Discussion of

"Fiscal Policy Switching: Evidence from Japan, US, and UK"

by

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Is the fiscal policy regime stable?

- Does the regime for fiscal policy shift over time?
- Is fiscal policy stable ("Ricardian")?
  - Within regime?
  - Averaged across regimes?
- Diagnosis of stability depends on near unit root behavior of debt/GDP ratio
- Does accounting for shocks to spending affect diagnosis of instability?

Switching regression model

b_t = Debt/GDP ratio

$$b_t = \begin{cases} \mu_0 + (\alpha_0 + \eta_t) b_{t-1} + \varepsilon_{0t} - \nu_t & \text{if} \quad S_t = 0 \\ \mu_1 + (\alpha_1 + \eta_t) b_{t-1} + \varepsilon_{1t} - \nu_t & \text{if} \quad S_t = 1 \end{cases}$$

Note: b_t does not include money

Switching regression model: Alternate Cases

$$b_t = \begin{cases} \mu_0 + (\alpha_0 + \eta_t) b_{t-1} + \varepsilon_{0t} - \nu_t & \text{if } S_t = 0 \\ \mu_1 + (\alpha_1 + \eta_t) b_{t-1} + \varepsilon_{1t} - \nu_t & \text{if } S_t = 1 \end{cases}$$

Case 1: $\eta_t = \nu_t = 0$

Case 2: $\eta_t = 0$, $\nu_t = -$military spending

Switching regression model: Alternate Cases (cont'd)

$$b_t = \begin{cases} \mu_0 + (\alpha_0 + \eta_t) b_{t-1} + \varepsilon_{0t} - \nu_t & \text{if } S_t = 0 \\ \mu_1 + (\alpha_1 + \eta_t) b_{t-1} + \varepsilon_{1t} - \nu_t & \text{if } S_t = 1 \end{cases}$$

Case 3: η_t = –nominal growth rate, ν_t = –military spending

Case 4: η_t = nominal interest rate – nominal growth rate

ν_t = –military spending

i.e., η_t = real interest rate – real growth rate

Alternate models

- Case 4 theoretical preferred
    - real growth against real discounting preferred to nominal discounting

Empirical/Econometric Strategy

- Estimation over long time periods (nineteenth century present)
- Comparison of Japan, US, and UK (focus on Japan)
- Estimation via Gibbs sampler

Main results

- US and UK
  - little evidence that regime switching important
  - fiscal policy sustainable

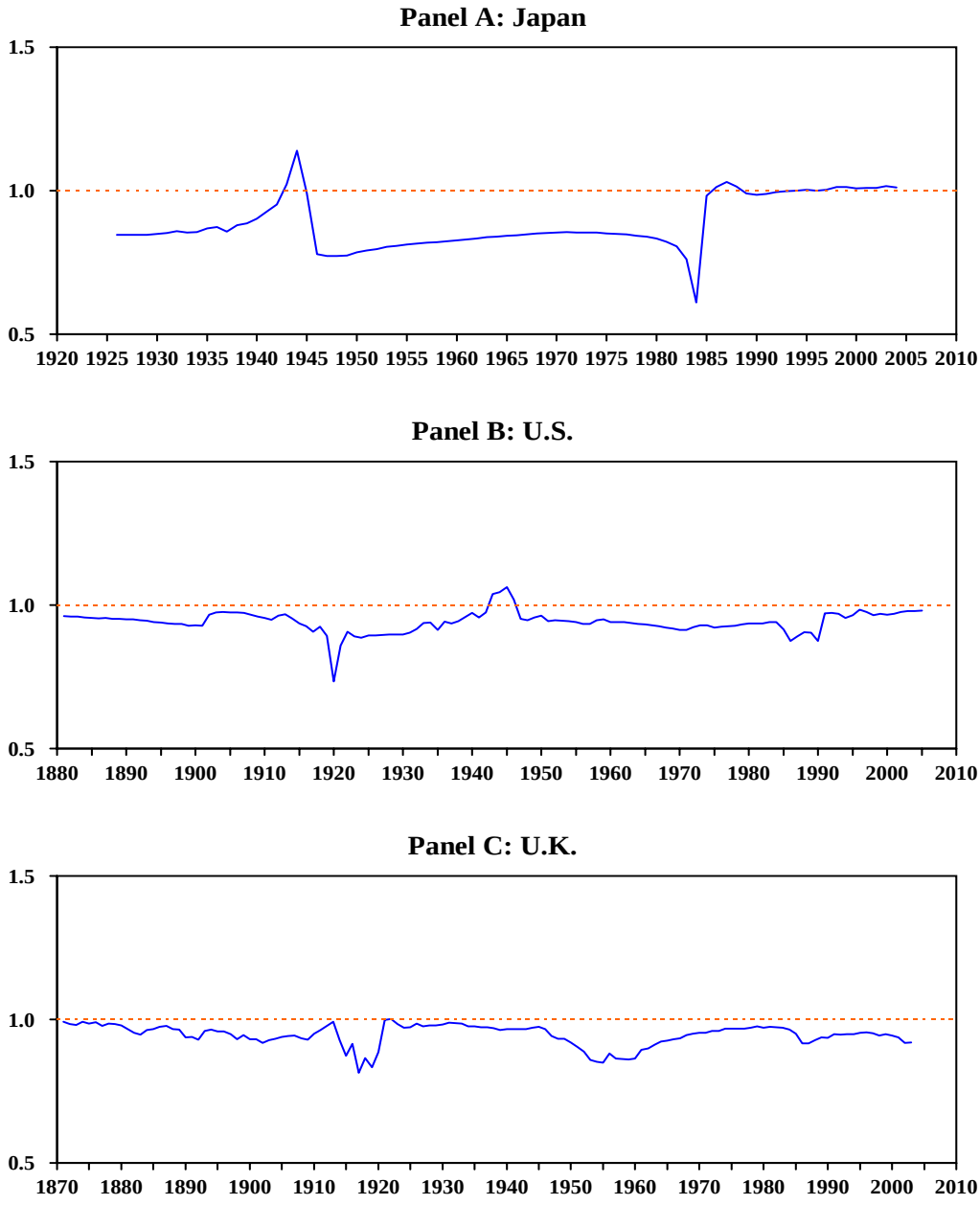
- Japan
  - evidence of regime switching
  - estimates of regime sensitive to specification
  - extend period of explosive policy

