Self-defeating austerity?

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National Institute of Economic and Social Research

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OFCE Seminar
Introduction

- With no consolidation plans, debt in many EU economies would be on an unsustainable path
- Timing of fiscal programme matters
  - Consolidation is always contractionary
  - During a depression, negative impacts are amplified
- Paper considers the ongoing synchronised consolidation across Europe
  - What is the economic impact?
  - When can tightening become self-defeating?
  - How important are fiscal spillovers?
Outline of presentation

- Analysis based on simulation using the National Institute Global Econometric Model (NiGEM)
  - Overview of key features of NiGEM model
- Relationship between debt and fiscal policy
- What determines the fiscal multiplier?
- Does the state of the economy affect the multiplier?
- How does the fiscal position affect sovereign bond yields?
- Assessment of fiscal consolidation programmes, 2011-2013 for 12 EU economies
NiGEM Overview

- NiGEM is a large-scale structural econometric model of the world economy
  - Discrete models for 40 countries and 6 regional blocks for the remaining countries

- Country Linkages
  - Trade and competitiveness
  - Interacting financial markets
  - International stocks of assets

- Endogenous policy rules for interest rates and fiscal solvency

- Rational expectations options
  - Financial markets
    - Exchange rates
    - Long rates
    - Equity prices
  - Labour markets
  - Consumption

- Exogenous labour force
In the short- to medium-term, GDP is driven by the demand side

\[ Y = C + I + GC + GI + XVOL - MVOL \]

In the longer term, GDP is governed by the supply side

\[ Y_{CAP} = \gamma \left[ \delta K^{-\rho} + (1 - \delta) (Le^{\lambda techl})^{-\rho} \right]^{-(1-\alpha)/\rho} M^\alpha \]
Consumption

- Consumption depends on (a dynamic adjustment path around) real personal disposable income and wealth.

\[ d \ln(C_t) = \lambda \left\{ \ln(C_{t-1}) - \left[ a + b_0 \ln(TAW_{t-1}) + (1 - b_0) \ln(RPDI_{t-1}) \right] \right\} + b_1 d \ln(RPDI_t) + b_2 d \ln(NW_t) + b_3 d \ln(HW_t) \]

- Short-term income elasticity of consumption captures liquidity constraints (depends on \( b_1, b_0 \) and \( \lambda \))

- RPDI depends on TAX
Government sector

- Government sector has 3 revenue sources and 4 expenditure categories:
  - \( BUD = (GC + GI) \times PY + TRAN + GIP - TAX - CTAX - MTAX \)
    - Income tax (TAX)
    - Corporate tax (CTAX)
    - Indirect tax/VAT (MTAX)
    - Consumption (GC)
    - Investment (GI)
    - Social transfers to households (TRAN)
    - Interest payments (GIP)

- The deficit flows onto the debt stock, after allowing for money finance:
  - \( \text{DEBT} = \text{DEBT}_{t-1} - BUD - \Delta M \)
Short-term interest rates generally set by a central bank
- Feedback rules depend on (+T for Target)
  - Inflation (INFL), Output gap (Y/YCAP),
  - Price level (PL), Nominal Aggregate (NOM)

Two Pillar Strategy
- Interest rate = c*(INFL-INFLT)+d*(NOM-NOMT)

Long-term interest rates are forward looking – the forward convolution of expected short rates
What happens to DEBT ratio initially when policy is tightened?

- If rise in money stock is neither inflation/deflationary
  - \( \text{DEBT} = \text{DEBT}_{t-1} - \text{BUD} - \Delta M \)

- Becomes
  - \( \text{DEBT} = \text{DEBT}_{t-1} - \text{BUD} - \alpha \Delta \text{NOM} \)

- And

\[
\frac{d}{dG} \left( \frac{\text{DEBT}}{\text{NOM}} \right) = \frac{\text{DEBT} - \frac{d\text{BUD}}{dG} - \alpha \frac{d\text{NOM}}{dG}}{\text{NOM} + \frac{d\text{NOM}}{dG}} - \frac{\text{DEBT}}{\text{NOM}}
\]

- In short-run debt-to-GDP ratio could rise or fall
With no feedbacks:

- If
  - BUD = TAX – G – OtherExp
  - NOM = C + I + G + X – M
- dBUD/dG = -dG
- dNOM/dG = dG
- dDEBT/dG = dG*(1-α)
- Impact on debt ratio depends on starting level and on M0/NOM
  - If GDR < 100, fiscal consolidation decreases GDR initially (no feedbacks) unless rise in money stock exceeds a threshold
  - if GDR = 100, fiscal consolidation increases GDR initially (no feedbacks) unless no rise in money stock
  - If GDR > 100, fiscal consolidation increases GDR initially (no feedbacks)
But there are feedbacks

- $dBUD/dG < |-dG|$
- $dNOM/dG$ generally less than $dG$

- Debt ratio more likely to worsen initially in response to consolidation:
  - The bigger your automatic stabilisers
  - The bigger the multiplier
  - The higher the initial debt ratio

- In the longer-run, Debt ratio will improve in response to a permanent consolidation, as output returns to capacity and inflation returns to target

- But deviation can be prolonged
How powerful are automatic stabilisers?

