

Comment on: “What Fiscal Policy is Effective at  
Zero Interest Rates?”

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## Role of expectations about policy

- Conventional view of stabilization policy
  - Active Monetary Policy / Passive Fiscal Policy
  - What if conduct of policy and beliefs are otherwise?
- Policy regime perfectly understood
  - Beliefs consistent with policy regime
  - What are the consequences for stabilization policy if they are not?

## Example 1: An Alternative View of Policy

- Plausible assumption:
  - Agents expect interest rates to remain pegged
  - Fiscal policy central arm of stabilization policy
- Implication: Labor income policy is desirable

## New Keynesian Model

- Demand and supply relations

$$x_t = E_t x_{t+1} - \sigma (i_t - E_t \pi_{t+1} - r_t)$$

$$\pi_t = \kappa x_t + \beta \psi \tau_t + \beta E_t \pi_{t+1}$$

where  $\sigma, \psi, \kappa > 0$  and  $0 < \beta < 1$

- Monetary Policy:

$$i_t = 0$$

- Fiscal Policy

- Issue one-period nominal debt  $B_t$  backed by payroll taxation
- Exogenous marginal tax rate evolving as

$$\tau_t = \rho\tau_{t-1} + \varepsilon_t$$

with  $0 < \rho < 1$

## A Labor Income Tax Cut

- Policy configuration: unique bounded rational expectations equilibrium
  - Zero lower bound poses no particular conceptual difficulties
- Consider two kinds of tax cut of unit magnitude
  - Temporary:  $\rho = 0$
  - Persistent:  $\rho = 0.9$

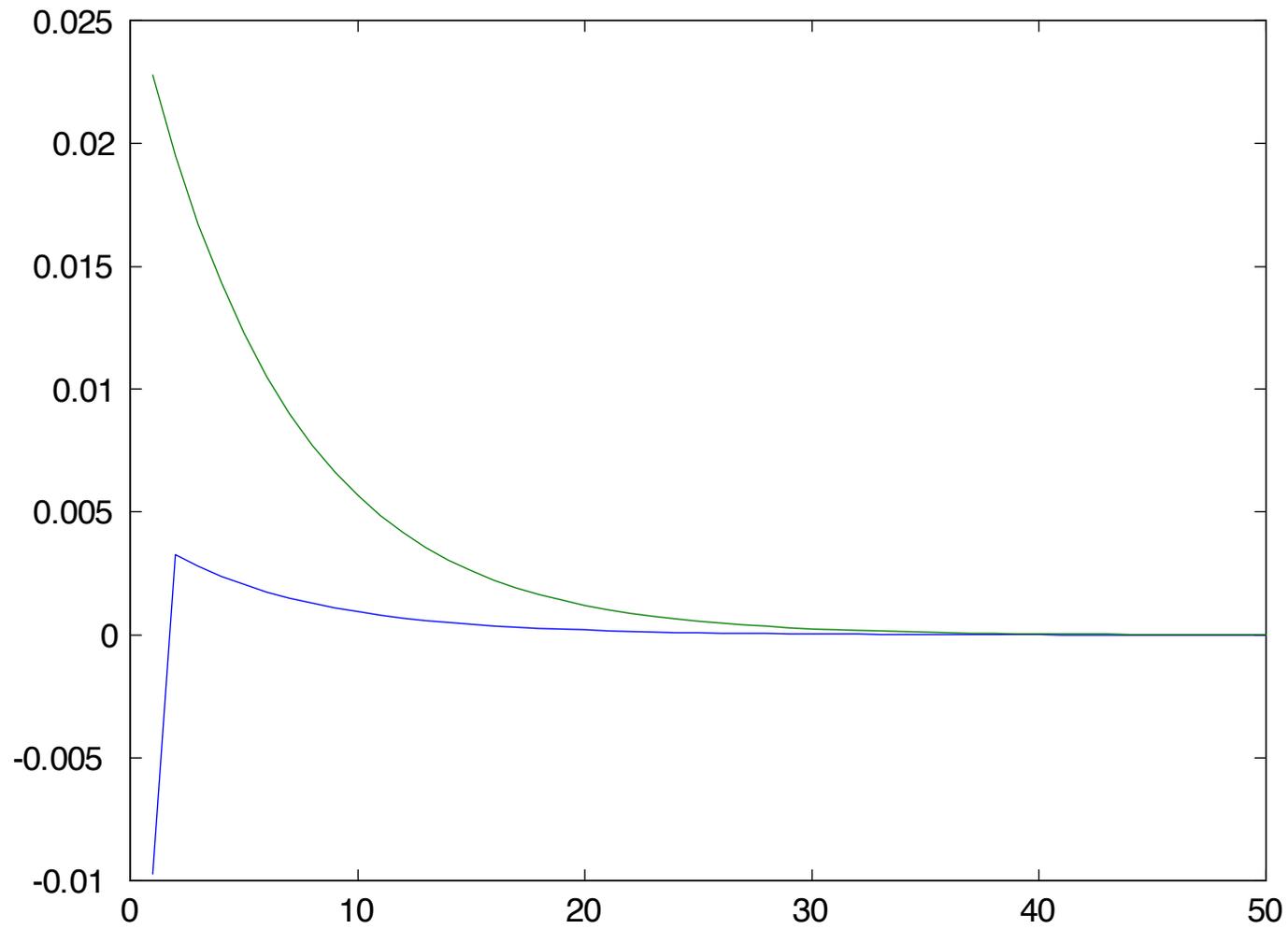


Figure 1: Impulse response functions for inflation and the output gap to a temporary tax shock.