First cut: Largest autoregressive root of debt/GDP ratio

- US and UK
  - Root slightly below one
  - Constant across time period
  - Could not reject unit root (downward bias)

- Japan
  - Two episodes that look explosive
    - Late WWII
    - Recently

Figure 2: Estimated Coefficient on b_{t-1} from Rolling Regressions

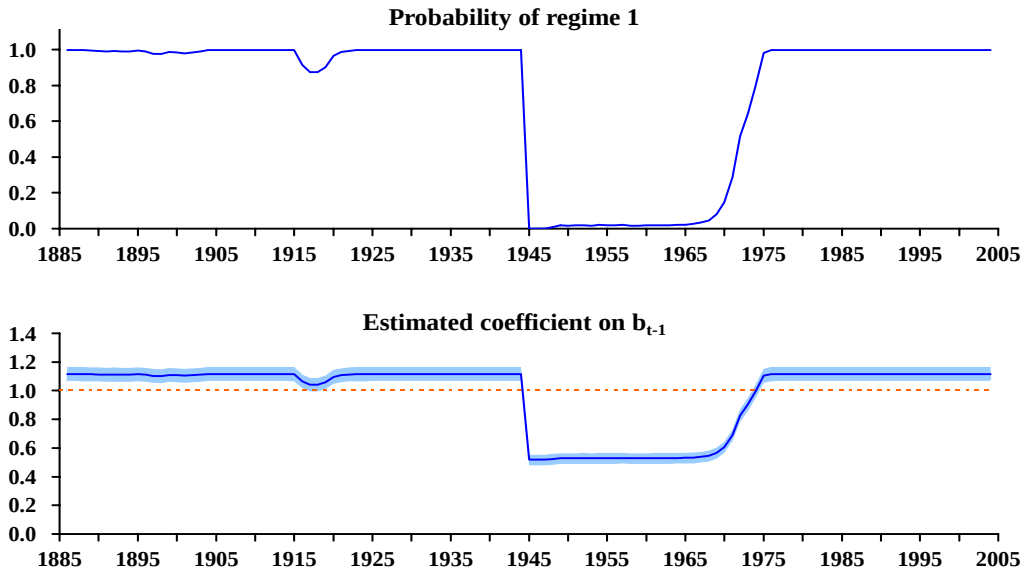


Estimation of switching model: Japan

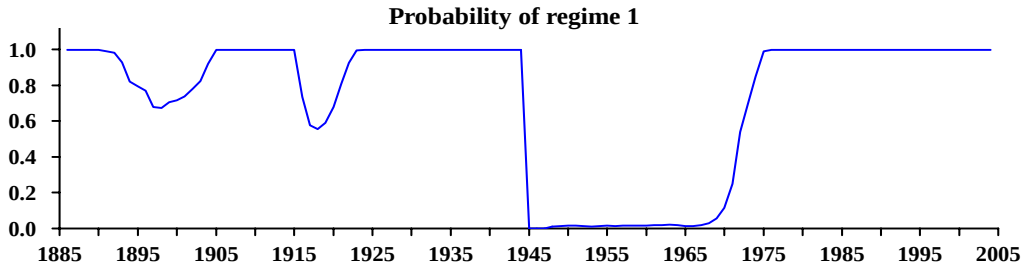
