# Revisiting the Twin Deficits Hypothesis: The Effect of Fiscal Consolidation on the Current Account

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This paper investigates the effect of fiscal consolidation on the current account. We examine contemporaneous policy documents, including Budget Speeches, Budgets, and IMF and OECD reports, to identify changes in fiscal policy motivated primarily by the desire to reduce the budget deficit, and not by a response to the short-term economic outlook. Estimation results based on this measure of fiscal policy changes suggest that a 1 percent of GDP fiscal consolidation raises the current account balance-to-GDP ratio by about 0.6 percentage points, supporting the twin deficits hypothesis. This effect is substantially larger than that obtained using standard measures of the fiscal policy stance, such as the change in the cyclically-adjusted primary balance.

In the aftermath of the Great Recession, a number of economies face the challenge of reducing budget deficits and of preventing the reemergence of large and persistent current account deficits. A natural question is whether making progress along one dimension—reducing budget deficits—is likely to facilitate progress in terms of limiting external imbalances. This question is closely related to the twin deficits hypothesis—the notion that an economy's fiscal and current account balances move in the same direction, which was invoked to explain the experience of the United States in the 1980s.

Despite the importance of this question, there is no clear consensus regarding the effect of fiscal policy on the current account. On the one hand, a standard implication of many theoretical models is that a fiscal *contraction* leads to a depreciation of the real exchange rate and an accompanying *fall* in the current account deficit. For example, 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). On the other hand, empirical research suggests that such a twin-deficits link is weak or nonexistent. For example, Kim and Roubini (2008) conclude that "twin divergence" is the norm in the United States, with a *cut* in the budget deficit *raising* the current account deficit. Other studies find that a 1 percent of GDP fiscal consolidation reduces the current account deficit-to-GDP ratio by 0.1-0.3 percentage points.[1] In other words, achieving a 1 percent of GDP reduction in the current account deficit requires a large fiscal adjustment of 3-10 percent of GDP.

However, the usual method of estimating the effect of fiscal policy on the current account in the empirical literature may bias the analysis toward underestimating the strength of the twin-deficits link. The standard approach involves regressions of the current account

[1] See, for example, Abbas et al. (2010), Alesina, Gruen and Jones (1991), Bernheim (1988), Bussière, Fratzscher and Müller (2010), Chinn and Ito (2005), Chinn and Prasad (2003), Gruber and Kamin (2007), Lee et al (2008), and Summers (1986). Gagnon (2011) obtains a coefficient of 0.2 for industrialized economies, and 0.3 for a broader sample of 112 countries.

balance on the fiscal balance, often taking multi-year averages or applying a filter to smooth out business cycle fluctuations. However, multi-year averages and cyclically-adjusted fiscal data are not fully purged of the effect of other developments that affect investment, imports, and the current account balance. Moreover, the standard approach is affected by reverse causality issues since governments sometimes deliberately tighten fiscal policy in response to accelerating domestic demand growth and a rising current account deficit. These issues may attenuate estimates of the twin-deficits link.

To address these problems, we examine the behavior of the current account following changes in fiscal policy that historical sources suggest are largely uncorrelated with other factors affecting the current account and are not responses to the current account itself. In particular, we use the new dataset of Devries et al. (2011), who examine budgetary policies to identify periods of fiscal consolidation motivated by budget deficit reduction and *not* by restraining domestic demand or reducing the current account deficit. Based on this new dataset, we then use straight-forward econometric methods to investigate the impact of fiscal consolidation on the current account.

In addition to the baseline test of the twin deficits hypothesis, we extend the results in a number of directions. First, we compare the results to those obtained using the standard approach with the change in the CAPB measuring fiscal consolidation. Second, we examine the channels through which fiscal consolidation affects the current account, including saving and investment, the role of relative prices, and the exchange rate regime, with a focus on the countries that adopted the euro in 1999. The rest of this paper is organized as follows. Section I describes our methodology, including the approach to identifying fiscal consolidations and the econometric methods used. Section II reports the estimation results and Section III concludes.

## I. METHODOLOGY

This section provides an overview of the analytical framework we use to test the twin deficits hypothesis, and explains how the methodology for identifying changes in fiscal policy differs from the conventional approach.

### A. Identification

A minimalist specification for testing how changes in the fiscal balance affect the current account balance is the following:

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

where $CA_t$ is the current account balance and $F_t$ is the fiscal balance, and $\varepsilon_t$ is a vector of other developments that affect the current account. For the moment, we abstract from the fact that changes in the fiscal balance may have lagged effects on the current account and ignore dynamic effects. We return to these issues in the next section.

The first challenge that the analysis faces is to measure changes in the fiscal balance that reflect deliberate policy decisions taken by the government and not simply the automatic effect of business cycle fluctuations. Such fluctuations include, for example, upswings in economic activity which improve the budget balance automatically (without any change in policy) and that are also correlated with the current account. Formally, such developments affect both the regressor, $\Delta F_t$, and the error term, $\varepsilon_t$, in the regression equation. Therefore, using the change in the overall fiscal balance to measure changes in fiscal policy would lead to biased estimates of the effect of fiscal policy on the current account.

The conventional approach to addressing this issue is to identify deliberate changes in fiscal policy using cyclically-adjusted fiscal data. In particular, a standard approach is to use the change in the CAPB to measure discretionary changes in fiscal policy. The CAPB is calculated by taking the actual primary balance—non-interest revenue minus non-interest spending—and subtracting the estimated effect of business cycle fluctuations on the fiscal accounts.[2] Cyclical adjustment offers an intuitive way of dealing with the fact that tax revenue and government spending move automatically with the business cycle. The idea is that, once they are cyclically adjusted, changes in fiscal variables reflect policymakers' decisions to adjust tax rates and spending levels. An increase in the CAPB would therefore provide evidence of deliberate fiscal policy tightening.

However, the conventional approach of using cyclically-adjusted fiscal data is far from perfect and is likely to bias the analysis *against* finding evidence of a twin-deficits link. Three issues arise with cyclical adjustment that complicate tests of the twin deficits hypothesis.

