Fiscal Consolidations in Currency Unions: Spending Cuts Vs. Tax Hikes

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Federal Reserve Board

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Motivation
Planned Fiscal Austerity Measures in Selected Euro Area Economies 2010-2014 (Source: OECD, March 2011)

Cumulative Fiscal Consolidations (% of 2009 GDP)

Consolidation Composition: Red = Revenues, Blue = Expenditures
Standard Keynesian analysis implies that fiscal consolidation should reduce output in the short and medium run.
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Effects of fiscal retrenchment according to existing literature

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- However, case study methodology subject to criticism on (at least) two important accounts:
  - Does not control for the influence of other factors
  - Decision to undertake consolidation could be endogenous
Positive analysis of the effects of spending and revenue based fiscal consolidations on output and government debt
What we do
Instruments and environment

- Positive analysis of the effects of spending and revenue based fiscal consolidations on output and government debt
  - Government consumption cuts and labor income tax hikes
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- Two regions, South and North, who share a common currency and monetary policy
- Sticky prices and wages, deviations from Ricardian equivalence
What we do
Non-coordinated vs. coordinated consolidations

- We entertain two alternative assumptions about the nature of the consolidations in the South

- First, we study consolidations in South only when South is a small member of a currency union (e.g. Belgium, Ireland, Greece, Portugal)
- Isomorphic to the SOE case - referred to as non-coordinated
- Second, we study the effects of coordinated actions in both South and North when monetary policy accommodates and in a liquidity trap
  - For fully synchronized actions in South and North, our model isomorphic to a closed economy framework
  - A liquidity trap is a situation where policy rates cannot be lowered for a protracted period due to the zero bound

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Presentation outline

- Model
- Parameterization of model
- Effects of non-coordinated actions
- Effects of coordinated actions
- Sensitivity analysis
- Concluding remarks
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Key features

- DSGE model similar to EGG (2006) with two regions within the currency area, each produces a single final good by aggregating a continuum of domestically-produced intermediate goods.
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- The Hand-to-mouth (HM) households set their wage at the average wage of the optimizing households, and since they face same labor demand curve, they work the same amount as optimizing households in equilibrium.
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Hebden, Lindé and Svensson (2009): Perfect foresight solution
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- Model fits central tendency of VAR evidence on monetary policy and government spending shocks
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- To build intuition, we also present results for a hypothetical case where South is assumed to have monetary independence and thus the ability to freely set interest rates and affect its nominal exchange rate.
Effects of non-coordinated actions in South only
Comparing the effects in a currency union with monetary independence
Summary of findings
Non-coordinated consolidation in South only

- Spending cuts in South *only* have substantially more adverse output effects than labor-tax hikes in the near term.
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Spending cuts in South only have substantially more adverse output effects than labor-tax hikes in the near term.

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Only with monetary independence, spending cuts would be more effective than tax hikes to reduce government debt quickly (after about 1 year).

- Reflect that adverse output effects of spending cuts strongly mitigated in South when policy rates fall and the exchange rate depreciates.
As many countries in the euro area have announced sizeable fiscal austerity measures, it is of interest to examine how consolidative measures undertaken simultaneously in both South and North affect outcomes in South.
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In Figure 3, we compare non-coordinated (South only) and fully synchronized (both South and North) spending cuts and labor tax hikes equal to 1 percent of baseline GDP.
Effects of coordinated actions in South and North
Monetary policy in the currency union assumed not to be in a liquidity trap

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- As before, we assume that discretionary spending and labor tax movements are perceived to be persistent, i.e. follow AR(1) processes with root 0.99
Effects of coordinated actions in South and North
Impact on South outcomes when North consolidates at the same time
In the previous analysis, we assumed monetary policy had the latitude to react to the austerity measures.

