Self-Fulfilling Debt Crises: Can Monetary Policy Really Help?

Philippe Bacchetta, Elena Perazzi and Eric van Wincoop

Discussion by

Luigi Bocola

Northwestern University

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THE PAPER

- Shifts in investors' beliefs often used to explain debt crises
- Role for policy: off path interventions desirable
- Are these off path interventions credible?
- This paper:
  - Lorenzoni and Werning (2014) + closed economy NK model
  - Can monetary policy rule out bad equilibria?
  - Yes, but unrealistic and costly movements in inflation/output
- Nice paper, complements mostly theoretical literature on the subject

Overview of Discussion

- Outline of the model and main results
  - Monetary version of LW
  - NK block and quantitative strategy
  - Even without NK block, implausible movements in inflation and output

- Two main points of discussion
  1. Restrictions from NK block
     - Inflation + low real rates could go a long way in ruling out bad equilibria
     - Key model parameters and calibration
  2. Asymmetries between Gov't and Central Bank in terms of commitment and reputational costs
     - High inflation experience of the 1970s in advanced economies (Italy)

Model and Results

MONETARY VERSION OF LW

From $t = 1, \ldots, T-1$ no uncertainty

- Government issues LT debt to finance deficits ($\overline{s}$) and payments to lenders

$$Q_t B_{t+1} = [(1-\delta)Q_t + \kappa]B_t - \overline{s}P_t$$

- Lenders break even

$$R_t = \frac{(1-\delta)Q_{t+1} + \kappa}{Q_t}$$

At $t = T$, present discounted value of future surpluses realizes

- If s^{pdv} is low (prob. ψ), a default is possible. Gov't default if:

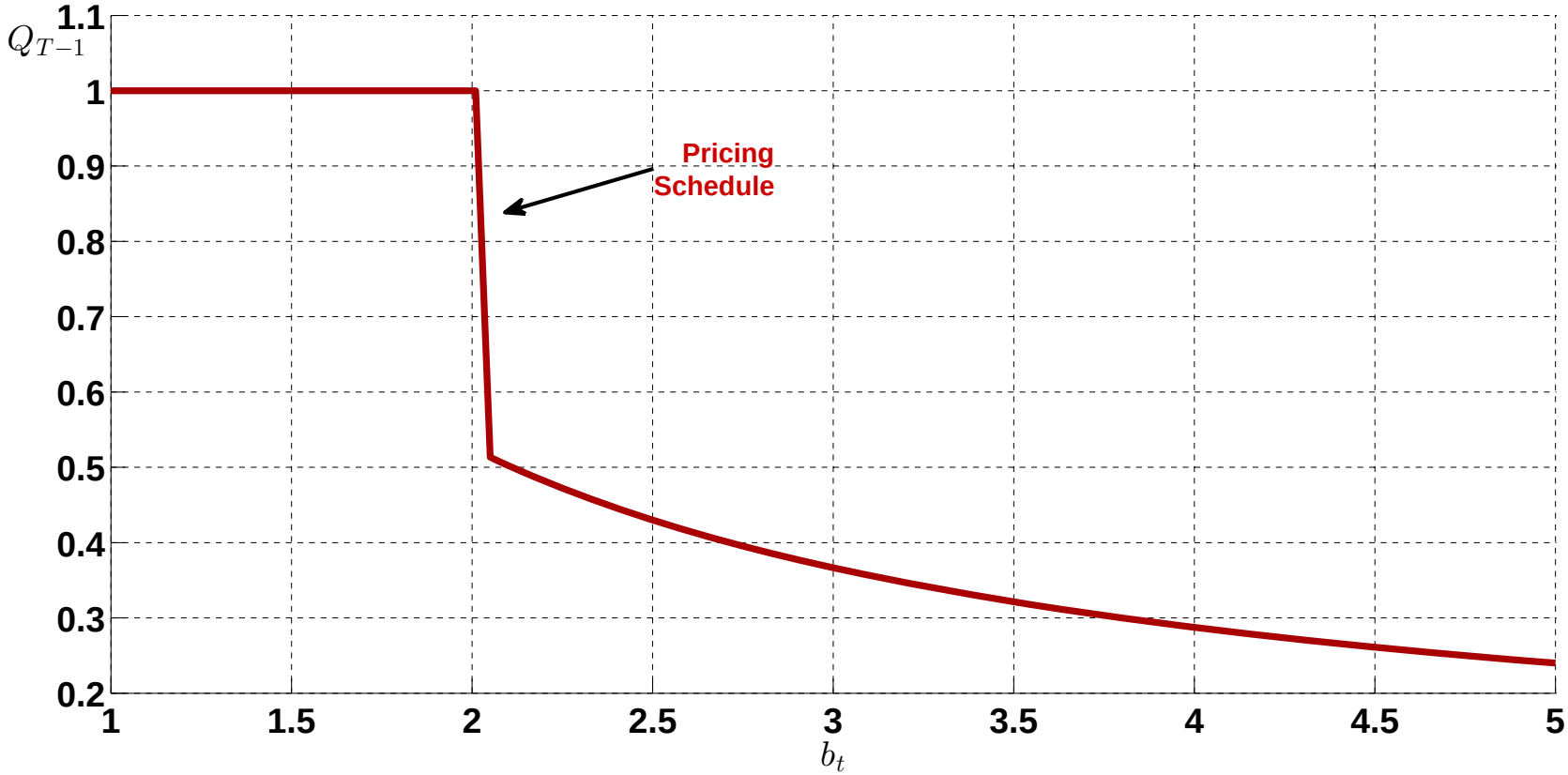
$$[(1-\delta)Q_T + \kappa]\frac{B_T}{P_T} > \underline{s}^{pdv} \Rightarrow b_T > \tilde{b}$$