- Results sensitive to specification
- Cannot replicate unit root results without adjustments
- Evidence of regime switching akin to unit root tests (once adjustments made)
- Contrast with US and UK results

Figure 3: Two State Model for Japan

Panel A: Specification 1



Panel B: Specification 2



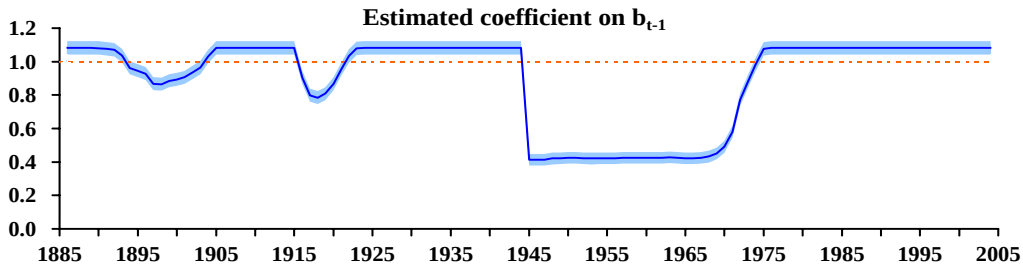
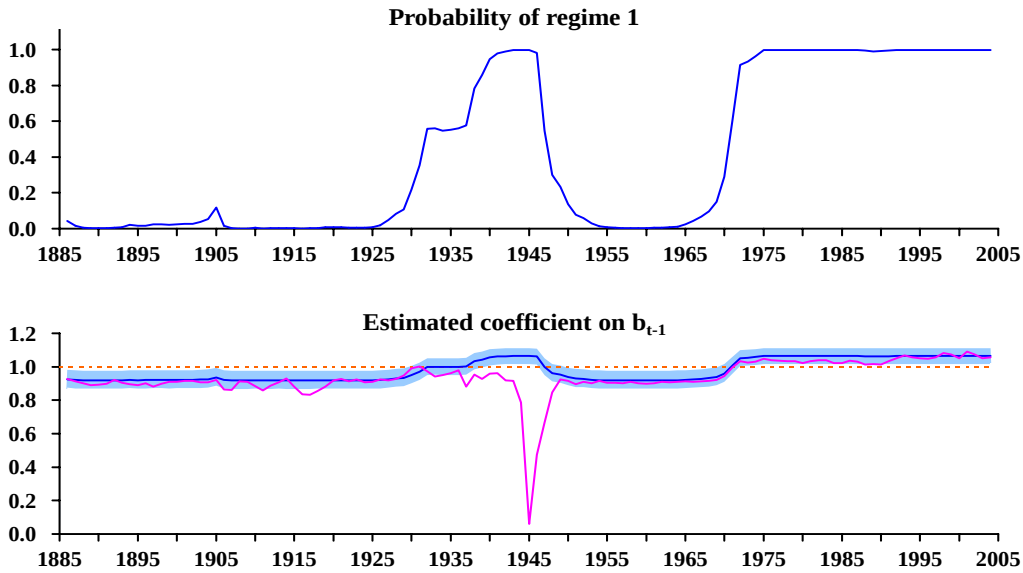
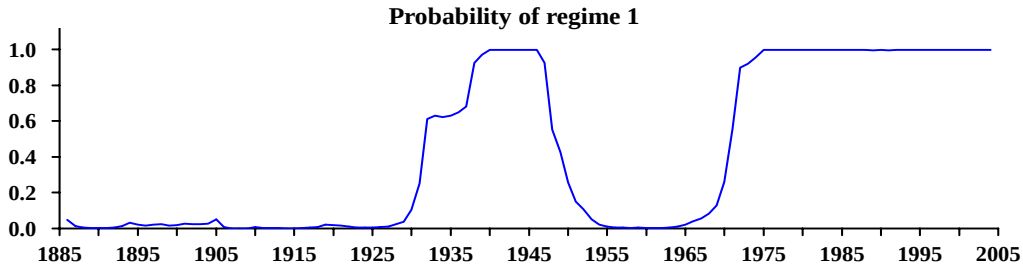


