronounced for the case of expenditure cuts (1.2 percent), while the twin-deficit effect is weak for revenue-based consolidations.

Moreover, the mismatch between our results and those computed based on the conventional approach also suggests that previous CAPB-based methods apply a critical cyclical adjustment method (Breuer, 2017), so that the results of previous literature might be driven by endogeneity issues (i.e. incomplete cyclical adjustment). While previous results based on conventional methods found that investment increases with a fiscal consolidation, this relationship turns out to be opposite, after controlling the incomplete cyclical adjustment problem in previous analysis and, at the same time, adopting the OECD cyclical adjustment approach. This emphasizes the fact shown by Breuer (2017) that the evidence on

expansionary austerity is influenced by reverse causality, so that the (incompletely-adjusted) primary balance as well as 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. Our findings that the effect of fiscal consolidation on investment is negative (rather than positive as suggested by previous measures - (see Bluedorn and Leigh, 2011), suggests that the previous literature based on conventional measures of fiscal policy underestimates the twin-deficit hypothesis, due to an incomplete cyclical adjustment problem (Perotti, 2013).

2. Data and empirical approach

In order to identify changes in fiscal policy we use fiscal data of the OECD economic outlook database (no. 101) June 2017. We adopt the underlying primary balance as provided by this database. Compared to previous analyses based on the conventional approach this has two advantages: firstly, 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 these one-offs. So we prefer to rely on underlying balance and exclude these one-offs from the beginning.

Secondly, in the debate about the non-reliability of the conventional approach, Breuer (2017) has shown that previous measures of the CAPB (as used on some of the conventional approaches, for example in Bluedorn and Leigh, 2011) 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, 2013), Guajardo et al. (2014) as well as Bluedorn and Leigh (2011), does not sufficiently correct for cyclical effects in the case of government expenditures so that this measure is prone to an incomplete cyclical adjustment problem (Breuer, 2017). 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 discussed in Girouard and André (2005).

For comparison, we also take into account data on narrative fiscal consolidations from Devries et al. (2011) and compare our results based on the (new) conventional approach with the narrative approach, similar to Bluedorn and Leigh (2011).

To investigate the relationship between fiscal policy and the current account, in a minimalistic specification, we regress

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

hereby $\Delta CA_{i,t}$ represents changes in the current account as a ratio to GDP, $\Delta F_{i,t}$ denotes changes in fiscal policy, according to the measure chosen.

Using this measure and a large panel dataset of 23 OECD countries, we investigate the relationship between fiscal policy and the current account with this equation:

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

For computing impulse-response-function, we additionally take into account a dynamic 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 a robust estimation of 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) while the 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 the third: we show the results when we use the narrative approach, as provided by Devries et al. (2011) and applied in Bluedorn and Leigh (2011). Table 1 discusses the descriptive statistics of the data.

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 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 place at the revenue or expenditure side. The results turn out to be even more striking when we distinguish between revenue- and spending-based adjustments. While the effect of revenue-based consolidation 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 $\Delta CAPB < 0$) and focus on fiscal adjustments. The results in column (5) demonstrate that the current account improves by 1.2 percentage points after an expenditure-based fiscal consolidation. These results are quite different compared to those computed based on classical conventional measures (Bluedorn and Leigh, 2011) and even two times stronger compared to the results based on the narrative approach (column 6). To analyze whether the different size of the twin-deficit relationship is influenced by the sample, 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. The results are very much in line with the results presented in Table 2.¹

¹ See table A1 in the appendix.

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. 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 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 replications of the evidence provided by Bluedorn and Leigh (2011), 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 similar.

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).

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.

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 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. 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 panel of this figure shows the effect of fiscal consolidations in Eurozone countries, while the right panel depicts the same effect for non-EMU countries. We derive the following results. Firstly, without distinguishing 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, while this is not the case for the conventional measure. In general we conclude that the effect turns out to be substantially stronger for EMU countries, compared to non-EMU countries, independent from the approach applied. For example, for EMU-countries, the peak effect is approximately 1 percentage point (conventional approach), while we find only an effect of 0.5 for non-EMU countries.

Secondly, 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 support this finding, similar to the narrative approach: the twin-deficit channel appears to be more pronounced in EMU countries, indicating that there exchange rate flexibility might offset or dampen the twin-deficit relationship.

Furthermore the effect of expenditure cuts on the current account seems to be more significant if we use the new conventional method. Particularly the impact effect is stronger, both for Eurozone members and non-EMU countries. For those non-EMU countries, the dynamic relationship is almost identical for both approaches after 2 or 3 years, however, the evidence for the EMU countries suggests a more significant effect of expenditure-based consolidations, when our (new) conventional approach is applied.