- Consider 3 channels of stabilisation
  - Unemployment benefits partially offset income loss
  - Tax liabilities fall with income
  - General government consumption and investment invariant to the state of the economy

- In general, automatic stabilisers offset 6-15% of output loss
  - May be higher in Ireland, Greece, France, Spain
What determines the size of the fiscal multiplier?

- Multipliers differ across countries
  - Openness
  - Access to liquidity
  - Size
  - Independent monetary policy?
  - Speed of adjustment in labour market
  - Inflation anchor

- Multipliers differ within countries
  - Instrument
  - Monetary policy response
  - Expectation formation
Interpretation of baseline multipliers

- Why are multipliers generally less than 1?
  - Import leakages
  - Looser monetary policy, exchange rate
  - Consumption/investment channels adjusts gradually and offset through savings
Baseline Fiscal Multipliers

Table 2. Key factors determining cross-country differences in multipliers

<table>
<thead>
<tr>
<th></th>
<th>Temporary spending multiplier</th>
<th>Temporary income tax multiplier</th>
<th>Import penetration</th>
<th>Income elasticity</th>
</tr>
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<tbody>
<tr>
<td>Austria</td>
<td>-0.52</td>
<td>-0.13</td>
<td>0.50</td>
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<tr>
<td>Belgium</td>
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<td>-0.12</td>
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<td>-0.53</td>
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<td>-0.08</td>
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<td>-0.20</td>
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<td>0.37</td>
<td>0.30</td>
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<td>United Kingdom</td>
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<td>-0.09</td>
<td>0.29</td>
<td>0.26</td>
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<td>United States</td>
<td>-0.92</td>
<td>-0.19</td>
<td>0.16</td>
<td>0.29</td>
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<td>Spending correlation</td>
<td></td>
<td></td>
<td>0.43</td>
<td>-0.14</td>
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<tr>
<td>Tax correlation</td>
<td></td>
<td></td>
<td>0.22</td>
<td>-0.66</td>
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</table>
Assumptions underlying baseline multipliers

- Innovations are temporary
- Central bank sets interest rates to stabilise inflation (no boundary issues)
- Financial markets are “rational”
  - Long-term interest rates
  - Equity prices
  - Exchange rates
- Consumers are myopic
- Liquidity constraints/propensity to save are “normal”
- Government borrowing premium is exogenous
Fiscal multipliers and the state of the economy

- Recent studies suggest multipliers may be more pronounced when the economy has suffered a prolonged downturn
  - Delong and Summers (2012), Auerbach and Gorodnichenko (2012), IMF (2012), and others

- Channels of transmission?
  - Interest rates and the zero lower bound
  - Impaired banks and heightened liquidity constraints
  - Hysteresis (not covered in this presentation)
Impaired interest rate channel

**Figure 3. Impact of an impaired interest rate adjustment on GDP**

![Graph showing the impact of an impaired interest rate adjustment on GDP.](image)

Notes: Impact on the level of GDP of a 1% of GDP fiscal spending consolidation (permanent) in the UK, with and without an interest rate response.

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Heightened liquidity constraints

\[ d \ln(C_t) = \sum \ln(C_{t-1}) - \left[ a + b_0 \ln(TAW_{t-1}) + (1 - b_0) \ln(RPDI_{t-1}) \right] \]

\[ - b_1 d \ln(RPDI_t) + b_2 d \ln(NW_t) + b_3 d \ln(HW_t) \]

Table 3. Impact of consolidation programme (tax rise) on UK GDP, under different short-term income elasticities of consumption

