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**Working Paper**

# Fiscal consolidation strategy: An update for the budget reform proposal of march 2013

IMFS Working Paper Series, No. 68

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*Suggested Citation:* Cogan, John F.; Taylor, John B.; Wieland, Volker; Wolters, Maik Hendrik (2013) : Fiscal consolidation strategy: An update for the budget reform proposal of march 2013, IMFS Working Paper Series, No. 68, Goethe University Frankfurt, Institute for Monetary and Financial Stability (IMFS), Frankfurt a. M., https://nbn-resolving.de/urn:nbn:de:hebis:30:3-297149

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JOHN F. COGAN, JOHN B. TAYLOR, VOLKER WIELAND, MAIK WOLTERS

# Fiscal Consolidation Strategy: An Update for the Budget Reform Proposal of March 2013

Institute for Monetary and Financial Stability
GOETHE UNIVERSITY FRANKFURT AM MAIN

WORKING PAPER SERIES NO. 68 (2013)

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# Fiscal Consolidation Strategy: An Update for the Budget Reform Proposal of March 2013

John F. Cogan, John B. Taylor, Volker Wieland, Maik Wolters*

March 18, 2013

**Abstract**

Recently, we evaluated a fiscal consolidation strategy for the United States that would bring the government budget into balance by gradually reducing government spending relative to GDP to the ratio that prevailed prior to the crisis (Cogan et al, JEDC 2013). Specifically, we published an analysis of the macroeconomic consequences of the 2013 Budget Resolution that was passed by the U.S. House of Representatives in March 2012. In this note, we provide an update of our research that evaluates this year's budget reform proposal that is to be discussed and voted on in the House of Representative in March 2013. Contrary to the views voiced by critics of fiscal consolidation, we show that such a reduction in government purchases and transfer payments can increase GDP immediately and permanently relative to a policy without spending restraint. Our research makes use of a modern structural model of the economy that incorporates the long-standing essential features of economics: opportunity costs, efficiency, foresight and incentives. GDP rises because households take into account that spending restraint helps avoid future increases in tax rates. Lower taxes imply less distorted incentives for work, investment and production relative to a scenario without fiscal consolidation and lead to higher growth.

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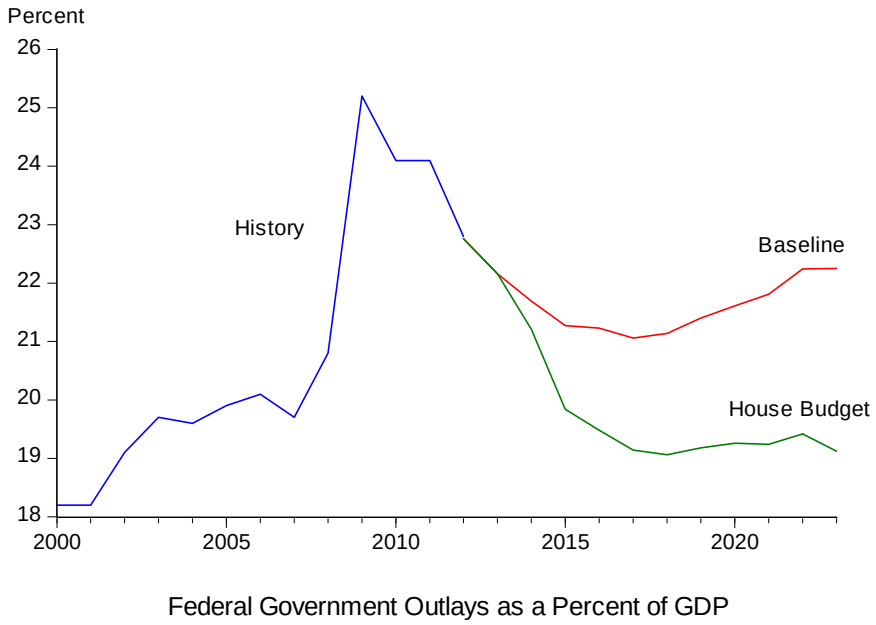
## 1. Introduction

As a consequence of the global financial crisis and great recession government deficits have risen substantially, thus creating the need for a fiscal consolidation strategy to reduce deficits and stabilize government debt. Looking forward, sustained spending increases are particularly worrisome, because they ultimately require raising tax rates beyond pre-crisis levels, even after the economic recovery. The distortions resulting from higher tax rates would then constrain the economy's trend growth for a long time.

