Can the cure kill the patient? Corporate credit interventions and debt overhang

By Nicolas Crouzet & Fabrice Tourre

Discussion by Julian Kozlowski, FRB St. Louis

June 2021, Barcelona GSE Summer Forum

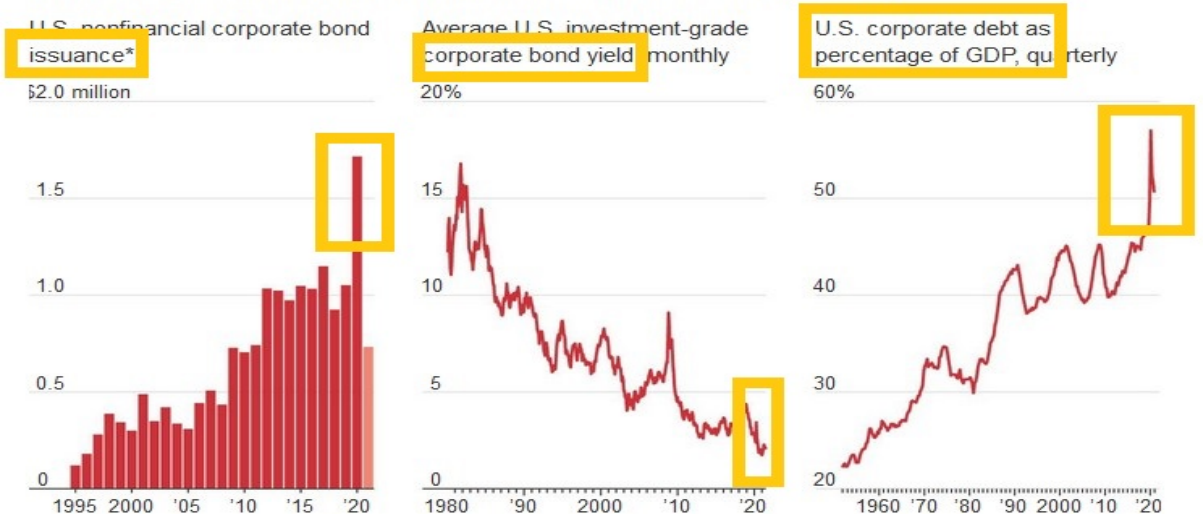
The views do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors.

Pandemic Hangover: $11 Trillion in Corporate Debt

Stressed companies piled on debt as interest rates plummeted, but could face a reckoning in the next economic downturn

Corporate Debt Boom

U.S. corporate bond issuance has surged to record levels during the pandemic, aided by low borrowing costs, pushing total corporate debt to the equivalent of half the size of the economy.



*2021 data through June 10

Sources: Dealogic (issuance); Bloomberg Barclays (yield); Federal Reserve Bank of St. Louis (corporate debt)

Corporate credit interventions and debt overhang

What are the impacts of the 2020 public lending on the real economy?

- Short-run: reduces exit and supports investment
- Long-run: debt overhang

Corporate credit interventions and debt overhang

What are the impacts of the 2020 public lending on the real economy?

- Short-run: reduces exit and supports investment
- Long-run: debt overhang

Model

- **Investment:** *ak* with convex adjustment costs
- **External financing**
  - Equity issuance
  - Tax-advantaged, long-term, defaultable debt
- **Crisis:** expected and unexpected shocks
  - $\downarrow$ productivity + $\uparrow$ price of risk + sudden stop
- Policy interventions

Corporate credit interventions and debt overhang

What are the impacts of the 2020 public lending on the real economy?

- Short-run: reduces exit and supports investment
- Long-run: debt overhang

Model

- **Investment:** *ak* with convex adjustment costs
- **External financing**
  - Equity issuance
  - Tax-advantaged, long-term, defaultable debt
- **Crisis:** expected and unexpected shocks
  - $\downarrow$ productivity + $\uparrow$ price of risk + sudden stop
- Policy interventions

Main result: short-run benefits outweigh long-run costs

An army of alternative specifications, robustness, etc. (106 pages!)