First, the change in the CAPB typically includes many nonpolicy factors that may be correlated with other developments affecting economic activity and the current account.[3] For example, a boom in the stock market improves the CAPB by increasing capital gains and cyclically-adjusted tax revenues. It is also likely to reflect developments that will raise domestic investment and imports, and worsen the current account balance. As a result, the correlation between the change in the CAPB and the error term in the regression is likely to be negative, leading to a downward-biased estimate of the twin-deficits link.

Second, the change in the CAPB may reflect deliberate policy responses to other developments affecting economic activity. For example, governments may raise tax rates and cut government spending when domestic demand is expected to grow rapidly and raise inflation. To the extent that such booms are correlated with the current account, they are included in the error term in the regression, $\varepsilon_t$. Also, discretionary policy responses to such developments would be reflected in the change in the CAPB, implying a correlation between

[2] For example, Alesina and Perotti (1995) and Alesina and Ardagna (2010) correct the primary balance for year-to-year changes in the unemployment rate.

[3] For a discussion of how cyclically-adjusted fiscal data contain non-policy movements correlated with economic activity, see, for example, Guajardo, Leigh and Pescatori (2011), Romer and Romer (2010), Milesi-Ferretti (2009), Morris and Schuknecht (2007), and Wolswijk (2007).

the regressor, $\Delta F_t$, and the error term. To the extent that domestic booms in economic activity tend to coincide with a worsening current account balance, the analysis would then be biased toward *under*playing the effect of fiscal policy on the current account.[4] Devries et al. (2011) provide a number of real-world counterparts to this hypothetical example. For example, in Finland in 2000, there was an asset price boom and rapid domestic demand growth, and the government cut spending to reduce the risk of economic overheating (Devries et al., 2011, p. 31). Interestingly, the authorities also cited the lack of an independent monetary policy (Finland adopted the euro in 1999) in explaining why fiscal policy needed to tighten to stabilize economic activity (Finland Ministry of Finance, 2000).

Finally, the change in the CAPB may reflect an explicit policy response to the current account balance. For example, in an economy with rapid import growth and a rising current account deficit, the government might raise taxes or cut government spending in order to restrain domestic demand and unwind the current account imbalance. Such a discretionary fiscal policy response to developments affecting the current account would again imply a *negative* correlation between the error term in the regression equation, $\varepsilon_t$, and the regressor, $\Delta F_t$, leading to biased estimates of the effect of fiscal policy on the current account. France in 1983 provides a real-world counterpart to this hypothetical example. Fiscal policy tightening was motivated by a desire to reduce the current account deficit, as the 1983 *IMF Recent Economic Developments* (p. 3) explains: "In response to the widening current account deficit since late 1981, the authorities announced a package of measures on March 25, 1983 aimed at reducing domestic demand… The package consisted of public spending cuts, tax increases, and measures to increase private saving." Because this fiscal consolidation was motivated by the status of the current account, it illustrates the issue of reverse causation.

To address these problems with the conventional approach, we use an alternative approach based on identifying changes in fiscal policy directly from the historical record. In particular, we examine contemporaneous policy documents to establish whether discretionary changes in tax rates and government spending were motivated by a response to the business cycle or not. Our approach is similar to that of Romer and Romer (2010), who estimate the macroeconomic effects of U.S. tax changes and achieve identification using the historical record in two ways. First, they verify that the policy documents do not discuss a desire to respond to prospective economic conditions and return growth to normal. Second, within the set of policy changes not motivated by the near-term economic outlook, they focus on tax changes motivated either by ideological objectives or by the desire to reduce the budget deficit.

For the purposes of this paper, we focus on fiscal policy changes motivated by the desire to reduce the budget deficit. As Romer and Romer (2010) explain, the budget deficit

[4] An exception would be the case of an economy for which domestic activity is primarily driven by external demand for its exports, in which case the current account may also improve when activity rises. For example, a rise in the global demand for oil may be associated with strong domestic income and exports in a country such as Norway (which is not in our sample).

reflects past economic conditions and budgetary decisions rather than prospective economic conditions. Therefore, "[i]f policymakers raise taxes to reduce such a deficit, this is not a change motivated by a desire to return growth to normal or to prevent abnormal growth. So it is exogenous" (Romer and Romer, 2010, p. 770). Austria in 1996 provides an example of such a policy change. The authorities introduced austerity measures to conform to the budget deficit criteria for European Monetary Union (EMU) accession, agreed under the terms of the 1992 Maastricht Treaty, and not because there was a risk of economic overheating or because they wanted to restrain a growing trade deficit. Another example is the U.S. Omnibus Budget Reconciliation Act of 1993, which involved raising taxes and cutting spending not to reduce the risk of economic overheating, but because policymakers saw it as a prudent policy change with potential long-term benefits. Such changes in fiscal policy are thus valid for testing the twin deficits hypothesis, and should help the analysis avoid some of the pitfalls associated with the standard approach used in the literature on the effects of fiscal policy on the current account.

While the historical approach addresses some of the problems associated with the conventional approach discussed above, it is subject to additional criticisms that also apply to the conventional approach. First, both the standard approach and our historical approach record changes in fiscal policy when they are implemented rather than when they are *announced*, which ignores the role of anticipation effects highlighted by Ramey (2011). Thus, while the changes in fiscal policy that we identify should be "exogenous" in the Romer and Romer (2010) sense—not an explicit response to business cycle developments—they are not necessarily *unanticipated* shocks. At the same time, as Beetsma, Giuliodori and Klaassen (2008) point out, the role of anticipation effects is likely to be smaller at the annual frequency used here than at the quarterly frequency used by Ramey (2011) and Romer and Romer (2010). Second, if countries postpone fiscal consolidation until the economy recovers, or strengthen it in a downturn to remain on a desired deficit-reduction track, then the consolidation exercise will be associated with business cycle developments in both the standard approach and our approach. Thus, biases may remain even in our approach, although it is unclear in which direction they would go overall.[5]

To identify the policy changes, we examine a wide range of contemporaneous policy documents. The contemporaneous sources include *Budgets*, *Budget Speeches*, central bank reports, *Convergence* and *Stability Programs* submitted by the authorities to the European Commission, IMF reports, and *OECD Economic Surveys*. In addition, we examine country-specific sources, such as the Congressional Budget Office (CBO) reports and the *Economic Report of the President* for the United States, the *Journal Officiel de la Republique Francaise*