**Figure 1** summarizes the recent history and the outlook for federal government spending in the United States. It shows U.S. federal government outlays as a percentage of GDP. Government outlays (or government spending) include both government *transfers* and government *purchases* of goods and services. The history line indicates the swift increase in spending following the onset of the financial crisis and recession. Looking forward, two possible paths are shown. The red line titled baseline shows the increase in spending under current policies.. This baseline implies that federal spending as a share of GDP will remain about 3 percentage points above the pre-crisis level. Such a sustained increase in spending would require raising tax rates in the longer run in order to reduce the deficit and prevent the national debt from growing to economically dangerous levels. However, higher tax rates themselves will distort private incentives for saving, investment and capital accumulation to the detriment of economic growth and welfare.

Figure 1: Federal Outlays as a Percent of GDP (excluding interest)



The green line in **Figure 1** shows the path of federal spending under the House Budget Committee Plan proposed on March 12, 2013 and to be voted during the week of March 18 in the House of Representatives. This plan, which contains reductions in both government purchases and transfer payments from their current trajectory (the baseline) might realistically be employed to reduce federal spending and thereby, return the U.S. federal budget to the pre-crisis level relative to GDP. Because the U.S. federal budget was close to balance before the crisis, (the federal deficit was only 1.3 percent of GDP in 2007) this strategy would mitigate the size of any tax rate increase. Hence, relative to the current policy baseline, long-run tax rates would be lower under this alternative strategy.

The purpose of this note is to evaluate the consequences of this fiscal consolidation plan for the U.S. economy, including quantifying its impact on GDP, consumption and investment. Of course, the magnitude and the sign of this impact is a crucial and widely debated policy question, which is at the heart of the current austerity debate. We use modern structural macroeconomic models to assess the effect of fiscal consolidation.

Our primary tool for evaluating the short-, medium- and long-run impact of fiscal policy is a modified version of Coenen, McAdam and Straub's (2008) (CMS) model of the United States and euro area economies. Its authors have used it to investigate the impact of a reduction in distortionary taxes in the euro area. It is sometimes called the New-Area-Wide Model (NAWM) since a version of the model has been estimated and has replaced the so-called Area-Wide-Model (AWM) in European Central Bank policy analysis. We have parameterized the U.S. part of the model using estimates obtained with U.S. data (see Cogan et al. 2010).[1]

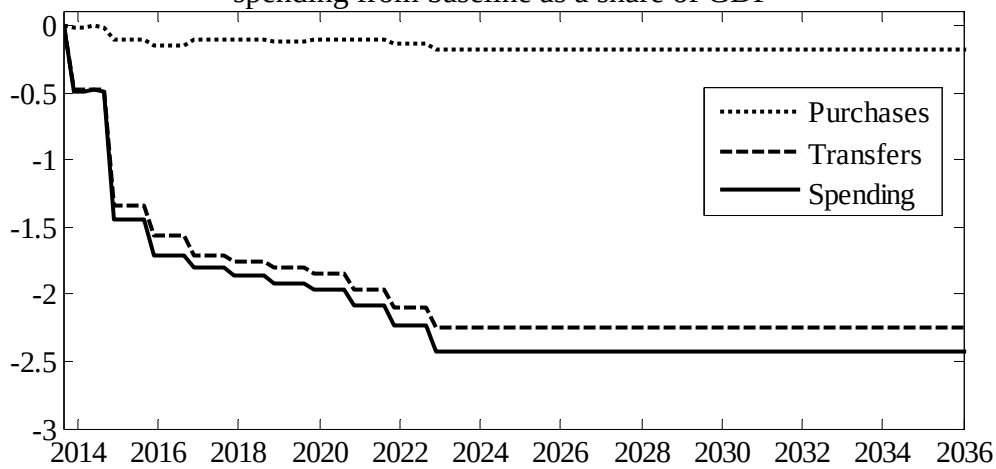
The CMS model is a New Keynesian dynamic stochastic general equilibrium (DSGE) model. Thus, it accounts for the optimizing behaviour of forward-looking households and firms in an environment with short-term nominal rigidities, imperfect competition and a number of additional real economic frictions and adjustment costs. It includes a detailed fiscal sector and accounts for the evolution of government debt. On the expenditure side it distinguishes between government purchases and transfers. With regard to taxation it considers a variety of distortionary taxes.

