Discussion
"Global Dynamics at the Zero Lower Bound"

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Global Dynamics at the Zero Lower Bound

Very interesting and well-executed paper

Contribution: Rigorous modeling of a zero lower bound economy

Effects of recent downturn lasting longer than expected

Rigorous modeling is key first step to explaining recent outcomes

Why can technological improvements be contractionary?

Aggregate demand curve has **positive** slope at zero lower bound

Use linearized AS-AD model to build intuition

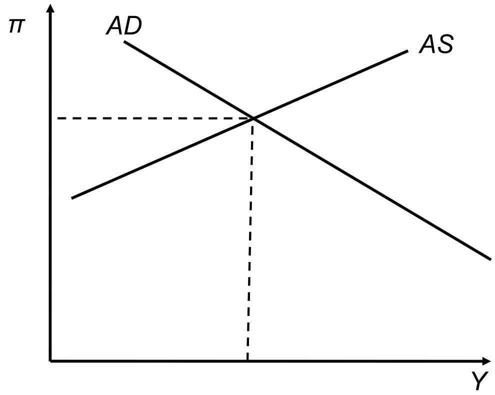
$$\pi_t = \beta E_t \pi_{t+1} + \psi_y y_t - (1-\eta)\,\psi z_t - \psi a_t$$

$$y_t = E_t y_{t+1} - \Big((r_t - r) - E_t \pi_{t+1} \Big) + (1-\rho_a)\, a_t$$

$$r_t = \text{max}\ \Big(0, r + \phi_\pi \pi_t + \phi_y y_t \Big)$$

Aggregate Demand Away From Zero Lower Bound

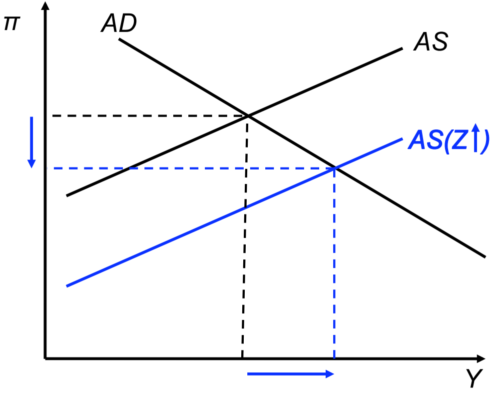
$$\left(1+\phi_y+\frac{\psi_y}{\beta}\right)y_t \quad = \quad E_t y_{t+1}-\left(\phi_\pi-\frac{1}{\beta}\right)\pi_t+\left(\text{Shocks}\right)$$



Declines in π_t offset with lower real rates which raises Y_t

Technology Shock Away From Zero Lower Bound

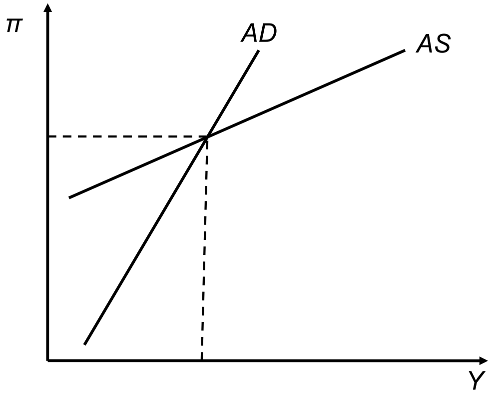
$$\left(1+\phi_y+\frac{\psi_y}{\beta}\right)y_t \quad = \quad E_t y_{t+1} - \left(\phi_\pi - \frac{1}{\beta}\right)\pi_t + \left(\text{Shocks}\right)$$



Higher technology lowers π_t & raises Y_t with policy accommodation

Aggregate Demand At Zero Lower Bound

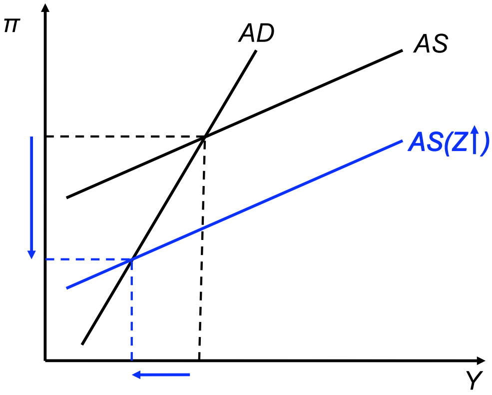
$$\left(1+\frac{\psi_y}{\beta}\right)y_t \quad = \quad E_t y_{t+1} + \frac{1}{\beta}\pi_t + \left(\text{Shocks}\right)$$



