Pandemic Panic? Effects of Health System Capacity on Firm Confidence During COVID-19

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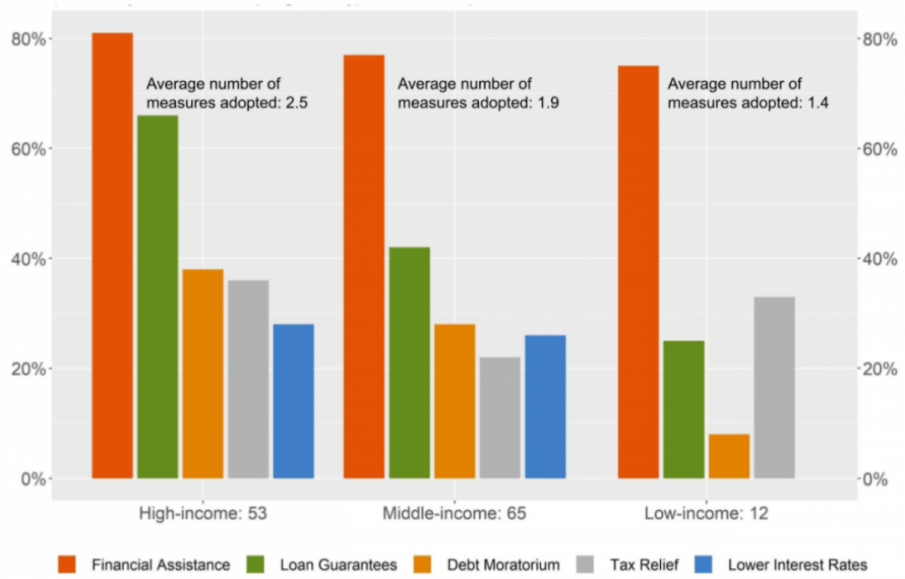
A Perhaps Familiar Sight?

Wither Government Support for Firms?

Support for small firms

Many countries have taken one or more measures to support small businesses during COVID-19. Most used financial assistance and loan guarantees.

(percent of countries adopting each type of measure)



Sources: IMF's Financial Access COVID-19 Policy Tracker and IMF staff calculations.

Note: The information in the policy tracker is collected from publicly available sources, inputs from various departments of the IMF, as well as feedback received from country authorities. The policy tracker is regularly updated and the chart uses information from the latest version (January 2021).

INTERNATIONAL MONETARY FUND

Understanding the Importance of Health System Capacity for Firm Confidence

- Managers' perceptions of sentiment and risk (firm **confidence**) shape firms' saving and investment, and hence performance
  - Internal firm dynamics (skills and motivation of workforce, access to capital, management/strategy) matter
  - External environment (macroeconomy, investment climate, socio-political backdrop) also matters
- Identifying contribution of an environmental factor challenging
  - May be relatively invariant over time. . .
  - . . . but also associated with unobservables

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The COVID-19 Shock as a Quasi-Natural Experiment

1. Rapidity and severity of the onset of COvID-19 meant this was an exogenous shock that:
   - Stressed one particular factor (capacity of the national healthcare system)...
   - ...which firms are unable to directly influence...
   - ...and offering little time for firms to dramatically adjust their resources endogenously
2. Identifying assumption: Healthcare resources *at onset of pandemic* reflect systemic capacity available to meet economywide healthcare needs
   - Estimate importance of health system capacity for firm perceptions of risk and sentiment

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Understand Importance of Systemic Capacity in Shaping Agents' Perceptions of Exposure to an Aggregate Shock

1. Provide causal estimate of health system capacity on firm confidence
   - Also: Examine the relative importance of public versus private healthcare on perceptions
   - And: Whether proactive (as opposed to passive) actions matter for perceptions
2. Firm level data from 53 advanced and emerging countries
   - Merged with country-level health metrics (system capacity, new case load)
   - Further matched with country controls (GDP per capita, growth, etc.)