Effects when currency union is in a liquidity trap
Currency union close to lower bound on policy rates absent any fiscal retrenchment
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Additionally, we include marginal multipliers when only South consolidates, which are constant for the austerity measures considered.
Effects when currency union is in a liquidity trap
Output and gov’t debt marginal multipliers as function of liquidity trap duration

Figure 4: Marginal Output and Government Debt Multipliers in South to Coordinated and Non-Coordinated Spending Cuts and Labor Tax Hikes in a Currency Union.

- **Government Spending Cut (close to 1 quarter liquidity trap absent fiscal actions)**
  - Zero Lower Bound Duration
  - Output vs. % Change in Govt Spend (Share of GDP)
  - Graph shows how output changes in response to government spending cuts in a liquidity trap scenario.

- **Labor-Income Tax Hikes (close to 1 quarter liquidity trap absent fiscal actions)**
  - Zero Lower Bound Duration
  - Output vs. Percentage Point Change in Labor Taxes
  - Graph illustrates the effect of labor-income tax hikes on output in a liquidity trap environment.

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Summary of findings

Coordinated consolidation in both South and North

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- However, we find that the logic of the conventional wisdom is reversed in a liquidity trap:
  - In this case, front-loaded spending cuts have more adverse output effects than tax hikes if the liquidity trap is sufficiently long-lived absent any fiscal actions, or the fiscal austerity measures are sufficiently large.
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In fact, coordinated front-loaded consolidations undertaken in a liquidity trap may cause debt to rise for as long as 3-years, echoing results in Erceg and Lindé (2010).
Sensitivity analysis

- We do four robustness experiments in the paper:
  1. Less persistent austerity measures
  2. More gradual austerity measures
  3. No HM households in the model
  4. Consequences of endogenous risk-spreads

Results holds up for 1 and 3, therefore focus on 2 and 4 in the following.
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  - Assume spending and tax components follow AR(2); coefficients set so that n.p.v. of actions identical to benchmark calibration
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- Study impact of non-coordinated (South only) and union-wide gradual spending cuts and labor tax hikes, with maximum effect after 5 years.
  - Assume spending and tax components follow AR(2); coefficients set so that n.p.v. of actions identical to benchmark calibration.

- For fiscal retrenchment in South only, tax hikes are still more effective in reducing debt in the near-term.
Sensitivity analysis

Gradual implementation of fiscal austerity measures

- Previous literature (e.g. Corsetti et al. 2010, Erceg and Linde, 2010, Woodford, 2011) suggest that gradual spending cuts should be less contractionary - or even expansionary - when monetary policy does not accommodate, because effects on the potential real rate are reversed
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- For fiscal retrenchment in South only, tax hikes are still more effective in reducing debt in the near-term
  - But coordinated spending cuts equally or more effective than tax hikes in this case, especially in a long-lived liquidity trap
Sensitivity analysis

Effects of a non-coordinated and coordinated gradual austerity measures in normal times

Erceg and Lindé (Federal Reserve Board)
Figure 6: Marginal Output and Government Debt Multipliers in South to Gradual Coordinated and Non-Coordinated Spending Cuts and Labor Tax Hikes in a Currency Union as Function of the Expected Liquidity Trap Duration Absent Any Fiscal Actions.

Government Spending

Labor-Income Taxes
Sensitivity analysis
Assessing the effects of endogenous sovereign spreads

So far, we have assumed that government and banks borrow at the same rate \( i_t \) in both South and North.

The formula to assess the consequences of the assumption that South is subject to an endogenous sovereign risk premium is:

\[
\psi_b (b_G + 1) + \psi_d (b_{Gt} + 1),
\]

where \( \psi_b = 0.0375 \) and \( \psi_d = 0.10 \).

Functional form adapted from Laubach (2010), who shows that it fits long-term interest rate spreads in the Euro area well during the debt crisis.