Declines in π_t cannot be initially offset which raises real rates

Technology Shock At Zero Lower Bound

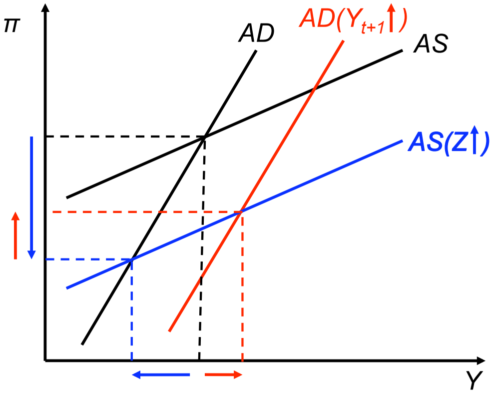
$$\left(1 + \frac{\psi_y}{\beta}\right) y_t = E_t y_{t+1} + \frac{1}{\beta}\pi_t + \left(\text{Shocks}\right)$$



Higher technology can cause larger disinflation & output losses

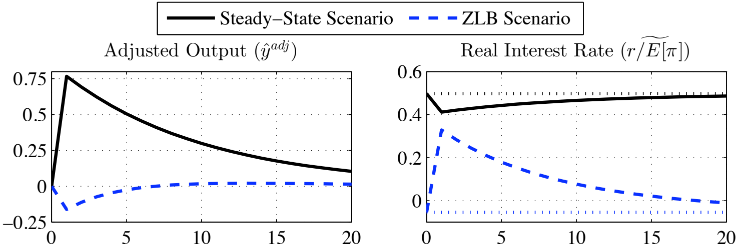
Discussion: Focus on Expectations About Future

$$\left(1+\frac{\psi_y}{\beta}\right) y_t \quad = \quad E_t y_{t+1} + \frac{1}{\beta}\pi_t + \Big(\text{Shocks}\Big)$$



Expectations about future crucial in determining effects of shocks

Assumptions About Zero Lower Bound Duration

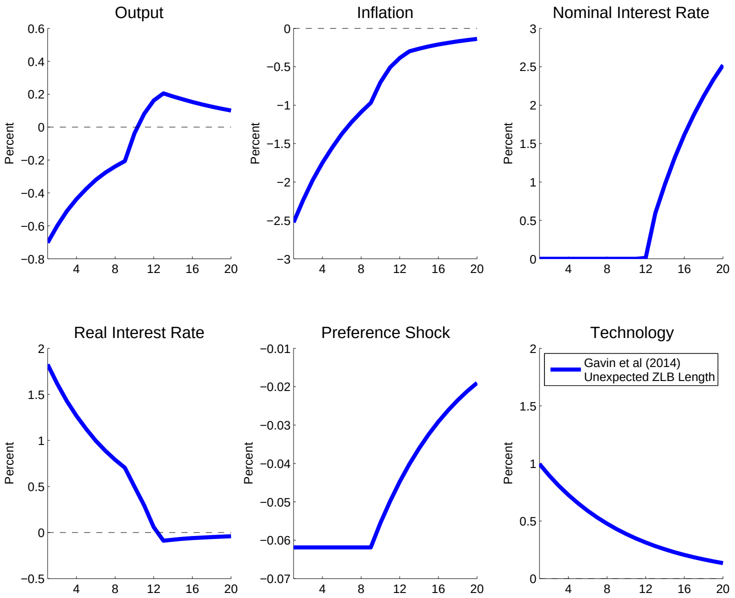


Assume preference shock is **constant** in impulse responses
$\Rightarrow$ Agents expect zero lower bound exit within 1-2 periods