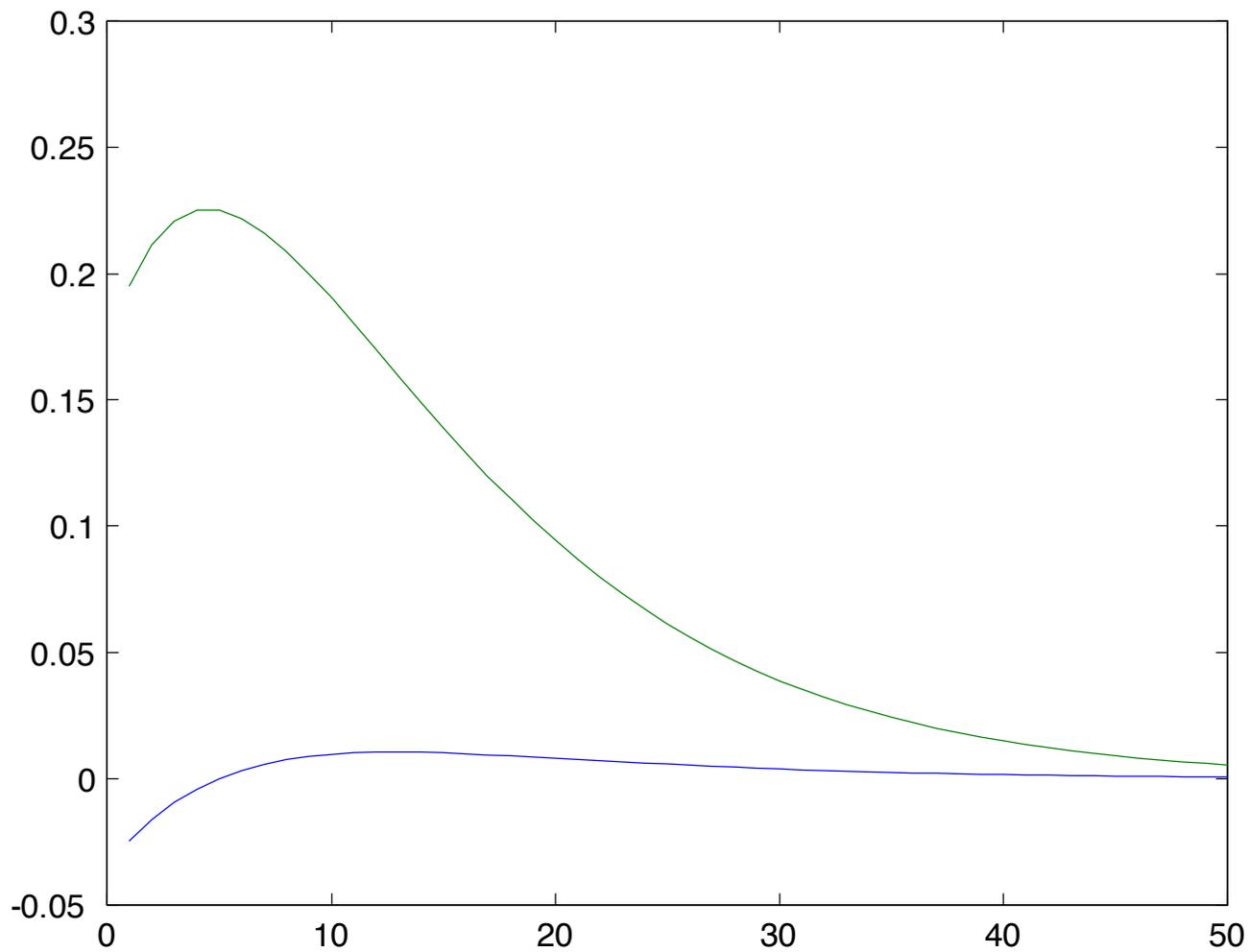


Figure 2: Impulse response functions for inflation and the output gap to a persistent unit tax shock.

## Conclusion I

- There may exist reasons to anticipate future inflation not considered in:
  - The standard New Keynesian framework
  - The standard configuration of policy
- The deflationary effects of labor income policy on marginal costs may be off-set
  - Other examples: multiple models — Cogley and Sargent; fiscal limits
- Multiple regimes unlikely to challenge this thinking
  - Only if policy is actually AM/PF and this is understood by agents

## Example 2: Regime Uncertainty

- Now suppose conventional policy configuration
  - Active Money / Passive Fiscal
- But: Agents uncertain about the details of the fiscal regime
- Question: does this impair stabilization policy?