- If Gov't defaults, lenders get $\frac{\xi \underline{s}^{pdv}}{R_{T-1} b_T}$

MULTIPLE EQUILIBRIA: TWO KEY EQUATIONS

Pricing schedule:

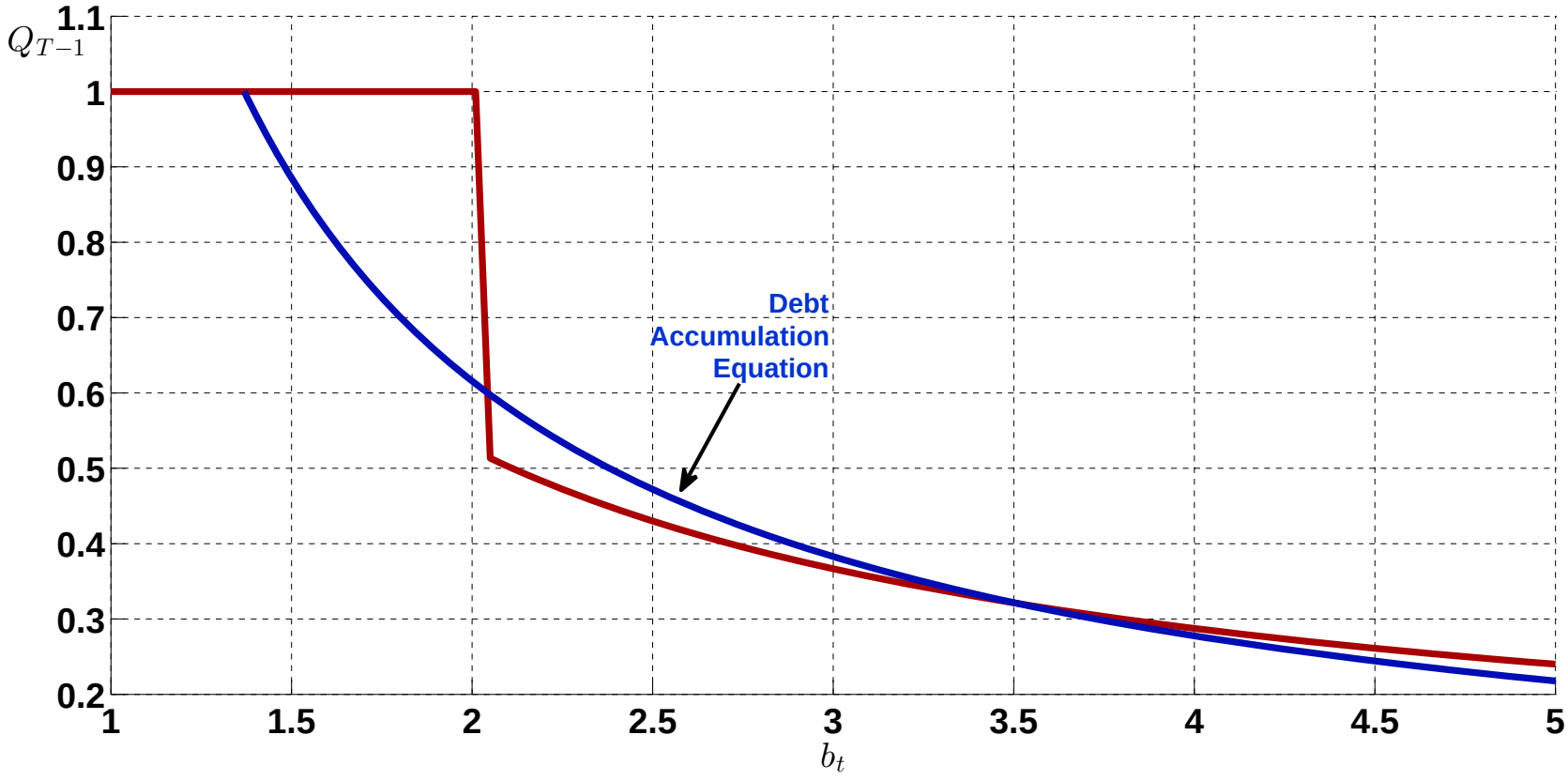
$$Q_{T-1} = \begin{cases} \frac{(1-\delta)Q_T+\kappa}{R_{T-1}} & \text{if } b_T \leq \tilde{b} \\ \psi \frac{\xi \underline{s}^{pdv}}{R_{T-1} b_T} + (1-\psi)\frac{(1-\delta)Q_T+\kappa}{R_{T-1}} & \text{otherwise} \end{cases}$$