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  - These are backward-looking measures of outcomes and performance, while our focus on business confidence is forward-looking
- Confidence and expectations (consumers, government, economywide) during COVID (Abel, Byker & Carpenter 2021; Bol *et al.* 2021; Altig *et al.* 2020)
  - Most are not focused on business sentiment, and many do not include large cross-country coverage
- Business expectations emerging from COVID-19 (Bartik *et al.* 2020; Buchheim *et al.* 2020; Hassan *et al.* 2020)
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Do Environmental Factors Affect Firm Perceptions?

- Internal (leverage, HR, legal liability, tech obsolescence) and external (macro, regulation, financial system structure, politics) benchmarks can affect perceptions of sentiment and risk in firms
  - Unanticipated shocks (natural disasters, epidemics) can also affect firm confidence
  - Countries with strong health system capacity (medical infrastructure, medical and public health personnel, medical equipment) were in a better *a priori* position to deal with the shock

Hypothesis (Health system affects firm perceptions)

Conditional on the case load, improvements in ex ante health system capacity will lead to reductions in firms' negative disease sentiment and risk.

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Does Public versus Private Provision of Health Capacity Matter?

- Public goods like health yield direct and indirect benefits
  - Credible and functional public health system will strengthen firms' confidence that the crisis will be managed well

Hypothesis (Public health affects firm perceptions)

Conditional on the case load, improvements in public health provision will lead to reductions in firms' negative disease sentiment and risk.

- Private provision of public goods can shore up system capacity
  - Private healthcare provision is common in emerging economies due to state failures

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Do Government Interventions Ameliorate Health Crises?

- For pandemics without any known treatment regime or vaccine, the efficacy of the government's toolkit is uncertain
  - Governments nevertheless were not expected to simply act as passive providers of public health services
  - Reactive actions were containment, health, and economic in nature

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Econometric Model

- Baseline estimating equation

$$\begin{aligned} \textit{Firm Perception}_{ijt} = \alpha_0 + \alpha_1 \textit{Log Cases}_{jt} + \alpha_2 \textit{Health Capacity}_j \\ + \alpha_3 \textit{Health Capacity}_j \times \textit{Log Cases}_{jt} + \sum_s \alpha_{4,l} X_{ij} \\ + \alpha_5 Y_j + \gamma_j \times \textit{Time Trend} + \mu_k \times \tau_t + \epsilon_{it}, \end{aligned}$$

- Panel FE estimation in baseline, alternatives as robustness (pooled OLS with Driscoll-Kraay SEs, GLS with AR(1) SEs)
- Country-specific time trends ($\gamma_j \times \textit{Time Trend}$) and industry-quarter interactive FEs ($\mu_k \times \tau_t$)

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Identification Strategy

- Exclusion: Suddenness and severity of COVID-19 onset meant the shock was effectively exogenous
  - **Reverse causality** limited since main units of measurement (at firm level) cannot easily affect environmental variable of interest (at country level)
  - **Simultaneity** further minimized by utilization of lagged firm- and country-specific controls
  - **Unobserved heterogeneity** mopped up by country-specific time trends and industry-quarter interactive fixed effects
- Relevance: Risk/sentiment coded specific to COVID-19 shock, so unlikely to measure aspects of confidence associated with other types of unexpected shocks

