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Small Firms and the COVID-19 Insolvency Gap

Julian Oliver Dörr[1,2], Georg Licht[1], Simona Murmann[1]

[1]ZEW – Leibniz Centre for European Economic Research
[2]Justus Liebig University Giessen

Outline

COVID-19 and German Business Insolvencies

In 2020, 16% fewer insolvencies compared to 2019

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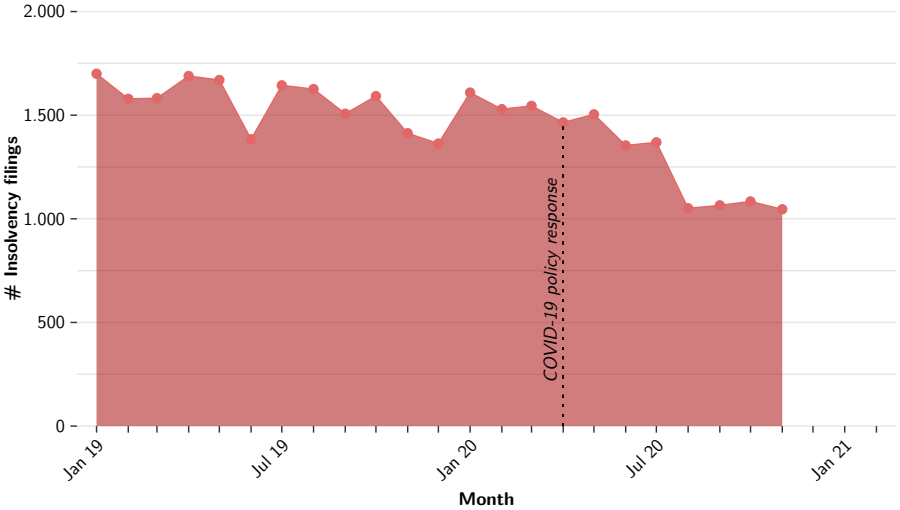

Source: Destatis

Policy Response in Germany

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'Largest assistance package in the history of the Federal Republic of Germany' (Federal Ministry of Finance)

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Liquidity provision

- Subsidies and government guarantees
  - 'Soforthilfen'
  - 'Überbrückungshilfen'
  - 'KfW-Schnellkredite'
  - ...
- Labor cost subsidies: 'Kurzarbeitergeld'
- Tax deferrals

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Change in insolvency regime

Act to Mitigate the Consequences of the COVID-19 Pandemic under Civil, Insolvency and Criminal Procedure Law

of 27 March 2020

The Bundestag has adopted the following Act:

Article 1

Act to Temporarily Suspend the Obligation to File for Insolvency and to Limit Directors' Liability in the Case of Insolvency Caused by the COVID-19 Pandemic (COVID-19-Insolvenzaussetzungsgesetz – COVInsAG)

Source: Federal Ministry of Justice

German Business Insolvencies and Economic Shocks

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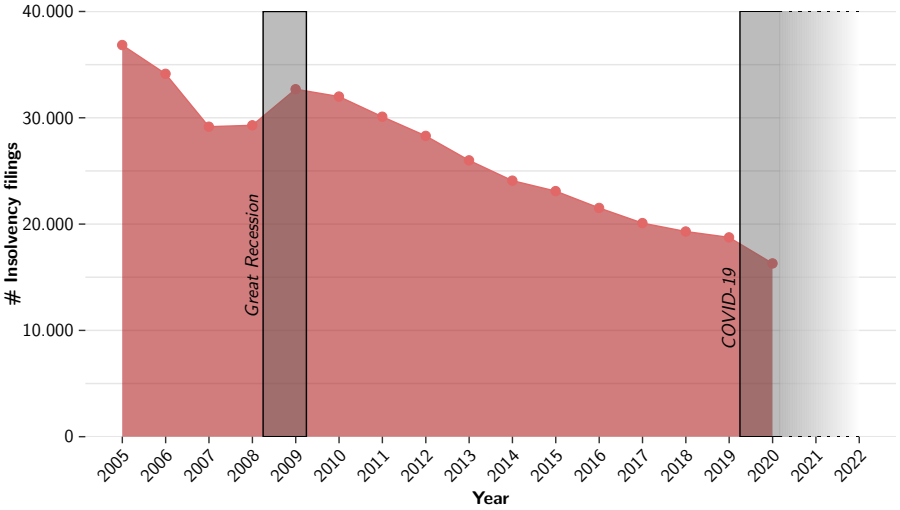

Source: Destatis

Cleansing Effect of Economic Crises

Efficient resource reallocation:

- crises force unproductive companies out of the market
- freeing up resources
- that find more productive use elsewhere

Does policy response impair the cleansing effect in the current crisis?

