

THE DEUTSCHE BANK PRIZE IN FINANCIAL ECONOMICS

2013

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Dynamics of Growth, Debt and Taxation

by

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Extending our earlier work in

**Sovereign Debt, Government
Myopia and the Financial Sector**

Review of Financial Studies, 2013



**Why don't governments
restructure debt even when long-
term gains seem high?**

**What leads to the entanglement of
financial sector with sovereign
credit risk?**

Proposed Explanations

- Fear of exclusion from debt markets
 - Need long-term exclusion, but defaulters return to international capital markets reasonably soon
 - At any rate, requires long-term governments!
- “Collateral damage” to own banks
 - Governments issuing debt in own currency face banking crises upon sovereign default
 - More suitable for rich, industrialized countries

Our Explanation

- Most governments care about short-term electoral popularity and like to “spend”
 - Hence, they care about current cash flows
- They dislike default as it lowers current cash
- They pass on the burden of repaying debt to future governments
 - Collateral damage channel, even if less relevant now, may be stronger then
- Current governments “stuff” their banks with bonds to build future commitment to repay
 - And knowing this, creditors continue to lend



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Two-period Model



The Economy

- Country that is emerging from an endowment shock (or a “poor” country)
 - Commodity price shock, war, financial crisis, ...
- Legacy debt held by external creditors
- Private sector (households and corporations)
 - Can invest endowment productively for long run
 - Save in government bonds via a financial sector
 - Financial sector has some “home bias”
- Short-term government
 - Maximize spending on populist schemes
 - Raise money through taxation and new debt
 - Taxes discourage investment; encourage savings

Costs of Default (in period 2)

- Default disrupts domestic financial sector
- Costs of default equal $zD_1^{Dom}(1+r)$, $z > 1$, and

$$D_1 = D_1^{For} + D_1^{Dom}$$

- Several explanations
 - Government bonds may be in demand for “safety”
 - They may serve as collateral in inter-bank flows
 - z exogenous for now
- Period 1 government likes to boost savings, i.e., D_1^{Dom} , to build future willingness to pay

How much can the future government repay?

- Constrained by ability to pay

$$D_1(1+r) \leq t^{Max} f_2(k_1).$$

- Constrained by willingness to pay

$$D_1(1+r) \leq zD_1^{Dom}(1+r) = z(E_0 - k_1^*(t_1)).$$

- Which constraint binds?

Current govt's "repression" policy

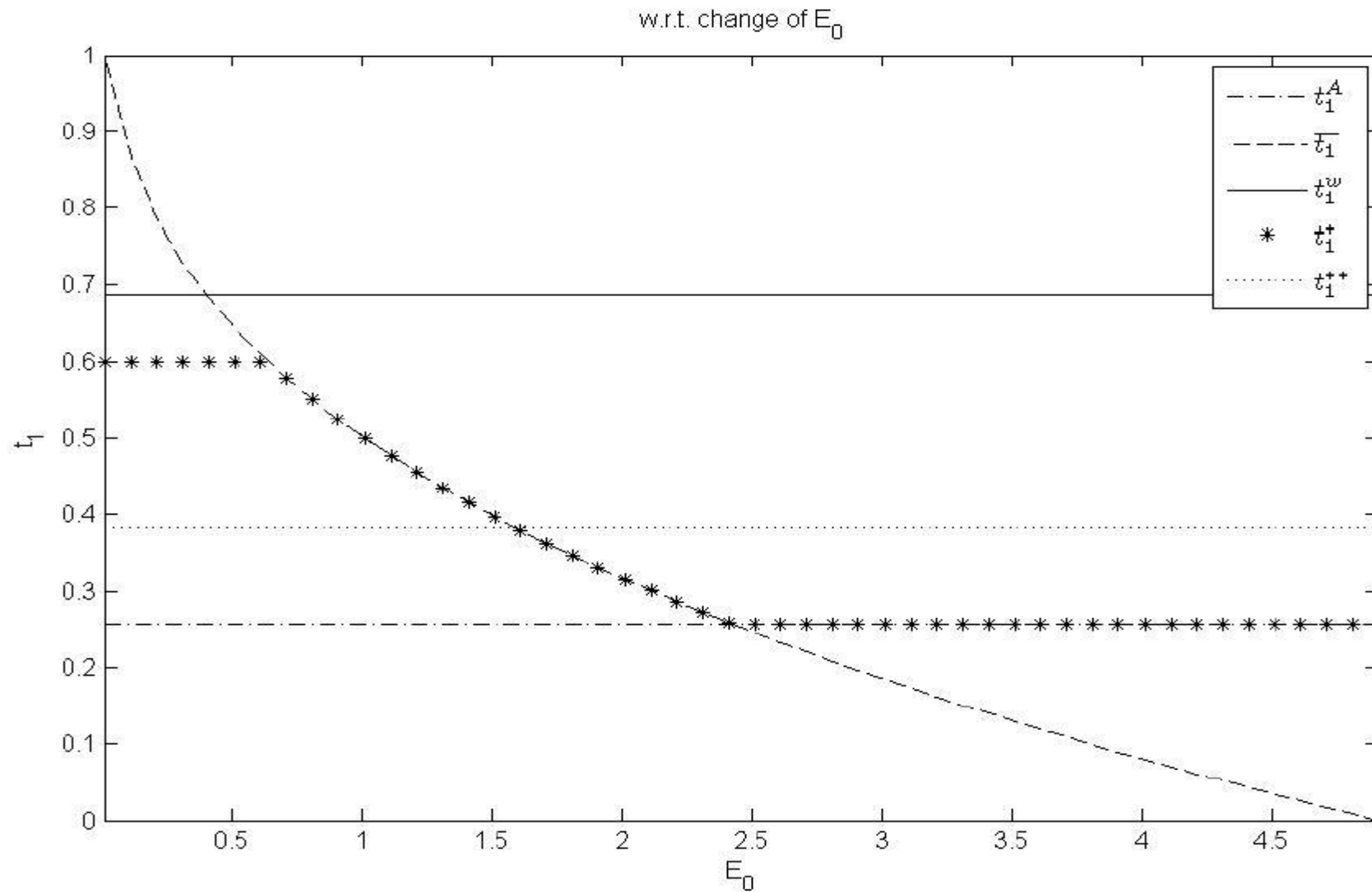
- High endowment or ability-to-pay:

$$\max_{t_1} \frac{1}{(1+r)} t_2 f_2(k_1^*(t_1)) + t_1 f_1(k_1^*(t_1)).$$

- Low endowment or willingness-to-pay:

$$\max_{t_1} z(E_0 - k_1^*(t_1)) + t_1 f_1(k_1^*(t_1))$$

Repression policy in endowment



Current govt's default decision

- Default if and only if

$$t_1^{**} f_1(k_1^*(t_1^{**})) \geq D_1^* - D_0(1+r) + t_1^* f_1(k_1^*(t_1^*)).$$

- Assumes that default leads to one-period exclusion from debt markets
- Default attractive only if economy is highly productive

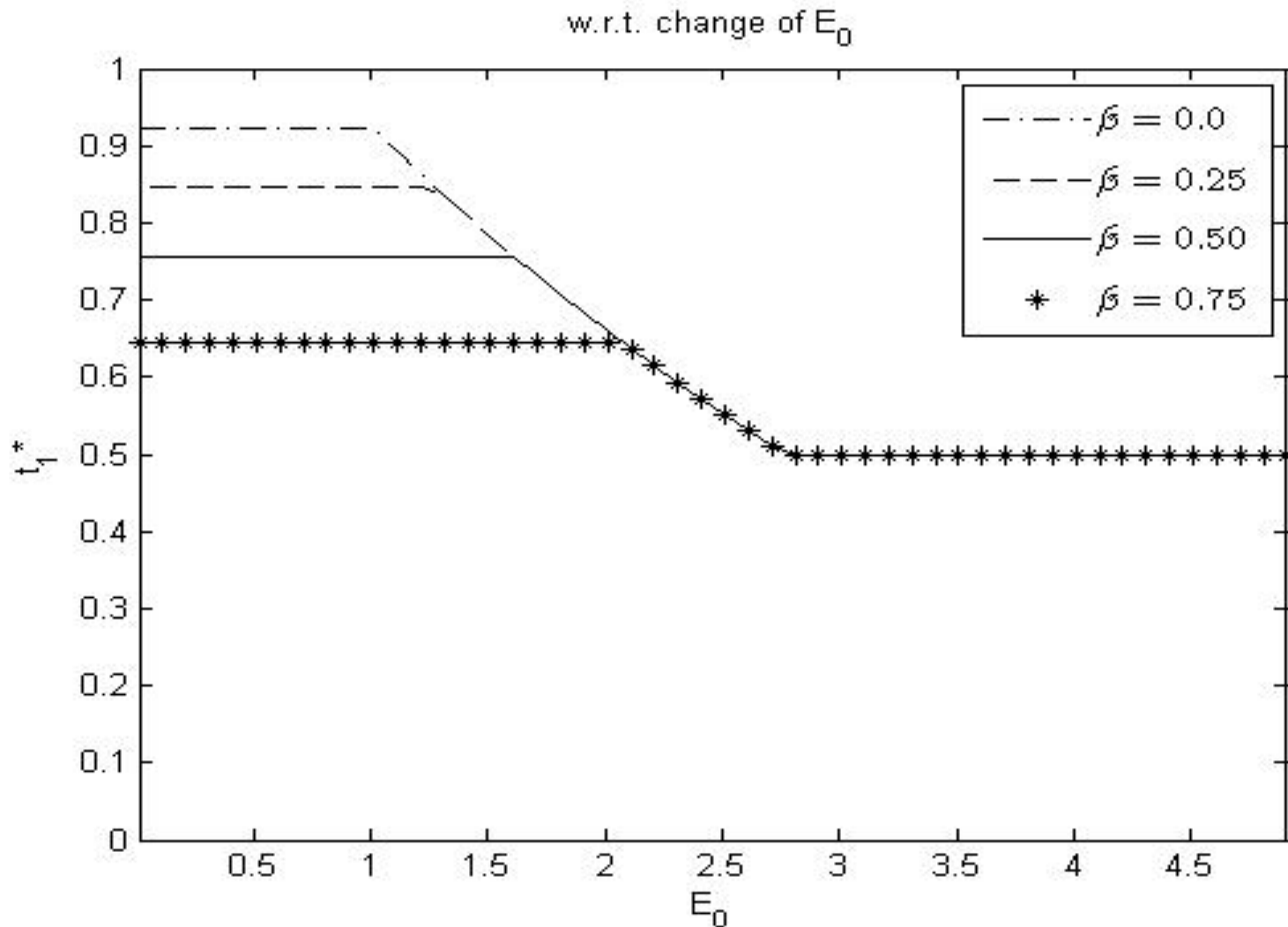
Long-term government

- Consider a government that discounts future spending at the rate $\beta \leq (1+r)^{-1}$
- Objective function:

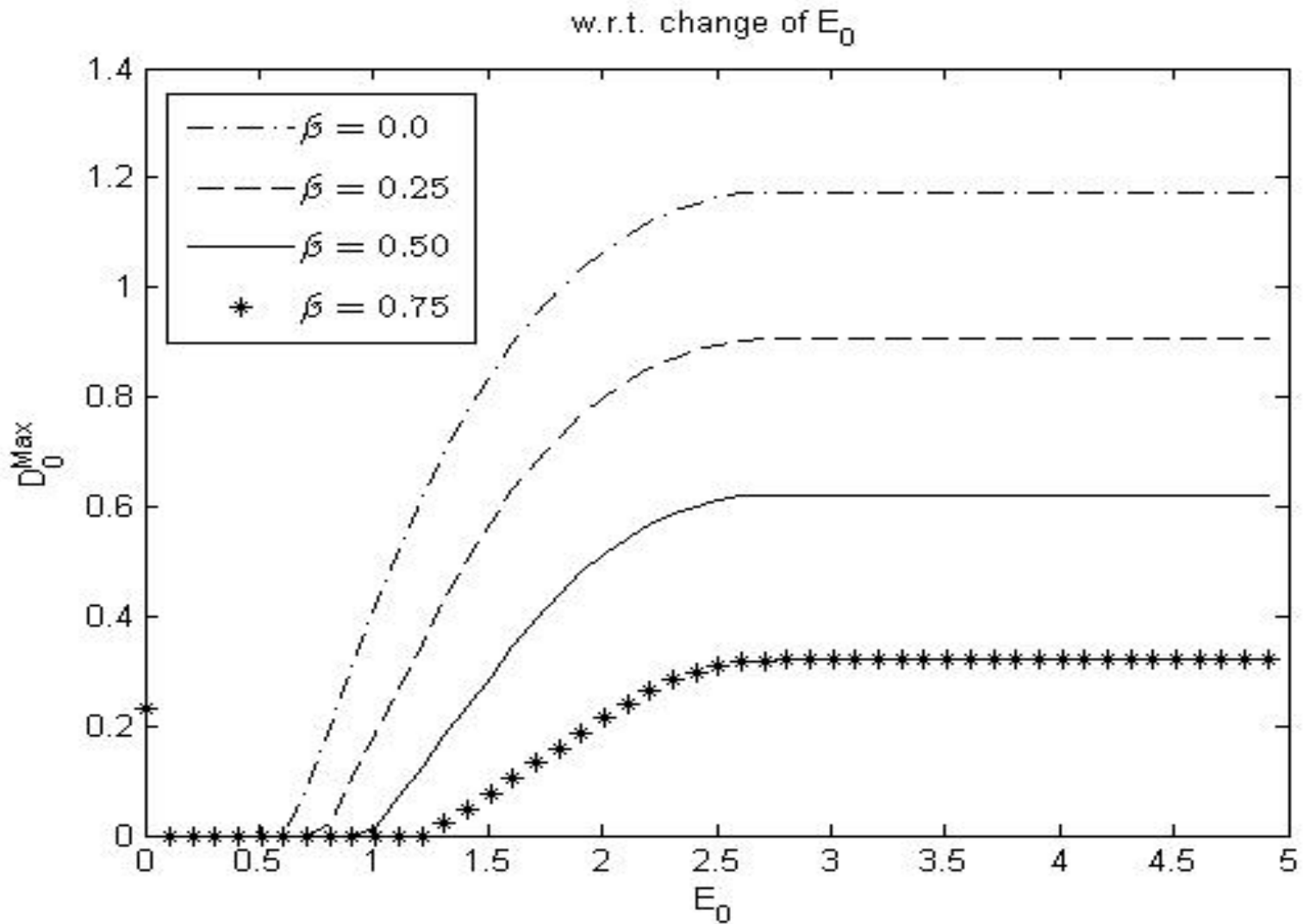
$$[D_1 - D_0(1+r)] + t_1 f_1(k_1(t_1)) + \beta [t_2 f_2(k_1(t_1)) - D_1(1+r)]$$