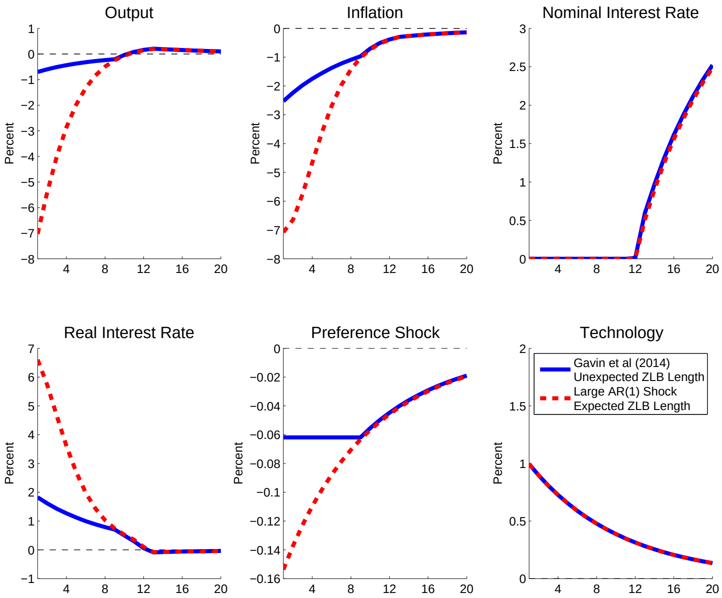
Economy surprised by zero lower bound duration every period

Comment: What is the "right" zero lower bound scenario?

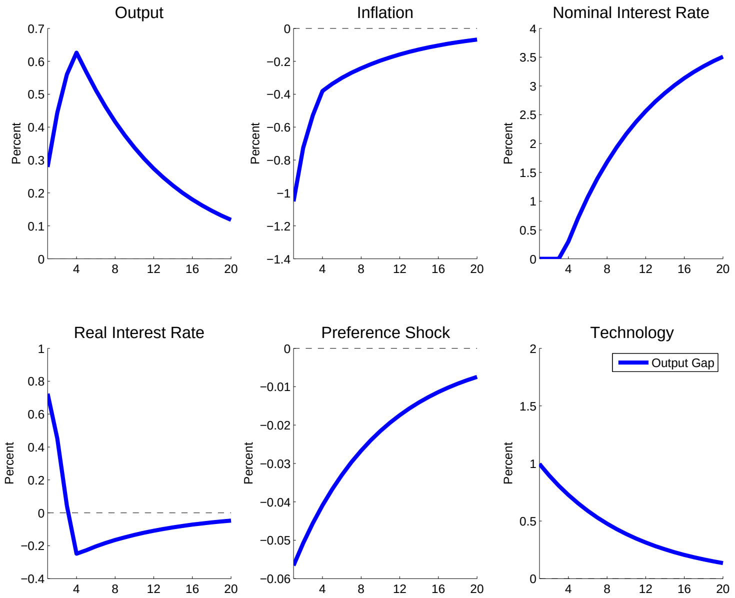
Unexpected Long Zero Lower Bound Episode