[5] Alternative approaches to identifying exogenous changes in fiscal policy include, for example, that of Shoag (2010), who focuses on changes in U.S. state government spending associated with windfalls from pension fund returns. Another example is the approach of Ramey (2011), who estimates the effect of changes in U.S. military spending. Future research could investigate the feasibility of applying these approaches to a broad panel of countries.

for France, Ministry of Finance press releases and publications, and, in one case, a transcript of a television interview. These documents provide evidence of what policymakers believed at the time that policy measures were taken, and provide estimates of the measures' budgetary impacts. Our sample includes 17 OECD countries over the period 1978-2009. The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, Portugal, Spain, Sweden, the United Kingdom and the United States. A companion paper, Devries et al. (2011), provides detailed citations for each observation we identify to show how we determine the motivation and estimated budgetary effects from the historical record. Following Romer and Romer (2010), we use the contemporaneous estimates contained in these sources since retrospective estimates are rarely available.

The dataset contains a total of 173 cases of changes in fiscal policy driven by a desire to reduce the budget deficit. Since some deficit-reduction actions are temporary, the changes we identify can take both negative and positive values. For example, a one-year tax of €1 has a budgetary impact (*change* in public saving) of €1 in the first year and –€1 in the next year when it ends, followed by no impact. The range runs from –0.8 percent of GDP to 4.6 percent of GDP. The sample mean is 1.0 percent of GDP, while the standard deviation is 0.9 percentage points. These changes in fiscal policy are the key inputs into the empirical analysis outlined in the next section.

## B. Econometric Methods

Our baseline regression specification takes the following form:

$$(2) \qquad \Delta CA_{i,t} = \mu_i + \lambda_t + \sum_{j=1}^{2} \beta_j \Delta CA_{i,t-j} + \sum_{s=0}^{2} \gamma_s \Delta F_{i,t-s} + v_{i,t}$$

where subscript $i$ indexes countries, subscript $t$ indexes years, and $\Delta CA$ is the change in the current account-to-GDP ratio. The term $\Delta F$ is the estimated size of our action-based fiscal consolidation in percent of GDP—the budgetary impact of changes in taxes and spending motivated by a desire to reduce the budget deficit based on the dataset of Devries et al. (2011). The term $\mu_i$ denotes a country-fixed effect, $\lambda_t$ denotes a year-fixed effect, and $v_{i,t}$ is a mean-zero error term. The $\beta$s are the autoregressive coefficients capturing the normal dynamics of the current account, while the $\gamma$s are the direct effects (contemporaneous and lagged) of fiscal consolidation on the current account. To see how the results compare with those obtained using on the standard CAPB-based measure of fiscal consolidation, we re-estimate the regression equation with the change in the CAPB replacing our action-based measure. In this case, the equation estimated is as above, with the change in the CAPB-to-GDP ratio measuring the change in fiscal policy.[6]

[6] The cyclically-adjusted data come from Alesina and Ardagna (2010).

Nonstationarity tests indicate that a unit root in the level of the current account balance-to-GDP ratio over 1978-2009 cannot be rejected for 16 out of the 17 countries which enter into the sample (Australia is the exception). Further tests indicate that the difference of the current account to GDP ratio is stationary, leading us to opt to use the difference in our baseline specification. We cumulate the estimated responses to recover the response of the level of the current account balance-to-GDP ratio to a permanent 1 percent of GDP fiscal consolidation. Estimation is by ordinary least squares and the standard errors of the impulse responses are calculated via the delta method. The baseline regression's lag order of 2 is selected based on a review of the information criteria and serial correlation properties associated with various lag lengths. As reported in the next section, the results are similar for alternative specifications. The current account balance-to-GDP is taken from the World Development Indicators database.

## II. Estimation Results

### A. Current Account

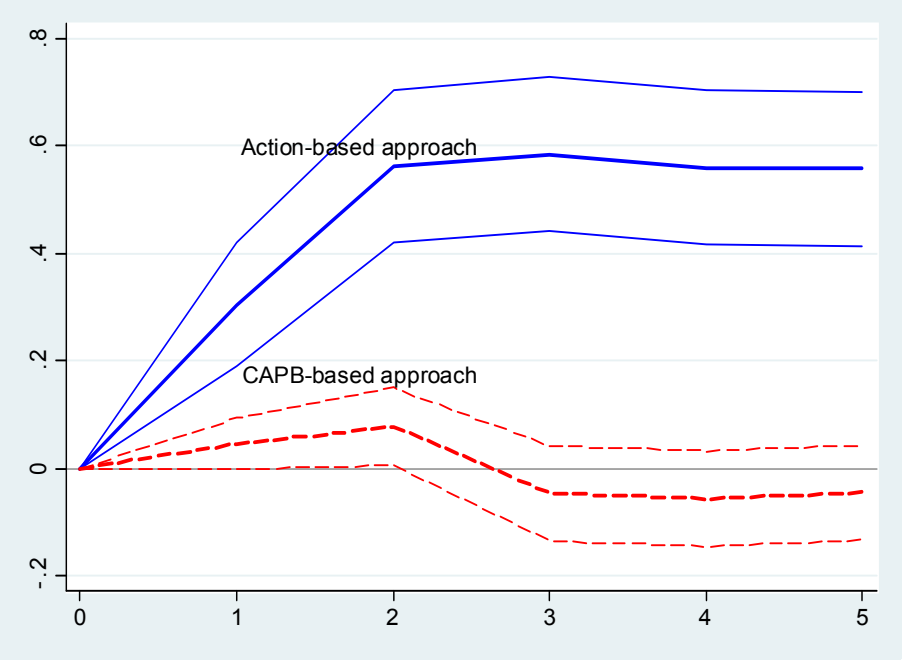
**Baseline Results**

The results suggest that fiscal consolidation has significant effects on the current account that are much larger than those obtained based on the standard CAPB-based approach. Figure 1 reports the estimated impact of a 1 percent of GDP fiscal consolidation on the current account in percent of GDP based on our action-based measures, along with the one-standard-error bands. Figure 1 also reports the estimation results using the standard measure of fiscal consolidation—the change in the CAPB.