3.4 Investment vs. Savings

Figure 5 presents 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 results are very contrary to the estimations calculated by in Bluedorn and Leigh (2011). The 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. If the method used by Alesina and Ardagna (2010 and 2013) and Bluedorn and Leigh (2011) does not correct for cyclical effects (as discussed in Breuer, 2017), the results based on this incomplete measure would entail the problems of endogeneity, as follows: if the economy is in an upswing and private investment increases, the (incompletely-adjusted) CAPB would improve and this suggests a positive correlation between CAPB and investment. However, controlling for this endogeneity and solving the incomplete cyclical adjustment problem, the results turn out to be oppositely to this and in line with the results based on the narrative approach. Thus, 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 different effect on investment explains also the different estimated effects on the current account, since the current account is a function of the reaction of investment and savings.

3.5 (Real) Exchange Rates

We now attempt to investigate the effect of fiscal adjustments on the (real) exchange rate and several measures of competitiveness (Figure 6). The first panel suggests that the real exchange rate decreases after a fiscal consolidation, while this effect is particularly pronounced for estimations based on narrative measures of fiscal policy. 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. It is interesting to 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 run. The same is true for the other measures of competitiveness. While the narrative measure suggests that both the unit labor costs as well as domestic relative prices decrease, the new conventional measure finds this phenomenon only for the case of unit labor costs and only after a period of 2 or 3 years.

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 (Table 7). First of all, the impact (twin-deficit-) effect of fiscal adjustments 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 is compatible with the lagged response of improved indicators of competitiveness (Figure 6), however, the deflator of exports do not depict this effect. The deflators for exports as well as imports increase slightly, for both approaches.

Nevertheless, when it comes to quantity effects on imports and exports, 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, while the narrative approach clearly does, indicating that the positive effect on exports might explain the reason why the results based on the narrative approach are quantitatively a little smaller, when compared to those based on the new conventional method. Summarizing, the results based on both approaches demonstrate that the strong twin-deficit relationship is primarily driven by reductions in imports, while the effect on exports remains ambiguous.

4. Conclusion

The literature on the twin-deficit hypothesis has not found a consensus 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), new research based on the so-called narrative approach suggests that there is a strong and statistically significant relationship.

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 found to be biased due to the incomplete cyclical adjustment problem (Breuer, 2017). 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.

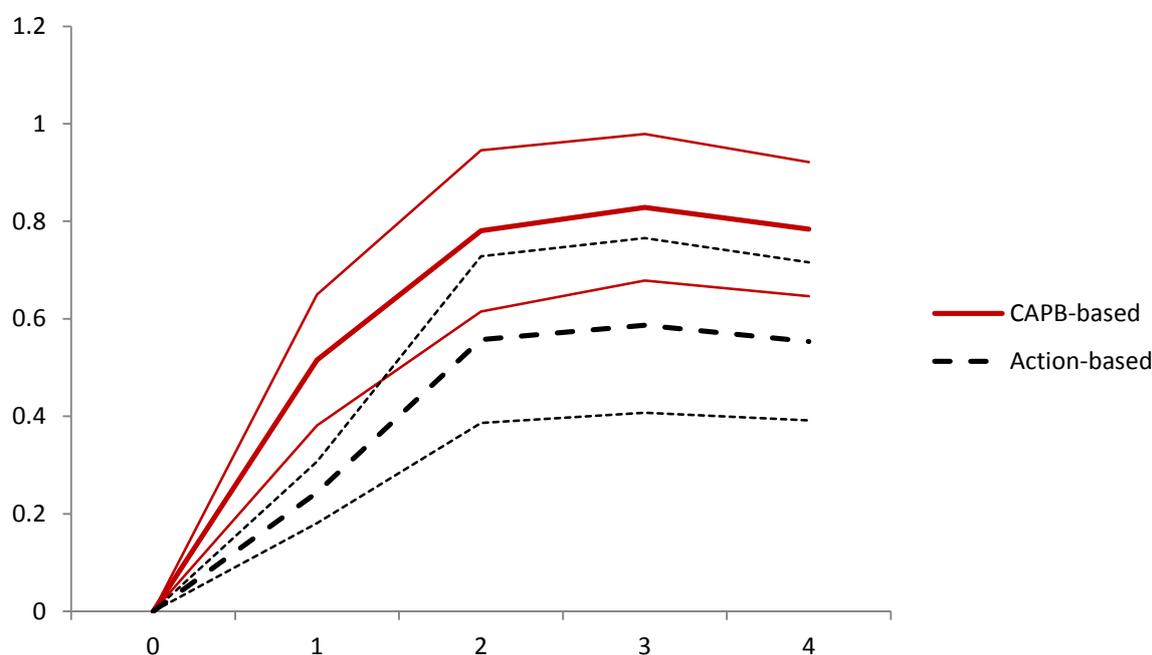
Our baseline specification implies that a 1-percent of GDP fiscal consolidation reduces the external current account deficit-to-GDP ratio by about 0.8 percentage points within two years. Therefore, reducing the current account deficit by 1percent of GDP would require a fiscal consolidation of about 1.25 percent of GDP ($1/0.8$). The twin-deficit relationship appears to be even more pronounced 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.