## Keynesian Model: Arbitrary Beliefs

- Log-linear approximation implies aggregate dynamics

$$x_t = \delta\beta^{-1}(b_t - \pi_t) - \beta^{-1}\delta s_t + \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} [(1-\beta)(x_{T+1} - \delta\tau_{T+1}) - (\sigma - \delta)(i_T - \pi_{T+1}) + \sigma r_T]$$

→ *optimal Consumption Decision Rule*

$$\pi_t = \kappa x_t + \hat{E}_t \sum_{T=t}^{\infty} (\alpha\beta)^{T-t} [\kappa\alpha\beta x_{T+1} + (1-\alpha)\beta\pi_{T+1}]$$

→ *optimal Pricing Decision Rule*

$$b_t = \beta^{-1}(b_{t-1} - \pi_{t-1} - (1-\beta)\tau_{t-1}) + i_{t-1}$$

→ *government flow budget constraint*

- Policy Rules

$$i_t = \phi_\pi \hat{E}_{t-1} \pi_t$$

→ *Monetary Policy*

$$\tau_t = \phi_\tau b_t$$

→ *Tax Rule for Lump-sum Taxation*

– Fiscal authority also specifies average structural surplus-to-output ratio,  $\delta$

## Beliefs

- Agents have statistical model:

$$z_t = \omega_{0,t} + \omega_{1,t}b_t + \varepsilon_t$$

where  $z_t = \{x_t, \pi_t, b_{t+1}, i_t, s_t\}$

- Update their beliefs using ordinary least squares

## Inflation Expectations Shock

- Assume policy configuration is conventional
  - Active Money / Passive Fiscal
- Assume agents understand the monetary policy rule
  - Statistical model is restricted to make policy consistent forecasts
  - Agents do not know tax policy rule
- Compute impulse response functions to a shift in inflation expectations
  - Consider role of average indebtedness:  $4\bar{b}/\bar{Y} = 0, 2.3$
  - Model Property: Beliefs converge to REE

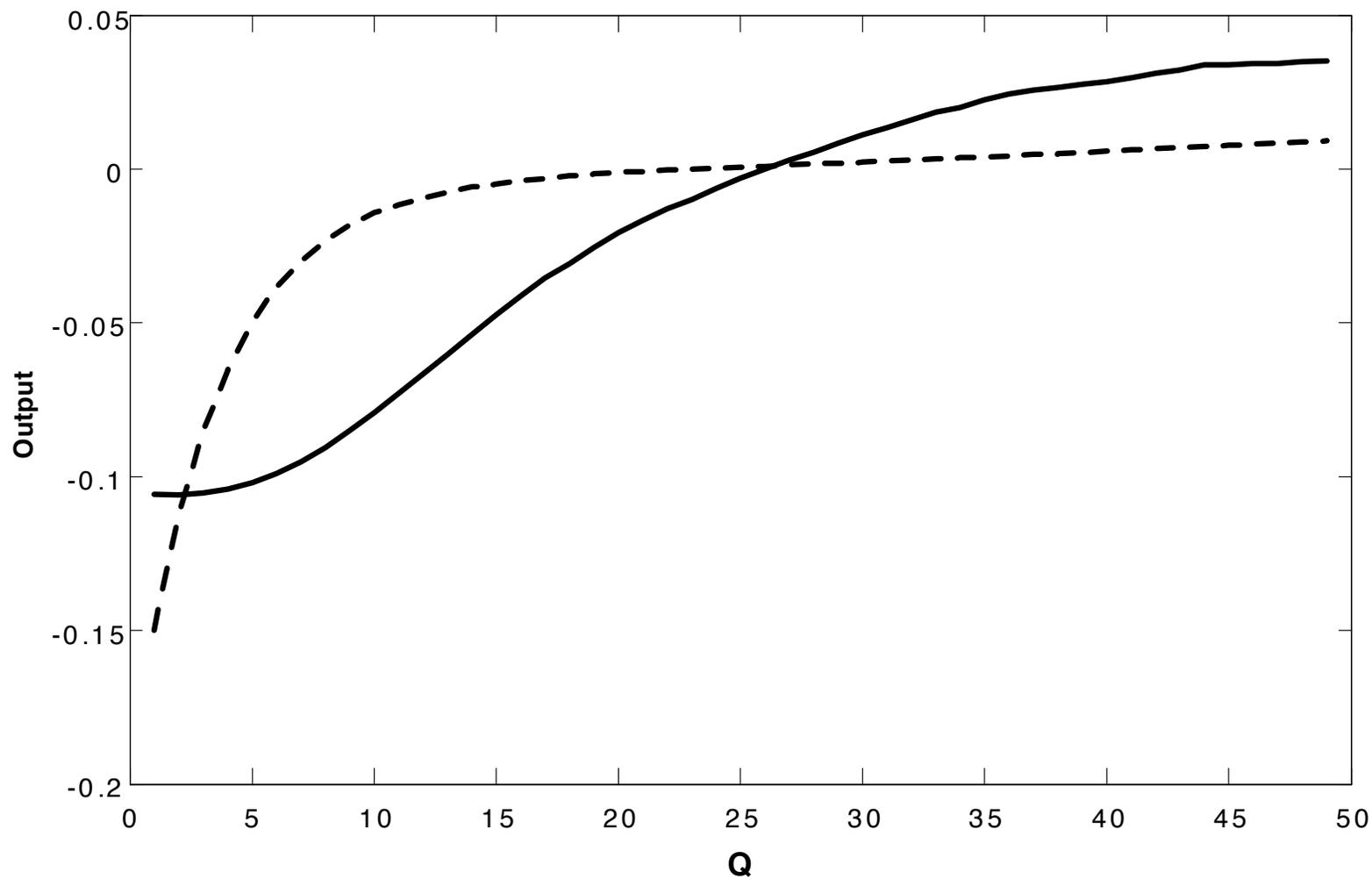


Figure 3: The figure shows the impulse response of output in the high debt economy (solid line) and in the zero debt economy (dashed line).