<table>
<thead>
<tr>
<th>Model</th>
<th>Short-run income elasticity of consumption (b₁)</th>
<th>First year multiplier</th>
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<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>-0.01</td>
</tr>
<tr>
<td>2</td>
<td>0.1</td>
<td>-0.06</td>
</tr>
<tr>
<td>3</td>
<td>0.2</td>
<td>-0.11</td>
</tr>
<tr>
<td>4</td>
<td>0.3</td>
<td>-0.15</td>
</tr>
<tr>
<td>5</td>
<td>0.4</td>
<td>-0.20</td>
</tr>
<tr>
<td>6</td>
<td>0.5</td>
<td>-0.25</td>
</tr>
<tr>
<td>7</td>
<td>0.6</td>
<td>-0.31</td>
</tr>
<tr>
<td>8</td>
<td>0.7</td>
<td>-0.36</td>
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<tr>
<td>9</td>
<td>0.8</td>
<td>-0.41</td>
</tr>
<tr>
<td>10</td>
<td>0.9</td>
<td>-0.47</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>-0.52</td>
</tr>
</tbody>
</table>
Government borrowing premia

- Several studies look at links between fiscal position and government borrowing rates
- GPREM may depend on BUD/GDP and/or DEBT/GDP
- Budget balance improves following a fiscal consolidation innovation
- Government debt/GDP may deteriorate in short-term

Table 4. Empirical relationship between government borrowing premia and fiscal variables

<table>
<thead>
<tr>
<th></th>
<th>Spread (t-1)</th>
<th>Debt to GDP ratio</th>
<th>Fiscal balance to GDP ratio</th>
<th>Implied long-run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argyrou and Kontonikas (2011)</td>
<td>0.74</td>
<td></td>
<td>-2.0 (t+1)</td>
<td>-7.7</td>
</tr>
<tr>
<td>Attinasi et al (2009)</td>
<td>0.97</td>
<td></td>
<td>-1.6 (t+1)</td>
<td>-54.9</td>
</tr>
<tr>
<td>Bernoth and Erdogan (2012)</td>
<td></td>
<td>2.2</td>
<td>-16 (t+1)</td>
<td></td>
</tr>
<tr>
<td>De Grauwe and Ji (2012)</td>
<td></td>
<td></td>
<td>-6.12(t) +0.08(t)^2</td>
<td></td>
</tr>
<tr>
<td>Schuknect et al (2010)</td>
<td></td>
<td>1.25</td>
<td>-12.64</td>
<td></td>
</tr>
</tbody>
</table>

Note: Spread is defined as the 10-year government bond yield over that in Germany, expressed in basis points. (t+1) indicated expectations 1 year ahead. (t)^2 indicates the current debt to GDP ratio squared.
Let \( \text{GPREM} = 0.04 \times \text{DEBT/GDP} \)

Figure 4. Impact of 1% of GDP fiscal consolidation in the UK on long-term interest rates
# Assessing fiscal consolidation programmes 2011-2013

## Ex-ante Net Fiscal impulses 2011-2013, as announced by governments

<table>
<thead>
<tr>
<th>Country</th>
<th>Fiscal impulse (% of 2011 GDP)</th>
<th>of which tax based</th>
<th>of which spending based</th>
<th>Fiscal impulse (% of 2011 GDP)</th>
<th>of which tax based</th>
<th>of which spending based</th>
<th>Fiscal impulse (% of 2011 GDP)</th>
<th>of which tax based</th>
<th>of which spending based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>-0.9</td>
<td>-0.4</td>
<td>-0.5</td>
<td>-0.4</td>
<td>-0.2</td>
<td>-0.3</td>
<td>-0.1</td>
<td>0</td>
<td>-0.1</td>
</tr>
<tr>
<td>Belgium</td>
<td>-0.7</td>
<td>0</td>
<td>-0.7</td>
<td>-1.2</td>
<td>-0.5</td>
<td>-0.7</td>
<td>-1.3</td>
<td>-0.4</td>
<td>-0.9</td>
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<tr>
<td>Finland</td>
<td>-0.3</td>
<td>-0.3</td>
<td>-0.1</td>
<td>-0.6</td>
<td>-0.5</td>
<td>-0.1</td>
<td>-0.1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>France</td>
<td>-1.4</td>
<td>-1.1</td>
<td>-0.3</td>
<td>-1.7</td>
<td>-1.1</td>
<td>-0.6</td>
<td>-1.7</td>
<td>-0.8</td>
<td>-0.8</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.5</td>
<td>-0.2</td>
<td>-0.3</td>
<td>-0.2</td>
<td>0</td>
<td>-0.2</td>
<td>-0.1</td>
<td>-0.1</td>
<td>0</td>
</tr>
<tr>
<td>Greece</td>
<td>-2.7</td>
<td>-1.2</td>
<td>-1.5</td>
<td>-5.1</td>
<td>-3.5</td>
<td>-1.6</td>
<td>-2</td>
<td>-0.9</td>
<td>-1.1</td>
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<tr>
<td>Ireland</td>
<td>-3.4</td>
<td>-0.9</td>
<td>-2.5</td>
<td>-2.4</td>
<td>-1</td>
<td>-1.4</td>
<td>-2.1</td>
<td>0.7</td>
<td>-1.4</td>
</tr>
<tr>
<td>Italy</td>
<td>-0.5</td>
<td>-0.3</td>
<td>-0.2</td>
<td>-3</td>
<td>-2.4</td>
<td>-0.6</td>
<td>-1.5</td>
<td>-0.6</td>
<td>-0.9</td>
</tr>
<tr>
<td>Netherlands</td>
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<td>-0.3</td>
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<td>-0.6</td>
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<td>-0.1</td>
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<td>-2.1</td>
<td>-1.9</td>
<td>-0.5</td>
<td>-1.4</td>
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<td>-0.5</td>
<td>-2</td>
<td>-2.1</td>
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<td>-1.7</td>
<td>-1.4</td>
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<td>-1.1</td>
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<tr>
<td>UK</td>
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<td>-1.1</td>
<td>-1</td>
<td>-1.8</td>
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<td>-1.6</td>
<td>-1</td>
<td>0</td>
<td>-1</td>
</tr>
</tbody>
</table>