MULTIPLE EQUILIBRIA: TWO KEY EQUATIONS

Debt accumulation equation:

$$b_T = (1-\delta)^T \frac{B_0}{P_T} + \frac{P_{T-1}}{P_T} \frac{\chi^{\kappa} \kappa b_0 - \chi^{s} \bar{s}}{Q_{T-1}}$$



MULTIPLE EQUILIBRIA: TWO KEY EQUATIONS

Two equilibria:

No Default equilibrium

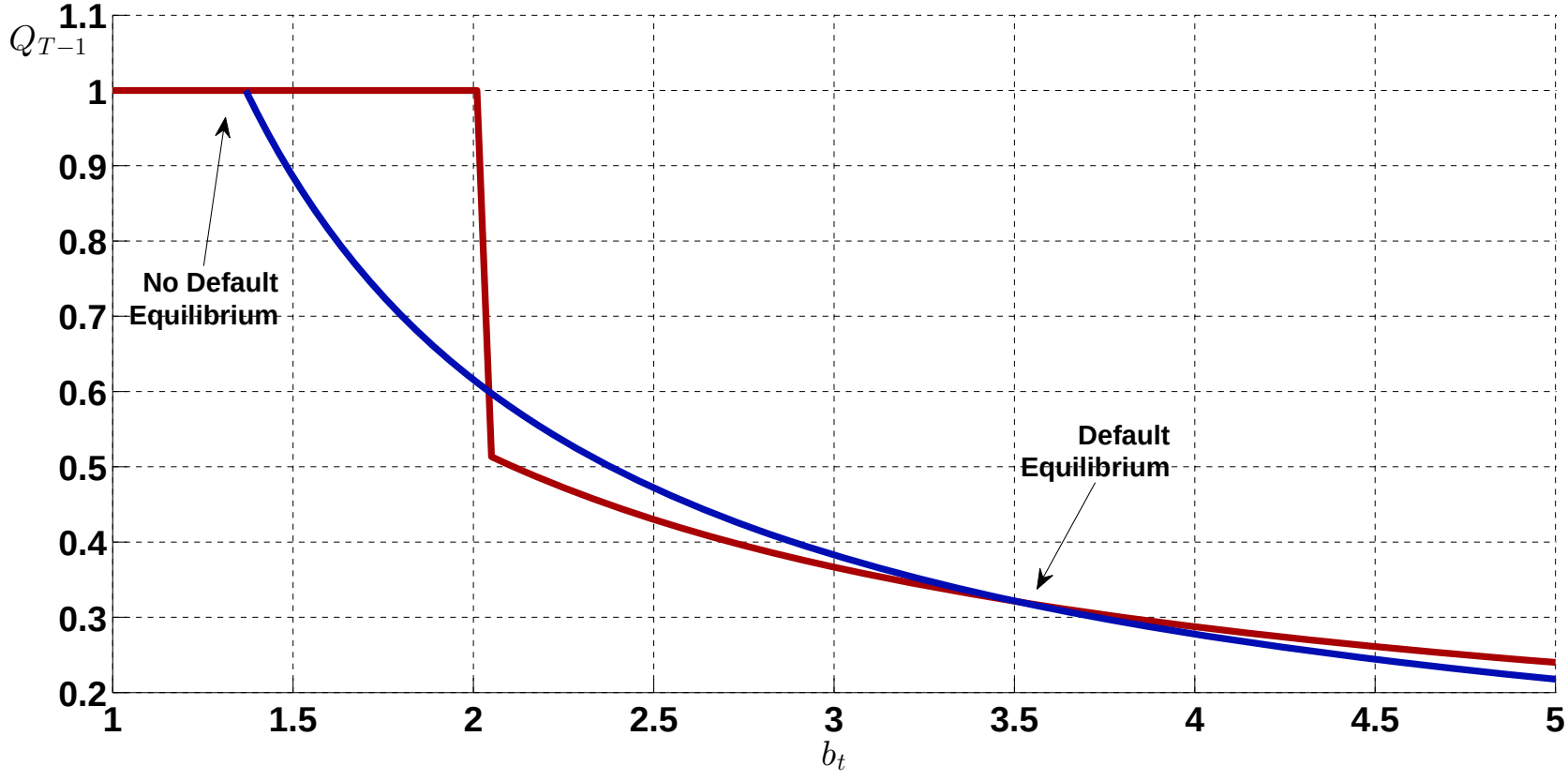
$\Downarrow$

Low spreads, low debt accumulation

Default equilibrium

$\Downarrow$

High spreads, high debt accumulation



WHAT CAN MONETARY POLICY DO?