In our baseline specification, a 1 percent of GDP fiscal consolidation raises the current account balance-to-GDP ratio by 0.6 percentage point within two years (*t*-statistic = 4). Moreover, the improvement is long-lasting.[7] In contrast, based on the standard CAPB-based approach, a fiscal consolidation of 1 percent of GDP raises the current account-to-GDP ratio by only 0.1 percentage point (*t*-statistic = 1.1) within two years with the effect fading over time, a result that is broadly consistent with the existing literature. A similar difference between the results obtained with the action-based and CAPB-based approaches arises when the sample is restricted to *large* fiscal consolidations (greater than 1.5 percent of GDP), as reported in Figure 2. Overall, the results suggest that the bias associated with the conventional CAPB-based approach is substantial.

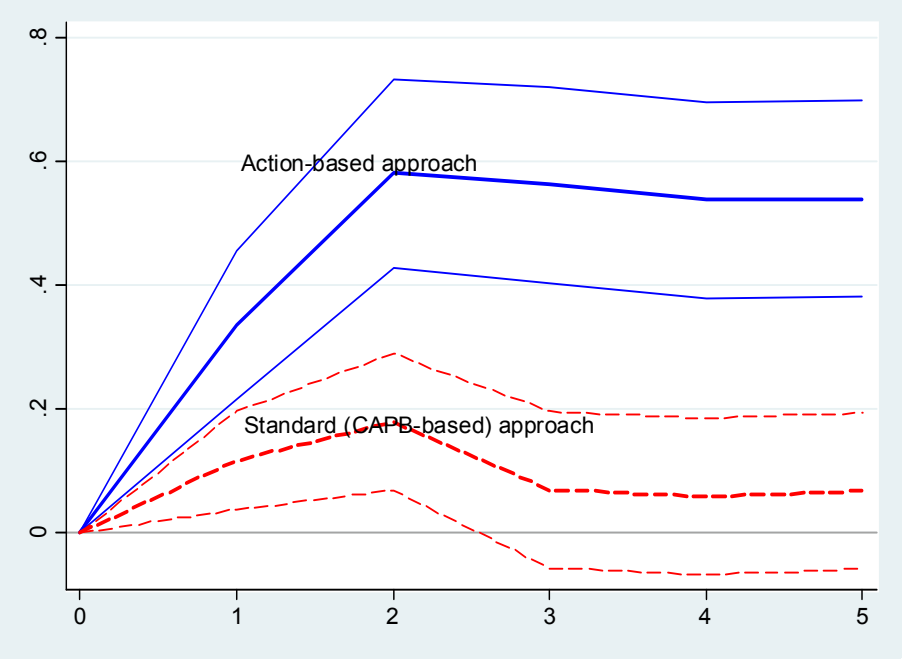
[7] The magnitude of this effect is close to that found by Kumhof and Laxton (2009) in simulations using a calibrated non-Ricardian open-economy DSGE model featuring households with finite horizons.

Figure 1. Impact of Fiscal Contraction of 1 Percent of GDP on the Current Account-to-GDP (percentage points)




Note: *t*=1 denotes year of fiscal contraction. Fine lines equal one standard error bands.

Figure 2. Impact of Large Fiscal Contraction on the Current Account-to-GDP Ratio (percentage points)




Note: *t*=1 denotes year of fiscal contraction. Fine lines equal one standard error bands. Figure reports impact per each additional 1 percent of GDP of fiscal consolidation.

**Robustness**

The above results suggest that fiscal consolidation tends to have a positive and large effect on the current account. In this sub-section, we perform a number of tests to assess the robustness of this result. Overall, the finding of a large and significant twin-deficits link is robust to alternative specifications, dropping outliers, and employing different estimation approaches.

First, we consider the robustness of the results to estimating a static model. In particular, we repeat the analysis while excluding the dynamic lags of the dependent variable—the $\sum_{j=1}^{2} \beta_j \Delta CA_{i,t-j}$ terms—from the estimated equation. If consolidation were more likely in an economy with an improving current account balance, one would expect to see a correlation between lagged changes in the current account and consolidation, and controlling for the lagged current account would have an appreciable impact on the estimates. To allow the estimates to cover the five-year impulse response horizon used in the baseline, we also include four lags of our action-based fiscal consolidation variable ($\Delta F$) in the equation rather than two as in the baseline specification. As Figure 3 reports (panel 1), excluding lags of the change in the current account has only a small effect on the results, which is reassuring as it suggests that this source of bias is small in our sample.

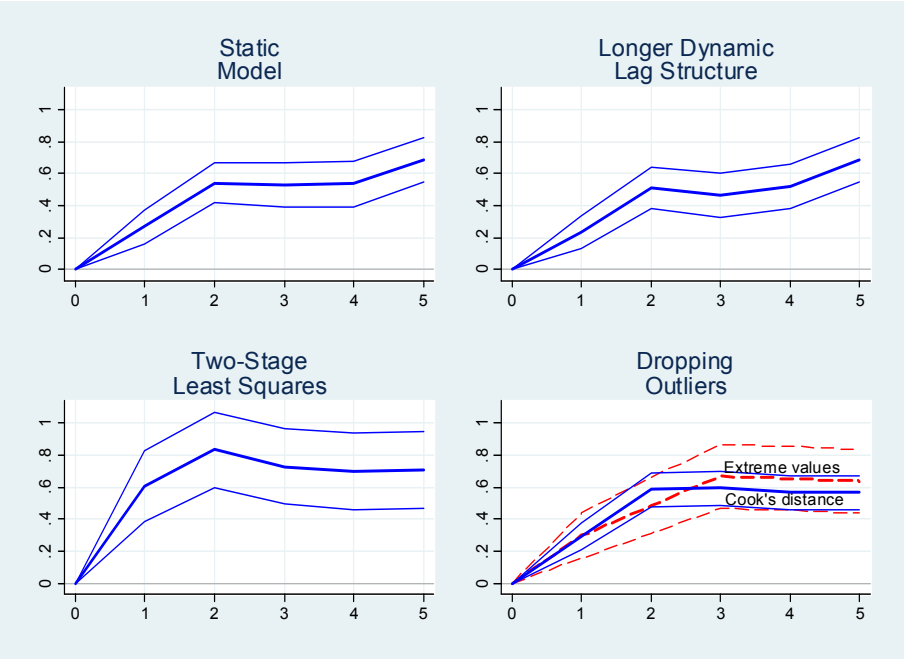
Second, we consider a longer dynamic lag structure. While our baseline estimates include two lags of the dependent variable to capture the normal dynamics of the current account, it is possible that allowing for a longer dynamic structure might affect the estimation results. To explore this possibility, we re-estimate Equation (1) to include four years of lags of the dependent variable. Here, we also include four years of lags of the fiscal consolidation variable. As Figure 3 reports (panel 2), this change in specification has a negligible effect on the results.