In particular previous research based on the conventional approach might underestimate the twin-deficit effect, because of an incomplete cyclical adjustment problem (Breuer, 2017). 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 2017). 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 explains the largest difference between the analyses based on conventional measures of fiscal policy and the recent 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 emerges to be more significant, the fact which is well in line with the recent empirical evidence found by Bluedorn and Leigh (2011) based on the narrative approach.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Current Account	984	0.09	2.01	-13.66	12.57
Δ CAPB	658	0.03	1.23	-5.14	6.08
Δ CA_Revenue	661	0.08	1.04	-6.48	5.60
Δ CA_Expenditure	671	0.13	0.93	-7.41	4.37
Consolidation (Devries)	544	0.31	0.70	-0.75	4.74
Consolidation (Revenue)	544	0.12	0.37	-0.75	2.54
Consolidation (Expenditure)	544	0.20	0.48	-0.29	3.71

Source: OECD Economic Outlook No. 101, Devries (2011)

Figure 1: Effect of Fiscal Adjustment of 1 Percent of GDP on the Current-Account-to-GDP (percentage points)

Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

Table 2: Effect of Fiscal Adjustment of 1 Percent of GDP on Current-Account-to-GDP (percentage points)

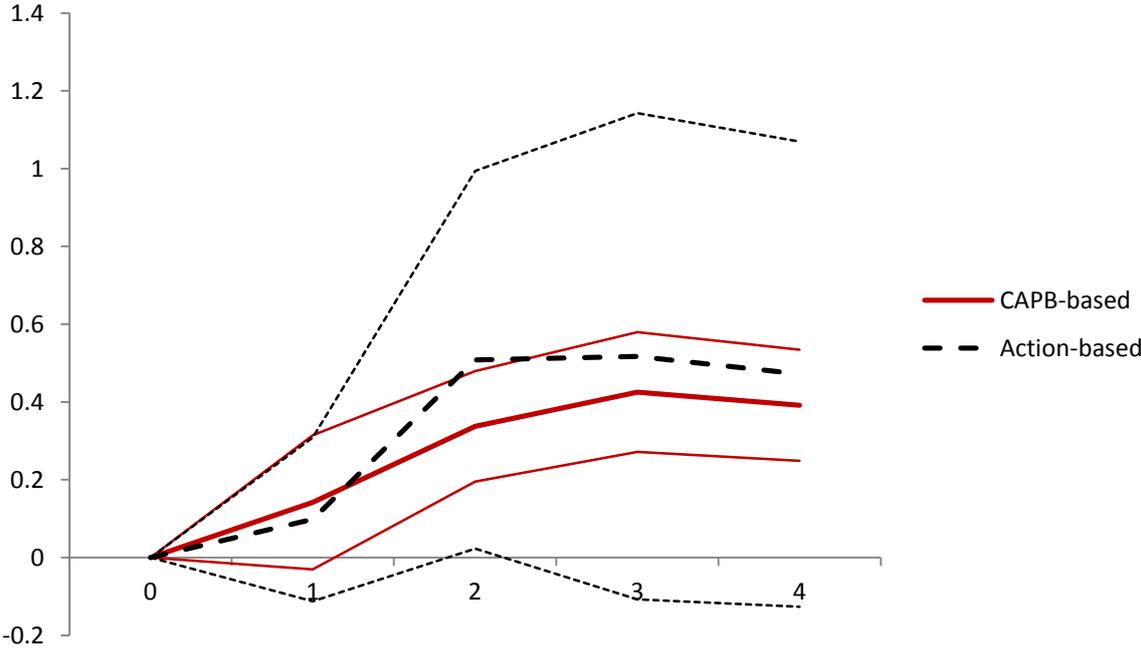
	(1)	(2)	(3)	(4)	(5)	(6)
	<u>Effects of fiscal adjustments</u>			<u>Taxes- vs. spending-based</u>		
	Baseline: dCAPB	dCAPB (if>0,0)	Comp.: Devries	Baseline: dCAPB	dCAPB (if>0,0)	Comp.: Devries
y (t-1)	-0.003 (0.041)	-0.010 (0.039)	0.108 (0.075)	-0.047 (0.034)	-0.043 (0.035)	0.102 (0.076)
y (t-2)	-0.118 (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
R-squared	0.099	0.116	0.171	0.250	0.228	0.175
Number of country_no	23	23	17	23	23	17
R-squared within	0.0993	0.116	0.171	0.250	0.228	0.175
R-squared between	0.110	0.0246	0.00322	0.00889	0.00101	0.0412
R-squared overall	0.0974	0.112	0.169	0.235	0.213	0.174