Zombification of Economy?

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The Economist

Menu

Finance & economics

Sep 26th 2020 edition

The corporate undead

Why covid-19 will make killing zombie firms off harder

Easier access to credit and government support means they will stumble on

Zombification of Economy?

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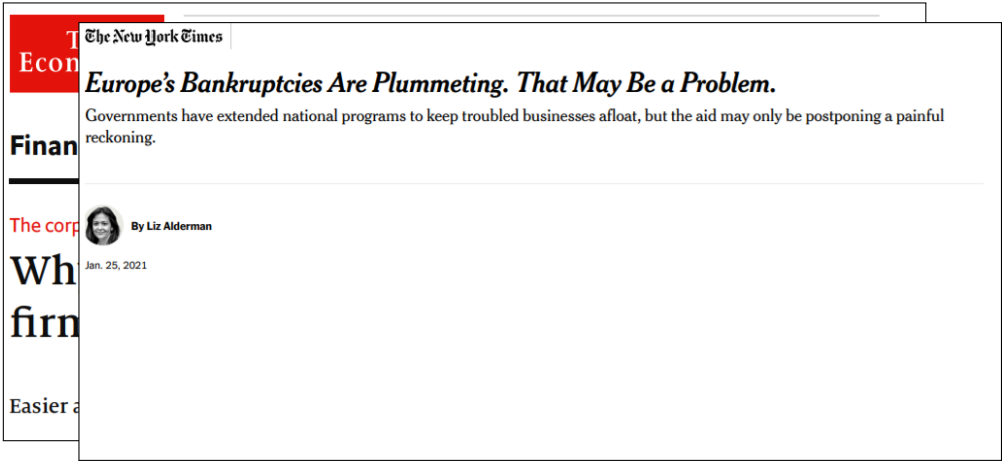

The New York Times

Europe's Bankruptcies Are Plummeting. That May Be a Problem.

Governments have extended national programs to keep troubled businesses afloat, but the aid may only be postponing a painful reckoning.

By Liz Alderman

Jan. 25, 2021

Zombification of Economy?

The New York Times

Jan. 25, 2021

Handelsblatt

FIRMENPLEITEN

Insolvenzverwalter warnen vor Zombie-Unternehmen

von: Heike Anger • Kirsten Ludowig
Datum: 10.08.2020 16:53 Uhr

Die Regierung will überschuldeten Firmen in der Cororonakrise mehr Luft verschaffen. Doch Experten fürchten massive Schäden für die Wirtschaft.

This Study

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Has the COVID-19 policy response induced an insolvency gap? If so, by which companies is the gap determined?

The COVID-19 Insolvency Gap:

First-round Effects of Policy Responses on SMEs

Julian Oliver Dörr*[1,2], Simona Murmann[1], and Georg Licht[1]

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January 1, 2021

Abstract COVID-19 placed a special role to fiscal policy in rescuing companies short of liquidity from insolvency. In the first months of the crisis, SMEs as the backbone of Europe's real economy benefited from large and mainly indiscriminate aid measures. Avoiding business failures in a whatever it takes fashion contrasts, however, with the cleansing mechanism of economic crises: a mechanism which forces unviable firms out of the market, thereby reallocating resources efficiently. By focusing on firms' pre-crisis financial standing, we estimate the extent to which the policy response induced an insolvency gap and analyze whether the gap is characterized by firms which had already struggled before the pandemic. With the policy measures being focused on smaller firms, we also examine whether this insolvency gap differs with respect to firm size. Based on credit rating and insolvency data for the near universe of actively rated German firms, our results suggest that the policy response to COVID-19 has triggered a backlog of insolvencies in Germany that is particularly pronounced among financially weak, small firms, having potential long term implications on economic recovery.

Keywords: COVID-19 policy response, Corporate bankruptcy, Cleansing effect, SMEs

JEL: C83, G33, H12, O38

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Data

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Credit ratings

Insolvency information

Firm characteristics

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Credit ratings

Scoring index by Creditreform incorporating

- payment discipline
- legal form
- credit line limits
- financial account indicators
- ...

