Covid-19 and Business Failures

Pierre-Olivier Gourinchas
UC Berkeley

Şebnem Kalemli-Özcan
IMF and University Maryland

Veronika Penciakova
Federal Reserve Bank of Atlanta

Nick Sander
UC Berkeley

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Summary

- Estimate the impact of COVID-19 on SME business failures using large representative firm-level database from 17 countries (mostly European)
- Use a rich modeling of COVID-19 shock, with a combination of supply, demand, aggregate and sectoral shocks
- Baseline estimated business failure rate jumps from 4.5% to 12.1% in 2020, without policy interventions
- Targeted policy interventions can dramatically lower business failures, saving 8.75 percent of businesses, preserving a large number of jobs (5.3 percent of employment), for a 'moderate' fiscal cost (1.1% of GDP).

Introduction: The COVID-19 shock

1. Unprecedented in its complexity and severity

2. Temporary economic shutdown driven both by pandemic and health policy (lockdown)

3. Collapse in demand as well as severe constraints on supply

4. Public policy responses aimed at 'protecting the economic network' of employees, firms and financial institutions. 'Flatten the recession curve'

5. SMEs are particularly vulnerable: low cash buffers, limited access to credit. Yet represent a sizable share of employment and output.

Methodology

Methodology

Consider a firm i in sector s with employment n_{is} and productivity A_s.

- Labor supply shock: $n'_{is}/n_{is} \leq \hat{x}_s$ (shutdown of non-essential business, telecommuting...)
- Productivity shock: $A'_s \leq A_s$ (working from home, spatial distantiation...)
- Demand: $d'_{is}/d_{is} = \hat{\xi}_s \widehat{PD}$
  - Sectoral demand shock: $\hat{\xi}_s$ (restaurants vs. online grocery shopping)
  - Aggregate demand shock: $\widehat{PD}$ (precautionary saving, forced saving...)
- Firm cost-minimizes over labor and materials given supply and demand shocks calibrated at sectoral level (4-digit).
- Construct counterfactual cashflow. Business failure if:

$$\text{cashflow + cash} \leq \text{financial expenses}.$$

Important Limitations of the Exercise

1. Liquidity criterion, not insolvency criterion. Distinction matters for firms with access to credit markets (large firms).
   - Both law and finance define insolvency as negative equity. Difficult to establish in practice especially for unlisted businesses
   - Law looks into the “manifestation” of insolvency in terms of cessation of payments (to workers, suppliers, and taxes)—cash flow
   - For example: in the U.S. Chapter 11 does not require insolvency but looks at financial distress
2. Not a general equilibrium exercise. First round effect before multipliers. Appropriate given focus.
3. No amplification via input-output matrix. Important and left for future work, but hard to estimate properly.

Calibration

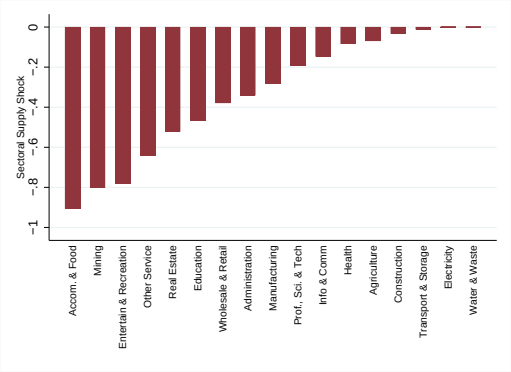
Calibration

Shocks are calibrated as follows, during lockdown/confinement:

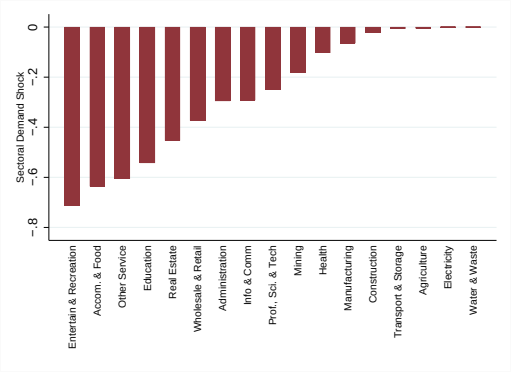
- Labor Supply: Feasibility of remote work by industry (Dingel and Neiman 2020, O*NET)
- Productivity: adjust productivity down 20% for remote work;
- Sectoral Demand: Reliance on face-to-face interaction by industry (O*NET)
- Aggregate Demand: IMF forecasts for 2020.