**Source:** Euroframe (2012). Does not include fiscal plans introduced after January 2012.
Two scenarios

- **Scenario 1** – impact of consolidation programme based on default assumptions underlying baseline multipliers
- **Scenario 2** – modified assumptions to allow for:
  - Impaired interest rate channel
  - Heightened liquidity constraints
How high are liquidity constraints?

- As a proxy, use bond spreads over Germany to calibrate relative stress in banking systems

  - 10-year government bond spreads over Germany, Sept 2012
Expected impact of programmes on level of GDP

Table 6. Impact of consolidation programmes on GDP

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scenario 1</td>
<td>Scenario 2</td>
<td>Scenario 1</td>
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<tr>
<td>Austria</td>
<td>-0.2</td>
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<tr>
<td>Finland</td>
<td>0.0</td>
<td>-0.9</td>
<td>0.1</td>
</tr>
<tr>
<td>France</td>
<td>-0.5</td>
<td>-1.4</td>
<td>-1.1</td>
</tr>
<tr>
<td>Germany</td>
<td>-0.1</td>
<td>-1.0</td>
<td>0.0</td>
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<tr>
<td>Greece</td>
<td>-2.4</td>
<td>-4.6</td>
<td>-6.7</td>
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<tr>
<td>Ireland</td>
<td>-0.9</td>
<td>-1.2</td>
<td>-1.3</td>
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<tr>
<td>Italy</td>
<td>0.0</td>
<td>-0.7</td>
<td>-0.7</td>
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<tr>
<td>Netherlands</td>
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<td>Portugal</td>
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<tr>
<td>Euro Area</td>
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<td>-1.0</td>
</tr>
</tbody>
</table>

Note: Per cent difference from base in level of real GDP
Output declines nearly double in most countries due to impaired interest rates/credit.
Fiscal balances improve, but not as much when output declines deepen

Impact of programmes on government budget balance, 2013

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Perverse impact on Debt/GDP ratio with impaired transmission

Impact of programmes on Government Debt/GDP, 2013

- Feedbacks on government borrowing premia??

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How much of decline due to spillovers from simultaneous consolidation?

Impact of joint policy action relative to unilateral action

- Austria
- Belgium
- Finland
- France
- Germany
- Greece
- Ireland
- Italy
- Netherlands
- Portugal
- Spain
- UK

Percentage point difference:

- 2011
- 2012
- 2013

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## Uncovering the multiplier

<table>
<thead>
<tr>
<th></th>
<th>Total ex-ante measures</th>
<th>Impact on GDP 2013</th>
<th>Of which Spillovers</th>
<th>Of which Domestic policy</th>
<th>Implied multiplier</th>
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<tbody>
<tr>
<td>Austria</td>
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<td>France</td>
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<td>-1.8</td>
<td>-2.2</td>
<td>0.6</td>
</tr>
</tbody>
</table>
Key conclusions

- Little prospect for growth in Europe given the ongoing fiscal adjustment
- The effectiveness of consolidation measures likely to be diminished at present
- Impaired transmission mechanisms exacerbate effects on output
- Fiscal consolidation may be ‘self-defeating’ at present
- Consolidation in all countries at the same time significantly aggravates the impact
  - on average output declines by 2% by 2013 due to spillovers
Thank you

Merci