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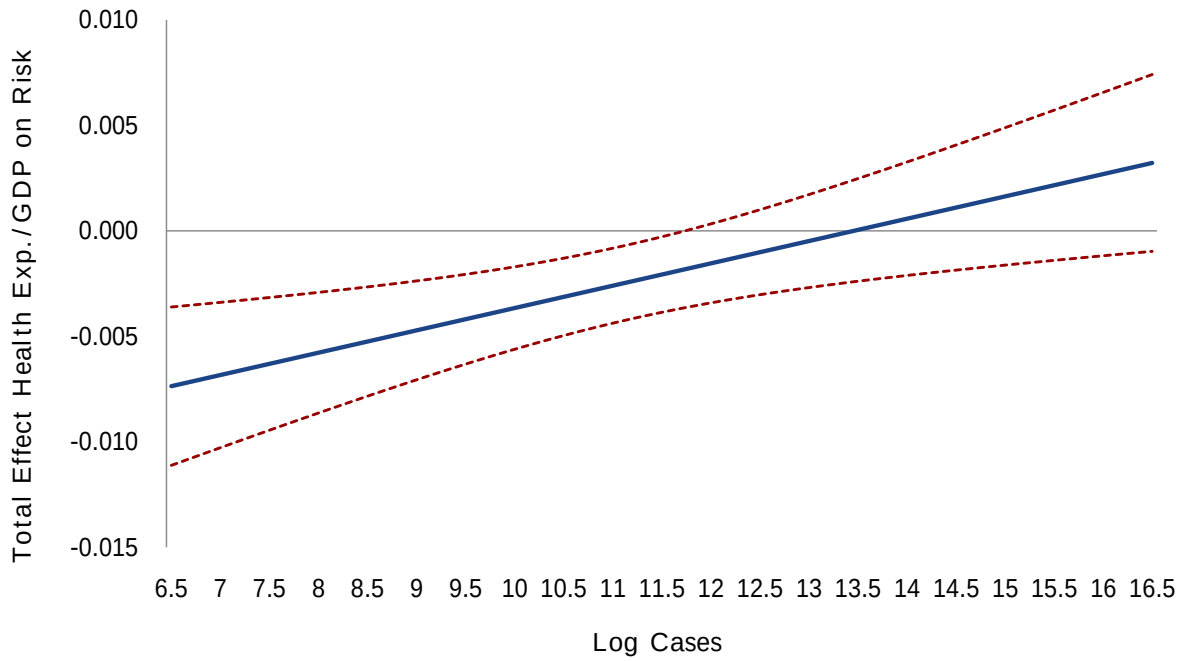
Health System Capacity and Firm Confidence

	COVID *Risk*		COVID *Neg. Sentiment*		COVID *Net Sentiment*	
	(1)	(2)	(3)	(4)	(5)	(6)
Health Exp./GDP	-0.002**	-0.015***	0.001	-0.048***	0.000	0.032**
	(0.001)	(0.005)	(0.003)	(0.016)	(0.003)	(0.015)
Health Exp./GDP × *Log Cases*		0.001***		0.004***		-0.003**
		(0.000)		(0.001)		(0.001)
Log Cases	0.002	0.008**	0.01	0.033***	0.007	-0.008
	(0.003)	(0.004)	(0.008)	(0.011)	(0.007)	(0.011)

- Risk and negative sentiment decline as *ex ante* capacity improves (1σ capacity $\uparrow \Rightarrow \frac{1}{15}\ \sigma$ risk $\downarrow$)
- Moderated by case load: as cases rise, resource constraints mean overburdened health system cannot deliver positive outcome, which leads to lower firm confidence

Total Effect of Health System Capacity on COVID-19 Risk



Source: Authors' calculations.

- Total effect remains negative for around 2/3 of the lower range of cases but after a sufficiently large caseload, turns positive

Public and Private Capacity and Firm Confidence

	Health exp. sample			*CHW and doctors sample*		
	Risk	*Neg. Sent.*	*Net Sent.*	*Risk*	*Neg. Sent.*	*Net Sent.*
	(1)	(2)	(3)	(4)	(5)	(6)
Govt. Health Exp./GDP	-0.011*	-0.052***	0.037*			
	(0.006)	(0.020)	(0.019)			
Govt. Health Exp./GDP	0.001	0.005**	-0.004**			
× Log Cases	(0.001)	(0.002)	(0.002)			
Pvt. Health Exp./GDP	-0.021**	-0.042	0.021			
	(0.009)	(0.029)	(0.028)			
Pvt. Health Exp./GDP	0.002*	0.004	-0.002			
× Log Cases	(0.001)	(0.003)	(0.003)			
Doctors per 1,000				-0.173***	-0.531***	0.378**
				(0.059)	(0.156)	(0.164)
Doctors per 1,000				0.020***	0.054***	-0.038*
× Log Cases				(0.007)	(0.019)	(0.020)
CHW per 1,000				-0.626**	-1.659***	1.335*
				(0.265)	(0.630)	(0.712)
CHW per 1,000				0.060***	0.082	-0.061
× Log Cases				(0.023)	(0.061)	(0.062)
Log Cases	0.009**	0.032**	-0.006	-0.002	0.026	-0.001
	(0.004)	(0.012)	(0.012)	(0.008)	(0.020)	(0.021)

