The Core, the Periphery, and the Disaster: Corporate-Sovereign Nexus in COVID-19 Times

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The Corporate-Sovereign Nexus

How do sovereign and domestic corporate credit risk interact with each other? For financial firms, most notably banks, a fundamental characterization of the channels at play has been established through the "doom loop" [1]. There is also empirical evidence that credit risk spillovers take place between the sovereign and the domestic non-financial sectors [4]. The sobering message from this literature is that a rise in sovereign risk generates negative externalities on the ability of corporations to service their debt obligations, and hence on their creditworthiness. This paper shows that, in the face of a tail event episode, this prediction is not supported by the data. In fact, the contrary holds.

We find that the sensitivity of CDS spreads referencing non-financial corporations to those on the corresponding governments, which we term the "corporate-sovereign nexus," increased in the period following the first Italian lockdown (February 24, 2020) only in the core of the EU; namely, in countries with *strong* fiscal capacity. For this group of countries – Belgium, Finland, France, Germany, and the Netherlands – the pandemic had an economically large and statistically significant positive impact on the nexus. By contrast, in peripheral EU countries (e.g., Greece, Italy, Portugal, and Spain) the effect of the pandemic on the nexus was, albeit positive, small and not statistically significant. We offer an explanation of this result through a disaster-risk asset pricing model with bailout guarantees.

Two Competing Hypotheses

Hypothesis 0: In the aftermath of the COVID-19 pandemic, fiscal space is not a determinant of the corporate-sovereign nexus.
Alternatively, the literature offers two possible explanations for the link between corporate and government credit risk, which relate to the threat of higher taxes and the broad amplification of a negative shock, as opposed to the pricing of bailouts.
Hypothesis A1: According to the "sovereign risk channel," the effect of COVID-19 outbreak on the nexus should be stronger in the EU periphery.
Hypothesis A2: According to the "bailout channel," the effect of the COVID-19 outbreak on the nexus should be stronger in the EU core.

Econometric Model

In our empirical design, we measure the nexus with the slope coefficient in regressing corporate CDS spread changes onto those of the corresponding sovereign while controlling for aggregate and firm-level fundamentals, including the firm's equity return, firm-level fixed effects, and CBOE VIX, among others. The E dummy equals one in the COVID-19 sample, and zero otherwise.

$$\Delta log(\text{CDS Corp})_{ijt} = \alpha_0 + \alpha_1 \times E + \delta_i + \beta_1 \Delta log(\text{CDS Sov})_{jt} + \beta_2 \Delta log(\text{CDS Sov})_{jt} \times E + \gamma_1 X_{ijt} + \gamma_2 X_{ijt} \times E + \varepsilon_{ijt},$$

	Equally Weighted		Value Weighted		Entropy Balanced	
	(1) Core	(2) Periphery	(3) Core	(4) Periphery	(5) Core	(6) Periphery
$\Delta log(\text{CDS sovereign})_{jt}$	0.127***	0.208***	0.170***	0.325***	0.126***	0.294***
	(0.013)	(0.036)	(0.015)	(0.037)	(0.013)	(0.040)
$\Delta log(\text{CDS sovereign})_{jt} \times E$	0.125***	0.052	0.151***	0.049	0.124***	0.008
	(0.016)	(0.032)	(0.025)	(0.037)	(0.016)	(0.044)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls × E	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	41,967	10,282	41,536	10,282	40,685	9,420
R-squared	0.274	0.285	0.315	0.434	0.278	0.386
No. Firms	99	24	98	24	96	22
p-value for $\left(\beta_2^{\text{Core}} = \beta_2^{\text{Periphery}}\right)$	0.019		0.006		0.010	

■ Increase in sensitivity only in core countries => $H_{A_{II}}$ **Bailout channel** ✓

A Bailout Channel?

We compute the model-implied CDS rate from the Merton distance to default model. Following [3], we then estimate cross-sectional weekly regressions of the form

$$\text{CDS}_{it} = a_t + b_{1t}\text{Merton Spread}_{it} + b_{2t}\text{Size}_{it} + b_{3t}\text{Leverage}_{it} + \varepsilon_{it},$$

separately for observations in the core and periphery. At the outbreak of the COVID-19 shock, CDS spreads were priced at a discount with respect to predicted spreads only in the case of large(r) companies located in core EU countries whose governments were deemed ready to extend bailout guarantees.