Ex-ante interventions (from $t = 0, \ldots, T-1$)

Inflation

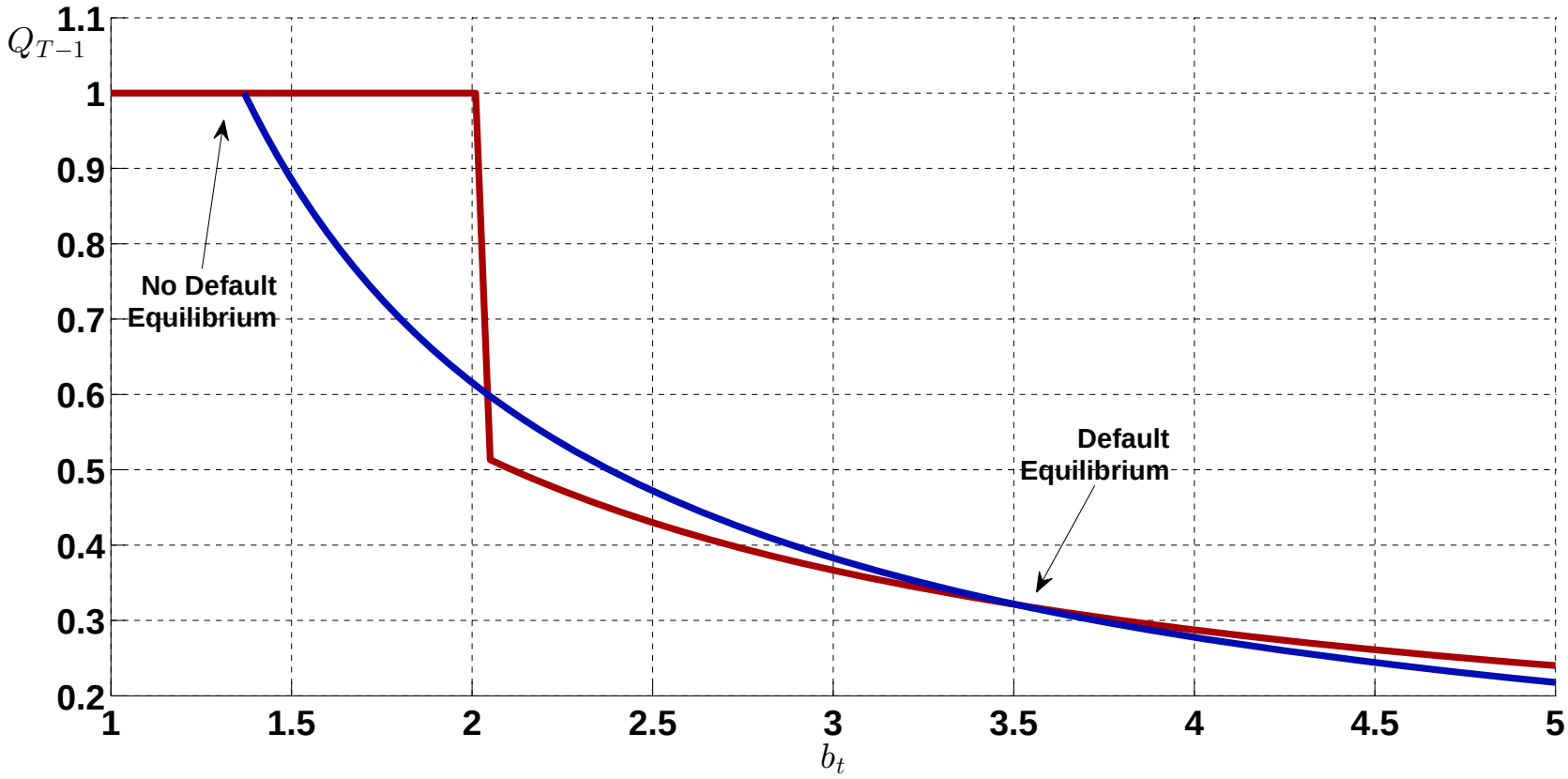
$\Downarrow$

Reduce real value of B_0 and κ

Real rates

$\Downarrow$

Control how fast debt accumulates



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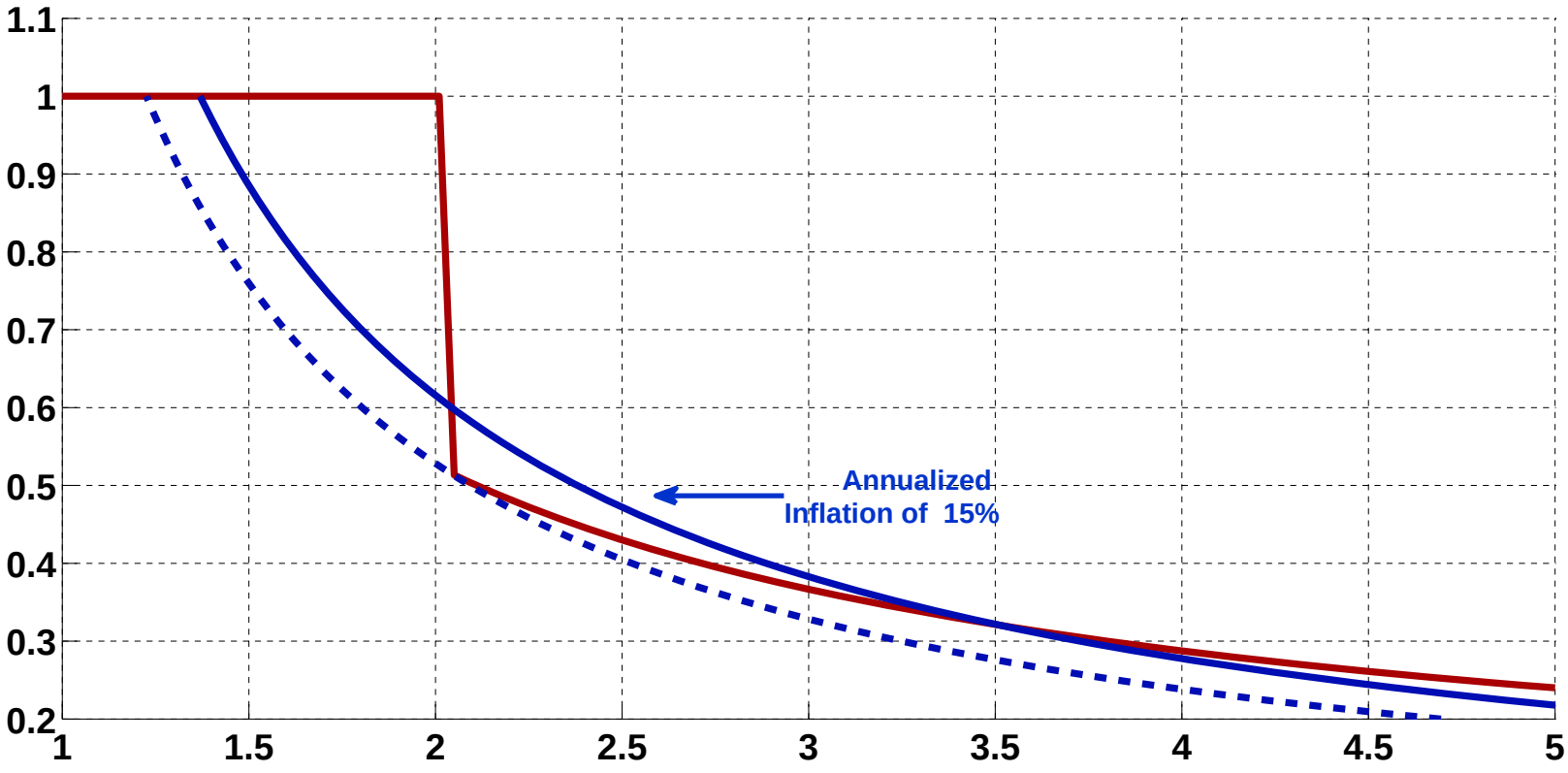


NK Block and Main Results

- Model of inflation and real rates determination, $\{\pi(\{i_t\}_{t=0}^{H}), r(\{i_t\}_{t=0}^{H})\}$
  - What are the paths of inflation and real rates that CB can implement?
  - How costly are these paths from a normative perspective?
- Model calibrated to replicate behavior of inflation in advanced economies

Experiment 1: CB chooses $\{i_t\}_{t=0}^{H}$ at $t = 0$ to minimize loss function, subject to avoiding default at T

- Need “tons" of inflation (price level increases by a factor of 5.3)