[1] We have made our implementations of the AWM, NAWM and other models available online in a new macroeconomic model archive (see http://macromodelbase.com.). The model comparison approach is presented in Taylor and Wieland (2012) and Wieland et al (2012).

## 2. Fiscal Consolidation Strategy

Under the House Budget Committee Plan total federal outlays would be kept at their current level for two years leaving spending at about the same level as it reached following the 2009 spending increase. Thereafter spending would rise each year, but more slowly than if current policies were continued. At the end of the budget plan's 10-year horizon, federal outlays would be about 12 percent higher than they are currently, after adjusting for inflation. Relative to GDP, however, federal expenditures would decline to 19.1 percent from the current burden of 22.2 percent of GDP. Thus, the budget plan would imply a significant reduction in spending as a share of GDP. With the Congressional Budget Office projection that revenues will equal 19.1 percent of GDP in 2023, the plan will thereby balance the budget that year. **Figure 2** shows how this reduction is distributed between federal government purchases and federal government transfer payments.

Figure 2: Fiscal consolidation strategy: percentage deviaton of purchases, transfers and total spending from baseline as a share of GDP

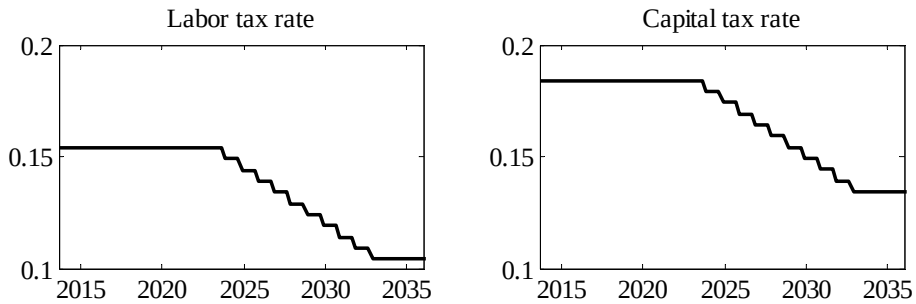



The plan combines a long-term permanent reduction in government spending with near-term spending cuts that are gradually phased-in. Expenditure reductions are heavily weighted towards transfers rather than purchases. Since the fiscal problem facing the United States and most of the European countries is primarily the result of large and growing transfer payment programs, the fiscal plan attacks the fiscal problem at its source. The plan reduces transfers as a percent of GDP relative to the budget baseline by 2.24 percentage points. Somewhat more than half of this reduction occurs relatively early in the ten year period; by 2016. The plan's impact on federal purchases is, in contrast, relatively modest. Government purchases decline relative to GDP by only 0.179 percentage points. After 2023 we assume that the annual expenditure reduction relative to the baseline remains fixed at its 2023 level.

***Tax rates under the Fiscal Consolidation Scenario***

Because the budget reform path for spending is lower than the baseline path, it allows for lower tax rates and/or lower levels of government debt. We assume a mixture. The funds released from reduced federal spending are used to reduce the labor income and capital income tax rates by about 5 percentage points relative to baseline. The remaining funds are used to reduce the debt to GDP ratio. We simulate two scenarios. The first scenario postpones tax reductions for 10 years. Instead, it uses government savings to reduce the debt-to-GDP ratio. We call it the *consolidation scenario*. The paths of labor and capital income tax rates are shown in **Figure 3**. The simulation is implemented as a transition from an initial steady state to a new one with lower government purchases and transfers and lower tax rates.

Figure 3: Implications for tax rates under a **consolidation scenario**




***Tax rates under the Tax Reform Scenario***

In the second scenario—we refer to it as the *tax reform scenario*—tax rates are assumed to be reduced right away while reforms are put in place to broaden the tax base so as to keep tax revenues up. As a result of such tax reform, the distortionary effect of marginal tax rates is reduced, while their impact on tax revenue is mitigated. In our simulation, we approximate the tax reform by reducing the distortionary labor and capital income tax rates while raising lump-sum taxes for some time. The decline in tax rates is shown in **Figure 4**. The path of lump-sum taxes is shown in **Figure 5** together with transfers and government purchases.