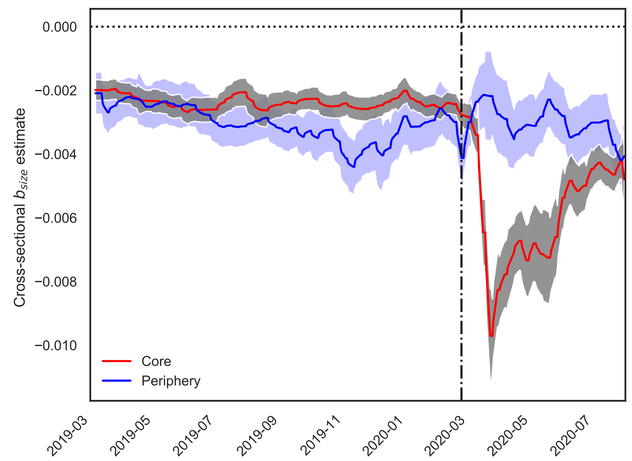


Fig 2: The Role of Size in Explaining Distance from Fundamentals, by Subsample

Bailout-Augmented Disaster-Risk Model

`Corporate` default intensity results from two factors, one capturing consumption growth and one innovations in credit risk, plus a disaster of stochastic magnitude.

$$\Delta\lambda^c_{t+1} = \begin{cases} \mu^c_t + \phi_c\sigma_i\eta_{t+1} + \sigma_c\varepsilon_{t+1} & \text{No Disaster} \\ \mu^c_t + \phi_c\sigma_i\eta_{t+1} + \sigma_c\varepsilon_{t+1} + \kappa_c J^c_{t+1} & \text{Disaster} \end{cases}$$

Fiscal Policy Function: stronger guarantees ⇒ lower $\underline{J}$.

$$J^c_{t+1} = \min\{J^\lambda_{t+1}, \underline{J}\}$$

`Government` default intensity increases by the portion of the shock absorbed

$$\Delta\lambda^g_{t+1} = \begin{cases} \mu^g_t + \phi_g\sigma_i\eta_{t+1} & \text{No Disaster} \\ \mu^g_t + \phi_g\sigma_i\eta_{t+1} + \max\{J^\lambda_{t+1} - \underline{J}, 0\} & \text{Disaster} \end{cases}$$

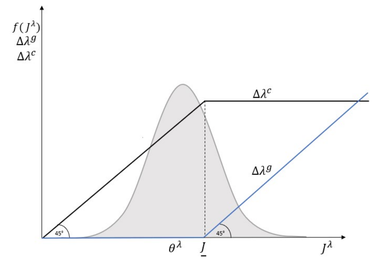


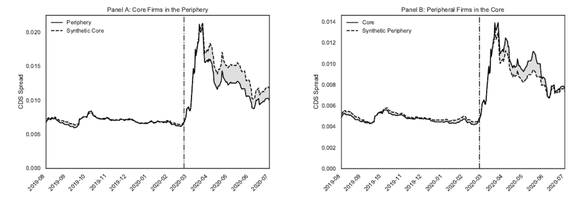
Fig 3: Fiscal Policy Function

$$\frac{\partial \text{Cov}(\Delta\text{CDS}^{corp}_{t+1}, \Delta\text{CDS}^{sov}_{t+1})}{\partial Guarantee} > 0 \quad \text{provided } \underline{J} > .5(\theta_\lambda + \frac{\phi}{1-\Phi})$$

Assuming that the government does not bear a disproportionate amount of corporate risk, the comovement between sovereign and corporate CSD spreads *increases* with bailout guarantees. Governments with wider fiscal space, whose guarantees are considered larger and more effective, should *ceteris paribus* display a stronger increase in the link between private and public sector credit risk as the disaster hits.

Model Calibration

To estimate the effect of bailout on CDS pricing, we match on observables firms in each region $j = \{Core, Peri\}$. We then simulate the unobservable counterfactual $CDS^j(\mathbb{1}_{E=1} \times \mathbb{1}_{J=\underline{J}^{-j}})$, namely how would have CDS spread been with the guarantees in place in the other subsample, conditioning on the disaster.



■ Model-implied ratio of (risk-neutral) bailout guarantees priced in CDS

$$\frac{[CDS^{\text{Synth. Core}} - CDS^{\text{Peri}}|E=1]}{[CDS^{\text{Core}} - CDS^{\text{Synth. Peri}}|E=1]} = \frac{\widehat{\underline{J}^{Peri}}}{\underline{J}^{Core}} = \frac{0.00169}{0.00065} = 2.60$$

Fig 4: Synthetic Control Method and Calibration

Macroeconomic Implications

Recently, [2] has argued that in a low interest rate environment, high public debt may not imply large fiscal costs. However, our analysis uncovers a positive effect originating from sovereign fiscal space, as spending capacity buffers directly spill over to corporate credit risk following disaster-induced repricing. Ultimately, this effect lowers corporate credit spreads – and hence the cost of capital – for companies in fiscally sound countries, thereby increasing their resiliency.

References

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