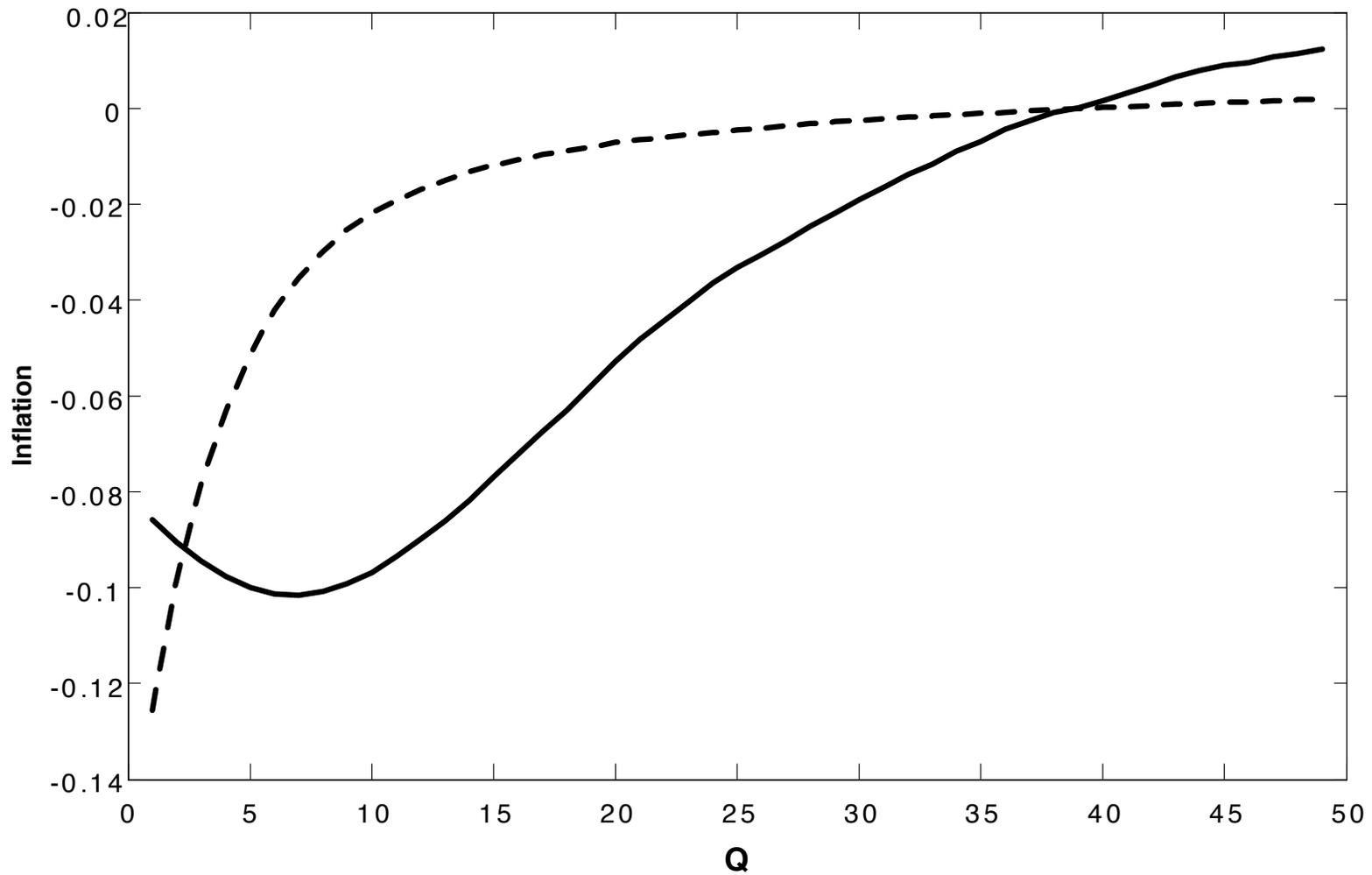


Figure 4: The figure shows the impulse response of inflation in the high debt economy (solid line) and in the zero debt economy (dashed line).