Figure 3: Two State Model for Japan, Continued

Panel C: Specification 3



Panel D: Specification 4



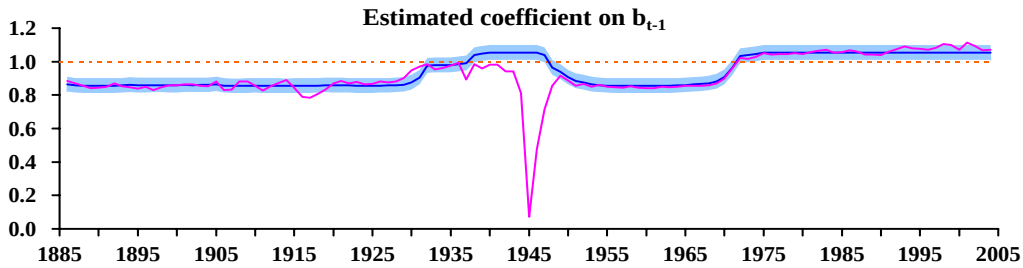
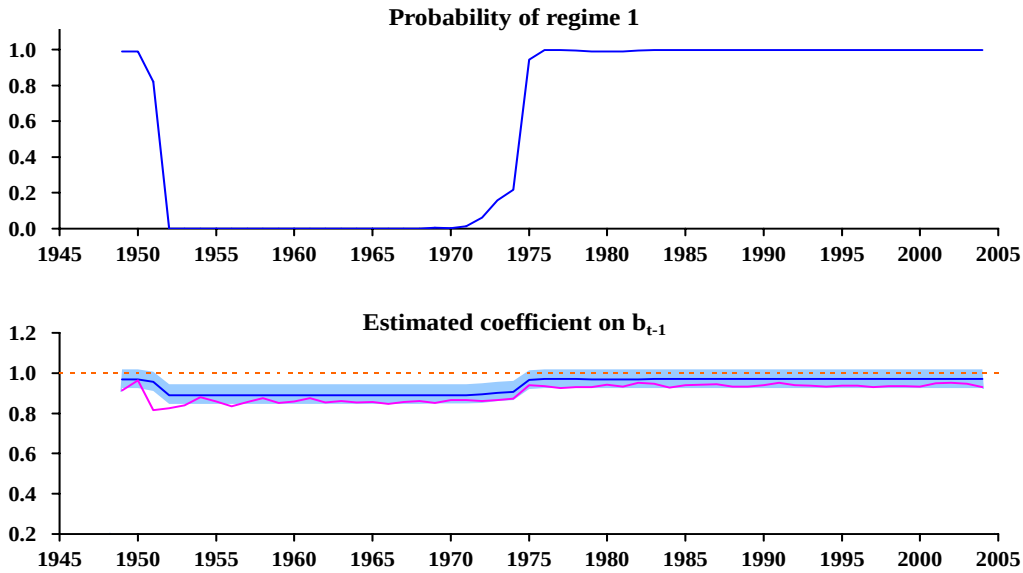
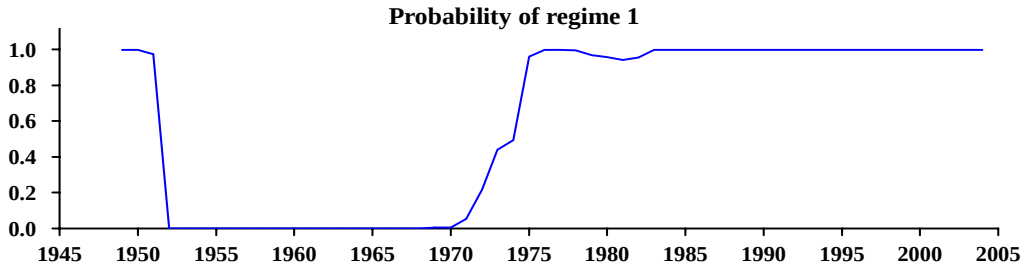