Figure 4: Implications for tax rates under a **tax reform scenario**

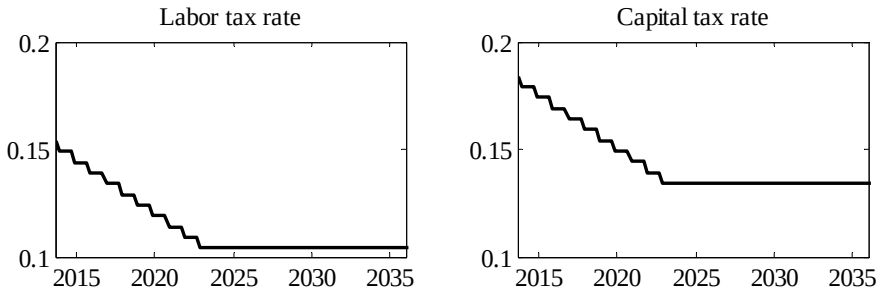
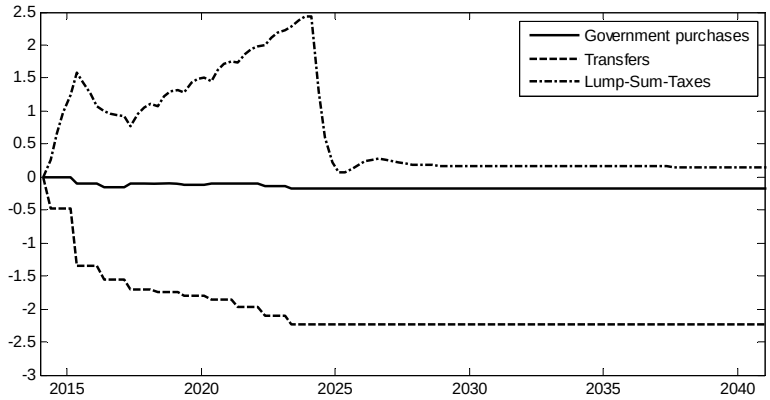



Figure 5: Lump sum taxes under the **tax reform scenario**




To be clear, the reductions in labor and capital income tax rates are relative to a baseline, which, if it corresponds to the actual current outlook for the United States economy, implicitly includes tax rate increases. Thus, in terms of practical implementation in the United States, our consolidation strategy would tend to deviate from the baseline outlook by avoiding tax increases rather than requiring actual tax cuts.

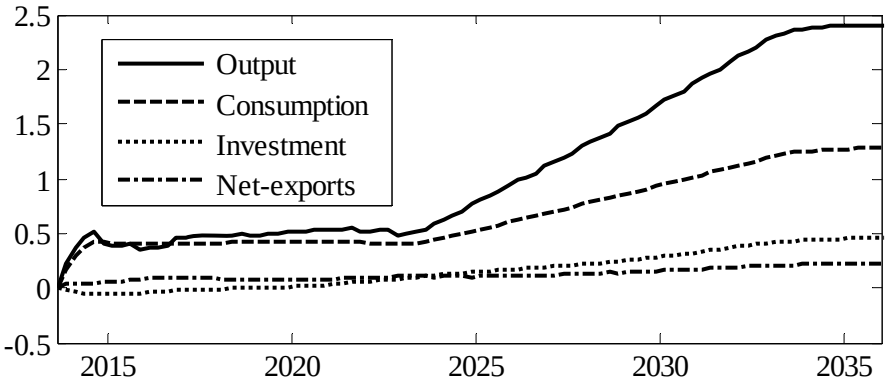
## 3. The impact of the Fiscal Consolidation and the Tax Reform scenarios

We consider the impact of the budget reform on the economy by simulating it in the CMS model.[2] Thus, households and firms immediately anticipate that the plan is carried out from 2014 onwards. Making decisions in a forward-looking manner they take into account future reductions in government spending and taxes and expect after-tax income to rise. Given the planned reduction in the labor and capital tax rates, they also face more favorable conditions for private sector production, investment and work effort.

[2] The model is nonlinear and solved numerically employing the stacked Fair-Taylor solution algorithm as implemented in Dynare. For further information on this implementation see Juillard (1996).

