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# **Fault Lines in the Public Sector**

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# Fault Lines in the Public Sector

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# The Euro Sovereign Debt Crisis

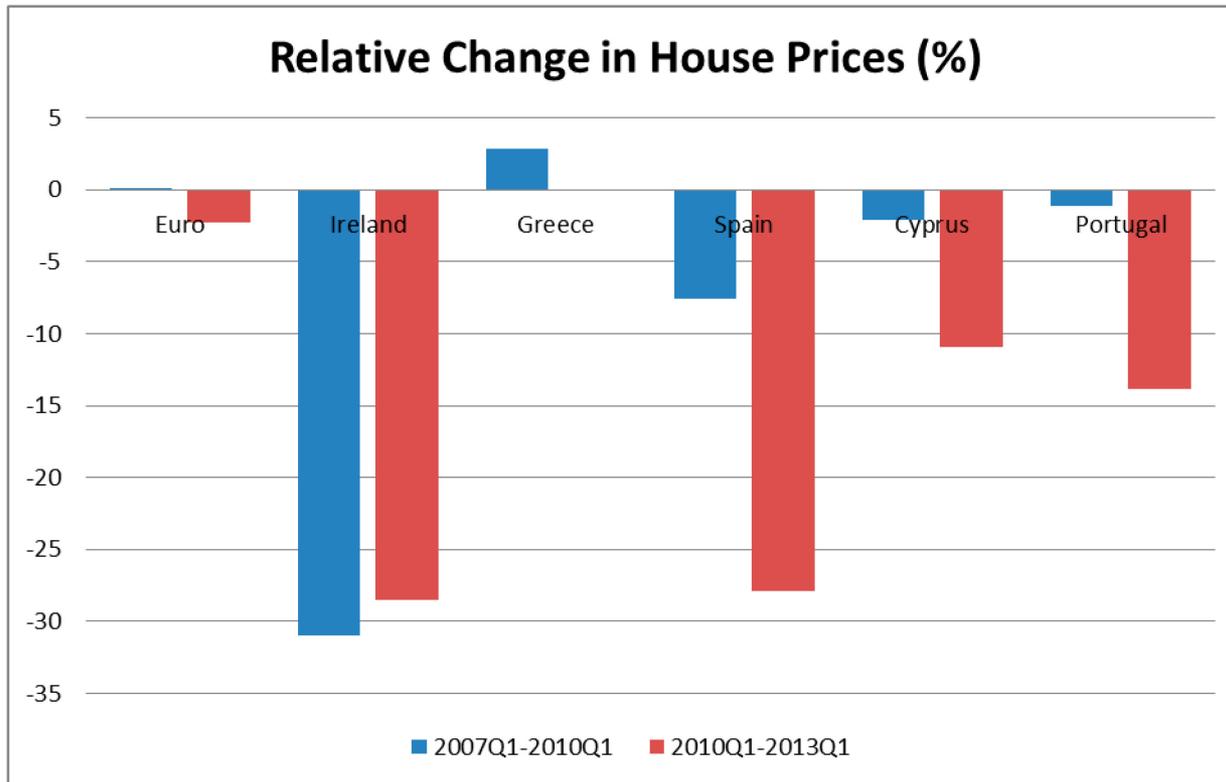
- Government by Statistics: EDP & SGP
  - Fiscal rules and targets did not prevent the build-up of major imbalances
- Why did it fail?
  - Backward-looking indicators
  - Too much emphasis on budgetary flows instead of risks and contingent liabilities.
  - No coherent and consistent framework to interpret the information

# The Euro Sovereign Debt Crisis

- A Brief Review
  - Greece:
    - Support programs May 2010 and February 2012, debt restructuring March 2012
  - Ireland:
    - Support program November 2010 ending Dec. 2013
  - Portugal
    - Support program May 2011 ending 2014
  - Spain
    - Financial assistance for banking sector support through ESM October 2012
  - Cyprus
    - Financial assistance for banking sector support through ESM March 2013
  - Italy



# The Euro Sovereign Debt Crisis



# The Euro Sovereign Debt Crisis

## Patterns of Fiscal Adjustments, 2007-2009

	Greece	Ireland	Italy	Portugal	Spain	Cyprus
Decline total revenues	Red	Red	White	White	Red	Red
Increase total spending	White	Red	White	White	White	Yellow
Social benefits	Red	Red	White	White	Red	Yellow
Final consumption	Red	Red	White	White	Red	White
Personnel	Red	Red	White	White	Red	Red
Interest	Red	Red	White	White	Red	White
Primary deficit	Red	Red	White	White	Red	Red
Gross debt	Red	Red	Red	Red	Red	Yellow
Share structural deficit	Dark Blue	Dark Blue	White	Dark Blue	Dark Blue	Dark Blue