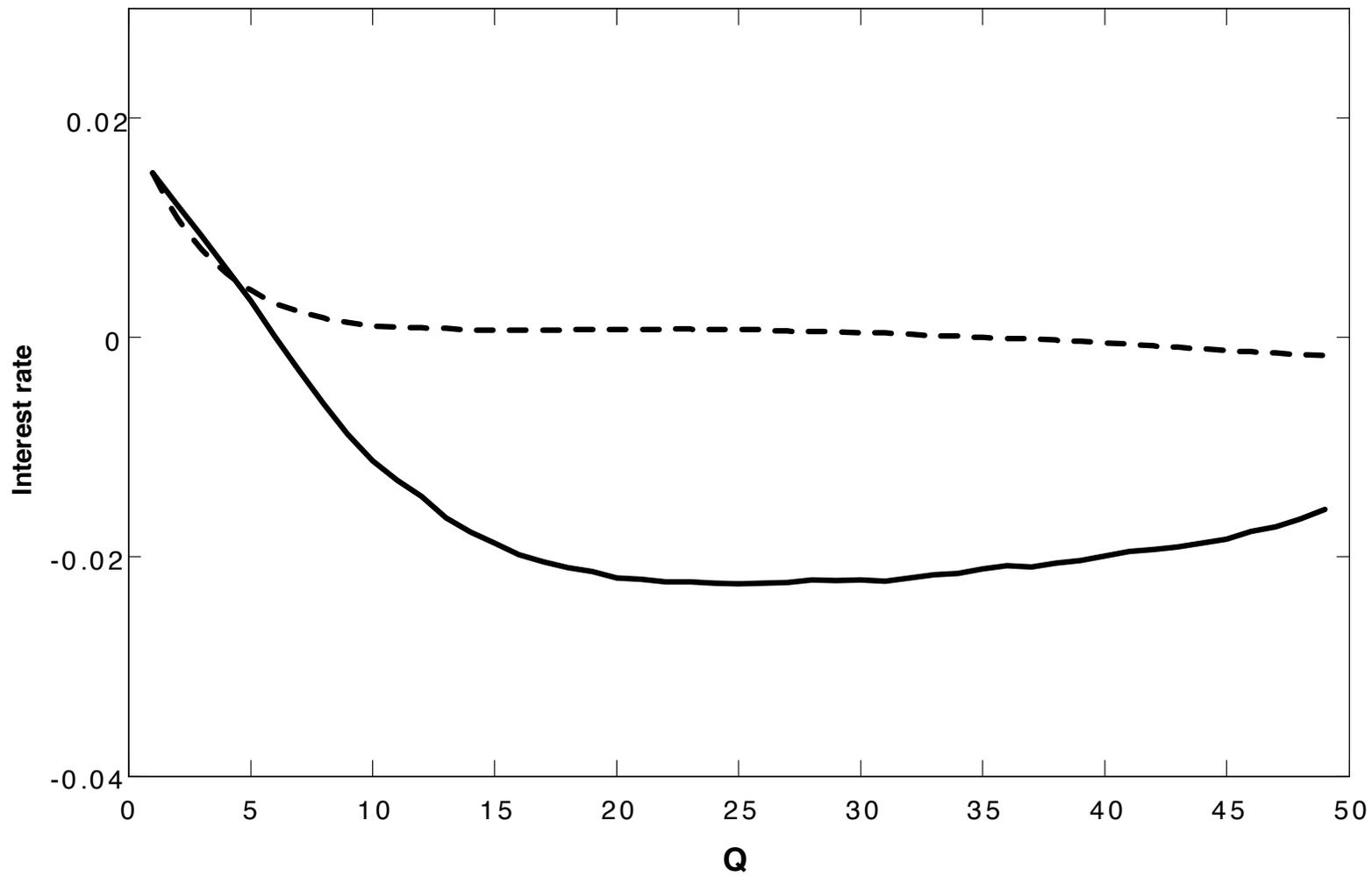


Figure 5: The figure shows the impulse response of the nominal interest rate in the high debt economy (solid line) and in the zero debt economy (dashed line).

## The Role of Indebtedness

- Aggregate demand

$$\begin{aligned}\hat{x}_t &= \delta \left( \beta^{-1} (\hat{b}_t - \hat{\pi}_t) - \beta^{-1} \hat{s}_t + \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} [(\hat{i}_T - \hat{\pi}_{T+1}) - (1 - \beta) \hat{s}_{T+1}] \right) \\ &\quad + \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} [(1 - \beta) \hat{x}_{T+1} - \sigma (\hat{i}_T - \hat{\pi}_{T+1}) + \sigma r_T] \\ &= \Psi_{\delta,t} + \Psi_{R,t}\end{aligned}$$

- Define long real rate

$$\rho_t = \hat{E}_t \sum_{T=t}^{\infty} \beta^{T-t} (\hat{i}_T - \hat{\pi}_{T+1})$$