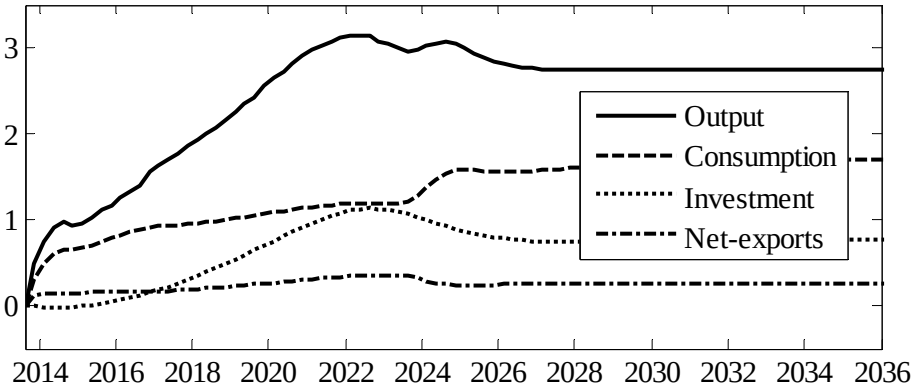
The impact of the budget reform on GDP, consumption, investment and net exports is shown in **Figures 6** and **7**. **Figure 6** concerns the consolidation scenario, while **Figure 7** reports on the tax reform scenario. In both cases, aggregate output increases throughout the simulation. Even in the short-run, the consolidation of government finances is found to boost economic activity in the private sector sufficiently to overcome the reduction in government spending.

Figure 6: Impact on GDP and its components: consolidation scenario




In the *consolidation scenario*, consumption and output increase on impact with another increase after 10 years. Investment is almost constant until 2023, but then rises in the longer run**.** In the *tax reform scenario* output and consumption increase more than in the consolidation scenario, because distortionary taxes are reduced from the start.

Figure 7: Impact on GDP and its components: tax reform scenario

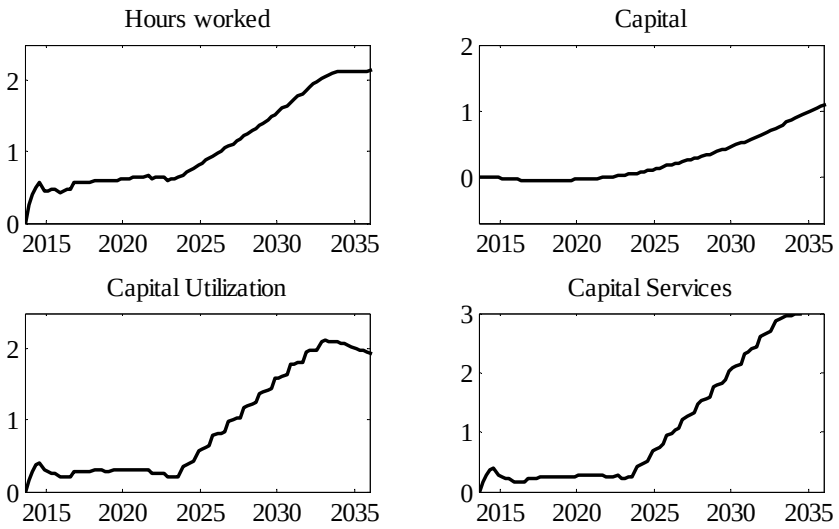



In both scenarios, the same effect is at work in the long run: the reduction in government spending raises permanent income of households, who then wish to consume more goods and to enjoy more leisure. The anticipation of labor income and capital tax cuts

result in less distorted incentives to work, invest and produce. Consequently, they trigger an increase in labor demand and supply.