After lockdown, supply shocks removed, relative demand shock may persist (AR(1)).

Sectoral Supply and Demand Shocks



(a) Supply Shock by Sector



(b) Demand Shock by Sector

Notes: Depicts the COVID-19 supply and demand shock by 1-digit NACE sector, as the percent change relative to the non-COVID scenario.

Firm-level Data

- ORBIS from BvD-Moody's for 17 countries, 2017: Belgium, Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, Japan, Korea, Poland, Romania, Slovak Republic, Slovenia, Spain, and the United Kingdom. (US mostly has large firms in ORBIS)
- Focus on SMEs: firms with less then 250 employees.
- Coverage is around 70 percent of the aggregate economy. In terms of firm size distribution data closely matches official statistics, covering almost all of SMEs.
- Variables: Sales, wagebill, intermediate inputs, employment, cash flow.

OECD vs. ORBIS Business Failure Rates. Non-COVID scenario.

	OECD	Orbis
Belgium	2.96	3.66
Czech Republic	7.88	2.02
Finland	5.39	3.83
France	4.69	3.15
Germany	6.72	5.55
Greece	4.04	4.77
Hungary	8.75	4.07
Italy	6.73	4.39
Portugal	11.46	3.8
Romania	8.63	3.82
Slovak Republic	9.96	2.84
Slovenia	3.94	1.89
Spain	7.4	3.55
United Kingdom	13.87	3.61

Notes: Data on firm failure rates are obtained from the OECD's SDBS Business Demography Indicators. Light-gray color for countries with lower quality ORBIS coverage.

Baseline Results

Table 1: Aggregate SME Bankruptcy Rate (percentage) for 2020

	Non-COVID	COVID
High coverage	3.61	12.36
All	4.49	12.14

Figure 2: Cross-Country Difference in SME Bankruptcy Rates (COVID - non-COVID)

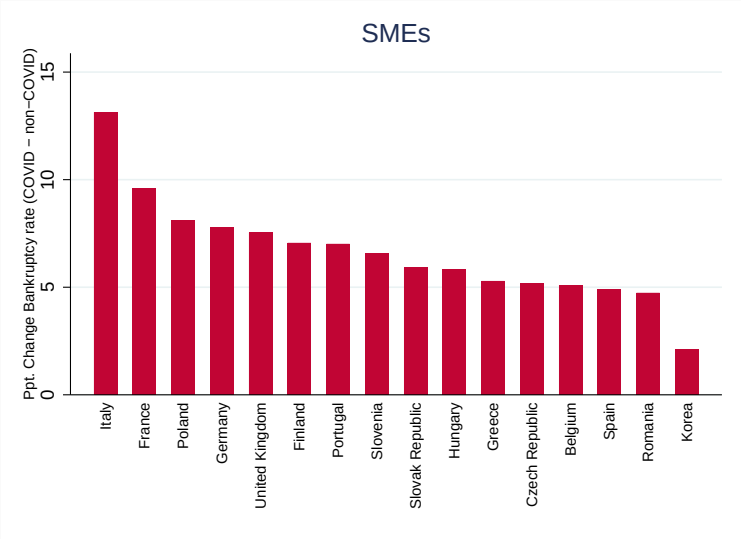


Figure 3: Sector Difference in SME Bankruptcy Rates (COVID - non-COVID)