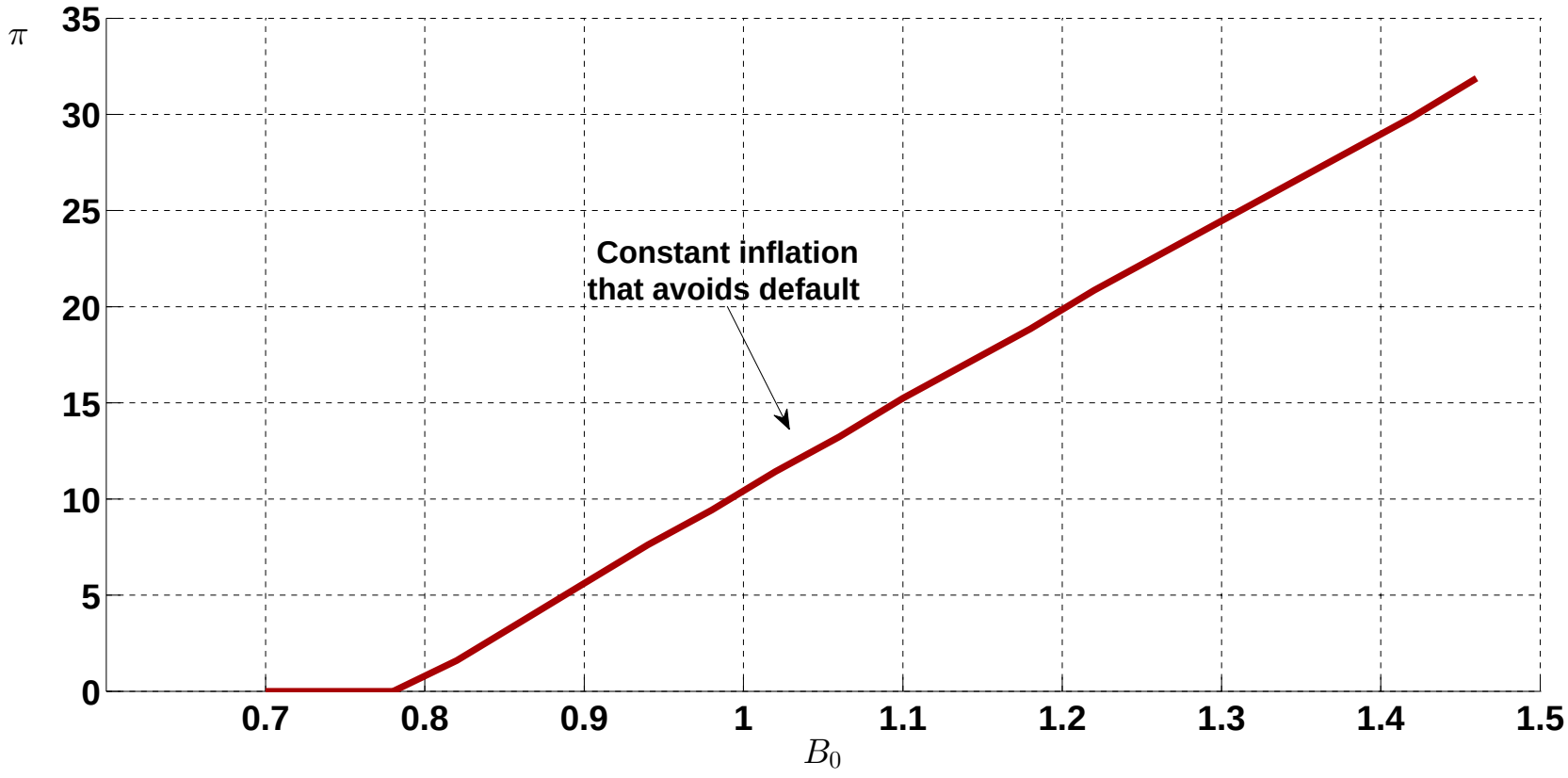
Experiment 2: CB chooses any path for $\{\pi_t, r_t\}_{t=0}^{T}$

- Still unrealistic movements in inflation and output (prolonged periods of low rates $\rightarrow$ output boom through Euler equation)