- If $\beta = (1+r)^{-1}$ then no value to bringing spending forward by borrowing, so it always defaults on legacy debt

Short-term governments engage more in repression



Short-term governments have greater debt capacity!





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Implications



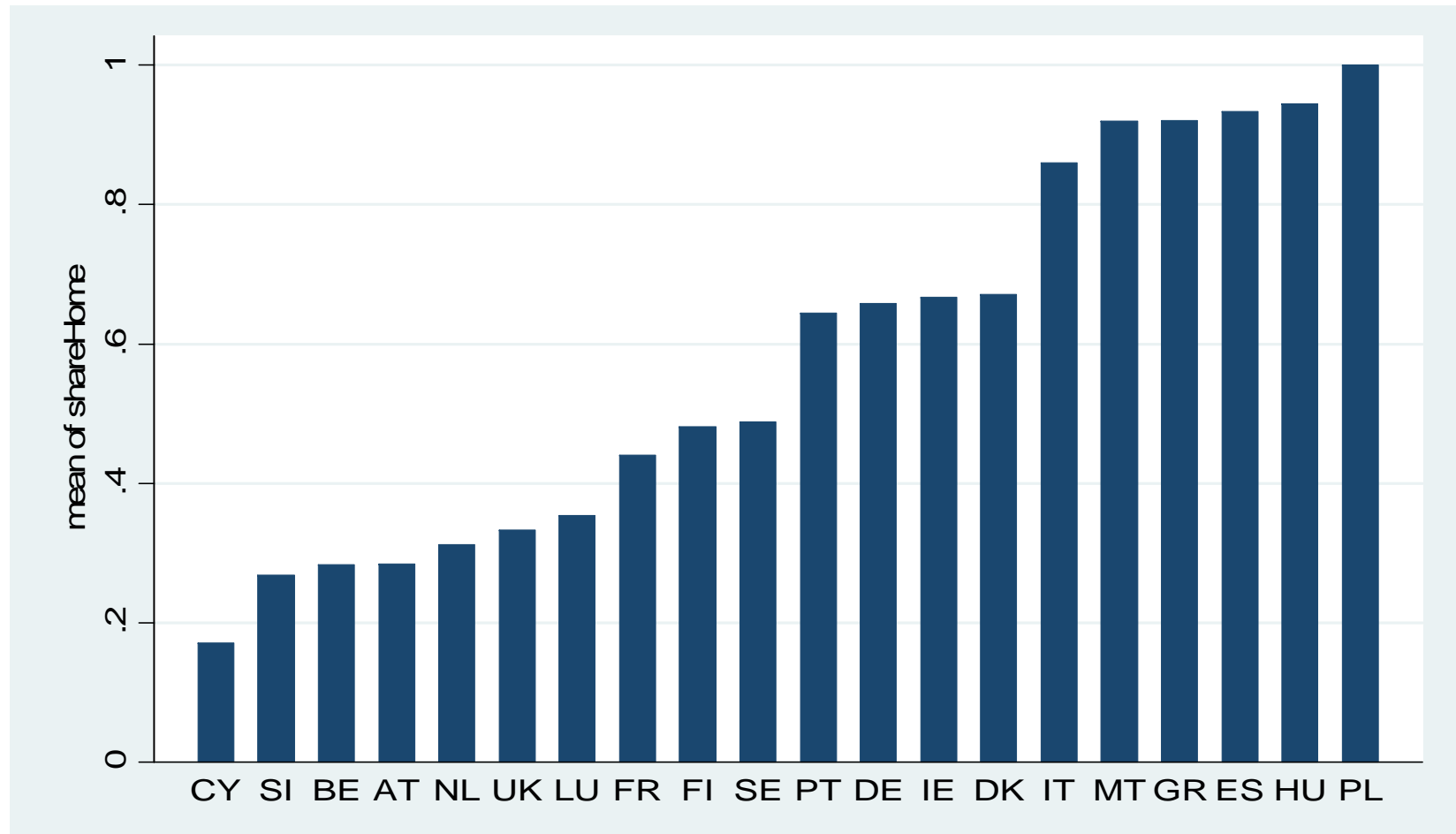
I. Debt is a double-edged sword

- Ability-to-pay region (high endowment):
debt lengthens government's horizons
even though it is myopic and populist
 - Debt monetizes future taxes
 - Leads to more growth and investment
compared to autarky (no sovereign debt)
- Willingness-to-pay (low endowment):
debt with myopic, populist governments
leads to economic and financial repression

II. (Over-)Developing of debt markets by governments

- Instead of direct taxation of investments, governments can favor banking sector investments in its own debt markets
 - High liquidity requirements for banks
 - Eligibility in central bank OMOs, LOLR, ...
- Governments can also choose “z” to increase vulnerability of the banking sector
 - Leave banks under-capitalized
 - Such banks prefer to gamble on domestic debt inducing a “home bias” in bond holdings

“Home bias” in Europe



Source: Acharya, Drechsler and Schnabl (2011)

III. European sovereign crisis

- Failure to recapitalize banks
 - Linked to zero risk weights on sovereign debt
- Under-capitalized banks did “carry trades” moving out of (shorting) German bunds into periphery debt
- Need mechanisms to break the sovereign-financial sector nexus – Bruegel proposal:
 - “Blue” bonds held by domestic banks and guaranteed by Euro area (taxation of members)
 - “Red” bonds guaranteed by issuing country and domestic banks prohibited from holding
 - Lack of commitment to repay Red bonds?
 - Compensate government officials in Red bonds?