Figure 10: Two State Model for U.S., Continued

Panel C: Specification 3, 1948-2004



Panel D: Specification 4, 1948-2004



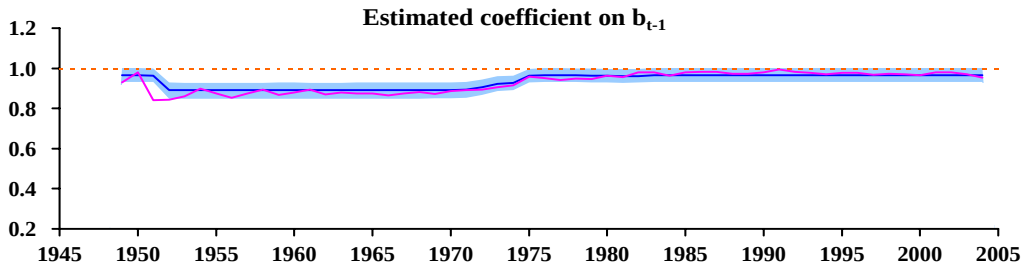
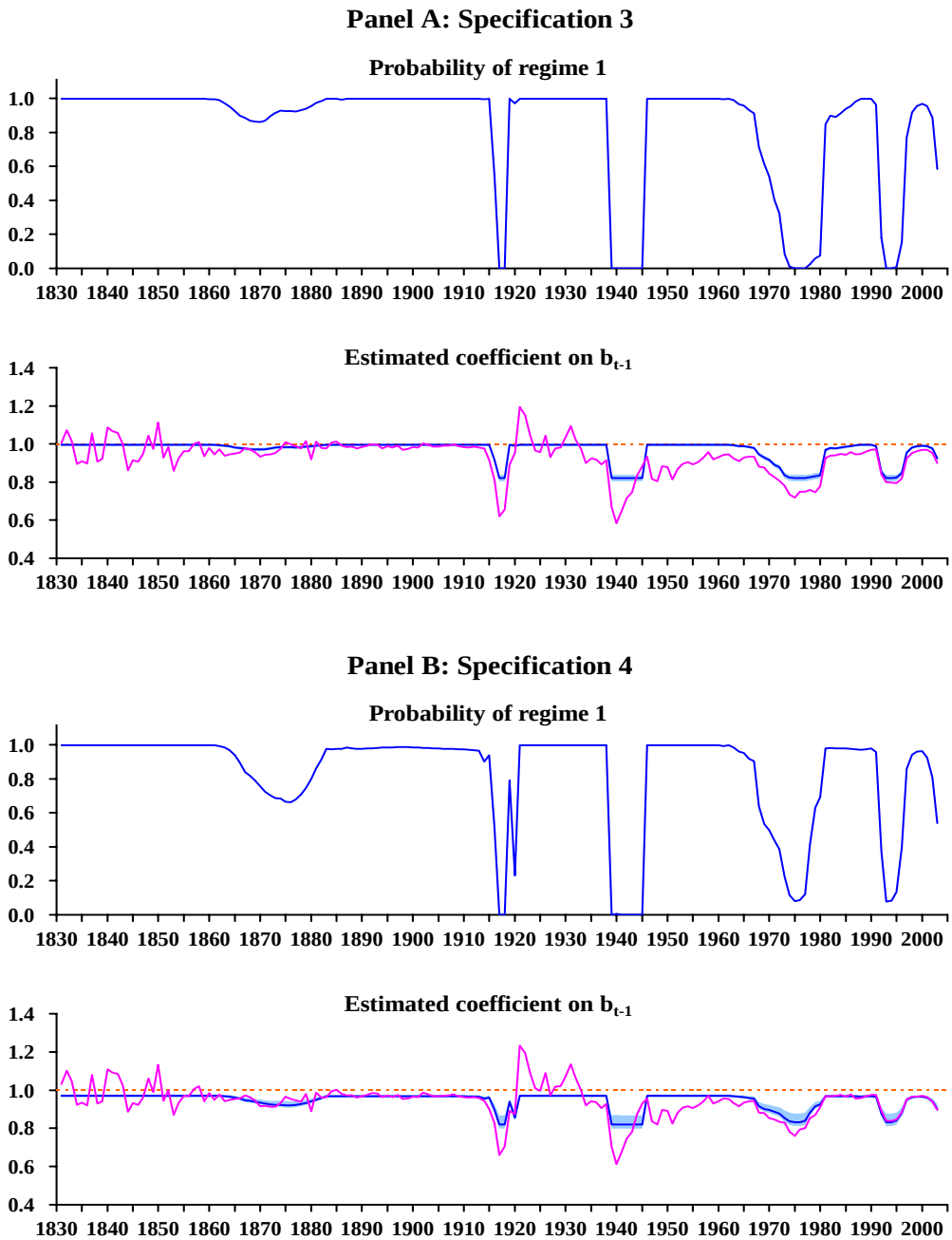


Figure 11: Two State Model for U.K.