Third, we consider how the results change when the estimation is undertaken via two-stage least squares. In particular, we estimate the impact of fiscal consolidation based on the CAPB, but with our action-based measure acting as an instrumental variable for the change in the CAPB. The results reported in Figure 3 (panel 3) imply that the rise in the CAPB, when instrumented using our variable, has a large and significant effect on the current account balance. The first stages are strong. Each equation has an *F*-statistic on the excluded instruments with a *p*-value well below 0.1 percent, indicating that action-based fiscal consolidations have explanatory power for the CAPB. The Anderson canonical correlations and Cragg-Donald Wald tests also have *p*-values well below 0.1 percent, rejecting the null that the system is unidentified. The second stage indicates that a rise in the CAPB-to-GDP ratio of 1 percentage point raises the current account balance-to-GDP ratio by 0.8 percentage points (*t*-statistic = 3.5) within two years. As in the baseline specification, the effect is long-lasting.

Fourth, we investigate the sensitivity of the results to outliers. While very large or very small fiscal consolidations are worth considering, it is natural to ask how important they are for the results. We therefore re-estimate the baseline equation after dropping 10 percent of the fiscal consolidations in the dataset, comprising the largest 5 percent and the smallest 5

percent of the sample. We also investigate the role of outliers using Cook's distance method.[8] As Figure 3 shows (panel 4), in both cases, the results are similar after the removal of outliers. If anything, the precision of the estimates appears to increase.

Figure 3. Robustness: Impact of Fiscal Contraction of 1 Percent of GDP on the Current Account-to-GDP Ratio (percentage points)




Note: $t$=1 denotes year of fiscal contraction. Fine lines equal one standard error bands.

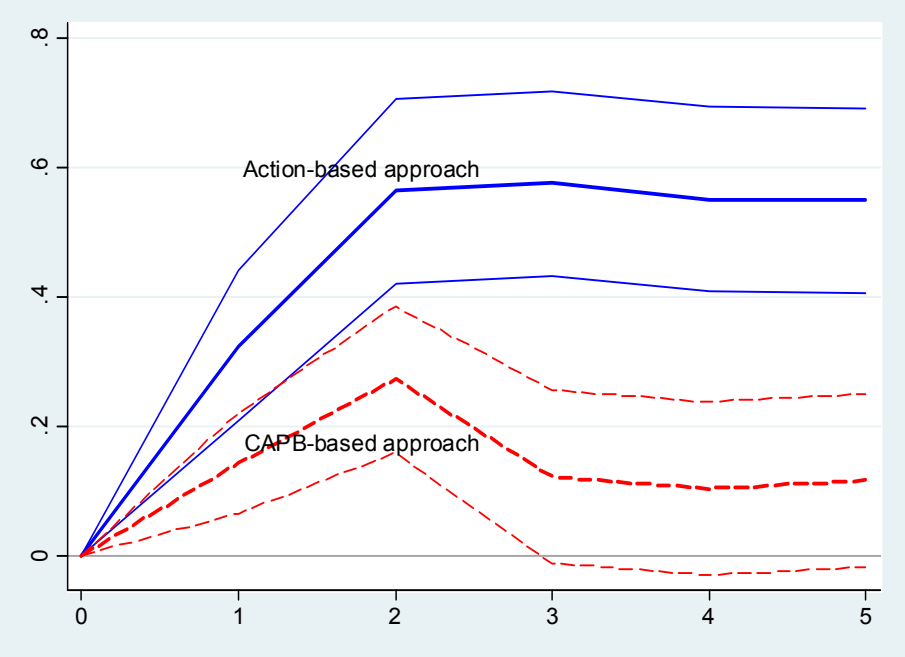
Finally, we investigate how the results change if the variables measuring changes in the fiscal balance are censored to include only positive values. In particular, while our series of fiscal policy changes does include some with a negative impact on the fiscal balance—the end of temporary deficit-reduction measures, as discussed above—the overwhelming majority of our fiscal policy changes have a positive impact on the fiscal balance. In contrast, the distribution of changes in the CAPB is more symmetric across positive and negative values. Is the difference in estimation results obtained using the two variables driven by this difference in distributions? To explore this possibility, we re-estimate our baseline Equation (2) while setting all the negative changes in our series and in the CAPB-to-GDP to zero.[9] Figure 4 reports the results, and suggest that the main findings hold up to this change. In particular, the difference between the results obtained using our action-based and the CAPB-

[8] Observations with Cook's distance greater than $4/N$, where $N$ is the sample size, are discarded.

[9] As Kilian and Vigfusson (2009) point out in the context of estimating the effects of energy price increases, setting one side of the distribution of the independent variable to zero can lead to estimates that are greater in absolute value than the true effects.

based fiscal variables remains large even when both are censored at zero. Also, while the CAPB-based estimates do increase relative to the uncensored baseline version, they remain small and statistically insignificant after the second year. These results again suggest that the bias associated with the conventional approach may be substantial.

Figure 4. Impact of Fiscal Contraction of 1 Percent of GDP on the Current Account-to-GDP Ratio. Fiscal Balance Changes Censored at Zero




Note: $t$=1 denotes year of fiscal contraction. Fine lines equal one standard error bands. Figure reports impact per each additional 1 percent of GDP of fiscal consolidation.