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Dynamics



Steady state

- I. The economy may reach the steady state when governments have the willingness to pay (high endowment)
 - Borrowing constrained only by ability to pay
 - Each government borrows fully against the entire future stream of tax proceeds
 - However, the tax proceeds only pay off the legacy debt of the previous government
 - Economies evolve to this state over time...

Transition to steady state

II. Along the path to steady state (at low endowments), the willingness to pay constraint binds

- Option 1: Increase willingness to pay by “repressing” the economy / financial sector
- Option 2: Increase future government’s ability to pay (reach steady state sooner) and enhance today’s debt capacity
- Both boost debt capacity, but only Option 2 boosts growth and Option 1 represses growth

Middle-income growth “trap”

- Poor economies choose Option 2 and stimulate growth to increase debt capacity
 - Indeed, it may be their only commitment to borrow
- As economies get richer, growth slows down *endogenously* due to government myopia and reliance on Option 1 (“repress growth”)
 - Government bond markets expand at the cost of the private sector investments

Great Moderation and Crises

- With uncertainty about growth, there can be default within the term of current governments (“sudden stop”)
 - Defaults are costly due to entanglement
 - Myopic governments partly internalize the cost of defaults due their debt policies
- If uncertainty about growth is primarily back-loaded (“Great Moderation”)
 - Myopic governments internalize less the cost of sovereign defaults if these are more in the long run
 - Leads to excessive build-up of sovereign debt and future sovereign defaults



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Thank You (Raghu)!