Robust standard errors in parentheses

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

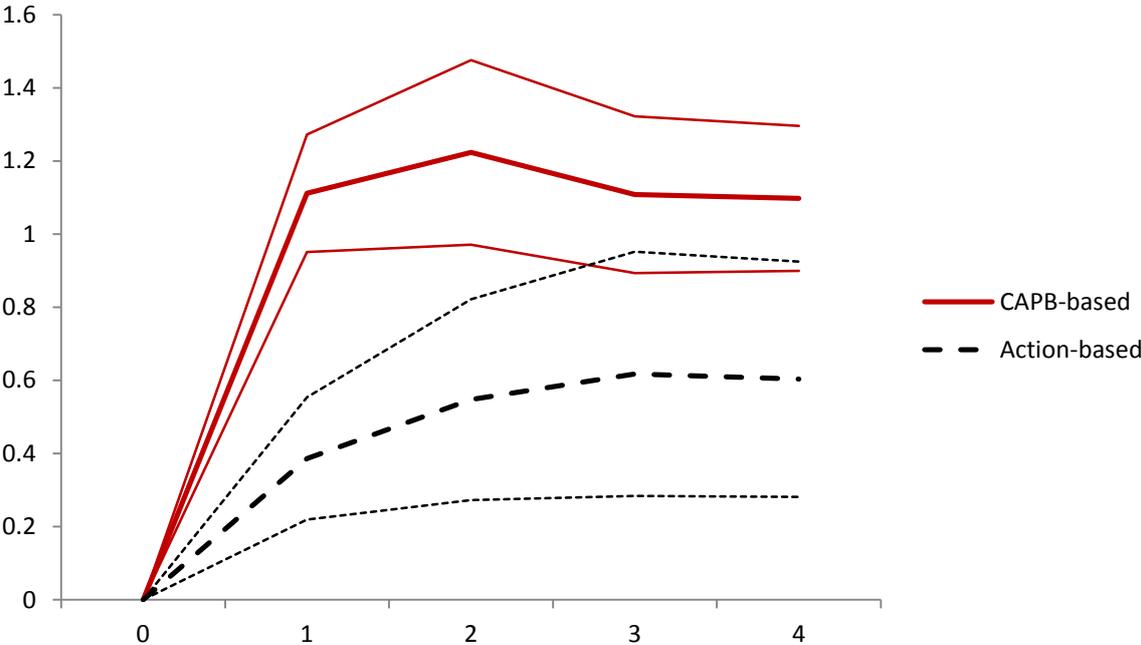
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Figure 2: Effect of Revenue-based Fiscal Adjustment of 1 Percent of GDP on the Current-Account-to-GDP (percentage points)



