

## RESEARCH QUESTION

### Background

- Asym info leads to misallocation of capital and finance... but it is hard to quantify.
- This paper focuses on asym info about firm's persistent productivity between informed borrowers (firms) and uninformed creditors (bondholders).

**How large is welfare loss created by asym info in corporate bond markets?**

### Mechanism

**Cross-subsidization**

low (high) productivity firms overissue (underissue) corporate bonds and overinvest (underinvest) in capital compared to full info.

**Signaling**

leverage and equity send positive signal to uninformed lenders.

"Good" ("Bad") reputations lowers (higher) interest rates of corporate bonds.

**Reputation Building (Diamond 1991) = Dynamic Learning**

Intuition of signaling: higher leverage and equity indicate marginal productivity of capital is higher given decreasing returns to scale production technology.

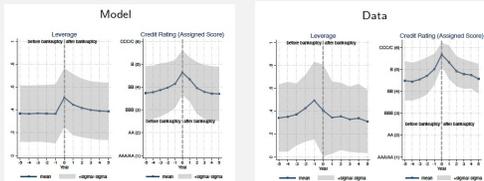
## Equilibrium

### How Firm Uses Reputation?

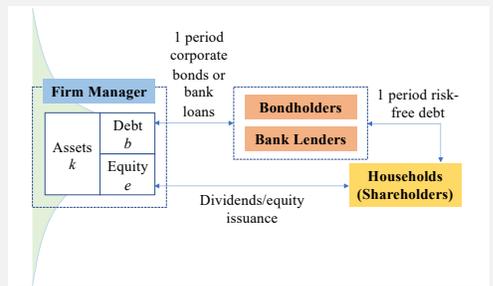


- Low productivity firms overinvest in capital to gain "good" reputation by mimicking financing behavior of high productivity firms.
- Leverage and equity are endogenous choices.
- High leverage and equity imply high marginal productivity of capital.
- Productivity is negatively related to likelihood of bankruptcy if all else being equal.

### Model Matches with Data



- Dynamic model reproduces realistic leverage and credit ratings (expected default rates) dynamics in data on both average and cross-section before and after firms file Chapter 7 and 11 bankruptcies.



### Outline of Model and Literature

Estimates firm financing model under dynamic adverse selection consistent with data facts.

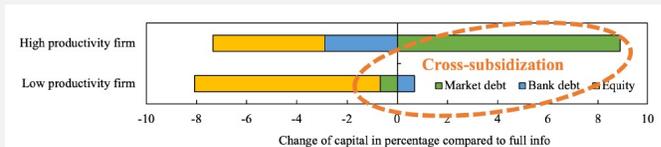
- Defaultable debts with heterogeneous firms (Hennessy and Whited 07)
- Integrates screening + signaling problems about firm's productivity (CCDR 2020)

## COUNTERFACTUAL I

- Comparison between asym info (benchmark) and full info (counterfactual). Misallocation of capital and finance lowers welfare measured by household consumption.

	Consumption	TFP	Aggregate bank debt ratio
Change (%)	1.35	0.29	-26.52

- Counterfactual simulation examines contribution of asym info in corporate bond markets.
- High productivity firms pay premia to issue corporate bonds. Cross-subsidization happens in presence of adverse selection.



## COUNTERFACTUAL II

### Policy Recommendation

- Taxation of debt forgiveness improves welfare without changing info structure.

	w/ asymmetric information			w/o asymmetric information		
	Benchmark	Counterfactual	Alternative benchmark	Alternative benchmark	Counterfactual	Counterfactual
<b>Panel A: Technology</b>						
Monitoring by bondholders				✓	✓	✓
Tax rate of COD (market debt)	0%	10%	10%	0%	10%	10%
Tax rate of COD (bank debt)	0%	0%	10%	0%	0%	10%
<b>Panel B: Welfare and Capital Allocation</b>						
Consumption	1.380	1.397	1.399	1.398	1.401	1.403
Change in % to benchmark	n.a.	1.25	1.44	n.a.	0.17	0.33
Output	12.81	12.82	12.82	12.77	12.75	12.75
Capital	45.03	45.04	45.02	44.00	44.48	44.47
Change in % to benchmark	n.a.	0.02	-0.04	n.a.	-0.27	-0.29
TFP	1.079	1.079	1.079	1.082	1.082	1.082
Change in % to benchmark	n.a.	0.06	0.07	n.a.	0.02	0.03
<b>Panel C: Bankruptcy</b>						
Bankruptcy prob. (Ch. 11) (%)	0.72	0.69	0.67	0.85	0.80	0.79
Bankruptcy prob. (Ch. 7) (%)	0.14	0.14	0.14	0.12	0.12	0.13

## CONCLUSION

### What I Do

- I develop quantitative model of reputation building.



### Policy Recommendation

- Taxation of debt forgiveness reduces incentive of low productivity firms to overinvest in capital and to overissue corporate bonds.