Summary of switching regression findings

- UK
  - nominally, frequently regime switching
  - but alternate between two stable regimes with similar coefficients

- US
  - nominally, low-frequency shift in regime
  - but like UK, regimes stable with similar coefficients

- Japan
  - switching at low frequency to explosive regimes
    1. WWII
    2. Since early 1970s
  - significant difference in coefficients across regimes
  - three state model
    1. groups WWII and early 1970s as highly explosive
    2. overfit?

What do estimates imply for stability?

- Stability in long-run

  - relative duration of explosive regimes
  - how explosive
  - rate of reversion in stable regime

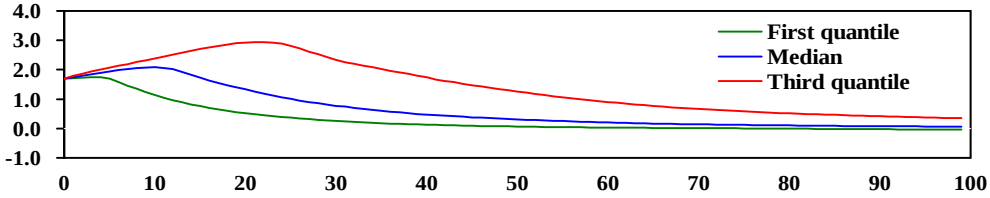
- Stochastic simulation

- Assessment
  - Stability depends on growth rate

Figure 9: Globally Stationary or Nonstationary?

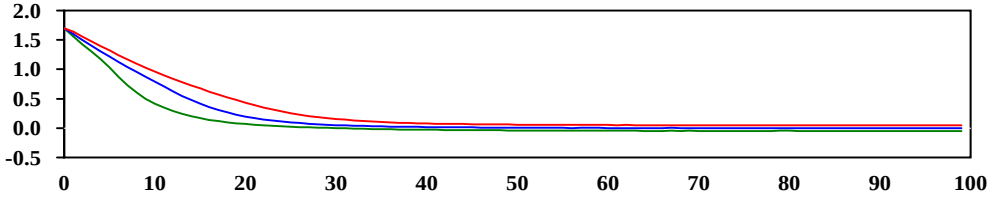
Panel A

Simulated data with 3% growth (Specification 3 of two state model)



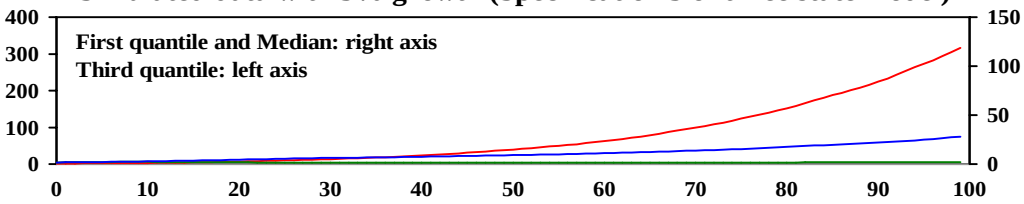
Panel B

Simulated data with 13.7% growth (Specification 3 of two state model)



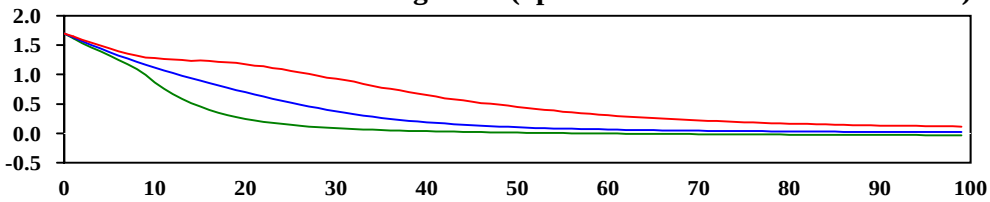
Panel C

Simulated data with 3% growth (Specification 3 of three state model)



Panel D

Simulated data with 13.7% growth (Specification 3 of three state model)



Notes: The data of size 120 is generated from Specification 3 using estimated values with b_0=1.7 and S_0=1. In all cases, we replicate it 5000 times to compute the first, second, and third quantiles.