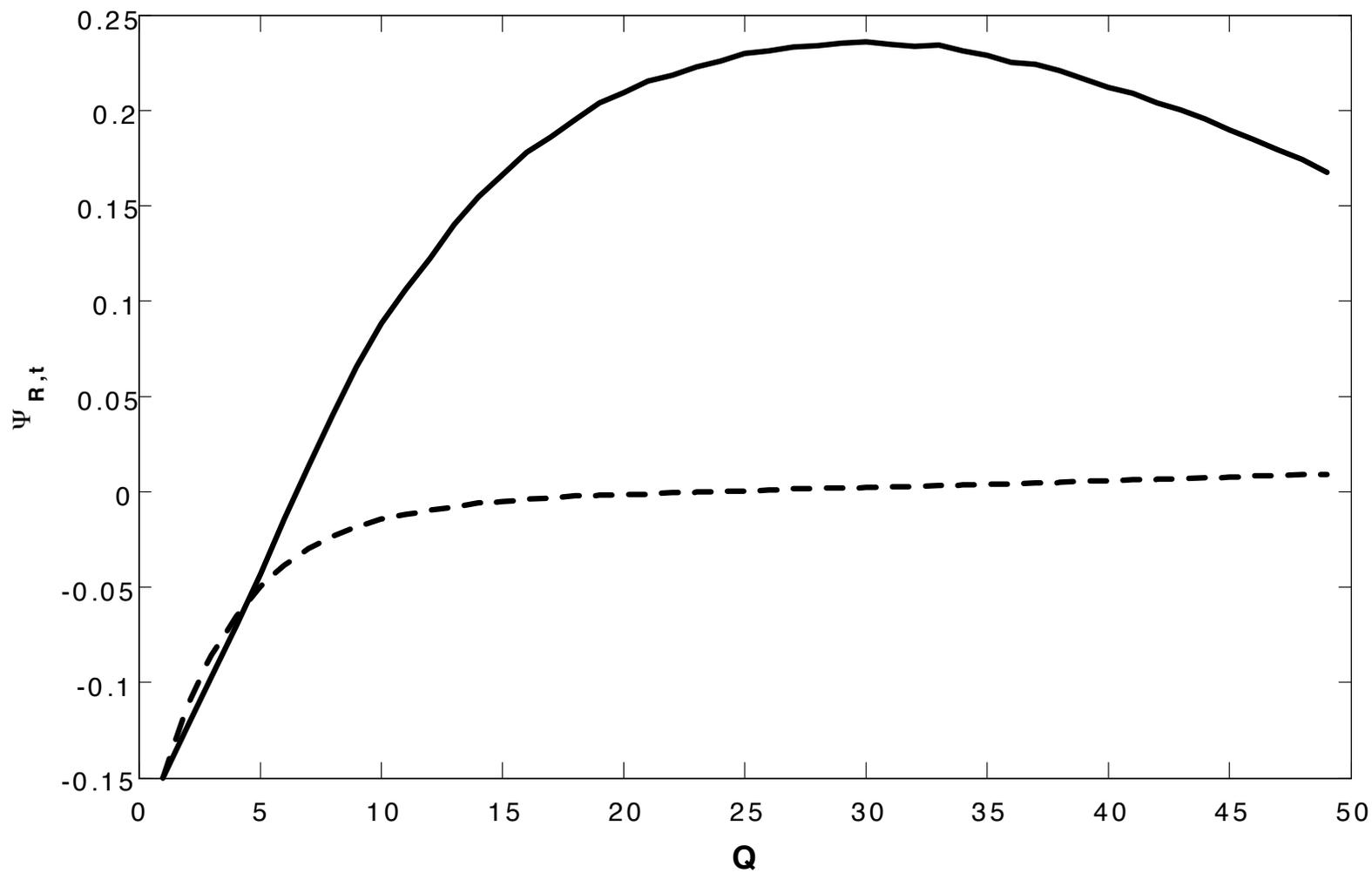


Figure 6: The figure shows the impulse response of the ricardian term  $\Psi_{R,t}$  in the high debt economy (solid line) and in the zero debt economy (dashed line).