Discussion: Quantitative evaluation

Quantitative strategy

1. Calibrate the model in steady-state, without aggregate shocks

2. **Crisis:** aggregate expected shocks Z and aggregate unexpected shocks

Quantitative strategy

1. Calibrate the model in steady-state, without aggregate shocks

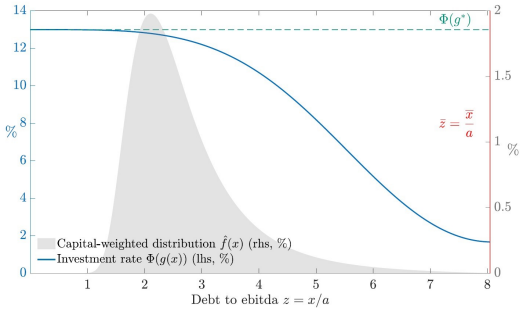
2. **Crisis:** aggregate expected shocks Z and aggregate unexpected shocks

Steady State Calibration: Target moments

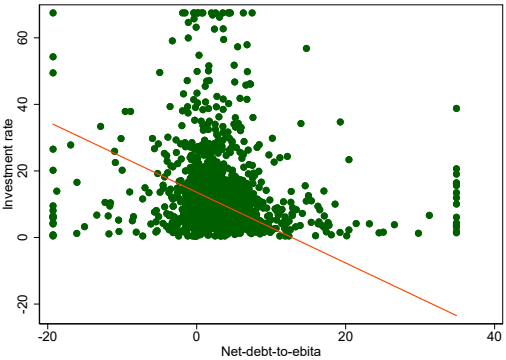
	Parameter	Moment
1.	Productivity	investment rate
2.	Volatility of idiosyncratic shocks	leverage
3.	Investment adjustment costs	OLS coefficient of reg investment leverage

Target moments: Investment and leverage

Model



Data



Target moments: Investment and leverage

- How to measure *debt-overhang* in the data and map to the model?
  The shape of investment and leverage is crucial for the quantitative evaluation

- **Paper:** investment rate$_i = \alpha + \beta$debt-to-ebitda$_i + \varepsilon_i$

- Comments:
  - The model has a non-linear relation
  - Why not estimate a non-linear statistical model?
  - Control for other factors in the data?

Target moments: Investment and leverage

Example: quantile regression

		Quantile regression				
	OLS	Q10	Q25	Q50	Q75	Q90
debt-to-ebitda	-1.082***	-0.164**	-0.307***	-0.787***	-1.113***	-1.628**
	(0.0964)	(0.0725)	(0.106)	(0.201)	(0.431)	(0.710)

- Non linear effects in the data too! use as target or validation
- Add controls? e.g., size and liquid assets, sector FE, etc.

Leverage or credit spreads?

- **Data:** firms with different leverage but similar credit spreads
- Reasons outside the model of why firms can have different leverage, e.g. collateral
- What is more relevant for *debt overhang*, leverage or credit spreads?
- Suggestion: work more on the empirical specification to measure *debt overhang* in the data and mapping to model

Steady State Calibration: Non-target moments

	Data	Model
Average credit spreads	2.5	5.0
Aggregate growth rate	1.9	0.5

- These are key moments for studying lending programs and the aggregate economy
- Can you add two parameters to target these moments?

	Parameter	Moment
1.	Productivity	investment rate
2.	Investment adjustment costs	measured debt overhang
3.	Volatility of idiosyncratic shocks	credit spreads
4.	motives for debt (tax-advantage parameter)	leverage
5.	risk-free rate	growth rate

Crisis

Is this paper a case study of 2020 or is it aobut large crisis in general?