POINTS FOR DISCUSSION

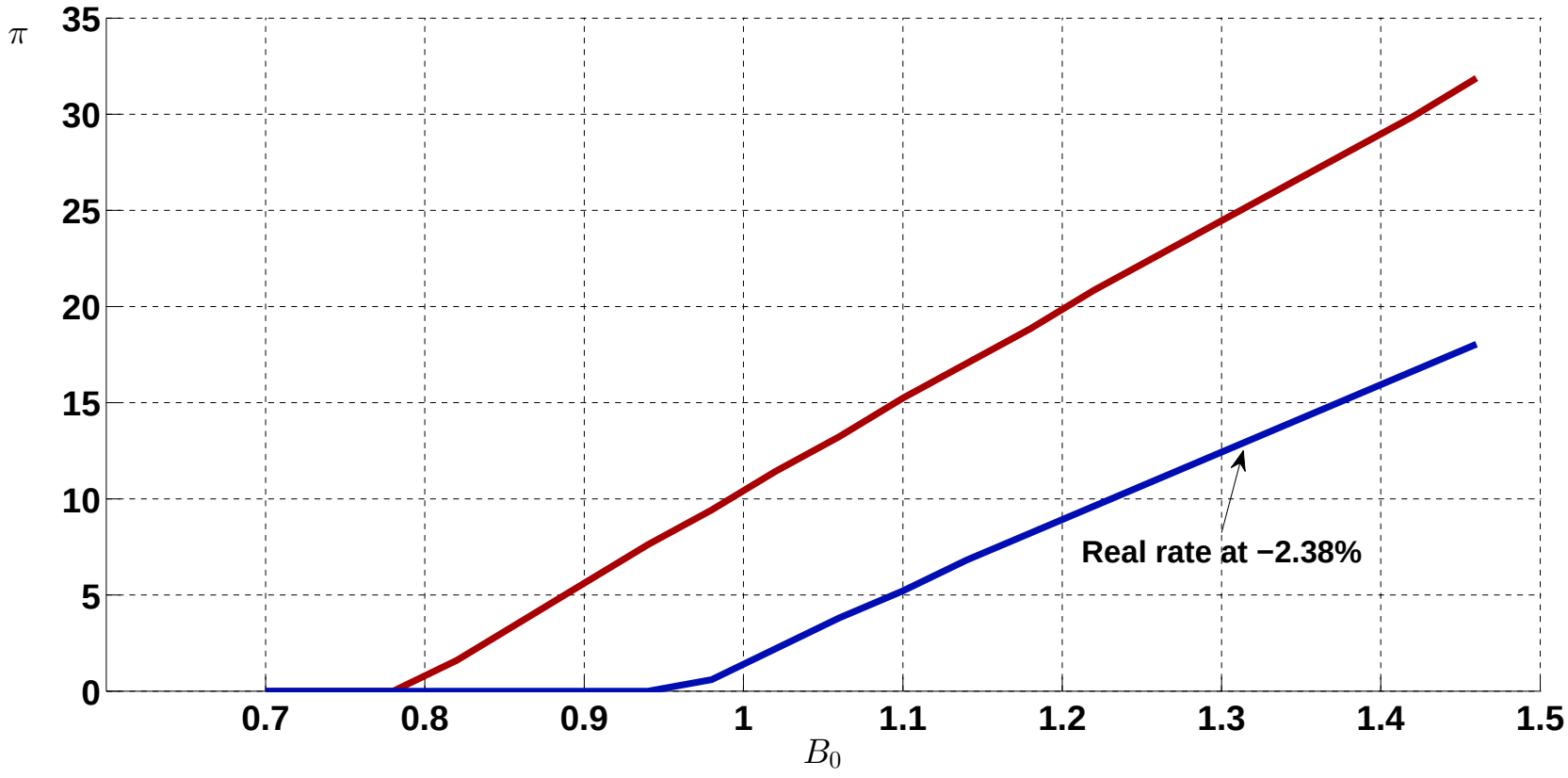
WHAT DO WE NEED TO SLOW DOWN DEBT ACCUMULATION?

Constant π that avoids default keeping real rates at natural level



WHAT DO WE NEED TO SLOW DOWN DEBT ACCUMULATION?

Constant π that avoids default keeping real rates at -2.38%



Inflation **and** low real rates can stabilize debt dynamics

- Italy, 1977-1980: Inflation jumped from 12% to 23%, Real rates -2.38%

RESTRICTIONS FROM NK BLOCK: POSITIVE IMPLICATIONS

Are these paths feasible in the calibrated NK model?

- Strong price rigidities $\Rightarrow$ Hard to get jumps in the inflation rate
- High natural real rate $(4\%) \Rightarrow$ Hard to achieve negative rates

Suggestion: Think about alternative calibration strategy

- Frequency of price changes high in high inflation periods
- 4% for natural real rate appears high. Forwards (5 years) on German bonds were 2% in nominal terms in 2013.
- Document trade-off between inflation and real rates in the model

RESTRICTIONS FROM NK BLOCK: NORMATIVE IMPLICATIONS

How costly are these paths?

- Welfare costs of inflation sensitive to underlying model: E.g. Calvo vs. Menu costs (Coibon et al, 2012; Blanco, 2015)

- Consumption responds excessively to prolonged deviations of real rates from natural level ("Forward guidance puzzle", Del Negro et al., 2012). These deviations are extremely costly

Suggestions:

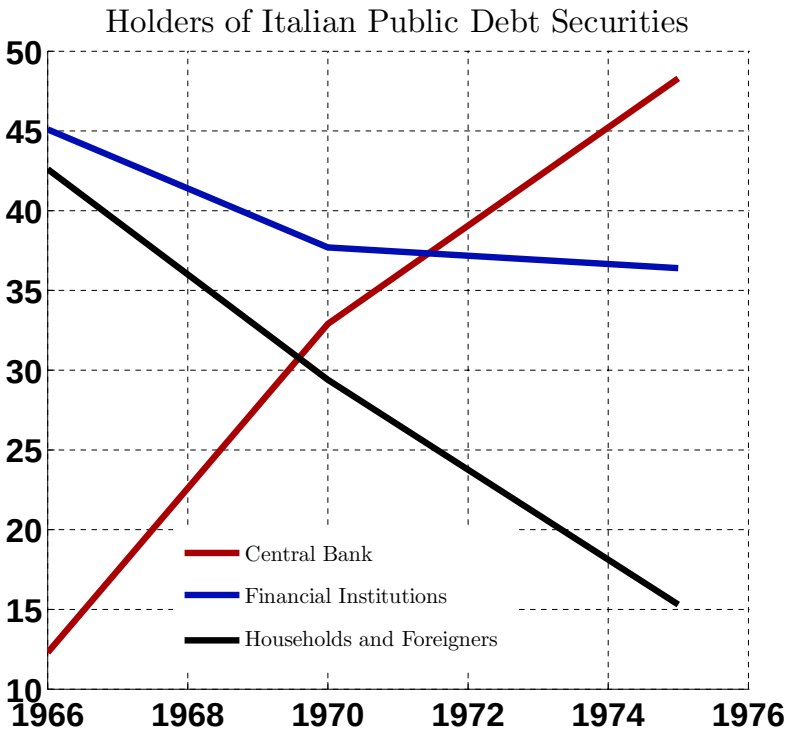
- Hard to check robustness to alternative pricing models?

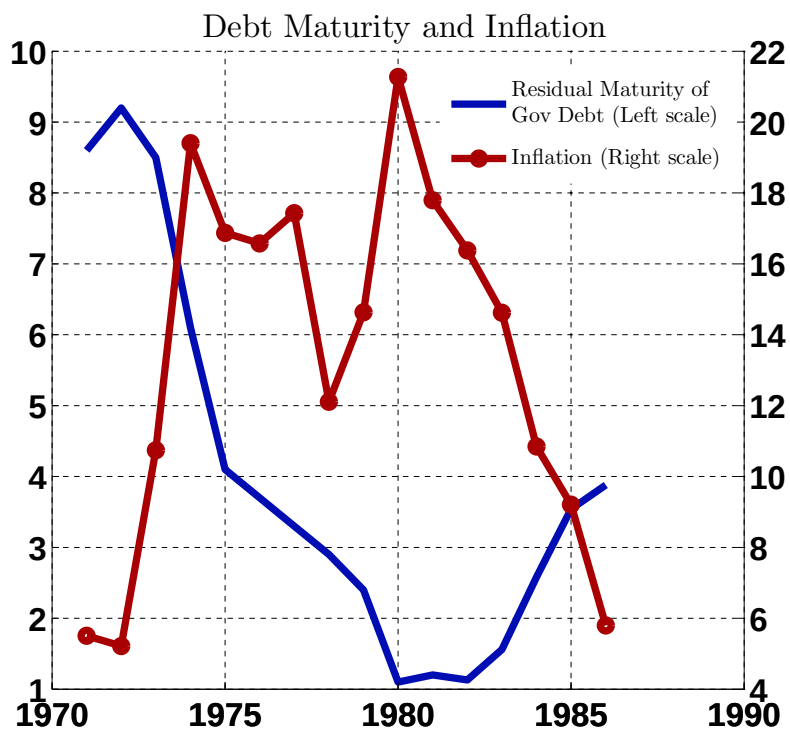
- Match output behavior conditional on prolonged period of low rates

POINT 2: ASYMMETRIES IN THE MODEL

- Gov't lacks commitment and (implicitly) suffers penalties from default
- CB can commit to interest rate path and does not suffer penalties from default through inflation
- Look at experience of advanced economies during high inflation periods

High Inflation in Italy during the 1970s





- "The rapid increase in the level and volatility of inflation inflicted very large capital losses on holders of outstanding public debt and made it increasingly difficult to finance deficits via debt issuances" (Pagano, 1988)
- Shortening of debt duration and time inconsistency (Arellano, Bai and Kehoe, 2013)

POINT 2: ASYMMETRIES IN THE MODEL

- Gov't lacks commitment and (implicitly) suffers penalties from default
- CB can commit to interest rate path and does not suffer direct penalties from default through inflation
- Relaxing these asymmetries likely to make CB problem harder
  - Loss of reputation makes debt financing harder on path
  - Shortening of maturity makes economy more prone to rollover crises (Bocola and Dovis, 2015)
- Suggestion: Make clear that model is intended to be an upper-bound to what CB can do

CONCLUSION

- Ambitious and needed paper

- Suggestions:

  - Refine calibration, perhaps matching the high inflation experience of advanced economies in the 1970s

  - Convey uncertainty surrounding welfare calculations

  - Discussion of why the experiment gives most likely an upper bound