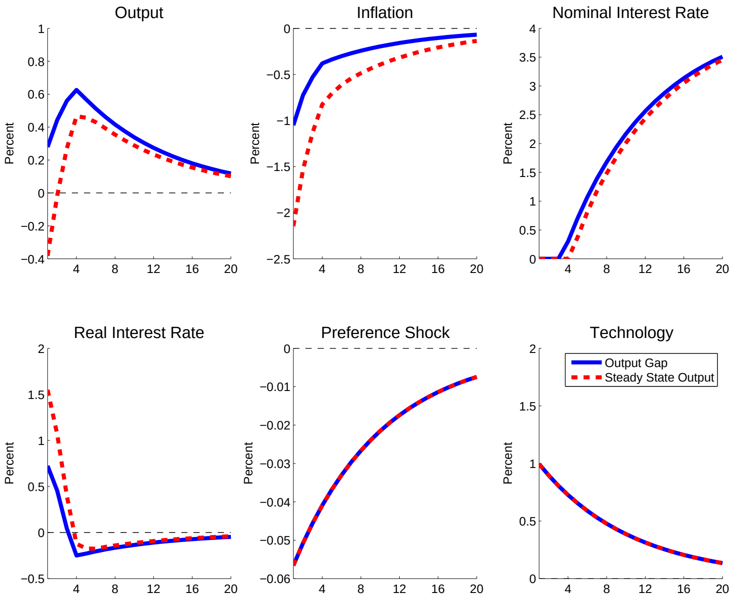
Expected Long Zero Lower Bound Episode



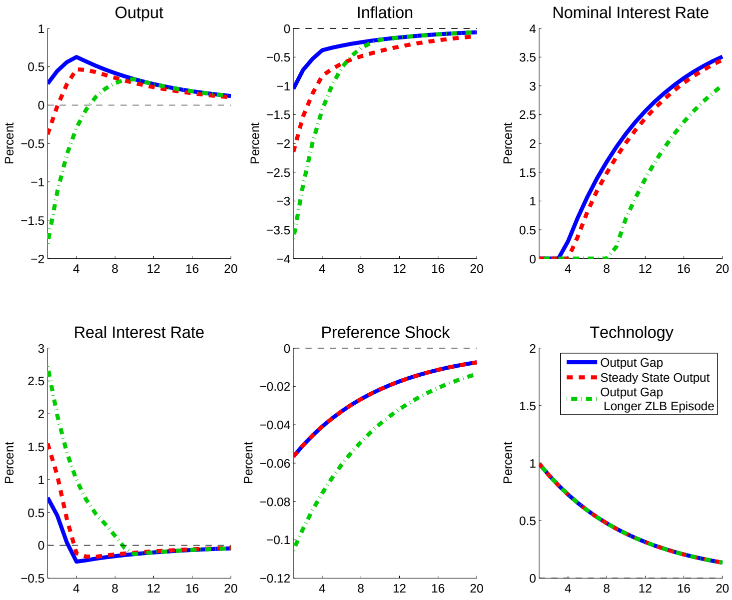
Central Bank Responds to Output Gap



Central Bank Responds to Steady State Output

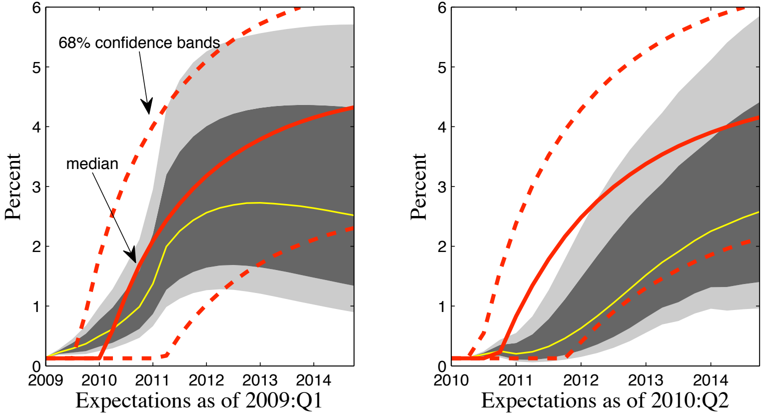


Output Gap Response - Longer Zero Lower Bound Episode



Expectations About Current Zero Lower Bound Duration

Gust, Lopez-Salído, and Smith (2013)
Model-implied (Red) & Futures Markets (Gray)



Expected duration increased markedly with “late-2014” language

Comments

Use an alternative zero lower bound scenario

1. Use expectations from data at a given point
2. Use "average" scenario from model simulations
3. Show robustness under variety of scenarios

Decomposing differences between linear & nonlinear model

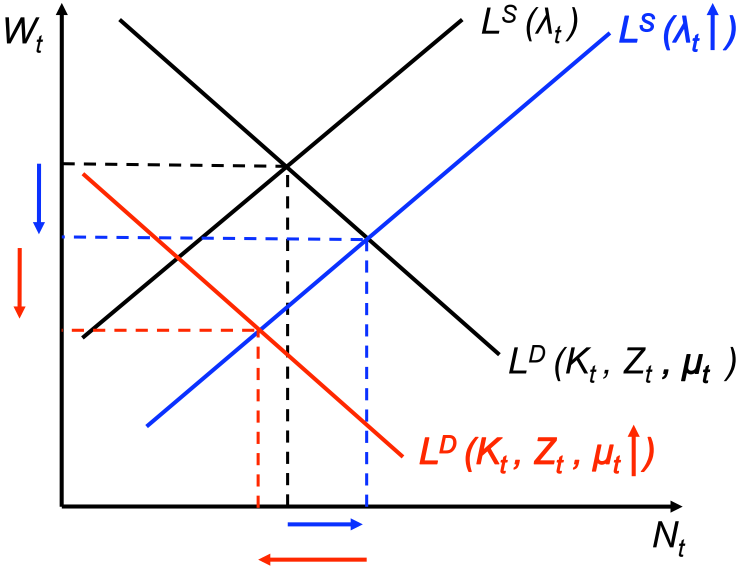
1. Role of quadratic adjustment costs
2. Precautionary labor supply
    - Away from zero lower bound
    - Additional downside risk implied by the zero lower bound

Solve linear with nonlinear costs or nonlinear with quadratic utility

Very nice and well-executed paper

Additional Details

Precautionary Labor Supply



Precautionary Labor Supply Without Capital