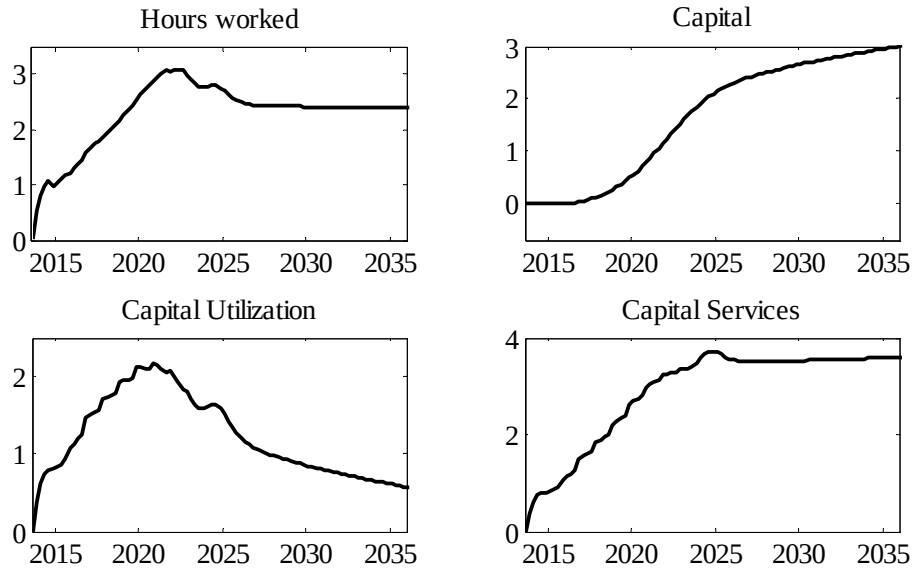
As shown in **Figures 8 and 9** hours worked rise substantially in parallel with produced output. Hours worked increase quicker in the *tax reform scenario* as distortions to the labor supply are lowered more quickly. More work effort also induces higher demand for capital services input in production, which can be satisfied by paying a cost to increase the utilization of capital or by investing to put new additional capital into place.

Figure 8: Labor and capital services in production: consolidation scenario



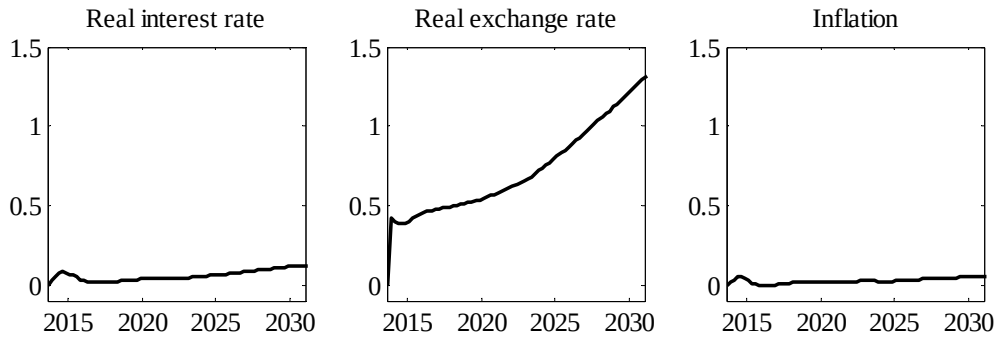

Initially, the capital stock remains about constant in both scenarios, while capital utilization improves. Over time, investment turns positive and capital is accumulated to reach a higher level in the long-run steady-state. In the *tax reform scenario* the greater initial increase in output despite a constant capital stock is achieved by using existing capital much more intensively. Capital utilization increases and therefore capital services in production increase along with the greater work effort.

Figure 9: Labor and capital services in production: tax reform scenario




The real interest rate is nearly flat throughout the simulation (see **Figures 10** and **11**) increasing slightly due to the expected increase in consumption and output growth. The sustained decline in the real wage mirrors the finding that the positive labor supply effect of reduced distortions outweighs the negative effect from increased life-time income.

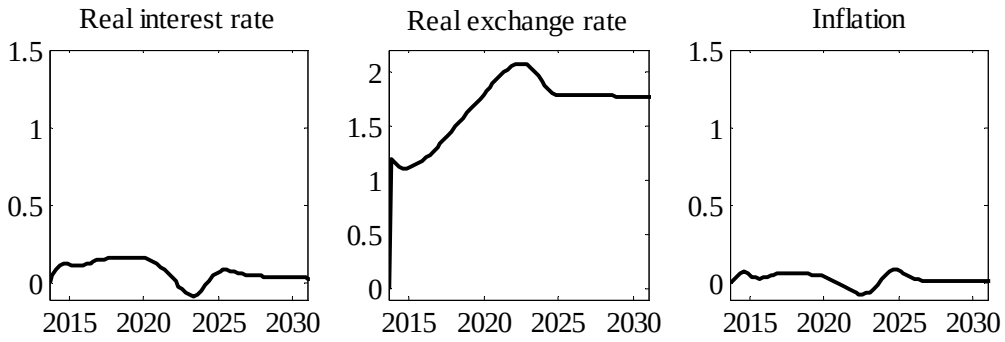
Figure 10: Interest rate, exchange rate and inflation: consolidation scenario




Notes: The scale on the vertical axis denotes percentage point changes.
An increase in the real exchange rate is a real depreciation.