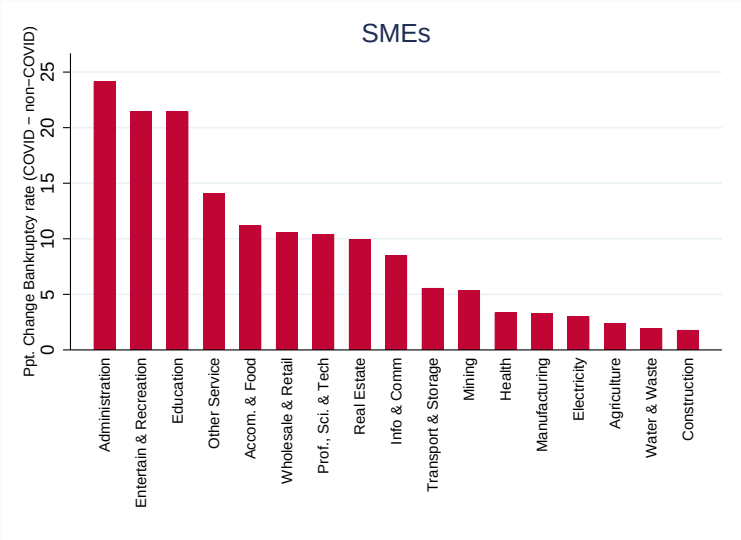
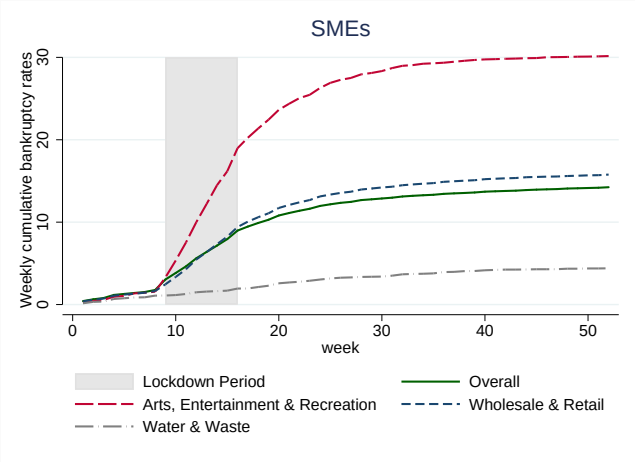


Figure 4: Bankruptcy rates, Weekly Evolution



Notes: Figure depicts cumulative bankruptcy rate over time (weekly) under the baseline scenario. Variables are first calculate at the 1-digit NACE level for each country, and then aggregated across countries using (country x sector) gross value added from the OECD as weights. The aggregation is done over the high coverage group, which includes Belgium, Czech Republic, Finland, France, Greece, Hungary, Italy, Poland, Portugal, Romania, and Spain.

Policy Interventions

Policy Interventions

- All firms bail-out: Each SME receives just enough cash to avoid bankruptcy under COVID.
- Targeted bail-out: We ONLY bail-out SMEs that go bankrupt under COVID but would have survived under the non-COVID scenario.

Both bailout policies would be difficult to implement. Instead, focus on 'blanket policies':

- Interest Costs Subsidy: SMEs get a subsidy equal to their annual financial expenses.
- Blanket Subsidy: Each SME receives a lump sum payment proportional to its size (proxied by Non-COVID labor costs).
  Baseline: subsidy equal to 100% of Non-COVID labor costs during 8 weeks (i.e. 8/52 of non-COVID annual labor costs).