- Large private healthcare sector diminishes COVID-19 risk perceptions (but not sentiment)
- Greater public healthcare provision improves COVID-19 sentiment (but not risk)
- Public and private capacity matter but are likely to be substitutes rather than complements

Government Responses and Firm Confidence

	Containment & health score			*Overall govt. response score*		
	Risk	*Neg. Sent.*	*Net Sent.*	*Risk*	*Neg. Sent.*	*Net Sent.*
	(1)	(2)	(3)	(4)	(5)	(6)
Log Containment	-0.035	-0.079	0.040			
	(0.023)	(0.070)	(0.065)			
Log Containment	0.005*	0.006	0.000			
× Log Cases	(0.002)	(0.007)	(0.007)			
Log Govt. Response				-0.037	-0.071	0.04
				(0.023)	(0.069)	(0.064)
Log Govt. Response				0.004*	0.005	0.000
× Log Cases				(0.002)	(0.007)	(0.006)
Health Exp./GDP	-0.008	-0.041**	0.035**	-0.008	-0.042**	0.037**
	(0.005)	(0.016)	(0.016)	(0.005)	(0.016)	(0.016)
Health Exp./GDP	0.001*	0.004***	-0.003**	0.001*	0.004***	-0.003**
× Log Cases	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Log Cases	0.007*	0.034***	-0.012	0.007*	0.034***	-0.012
	(0.004)	(0.012)	(0.011)	(0.004)	(0.012)	(0.012)

- Inclusion of *ex post* measures do not alter importance of *ex ante* measures
- Interventions contribute only tangentially to business confidence
- Prevention better than cure?

Baseline Survives Wide Array of Robustness Checks

1. Alternative proxy for capacity (hospital beds per 1,000 population)
2. Alternative definitions of covariates (3-year instead of 9-year average)
3. Limiting reactive policies to those linked with health infrastructure (emergency investments; testing; contact tracing)
4. Excluding statistically-insignificant firm controls (leverage) and various FEs
5. Including additional country controls (governance and democracy; business climate; openness and global value chain; demography)
6. Alternative estimation methods (pooled OLS with Driscoll-Kraay SEs; GLS with AR(1) errors)
7. *Include prior epidemic (H1N1, SARS) experience:* firms with prior experience have lower risk/negative sentiment, consistent with firm learning

Heterogeneity Reveals Importance of Development Status and Firm Size

1. Effect of capacity on risk and sentiment more pronounced in EMDEs vs AEs
   - EM firms operate in relatively riskier and uncertain political-economic environment, so health shock amplifies loss of business confidence
2. Size matters less for risk but is deleterious to sentiment
   - Riskiness of a poor external health environment comparable regardless of size, but sentiment materially affected by deterioration in health environment
   - Smaller firms may be more reliant on founder or early-stage CEO, and/or larger firms may have political connections or banking relationships to access finance/insurance, to manage sentiment
3. Other dimensions (liquidity, tangibility) less relevant

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Main Messages

- *Ex ante* health system capacity matters for firms' perceived risk and sentiment
- Public and private health capacity are substitutes, and *ex post* interventions are second-order
- Policy takeaway: Public goods provision matters not just directly (for societal health and wellbeing) but also *indirectly* (by improving business climate)
  - Political economy failures could amplify challenges faced by smaller firms in emerging market environment

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