Furthermore, the CMS model indicates that the increase in overall GDP is also supported to a small extent by an increase in net exports (dashed-dotted line in Figure 6 and 7). Net exports are stimulated by a real depreciation of the dollar as indicated in **Figures 10 and 11**.

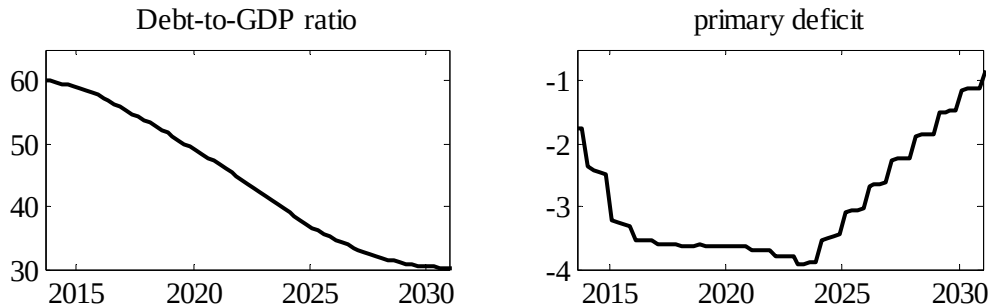
Figure 11: Interest rate, exchange rate and inflation: tax reform scenario




Notes: The scale on the vertical axis denotes percentage point changes.
An increase in the real exchange rate is a real depreciation.

While some of the government savings that result from the budget reform are used to lower the labor and capital tax rates, the remainder is applied to debt reduction. Technically, the model also contains lump-sum taxes. Small fluctuations in these taxes occur due to the technical modelling difficulty of finding a path which delivers both a smooth reduction in the debt to GDP ratio and in the tax rate. We have calibrated the *consolidation scenario* in a way that restricts fluctuations in lump-sum taxes to a minimum. As government debt declines and GDP rises, the debt to GDP ratio falls by about 30 percentage points by 2030 as shown in **Figure 12**. The primary deficit, which initially just covers interest paid on existing debt, improves with the start of the fiscal consolidation.

Figure 12: Debt and primary deficit: consolidation scenario

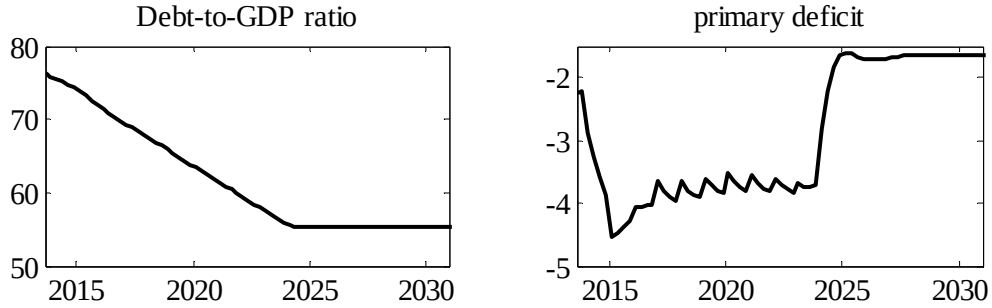



Notes: Primary deficit prior to interest payed on existing debt. A negative primary deficit implies a surplus.

The *tax reform scenario* is calibrated to ensure a temporary increase in lump-sum taxes as discussed previously (see Figure 5). The resulting path for the debt to GDP ratio is shown in **Figure 13.** Note that the CMS model initially exhibits a steady-state debt to GDP ratio of 60 percent. In order to assess the implications of this initial condition for our simulation, we have re-computed the steady-state for a higher ratio corresponding to the current level of 76 percent for the publicly held federal debt of the United States. However, we found essentially

the same adjustment path whether starting at an initial ratio of 60 or 76 percent. As shown in the left panel of Figure 13, the debt to GDP ratio initially declines more quickly under the tax reform scenario than under the *consolidation scenario* (Figure 12), but levels out earlier at a ratio of 55 percent.

Figure 13: Debt and primary deficit: tax reform scenario




Notes: Primary deficit prior to interest payed on existing debt. A negative primary deficit implies a surplus.