$r_{it} \in [100, 500]$

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Insolvency information

Business insolvency declarations at German insolvency courts including

- firm identification
- filing date

$$f_{it} = \begin{cases} 0 & \text{if } i \text{ non-insolvent at } t \\ 1 & \text{if } i \text{ insolvent at } t \end{cases}$$

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Firm characteristics

Firm information from Mannheim Enterprise Panel

- industry sector
- firm size
- ...

$\mathbf{X}_{it}$

Control and Crisis Period

Towards a matching framework

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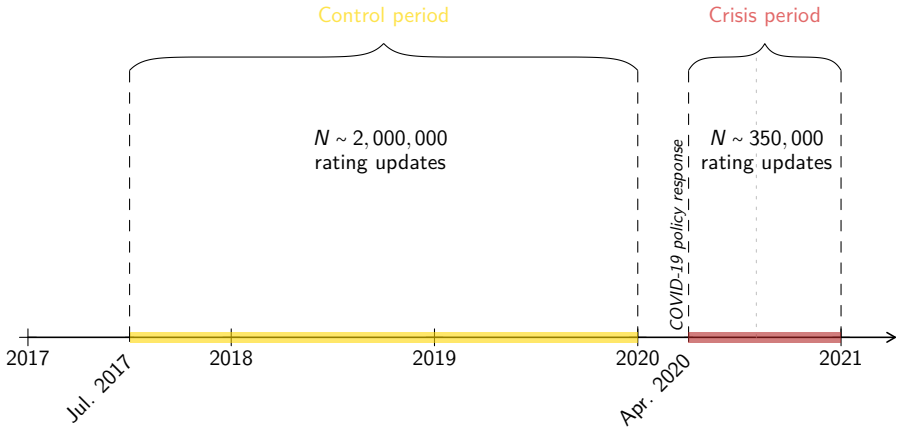

Nearest Neighbor Matching

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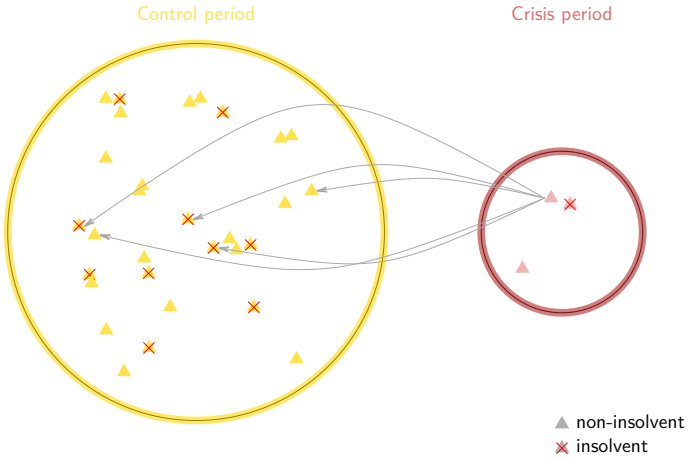
Match each rating update from the crisis period to the k nearest control units from the pre-crisis period and observe their insolvency state



Nearest Neighbor Matching

Some more details

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- control units only matched from the same sector-size strata
- within sector-size strata Mahalanobis distance (MD) between each possible pair of control and crisis unit on

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  - rating update (with caliper!): Δr_{it}
  - rating prior to update: $r_{i,t-x}$
  - number of downgrades preceding the update: d_{it}
  - average rating before the update: $\bar{r}_{it}$
  - company age: a_{it}

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$$MD_{ij} = \begin{cases} (\mathbf{X}_i - \mathbf{X}_j)' \Sigma^{-1} (\mathbf{X}_i - \mathbf{X}_j) & \text{if} \quad |\Delta r_{it} - \Delta r_{jt}| \leq c \\ \infty & \text{if} \quad |\Delta r_{it} - \Delta r_{jt}| > c \end{cases}$$

with $\mathbf{X} = (\Delta r_t \; r_{t-x} \; d_t \; \bar{r}_t \; a_t)'$, Σ as the variance covariance matrix of $\mathbf{X}$ in the pooled sample of in-crisis and all pre-crisis observations and c a predefined caliper on the rating update.