Table 2: The Effects and Costs of Various Policy Options

		Relative to Whole Economy			Relative to Covered Sectors		
	Δ Bankrupt Rate (pp.)	Jobs Saved (% Employed)	Wages Saved (% GDP)	Policy Cost (% GDP)	Jobs Saved (% Employed)	Wages Saved (% Wages)	Policy Cost (% VA)
All Firms Bailed Out	-12.36	6.68	2.02	1.25	13.11	7.07	1.59
Targeted Bailouts	-8.75	5.27	1.60	1.10	10.33	5.61	1.39
Interest Costs Waived	-0.27	0.12	0.04	0.11	0.23	0.13	0.13
8-week 100% Labor Subsidy	-4.06	2.97	0.88	2.38	5.83	3.08	3.02
8-week 50% Labor Subsidy	-2.45	1.88	0.56	1.19	3.69	1.96	1.51
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Large fiscal-bankruptcy multiplier: $1.60/1.1 = 1.45$.

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Waiving interest costs has minimal costs but insignificant effects

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Multiplier much smaller for blanket policies: $0.88/2.38 = 0.37$

Table 3: Which SMEs Get Relief: 'Survivors', 'Ghosts' and 'Viable' SMEs

	"Survivors": Firms that Survive COVID & non-COVID			"Ghosts": Firms Bankrupt Regardless of COVID			"Viable": Firms Bankrupt Only in COVID Scenario			Total
	Bankruptcy Rates		Cost	Bankruptcy Rates		Cost	Bankruptcy Rates		Cost	Cost
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All Firms Bailed Out	0.00	0.00	0.00	100.00	0.00	0.16	100.00	0.00	1.10	1.25
Targeted Bailout	0.00	0.00	0.00	100.00	100.00	0.00	100.00	0.00	1.10	1.10
8-week 100% Labor Subsidy	0.00	0.00	2.06	100.00	64.71	0.06	100.00	57.73	0.26	2.38
8-week 50% Labor Subsidy	0.00	0.00	1.03	100.00	79.78	0.03	100.00	71.33	0.13	1.19
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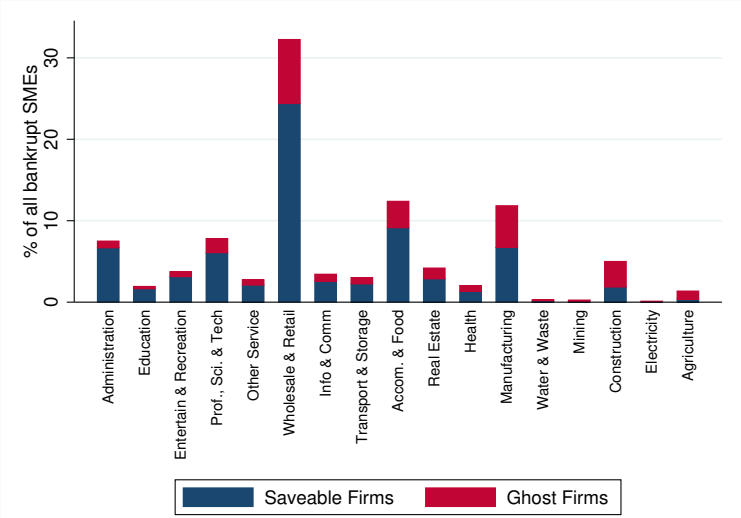
Suggests need to claw-back some of the relief, perhaps via future excess profit tax.

Similar properties as an equity injection. Aim is to reclaim 2% of GDP from 'survivor' firms.

Figure 5: Sectoral Distribution of "Viable" and "Ghost" Firms



Conclusion

Main lessons:

- Large fraction of SMEs at risk of failure as a consequence of COVID (12%). Substantial heterogeneity across countries and sectors.
- Represent up to 5% of employment in 17 countries.
- Targeted bailouts -if they could be implemented- would save these SMEs at a modest fiscal cost (1.1% of GDP). Large 'fiscal-bankruptcy' multiplier.
- Blanket policies much less efficient, unless there is a mechanism to claw back funds disbursed to firms not in need.
- Our paper is relevant for the recent debate: protection of jobs vs. allowing reallocation across firms/sectors
  - Depends on the persistence of the COVID shock that our framework allows to analyze
  - Targeted policies can protect significant amount of jobs while costing little