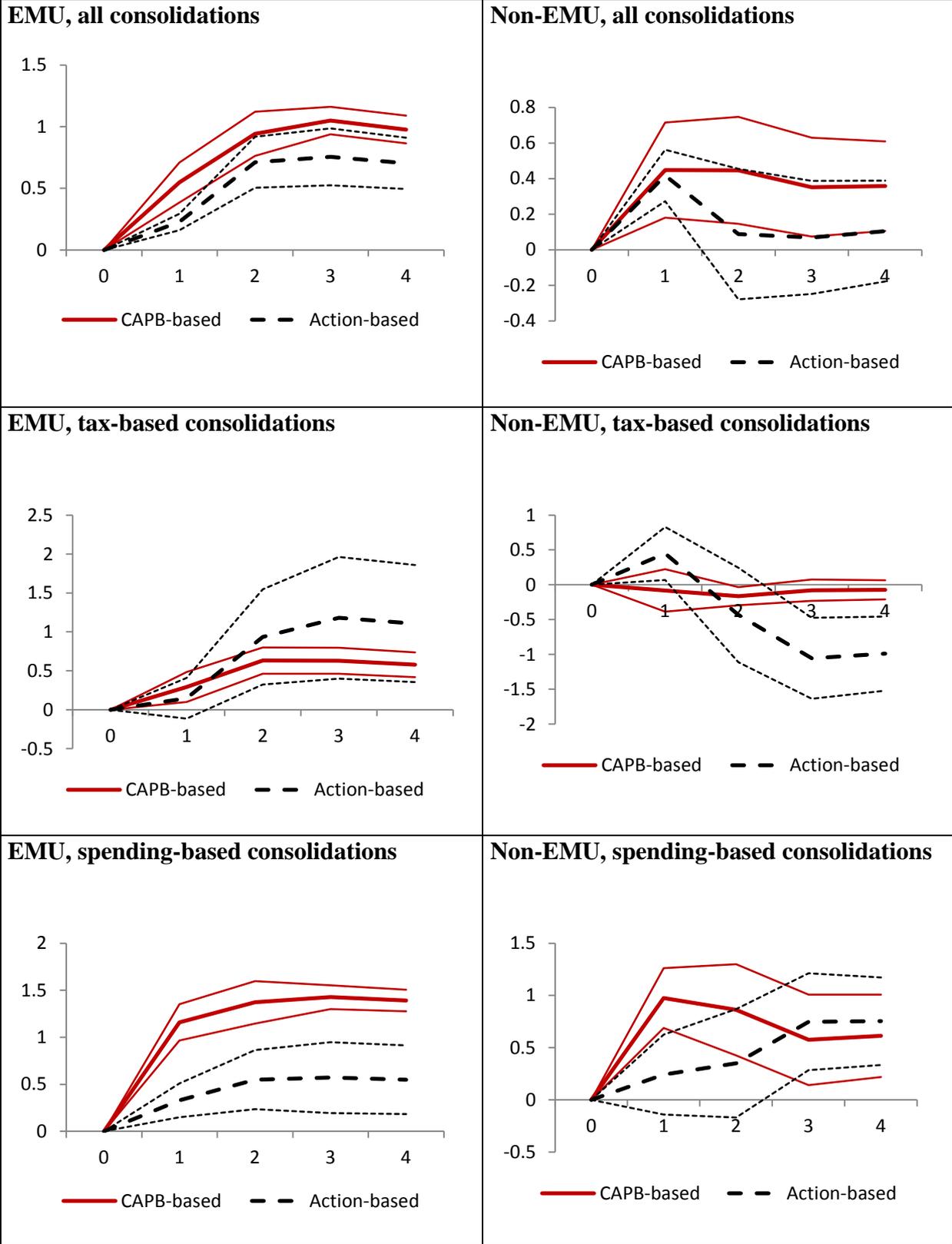
Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

Figure 3: Effect of Expenditure-based Fiscal Adjustment of 1 Percent of GDP on the Current-Account-to-GDP (percentage points)



Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

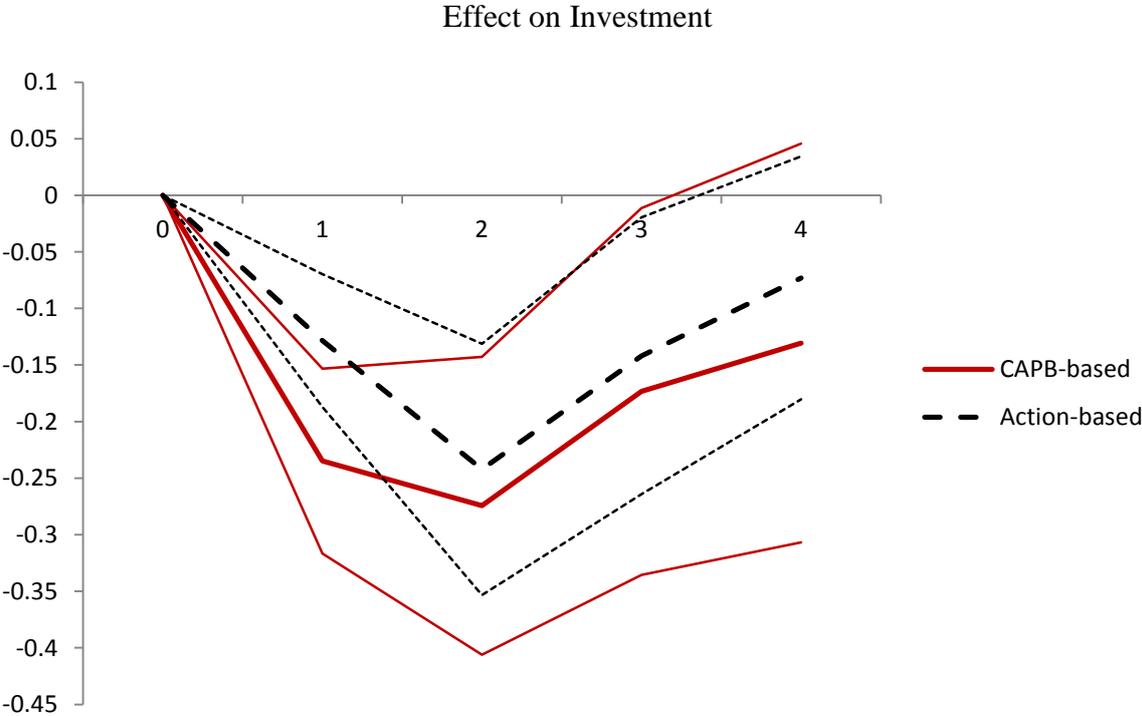
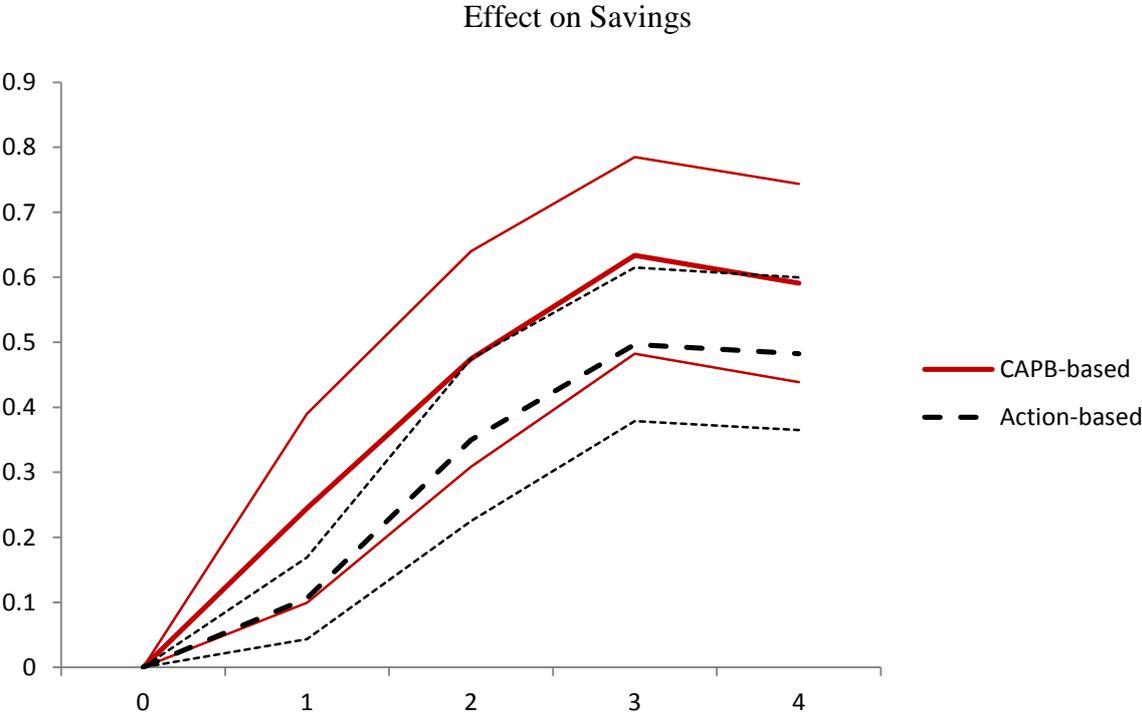
Figure 4: EMU vs. non-EMU and spending vs. tax-based consolidations Effect of Fiscal Adjustment of 1 Percent of GDP on the Current-Account-to-GDP (percentage points)



Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

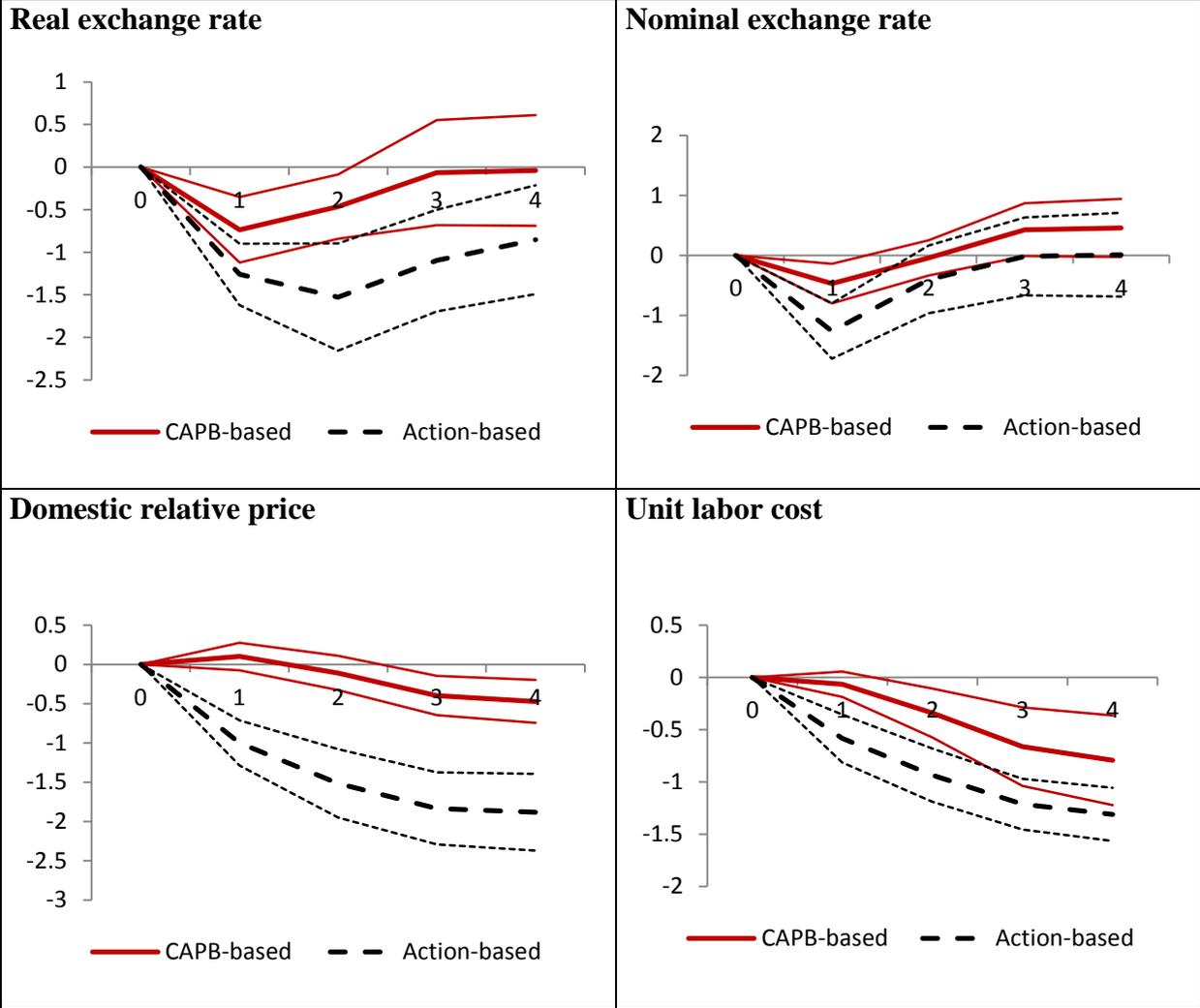
Figure 5: Savings vs. Investment

Effect of Fiscal Adjustment of 1 Percent of GDP on the Investment-to-GDP and the Savings-to-GDP ratio (percentage points)



Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

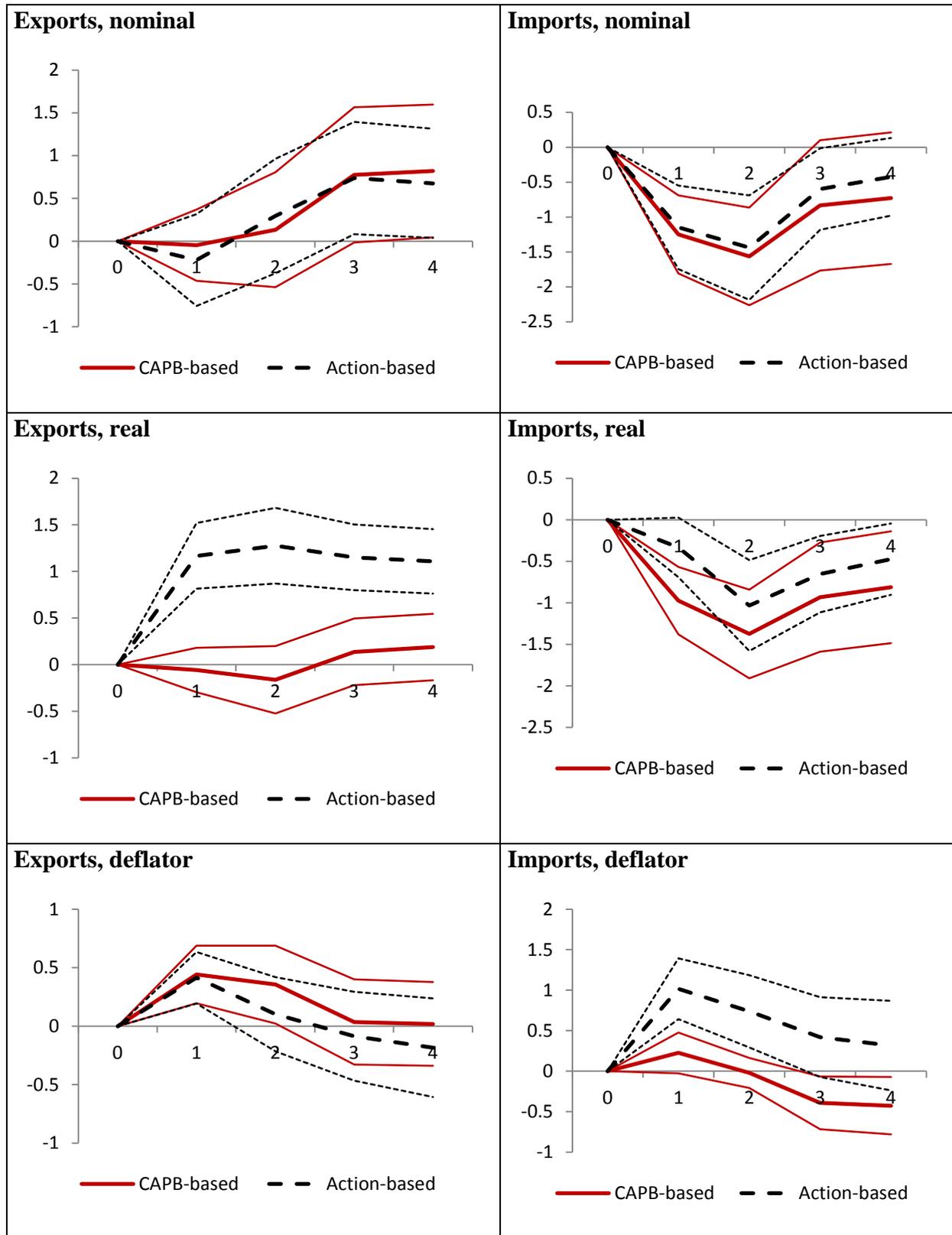
Figure 6: Effect of Fiscal Adjustment of 1 Percent of GDP on Real exchange rate change, nominal exchange rate, relative prices, and unit labor costs (percent)



Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

Figure 7: Imports and Exports (Do we need this figure?)

Effect of Fiscal Adjustment of 1 Percent of GDP on imports and exports (percent)



Note: t=1 denotes year of fiscal consolidation. Figure reports impact of 1 percent of GDP fiscal consolidation, and one standard errorbands.

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Appendix

Table A1: Sample restricted to pre 2010

	(1)	(2)	(3)	(4)	(5)	(6)
	<u>Effects of fiscal adjustments</u>			<u>Taxes- vs. spending-based</u>		
	Baseline: dCAPB	dCAPB (if>0,0)	Comp.: Devries	Baseline: dCAPB	dCAPB (if>0,0)	Comp.: Devries
y (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)
y (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)
Constant	0.700*** (0.180)	0.247 (0.364)	1.149** (0.464)	0.440 (0.534)	0.372 (0.439)	1.152** (0.465)
Observations	493	493	529	496	496	529
R-squared	0.083	0.090	0.171	0.221	0.179	0.175
Number of country_no	23	23	17	23	23	17
R-squared within	0.0834	0.0903	0.171	0.221	0.179	0.175
R-squared between	0.148	0.0332	0.00322	0.424	0.288	0.0412
R-squared overall	0.0824	0.0876	0.169	0.219	0.173	0.174

Robust standard errors in parentheses

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