# The Euro Sovereign Debt Crisis

- Three stories
  - Persistent structural weaknesses revealed by the recession of 2008-09: Italy, Portugal
  - Strong decline in revenues due to the recession combined with a lack of flexible fiscal tools: Greece, Spain, Cyprus
  - Exposure to asset market bust and contingent liabilities in the banking sector: Ireland, Spain

# Fiscal Limits and Fiscal Space

- *Flow budget constraint*

- $B_t = (1 + i_{t-1})B_{t-1} - (R_t - G_t) - \mu_t$

- Intertemporal Budget Constraint

- $B_{t-1} \leq E_t \sum_{\tau=0}^{\infty} D_{\tau} (R_{t+\tau} - G_{t+\tau} + \mu_{t+\tau}),$

- $D_{\tau} = \prod_{j=0}^{\tau} \frac{1}{1+i_{t-1+j}}.$

# Fiscal Limits and Fiscal Space

- To make the IBC meaningful, add
  - Economic constraints
  - Political constraints
  - The fiscal limit is the level of debt from which on debt rises without limits as primary surpluses are not sufficient to offset the growing debt service
  - Fiscal space is the difference between the fiscal limit and the current level of debt.

# Fiscal Limits and Fiscal Space

- Bi-Leeper model
- A macroeconomic production function with stochastic and persistent productivity shocks,  $P_t$ , and embedding a Laffer curve for income taxes,
- A fiscal policy block consisting of
  - a stationary stochastic process of government purchases,  $g_t$ ,
  - a process of stochastic government transfers to households,  $z_t$ , stochastically switching between a stationary and a non-stationary regime,  $rs_t$ ,
  - a reaction function of the income tax rate as a function of the level of debt which gives rise to a tax revenue function  $T_t$ ,
  - and a default rule specifying the rate of default if the government hits the fiscal limit,
- A forward-looking bond pricing equation which depends on the households' perception of the probability of default next period and implies that bond prices fall and yields rise as the perceived probability of default increases.

# Fiscal Limit and Fiscal Space

- Fiscal Limit Distribution

$$\Omega_t \sim \sum_{\tau=0}^{\infty} d_{\tau}^* \left[ T_{t+\tau}^{max}(A_{t+\tau}, g_{t+\tau}) - g_{t+\tau} - z_{t+\tau}(rs_{t+\tau}) \right].$$

Discount factor

$$d_{\tau}^* = \beta u_{c,\tau+1}^* / u_{c,\tau}^*$$

Policy constraint:

$$prob(B_{t+1} > \Omega_{t+1}, \dots, B_{t+m} > \Omega_{t+m}) \leq \pi.$$

# Fiscal Limits and Fiscal Space

- Implementation
  - More detailed economic structure
  - more detailed modeling of taxes and expenditures
  - All financial liabilities included
  - Measurement of government net debt
  - Modeling fiscal policy?

# Government Balance Sheets

- $E_t \sum_{\tau=0}^{\infty} D_{\tau} (R_{t+\tau} + \mu_{t+\tau}) = B_{t-1} + E_t \sum_{\tau=0}^{\infty} D_{\tau} G_{\tau} + W_t,$
- Balance sheet equation
- $q_t K_t + a_t A_t + f_t F_t = B_t + n_t N_t + p_{Ct} c_t C_t + W_t.$
- Sustainability condition:  $W \geq 0.$

# Government Balance Sheets

- How to price government assets and liabilities?
- Benchmark: What would an investor pay to obtain the expected future revenues from a given tax base?
- $$T_i = E_t \sum_{\tau=t+1}^{\infty} d_{\tau} \phi_{i\tau} \Phi_i(\phi_{i\tau}, \dots) =$$
- $$\sum_{\tau=t+1}^{\infty} \phi_{i\tau} (E_t d_{\tau} E_t \Phi_{i\tau} + cov_t(d_{\tau} \phi_{i\tau})).$$
- This embeds the same discount factor as previously.
- The value of a given tax depends on its volatility and cyclicality.
- The value of a given tax depends on the sequence of tax rates (take the peak of the Laffer curve).

# Government Balance Sheets

- Proper accounting requires modeling the future tax and expenditure flows.
- Applying the same logic to all assets and liabilities reveals the relationship between the fiscal limit and the balance sheet.

# Evaluating Fiscal Risks

- Wealth of data alone is not sufficient.
- The computation of fiscal limits and government balance sheets make consistent use of statistical data.
- This would contribute greatly to fiscal transparency.
- A task for independent fiscal councils.