In Figure 10, we consider the effects of spending and tax austerity measures in South only with and without endogenous sovereign risk-spreads.
Sensitivity analysis
Assessing the effects of endogenous sovereign spreads

- So far, we have assumed that government and banks borrow at the same rate ($i_t$) in both South and North.
- We now explore the consequences of assuming that government and banks in South is subject to the following premium:

$$i_t^S - i_t = \psi_b (b_{Gt+1} - b_G) + \psi_d (b_{Gt+1} - b_G),$$

where $\psi_b = 0.0375$ and $\psi_d = 0.10$.
Sensitivity analysis
Assessing the effects of endogenous sovereign spreads

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- We now explore the consequences of assuming that government and banks in South is subject to the following premium:

\[
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\]

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where \(\psi_b = 0.0375\) and \(\psi_d = 0.10\).

- Functional form adapted from Laubach (2010), who shows that it fits long-term interest rate spreads in Euro area well during the debt crisis.

- In Figure 10, we consider the effects of spending and tax austerity measures in South only with and without endogenous sovereign risk-spreads.

- Consolidation measures are assumed to be \textit{fully} credible.
Sensitivity analysis
Effects of endogenous sovereign spreads when only South consolidates

Figure 10: Responses in South to Non-Coordinated (South only) Spending Cuts and Labor-Tax Hikes in a Currency Union With and Without an Endogenous Response of Interest Rate Spreads.

- Union Policy Rate (APR)
- Potential Real Rate (APR)
- Output
- Private Absorption
- South/North Real Exchange Rate
- Govt Debt as share of GDP
- Labor-income Tax Rate
Sensitivity analysis
Effects of endogenous sovereign spreads when both South and North consolidates

Figure 11: Responses in South to Non-Coordinated (South only) and Coordinated Spending Cuts and Labor-Tax Hikes in a Currency Union Where South Spreads are Endogenous: Liquidity Trap Expected to Last 8 Quarters Absent Any Fiscal Actions

- Union Policy Rate (APR)
- Potential Real Rate (APR)
- Output
- Private Absorption
- South/North Real Exchange Rate
- Govt Debt as share of GDP
- Govt Spend (trend GDP share)
- Labor-income Tax Rate

Legend:
- Spend Cut, South Only
- Spend Cut, Coordinated
- Tax Hike, South Only
- Tax Hike, Coordinated
Concluding remarks

- Bottom line: Monetary regime, state of the economy, and what other countries plan to do have important implications when designing consolidation packages.
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- Bottom line: Monetary regime, state of the economy, and what other countries plan to do have important implications when designing consolidation packages.
- For a small member state of a currency union, our analysis suggest that front-loaded temporary tax hikes are favorable to aggressive spending cuts to reduce debt quickly in the near term.
Concluding remarks

- Bottom line: Monetary regime, state of the economy, and what other countries plan to do have important implications when designing consolidation packages
- For a small member state of a currency union, our analysis suggest that front-loaded temporary tax hikes are favorable to aggressive spending cuts to reduce debt quickly in the near term
  - Spending cuts should be implemented gradually to mitigate adverse output effects and reduce government debt more effectively in the long-term
Concluding remarks

- Bottom line: Monetary regime, state of the economy, and what other countries plan to do have important implications when designing consolidation packages.

- For a small member state of a currency union, our analysis suggest that front-loaded temporary tax hikes are favorable to aggressive spending cuts to reduce debt quickly in the near term.
  - Spending cuts should be implemented gradually to mitigate adverse output effects and reduce government debt more effectively in the long-term.
  - Front-loaded spending cuts only warranted to the extent they can mitigate sovereign spreads more effectively than tax hikes.
Concluding remarks

- Bottom line: Monetary regime, state of the economy, and what other countries plan to do have important implications when designing consolidation packages.

- For a small member state of a currency union, our analysis suggest that front-loaded temporary tax hikes are favorable to aggressive spending cuts to reduce debt quickly in the near term.
  - Spending cuts should be implemented gradually to mitigate adverse output effects and reduce government debt more effectively in the long-term.
  - Front-loaded spending cuts only warranted to the extent they can mitigate sovereign spreads more effectively than tax hikes.

- Important distinction between being in a liquidity trap and a small member of a currency union (Erceg and Linde, 2011).