The Information-Driven Financial Accelerator

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Disclaimer: The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Federal Reserve Board of Governors or the Federal Reserve System.

- Empirically, it is well-known that credit spreads are large, volatile and countercyclical (Gilchrist and Zakrajsek, 2012; Greenwood and Hanson, 2013)

- What are the sources of credit market and macroeconomic fragility?

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- This paper shows that imperfect information in credit markets is a strong force behind credit cycles.
  - Debt investors are uninformed about firms' creditworthiness
  - Update beliefs using publicly-available forecasts of profit outlook

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$$\Downarrow$$

Bond prices move in response to the arrival of noisy information, not just to changes in fundamentals.

- Policies that help to anchor investors' expectations could have substantial financial stability benefits.

New Fact

Changes in professional forecasters' expectations of quarter-ahead corporate profit

$$\text{rev}_t = \mathrm{E}_t\left[\pi_{t+1}\right] - \mathrm{E}_{t-1}\left[\pi_{t+1}\right]$$

jointly predict:

- excess corporate bond returns
- macroeconomic aggregates

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$$R_{t\to t+k} = \alpha + \beta \underset{\sigma_t}{\text{rev}_t} + \gamma \text{controls}_t + u_{t+k}$$

The combined effect of $\Downarrow$ rev_t and $\Uparrow$ σ_t during 2007 financial crisis:

- spreads $\Uparrow$ 80 basis points

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The combined effect of $\Downarrow$ rev_t and $\Uparrow$ σ_t during 2007 financial crisis:

- spreads $\Uparrow$ 80 basis points
- investment $\Downarrow$ 1 percentage point and GDP $\Downarrow$ 40 basis points

Dynamic Model with Financing and Investment

Costly debt financing

- default risk

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Costly debt financing + Imperfect information

- default risk

- investors do not observe firm's state

$$z_t = \rho_z z_{t-1} + \varepsilon_t^z$$

- learn from a noisy public signal

$$s_t = \varepsilon_t^z + u_t$$

using a Kalman filter

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Costly debt financing + Imperfect information $\Longrightarrow$ Amplification

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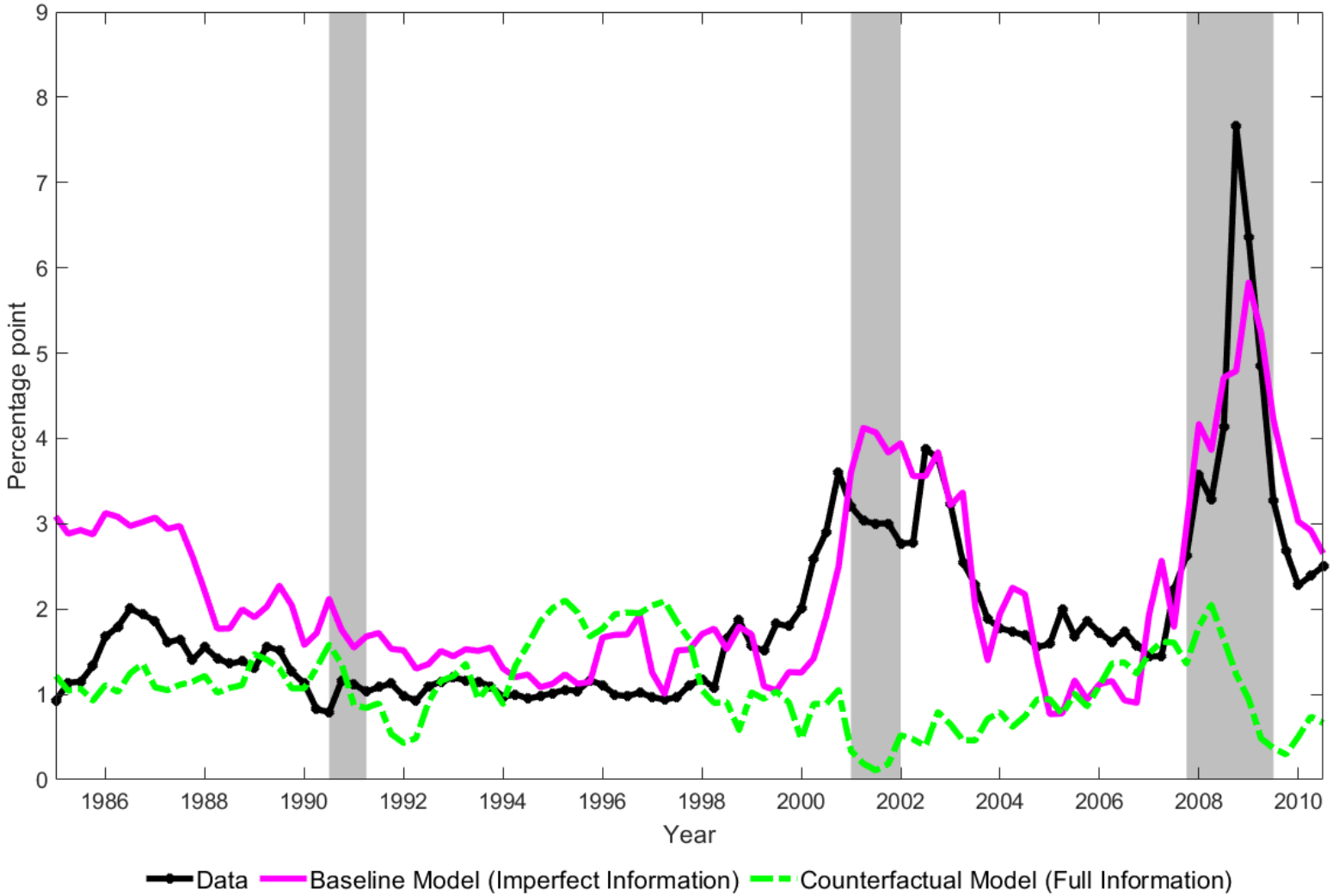
Model-based counterfactual for 2007 financial crisis:

- 1/2 of increase in spread
- 1/5 of contraction in aggregate investment

} from noisy signals

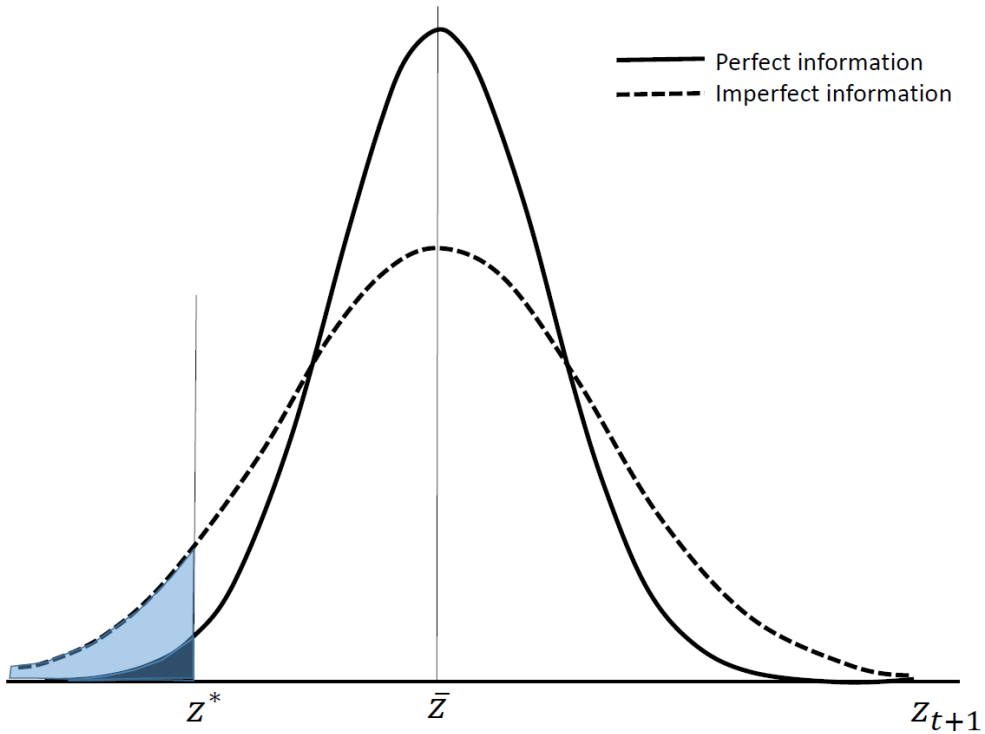
Historical Bond Spread: Data vs. Model



Imperfect information model matches the size and cyclical variation of credit spreads

Information uncertainty:

1. higher mean spread

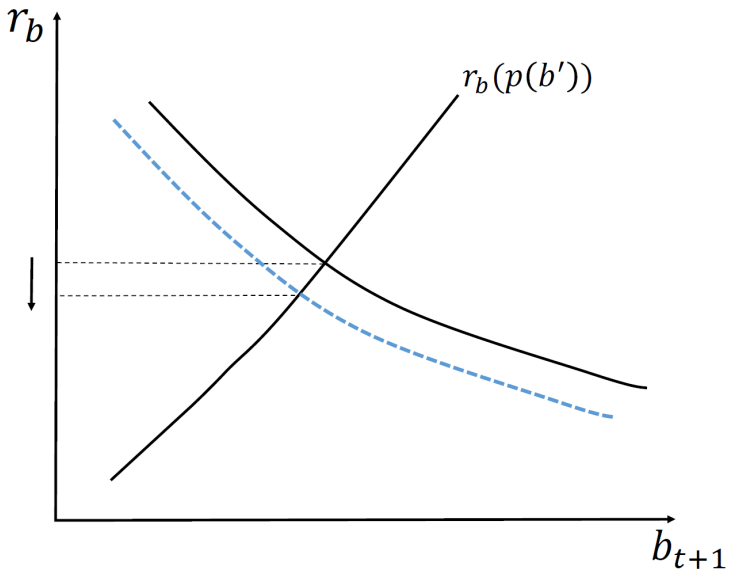


subjective default probability $>$ actual default probability

Information uncertainty:

1. higher mean spread
2. countercyclical defaults and spreads

Only financial frictions



- default probability p increasing in b'
- lending schedule $r_b(p)$ increasing in b'
- recession $\Downarrow \rightarrow$ deleveraging $\rightarrow$ $r_b \Downarrow$ $b' \Downarrow$ (first-order effect)

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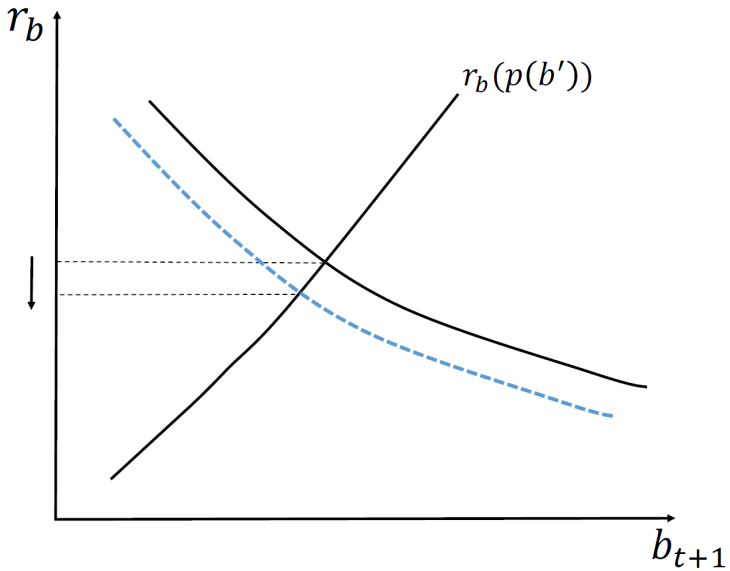

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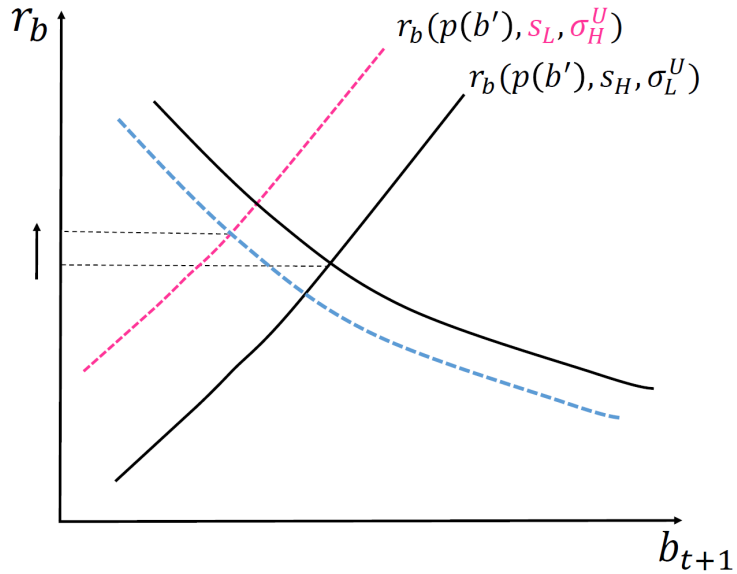
Financial frictions + information frictions



- lending schedule shifts to the left due to: (i) bad signal (s_L), (ii) noisy signal ($\sigma_u \Uparrow$) in recession $\longrightarrow r_b \Uparrow$ & $b' \Downarrow$

Microdata:

- IBES: firm-level estimates of earning forecasts
- ICE/IDC and Warga: bond-level spreads
- Compustat

} 5,000 bonds & 10,000 firms (1982-2010)

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More direct support for our mechanism:

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$\Longrightarrow$ Imperfect information in credit markets is a quantitatively important source of macroeconomic fragility.