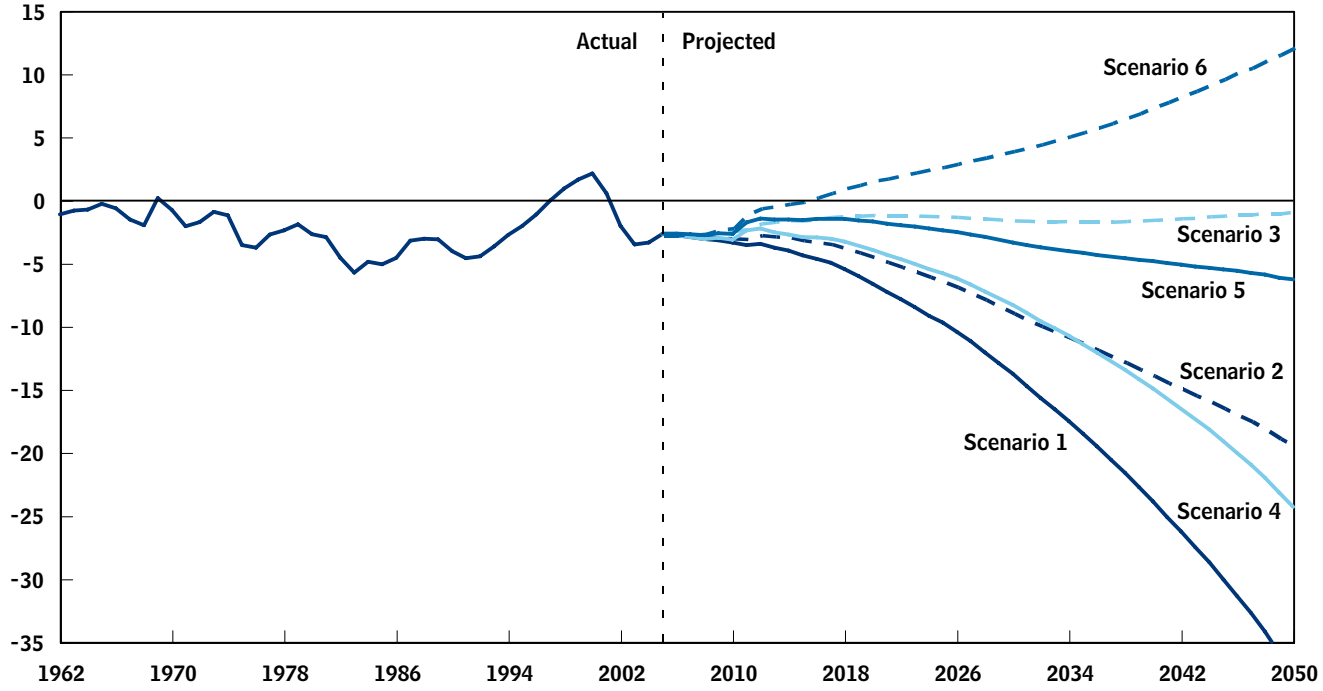
Discussion of Stochastic Simulations

- Growth rate matters (not surprising)
- Prefer case #4 (it has similar parameters to case #3)
- Stability overall
- Looks familiar!

Figure A-9.

Total Surplus or Deficit Under CBO's Long-Term Budget Scenarios

(Percentage of gross domestic product)



Source: Congressional Budget Office.

Notes: Scenario 1 = higher spending/lower revenues

Scenario 2 = intermediate spending/lower revenues

Scenario 3 = lower spending/lower revenues

Scenario 4 = higher spending/higher revenues

Scenario 5 = intermediate spending/higher revenues

Scenario 6 = lower spending/higher revenues

For information about the scenarios, see Table A-1 and Chapter 1.