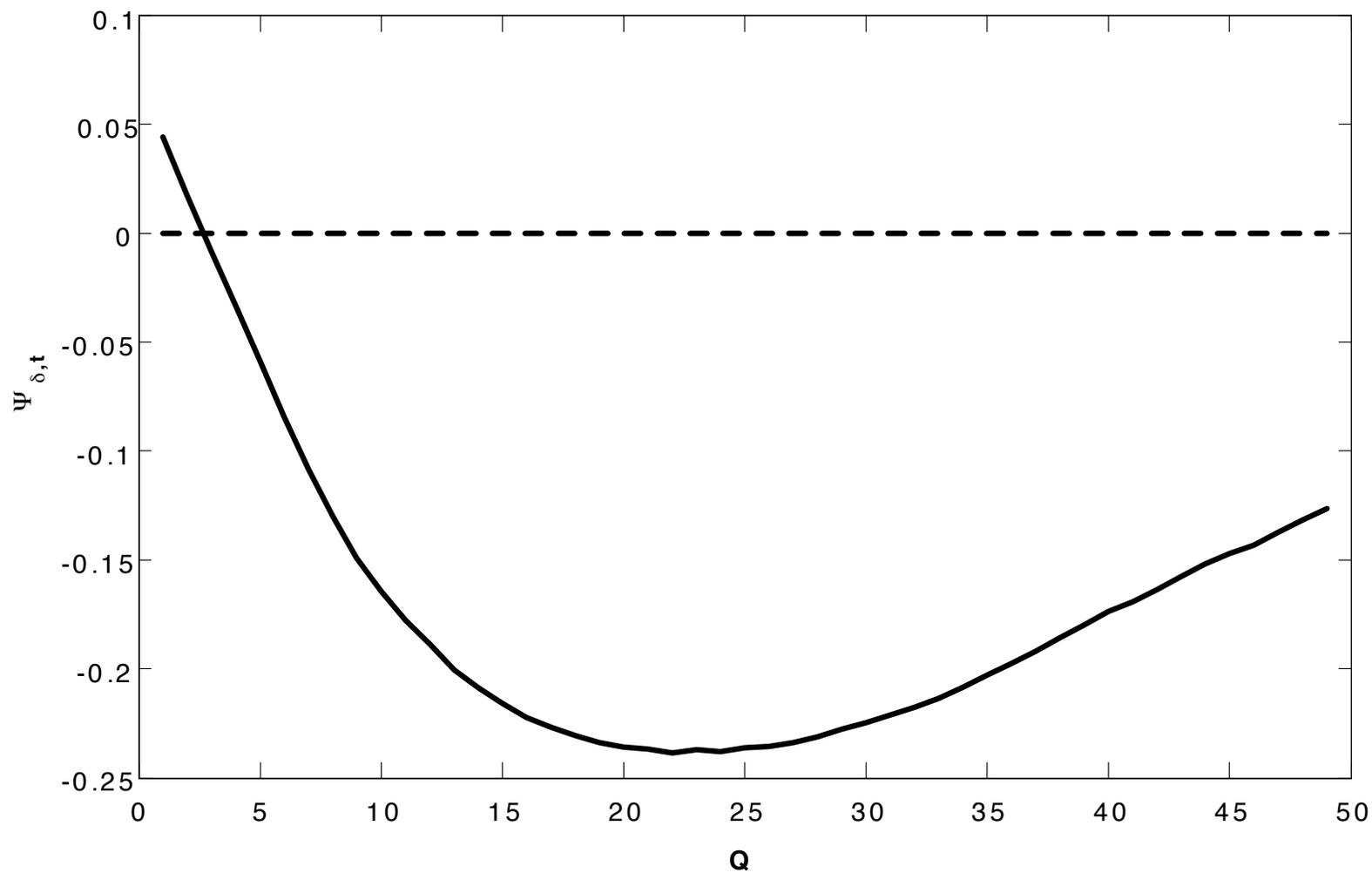


Figure 7: The figure shows the impulse response of the nonricardian term  $\Psi_{\delta,t}$  in the high debt economy (solid line) and in the zero debt economy (dashed line).