- The model has aggregate shocks Z, why not study a Z crisis?
- If it is about aggregate shocks $\rightarrow$ use other episodes (e.g., GFC)
- If it is about 2020 $\rightarrow$ add more pandemic related shocks

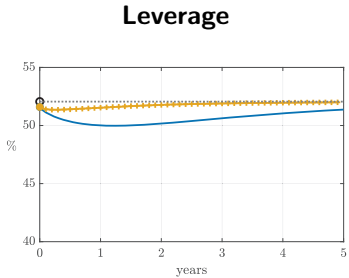
Crisis

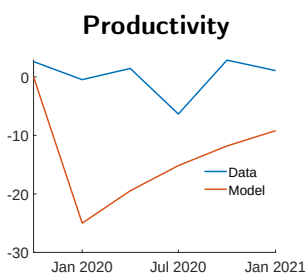
Is this paper a case study of 2020 or is it aobut large crisis in general?

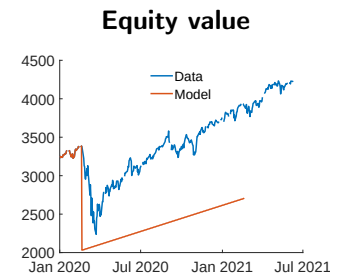
- The model has aggregate shocks Z, why not study a Z crisis?
- If it is about aggregate shocks $\rightarrow$ use other episodes (e.g., GFC)
- If it is about 2020 $\rightarrow$ add more pandemic related shocks

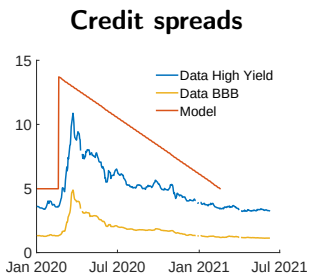
Case study: COVID

- It makes sense to model COVID as an unexpected shock ✓
- Exploit the quantitative simplicity:
  - Combination of multiple shocks
  - Continuous timing of events (February, vs March, vs April, etc.)
- Easy to solve backwards at daily frequency
  Main advantage relative to a quarterly model, exploit it!









- Leverage: ↑ data, but ↓ model ... debt overhang?
- Productivity shocks?
- Recovery of equity valuations?
- Heterogeneity of credit spreads?

Firm Level Characteristics: Leverage or Liquidity?

- What's the relationship between credit spreads leverage, and liquidity?
- Estimate:

$$\underbrace{cs_{f,t}}_{\text{credit spreads}} = \alpha_t + \gamma_f + \underbrace{\beta_{E(t)}\, \text{liq}_{f,t-r}}_{\text{liquid assets}} + \underbrace{\gamma_{E(t)}\, \text{lev}_{f,t-r}}_{\text{leverage}} + \Phi X_{f,t} + \varepsilon_{f,t}$$

- 3 periods $E(t)$:
  - Normal times
  - Great Recession (2008:Q2 - 2009:Q2)
  - COVID-19 (2020:Q1-2020:Q2)
- $X_{f,t}$ includes other firm-time controls (size, lagged spreads & investment)

(See Ebsim, Faria-e-Castro, Kozlowski 2021)

Firm Level Characteristics: Liquidity and Leverage

	Spreads
Leverage	
Normal	196.584***
	(34.804)
GR	867.605***
	(131.905)
COVID	464.949***
	(90.324)
Liquidity	
Normal	-58.465***
	(21.736)
GR	34.458
	(67.256)
COVID	-430.430 ***
	(39.964)
N	43509
R2	0.75

- Liquidity: very important for COVID (and therefore business funding programs)
- Yesterday's paper by Darmouni and Siani: bond issuance for liquidity
- Can you add *liquidity needs* exploiting the unexpected nature of shocks?

Cost and Financing of Policies

- What if there are distortionary taxes to finance the interventions?
- e.g. discussion on $\uparrow$ corporate taxes
- Does it change the short-run vs long-run trade-off?
- How distortive taxes have to be so the intervention is not worth it?

Can the cure kill the patient?

- Very nice paper on a policy relevant topic:
  short- and long-run real consequences of the 2020 public lending programs
- Well executed, with scope for fine-tuning some data moments