Evaluation of results and approach

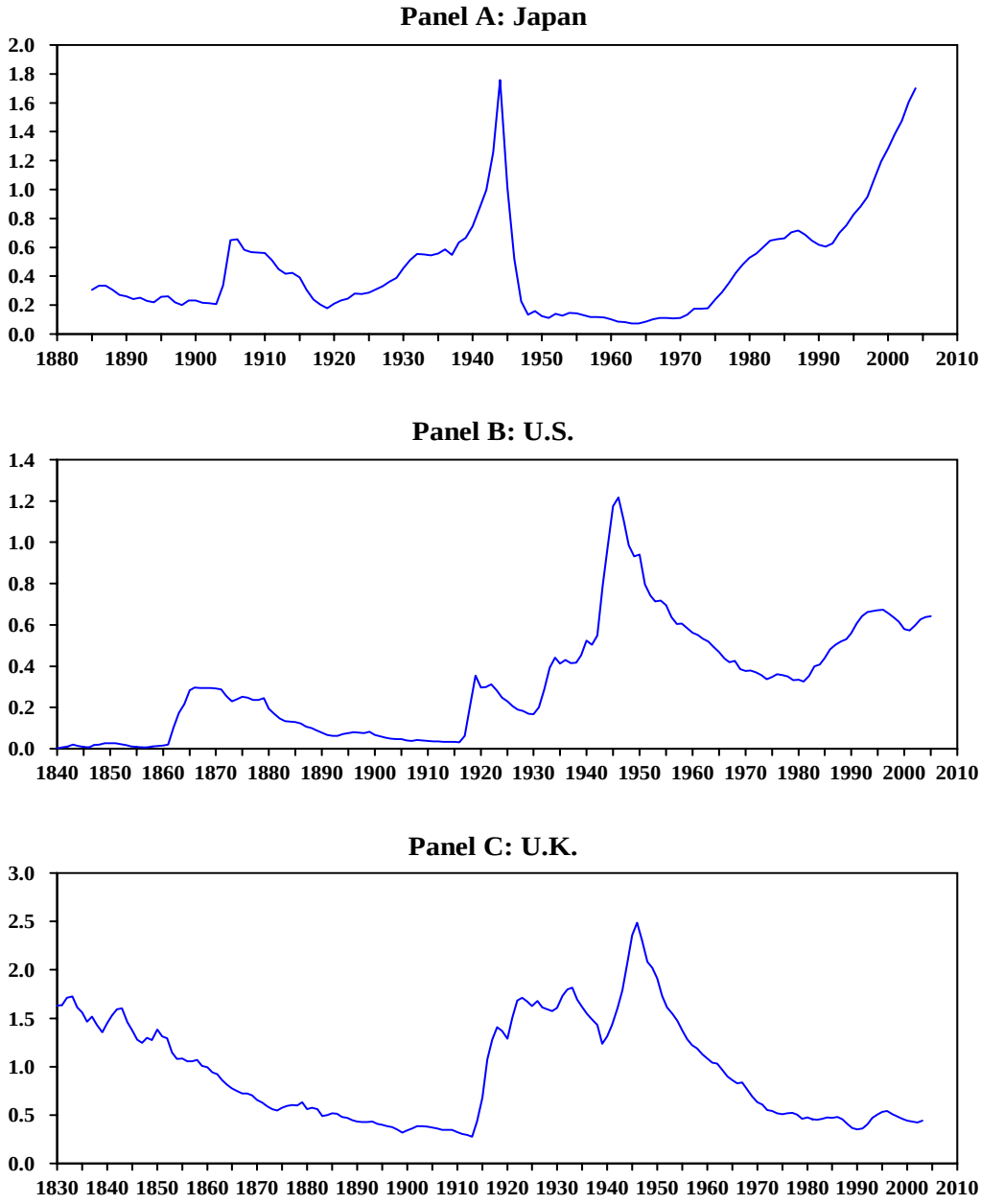
1. What underlies results

2. Value added of switching model:
   What leads to explosions and stabilizations?

3. Concluding comments

Inspection of episodes

Figure 1: Public Debt (Relative to GDP)



Summary of graphs

1. Run up of debt in wars

2. Run down during peace

3. Three (or four exceptions)
   a. Japan in 1970s, reversed
   b. Japan from early 1990s to present, not yet reversed
   c. U.S. under Reagan, reversed
   d. U.S. now, unclear whether new explosion

Main comment on paper

Switching model, if carefully parameterized, summarizes the data

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But

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Explosions and their reversal clear policy episodes that are better understood narratively

Explosions of debt usually wars

--> Reversal with peace

Since WWII, several episodes of peacetime explosion

Reversal of peacetime explosions

US: Tax increases and strong growth after periods on non-balanced budget tax cuts

Reagan/Bush I, then Clinton

Bush II, then ???

Reversal of peacetime explosions

US: Tax increases and strong growth after periods on non-balanced budget tax cuts

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Japan: 1970s episode followed by period of rapid growth

Current situation:
menu of unpleasant choices given slow growth

Main conclusion

Stochastic switching model estimated from history
does not help predict what will happen in current episode:

Faster growth

Fiscal retrenchment

Or an explosion of debt

Minor points, with major implications

1. Align dates across countries on Figure 1, etc.

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1. Align dates across countries on Figure 1, etc.

   $\rightarrow$ common shocks (mainly wars)

2. b_t excludes money

   $\rightarrow$ hardwires into analysis irrelevance of monetary solution to debt

   Compatible with the data,
   but inflating away debt a latent possibility

The End: Is debt exploding?

- Backward looking data analysis cannot tell us, aside from fact that debt has always been contained in the past

- Forwarding looking variables suggested debt/GDP contained:

  Long term interest rates and inflation rates low, so asset markets do not see explosion