## B. Adjustment Mechanisms

### Saving and Investment

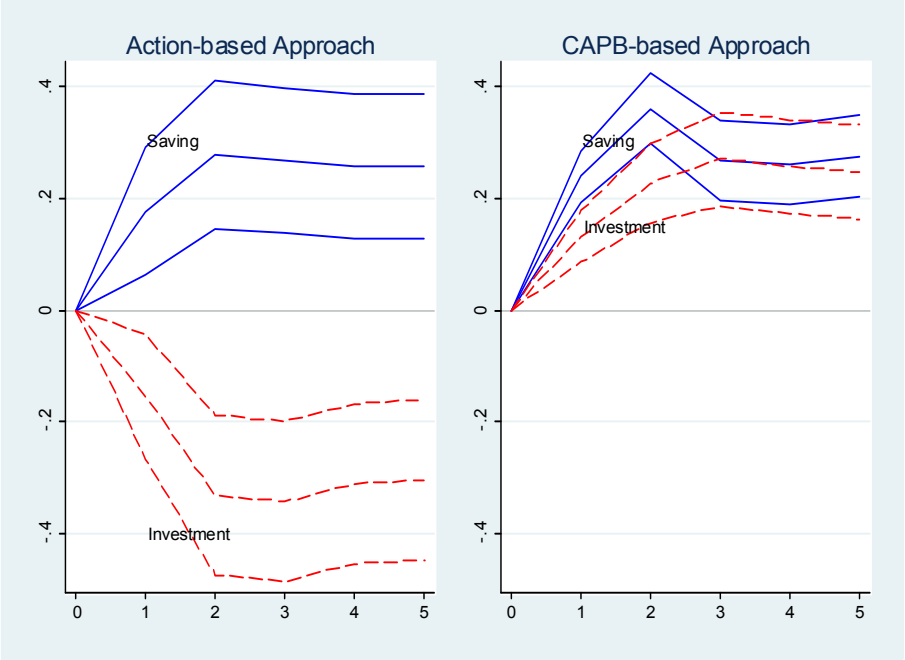
From the national income accounts expenditure identity, the current account balance can be decomposed into saving and investment. Accordingly, we consider the impact of fiscal consolidation on both saving and investment, estimating equation (1) with the variable of interest replacing the current account.[10] The saving-to-GDP and investment-to-GDP ratios are both taken from the World Development Indicators database.

The results suggest that current account adjustment in response to fiscal consolidation occurs both through a contraction in investment and through higher saving. As Figure 5 reports, the estimated effect of a 1 percent of GDP fiscal consolidation on the investment-to-GDP ratio is –0.3 percentage points (*t*-statistic = –2.3) within two years, with a slight rebound thereafter. This result is consistent with the contractionary effect of fiscal consolidation on domestic demand found by Guajardo, Leigh and Pescatori (2011) using the same dataset of fiscal consolidations. Meanwhile, the national saving-to-GDP ratio rises by 0.3 percentage points (*t*-statistic = 2.1) within two years. The rise in national saving in response to fiscal consolidation provides evidence against Ricardian equivalence, under which increased government saving would fail to raise total national saving.

In contrast, based on the standard approach, investment increases in the short term, largely offsetting the increase in national saving associated with fiscal consolidation. In particular, a 1 percent of GDP fiscal consolidation based on the CAPB is associated with a rise in the investment-to-GDP ratio of 0.2 percentage points (*t*-statistic = 3.2) within two years, and of 0.3 percentage points (*t*-statistic = 3.2) within three years. In the short term, the increase in investment is smaller than the rise in national saving, which rises by 0.4 percentage points within two years (*t*-statistic = 5.8), explaining the small improvement in the current account balance. However, the increase in investment associated with an improvement in the CAPB reflects the endogenous nature of CAPB-based measure of fiscal consolidation, as discussed above.

[10] For example, to investigate the impact of fiscal consolidation on the investment-to-GDP ratio, we estimate the following equation: $\Delta I_{i,t} = \mu_i + \lambda_t + \sum_{j=1}^{2} \beta_j \Delta I_{i,t-j} + \sum_{s=0}^{2} \gamma_s \Delta F_{i,t-s} + v_{i,t}$ where $I$ is the investment-to-GDP ratio.

Figure 5. Impact of Fiscal Consolidation of 1 Percent of GDP on Saving and Investment (percent of GDP)




Note: *t*=1 denotes year of fiscal contraction. Fine lines equal one standard error bands.

**Relative Prices**

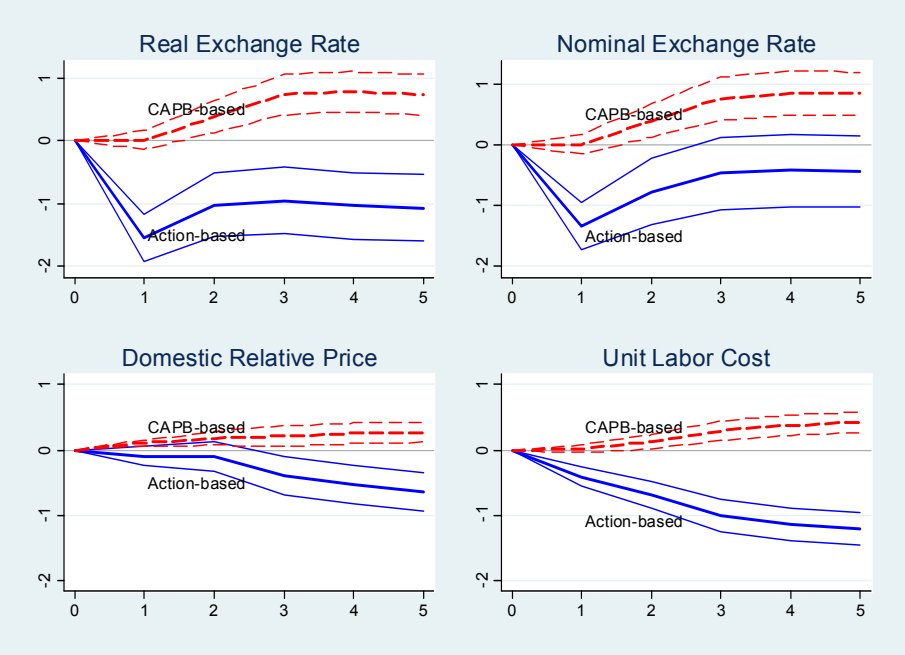
Textbook models suggest that a key mechanism for current account adjustment in response to changes in fiscal policy is a shift in the real exchange rate. Our results, summarized in Figure 6, are consistent with this prediction. The estimated effect of a 1 percent of GDP fiscal consolidation on the real effective exchange rate is a depreciation of 1.5 percent (*t*-statistic = –4.1) in the first year, with a partial unwinding thereafter. In the first year, almost the entire real depreciation is accounted for by a fall in the value of the nominal effective exchange rate. Over the next few years, as the nominal effective exchange rate regains some value, a fall in domestic prices relative to trading partners preserves the gain in real exchange rate competitiveness.[11] Within five years, the domestic price level declines relative to trading partners by 0.6 percent (*t*-statistic = –2.2). Further evidence that part of the adjustment occurs through a compression of domestic costs comes from the estimated response of unit labor costs (ULC).[12] Fiscal consolidation induces a steady decline in the ULC, which reaches –1.2 percent (*t*-statistic = –4.8) within five years.