Since the CMS model covers the United States and the euro zone economies, we can also use it to evaluate the impact of U.S. budget consolidation on the euro area. **Figures 14 and 15** indicate that the spillover effect for euro area GDP is positive but fairly moderate. While euro zone net exports decrease due to the real appreciation of the euro, consumption and wages increase on impact. Investment falls slightly for some time before it returns to positive territory. The increase in euro area GDP is greater under the U.S. *tax reform scenario* than under *the consolidation scenario*.

Figure 14: Spillovers to the euro area: consolidation scenario

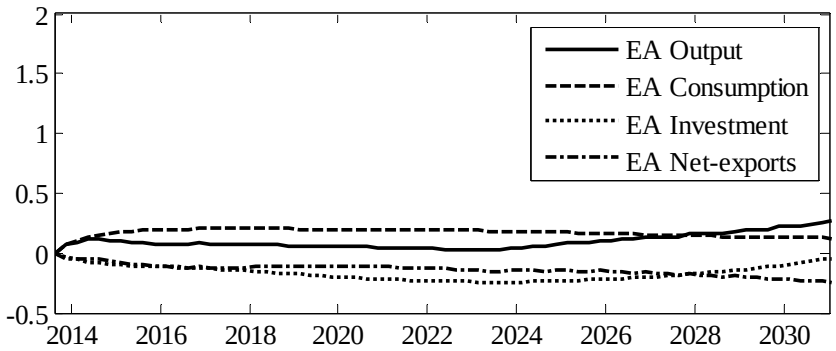
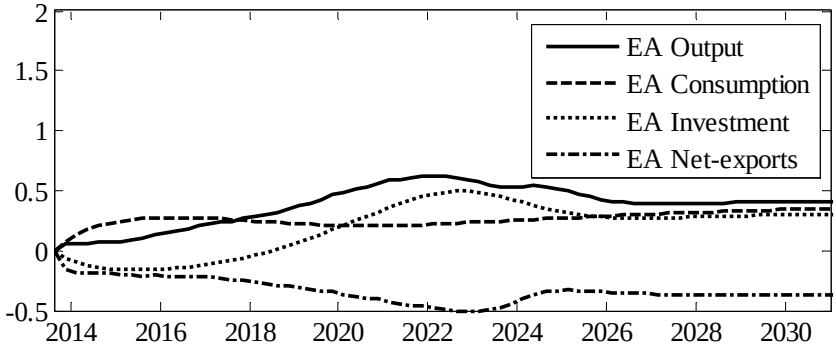


Figure 15: Spillovers to the euro area: tax reform scenario




***Why tax cuts rather than all debt reduction? Lower distortions raise growth.***

Our evaluation indicates that lower taxes *relative to the baseline* are central to ensuring a positive impact of the consolidation on aggregate GDP and employment, which suggests that expenditure cuts rather than tax hikes should be used to generate government savings. While part of these savings would be applied to reducing outstanding debt, the remainder would be used to keep tax rates below what they would otherwise have been.

With regard to the current outlook for the United States economy, our consolidation strategy implies returning government expenditures to pre-crisis levels in terms of share of GDP in order to avoid an increase in distortionary taxes. Thus, at this juncture in the United States, the strategy would not necessarily require legislating actual tax reductions, but rather deciding not to let them rise, so as to negate the disincentives to work and production arising from currently expected tax hikes.

## 4. Conclusions

In this note, we estimate the macroeconomic impacts of a fiscal consolidation strategy in which the government gradually reduces spending over time in order to reduce the deficit and the growth of the debt. We have calibrated the expenditure cuts to correspond to the House Budget Committee's budget plan introduced on March 12, 2013.

A big question is whether the reduction in government spending reduces GDP in the short run, a concern that has been raised by many economists and policy makers. We examine this question and others by simulating the strategy in a modern economic model calibrated to the U.S. and euro area economies. In this model, households are forward looking and they adjust their behavior in response to expectations of future tax and spending policy.

Furthermore, the model incorporates price and wage rigidities that are aimed at more explicitly capturing short run effects as well.

According to the model simulations, the strategy increases GDP in both the short run and the long run relative to the baseline. There appear to be three sources of this positive effect. First, lower levels of government spending in the future, compared to the baseline, imply lower taxes and thereby higher lifetime income for households, who respond by consuming more even in the short run. Second, the lowering of future tax rates removes distortions and provides incentives that stimulate employment and production. And third, lower government spending and debt reduces the exchange rate thereby increasing net exports, which also help offset the decline in government spending.

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