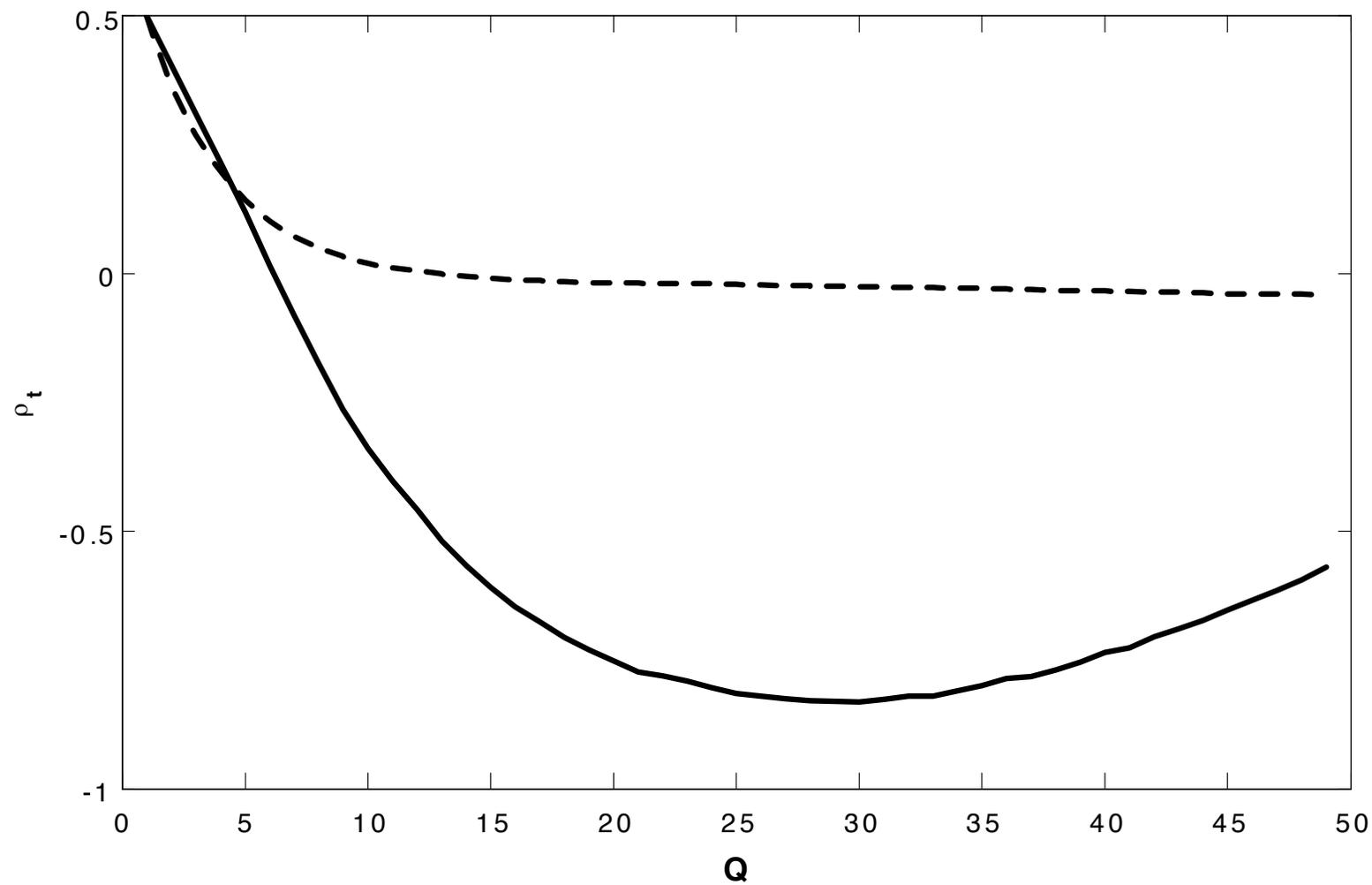


Figure 8: The figure shows the impulse response of the expected long-term interest rate  $\rho_t$  in the high debt economy (solid line) and in the zero debt economy (dashed line).

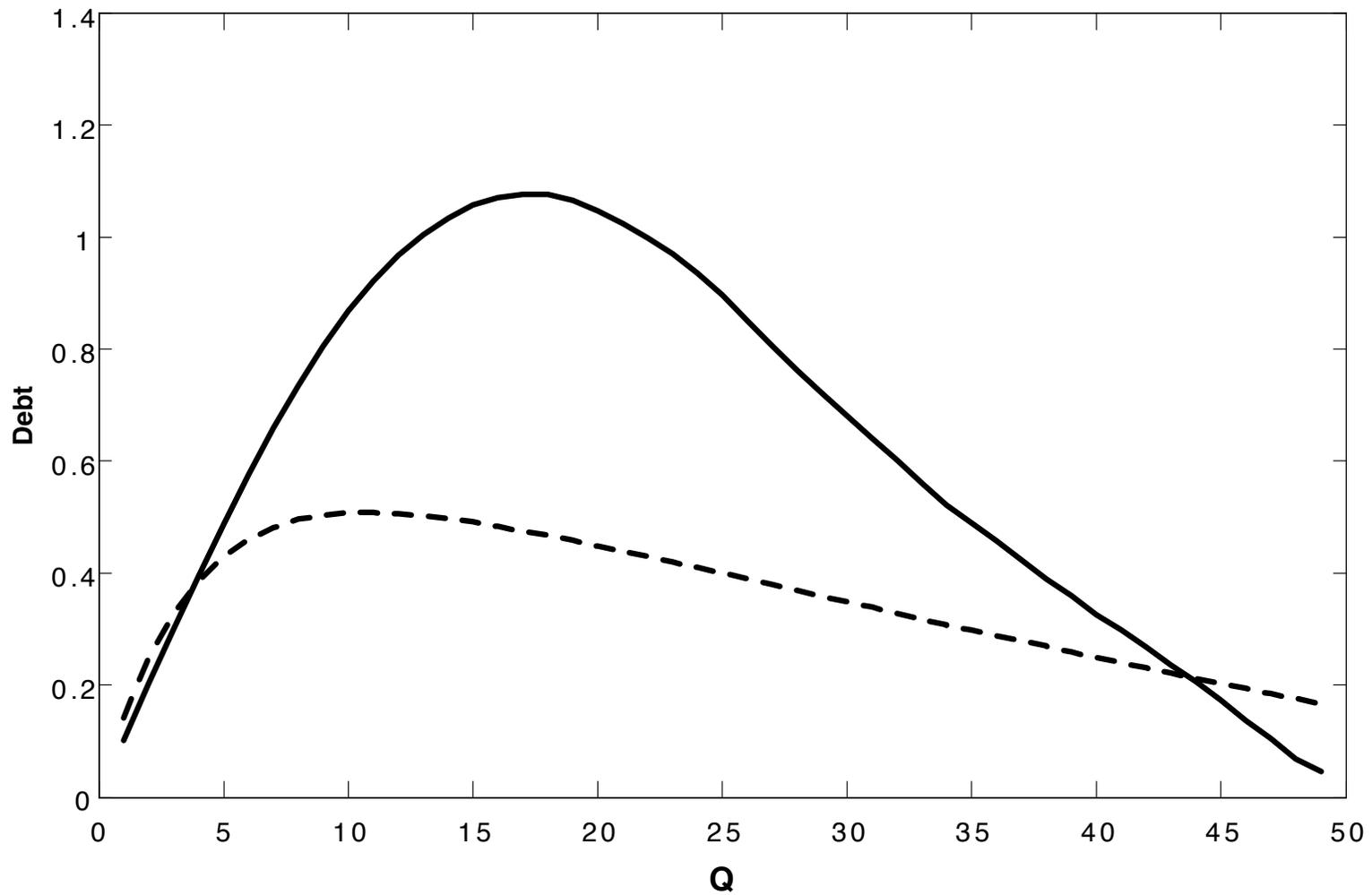


Figure 9: The figure shows the impulse response of real debt in the high debt economy (solid line) and in the zero debt economy (dashed line).

## Conclusion II and Final Remarks

- Model has the property that indebtedness constrains efficacy of policy
  - Raises questions about the likely magnitude of any multiplier
- Elegant paper
  - Clarifies mechanisms by which policy may be stimulatory under conventional assumptions
  - Question: are we in conventional times?