[11] The price differential relative to trading partners is defined as the ratio of the real effective (trade-weighted) exchange rate to the nominal effective exchange rate.

[12] The ULC measures the average cost of labor per unit of output and is calculated as the ratio of total labor costs to real output. The ULC data come from the OECD.

In contrast, the CAPB-based approach suggests that fiscal consolidation is not associated with real depreciation. As Figure 6 reports, a 1 percent of GDP fiscal consolidation measured by the CAPB is associated with an *appreciation* of the real exchange rate, which reaches 0.8 percent (*t*-statistic = 2.4) within three years. The real appreciation is a reflection of both a rise in the nominal value of the currency, and an increase in domestic prices relative to trading partners. Similarly, the ULC rises in this case. However, this lack of real exchange rate depreciation is likely to reflect the endogenous nature of the CAPB-based measure of fiscal consolidation, as discussed above. For example, a stock market boom is likely to increase the CAPB but also coincide with increased capital inflows and any associated real exchange rate appreciation. It is therefore not surprising that the standard CAPB-based approach finds little evidence of real exchange rate depreciation after fiscal consolidation.

Figure 6. Impact of Fiscal Contraction of 1 Percent of GDP on Relative Prices (percent)




Note: *t*=1 denotes year of fiscal contraction. Fine lines equal one standard error bands. Figure reports impact on real and nominal effective exchange rates, with a decline indicating a fall in value.

## Exchange Rate Regime

The evidence presented above suggests that a key mechanism underlying the twin-deficits link is a shift in the real exchange rate. Usually, the shift occurs mainly through a fall in the nominal value of the currency. This finding suggests that, if the nominal exchange rate is fixed, the process of external adjustment may rely more on a compression of domestic prices, a process referred to as "internal devaluation."

To shed light on how the twin-deficits link changes if the nominal exchange rate is fixed, we focus on a subsample of countries that fixed their exchange rates by adopting the euro in 1999. For this group of 10 countries—Austria, Belgium, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal and Spain—we investigate whether the effect of fiscal consolidation on the current account changed after they adopted the euro. In particular, we estimate the following modification of our baseline equation:

$$(3) \qquad \Delta CA_{i,t} = \mu_i + \lambda_t + \sum_{j=1}^{2} \beta_j \Delta CA_{i,t-j} + \sum_{s=0}^{2} \gamma_s euro_{i,t-s} + \sum_{s=0}^{2} \gamma_s \Delta F_{i,t-s} + v_{i,t}$$

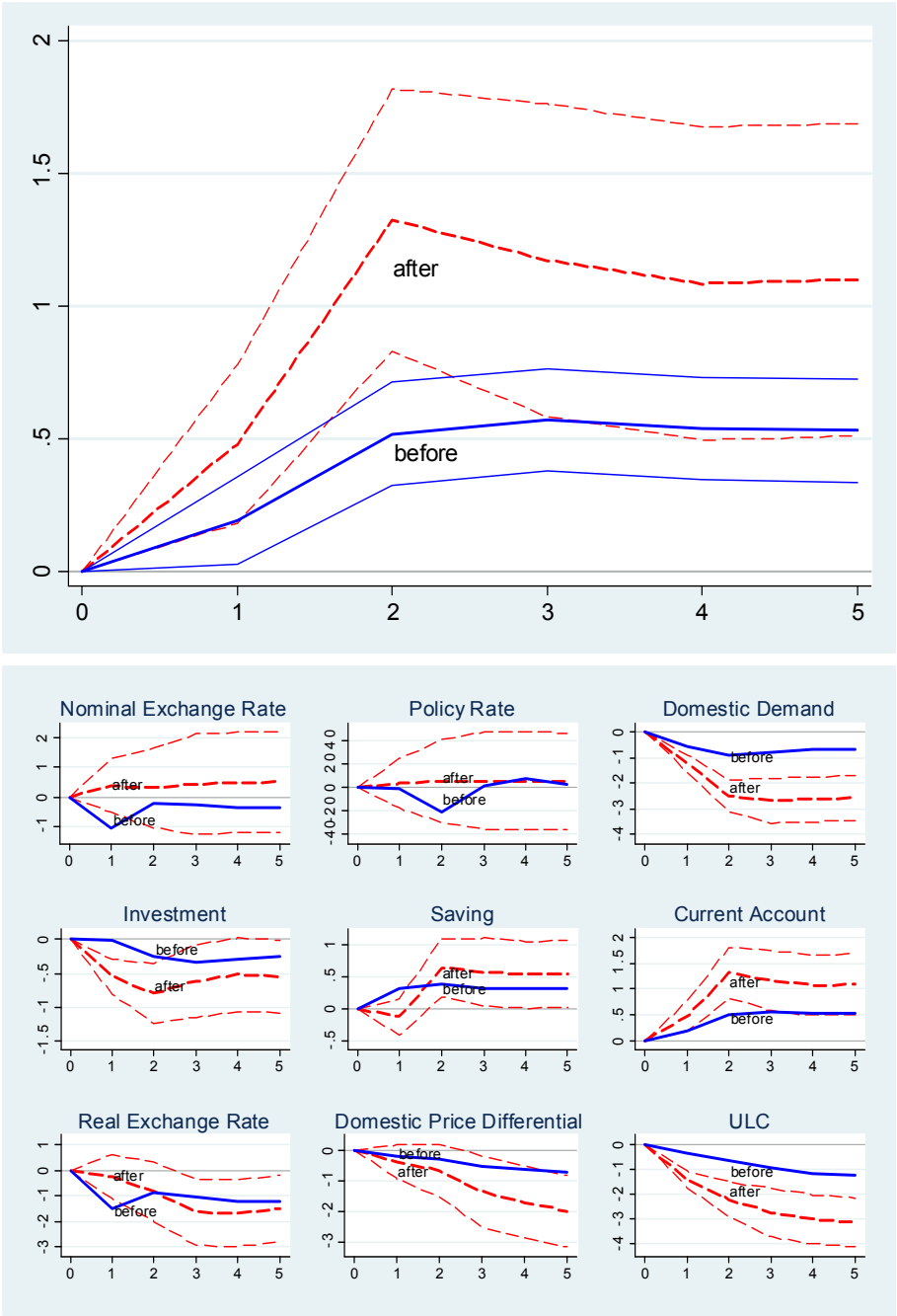
where the $euro$ term equals fiscal consolidation ($\Delta F$) if it occurs *after* the adoption of the euro in 1999. The sum of the responses to $euro$ and $\Delta F$ show the effects of consolidation after euro adoption, while the response to $\Delta F$ shows the impact of a consolidation before euro adoption. An important qualification to this analysis is that the estimates are likely to be imprecise since the dataset for these 10 countries post-1998 contains only 23 cases of deliberate fiscal consolidation motivated by a desire to reduce the budget deficit.

The results suggest that the effect of fiscal consolidation on the current account has not declined since the adoption of the euro. Indeed, the point estimates suggest a stronger twin-deficits link after euro adoption. As Figure 7 reports, the estimated effect of a 1 percent of GDP fiscal consolidation on the current account-to-GDP ratio within two years is 1.3 percentage points ($t$-statistic = 2.7) for the post-euro adoption sample.[13]

The analysis also provides evidence of a process of "internal devaluation" in response to fiscal consolidation after euro adoption. In particular, the estimation results summarized in Figure 7 show that after euro adoption, the nominal effective exchange (relative to all trading partners, not only euro area members) no longer looses value in response to fiscal consolidation (panel 1). Moreover, with monetary policy conducted at the euro area level, the policy interest rate no longer falls in response to an individual country's fiscal consolidation (panel 2). Possibly reflecting the absence of any associated monetary policy easing, domestic demand contracts more strongly (panel 3) and the investment-to-GDP ratio falls by more (panel 4). The larger fall in the investment-to-GDP ratio is what lies behind the sharper improvement in the current account balance in the short term (panel 6). While the real exchange rate depreciates very little in the short term (panel 7), a gradual compression in domestic prices (panel 8) results in a depreciation over the medium term. This cost compression is also visible in the larger decline in the ULC (panel 9), and is consistent with the disinflationary effects of the larger domestic demand contraction.

[13] Similarly, comparing the effect of fiscal consolidation following euro adoption with the effect in all economies with a pegged exchange rate, as defined by the IMF's *de jure* index, suggests that the current account improves more in the euro area than in economies with pegs in general. However, for the countries in our sample, this comparison is very similar to that of comparing the effect of fiscal consolidation before and after euro adoption, since most of the countries with a pegged exchange rate in our sample were those that eventually adopted the euro.

Figure 7. Impact of Fiscal Contraction of 1 Percent of GDP on the Current Account: Before and After Euro Adoption




Note: Sample restricted to countries that eventually adopted the euro. $t$=1 denotes year of fiscal contraction. Fine lines equal one standard error bands. Current account, investment and saving are in percent of GDP. All other variables are in percent except the policy rate, which is in basis points.

## III. CONCLUSION

This paper explores the effect of fiscal consolidation on the current account based on a new international dataset of fiscal consolidation and finds strong evidence in favor of the twin-deficits hypothesis. Following Romer and Romer (2010), the dataset uses contemporaneous policy documents to identify changes in fiscal policy motivated primarily by the desire to reduce the budget deficit, and not by a response to short-term developments that affect current account dynamics. Based on this dataset, our baseline specification implies that a 1 percent of GDP fiscal consolidation reduces the external current account deficit-to-GDP ratio by about 0.6 percentage points within two years. Thus, reducing the current account deficit by 1 percent of GDP would require a fiscal consolidation of about 1.7 percent of GDP (1/0.6). We find that a contraction in investment and a real exchange rate depreciation play a key role in this adjustment process.

By examining the experience of countries that adopted the euro in 1999, we also find that fixing the nominal exchange rate does not necessarily reduce the effect of fiscal consolidation on the current account. For these countries, the improvement in the current account balance appears to occur through a process of "internal devaluation," with sharper contractions in investment and domestic demand, and stronger relative domestic cost and price compression. This evidence provides support to the notion that the fiscal consolidation currently under way to address elevated government debt levels and comply with the Stability and Growth Pact (SGP) could also contribute to preventing the reemergence of excessive imbalances in the euro area. At the same time, however, given the relatively small sample size for the post-euro adoption period, the estimates for this period are imprecise, and further research is required. It is also worth noting that since the improvement in one country's current account balance implies a corresponding worsening for trading partners, the effect of fiscal consolidation on the current account is likely to be smaller if trading economies adjust simultaneously. Such may be the case in the euro area today.

The findings based on our action-based measure of fiscal consolidation contrast starkly with the findings of much of the empirical literature, which finds little or no evidence of a twin-deficits link. Much of this literature is based on measuring fiscal policy using the CAPB or the overall fiscal balance. Using data on the CAPB, we replicate this standard result, and find that a 1 percent of GDP fiscal consolidation improves the current account-to-GDP ratio by only 0.1-0.3 percentage points. The key factors that sever the twin-deficits link in these empirics are a surge in investment and a real exchange rate appreciation. However, as we explain, estimates based on the conventional CAPB-based approach are biased towards underplaying the strength of the twin-deficits link. It is therefore not surprising that the existing literature finds little evidence in favor of the twin deficits hypothesis.

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