Insolvency Rates in Sector-size Strata (s)

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Actual rates based on rating updates in crisis period, counterfactual rates based on control units

Actual insolvency rate

$$IR_s^{actual} = \frac{N_s^{insolvent}}{N_s}$$

Counterfactual insolvency rate

$$IR_s^{counterfactual} = \frac{\sum_{j=1}^{\tilde{N}_s} w_{j,s} \, \mathbf{1}(f_{j,t+4}=1)}{\sum_{j=1}^{\tilde{N}_s} w_{j,s}}$$

From Insolvency Rates to Insolvency Gap

ZEW

Actual insolvency rate

IR_s^{actual}

Counterfactual insolvency rate

$IR_s^{counterfactual}$

Insolvency gap

From Insolvency Rates to Insolvency Gap

Insolvency gap as the deviation between expected and observed insolvency rates

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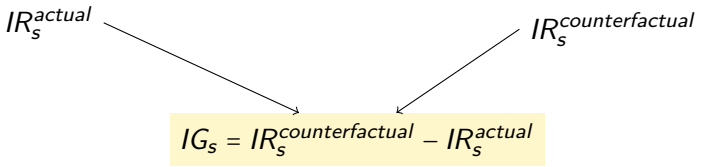
Actual insolvency rate

Counterfactual insolvency rate



Insolvency gap

Insolvency Gap on the Sector-Size Level

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Substantial among micro-enterprises (≤ 10 employees) but vanishes with increasing firm size

Sector affiliation	Size of company		
	Micro $\widehat{IG}$	Small $\widehat{IG}$	Medium $\widehat{IG}$
Manufacturing	+1.0330***	+0.0192	−0.0413
Business-related services	+0.7037***	−0.0072	−0.0530
Food production	+0.2741	+0.2418	−0.1881
Others	+0.3703***	−0.0183	0.0000
Manufacturing of data processing equipment	+0.4419*	−0.0904	0.0000
Mechanical engineering	+0.0325	+0.1768	-0.2458***
Accommodation & catering	+1.1474***	+0.0531	+0.2755
Creative industry & entertainment	+0.1225	+0.1718	0.0000
Health & social services	+0.3698***	+0.0529	−0.1148
Insurance & banking	+0.3696***	0.0000	0.0000
Logistics & transport	+0.7042***	+0.0207	+0.2981
Chemicals & pharmaceuticals	+0.3279*	+0.0299	0.0000
Wholesale & retail trade	+1.0747***	+0.0404	+0.0070

Note: Estimates presented in pp. Significance levels: *: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$ based on χ^2-Test for equality in the insolvency proportions using Rao-Scott corrections to account for matching weights.

Insolvency Gap and Pre-Crisis Credit Rating

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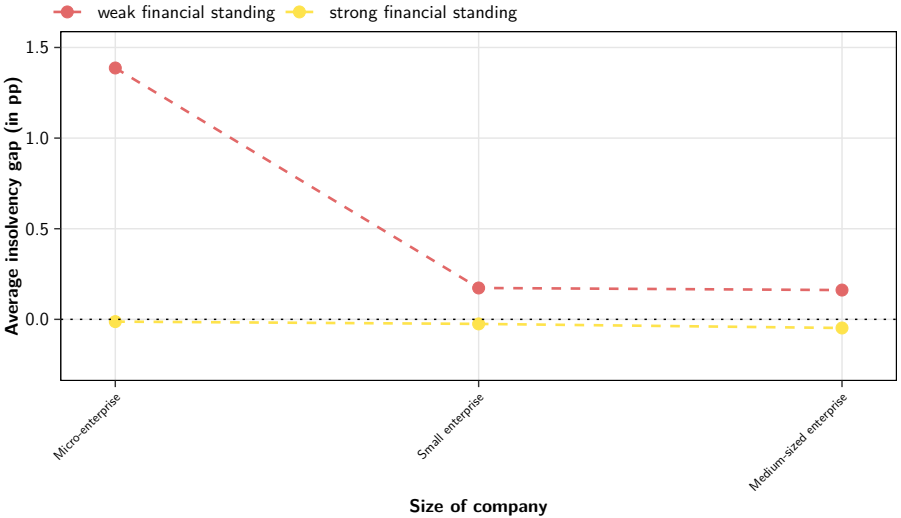
Insolvency gap driven by firms with weak pre-crisis conditions



Concluding Remarks

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Empirically

- policy response allowed to prevent large-scale business insolvencies ...
- at the cost of saving firms that would have ended insolvent without COVID-19 ...
- impeding efficient resource reallocation in the current crisis

Policy

- channeling aid measures to viable firms increasingly more important than providing aid in a whatever-it-takes fashion ...
- which may justify possible delays in the granting process

Appendix

COVID-19 Fiscal Policy Response

. . . by international comparison

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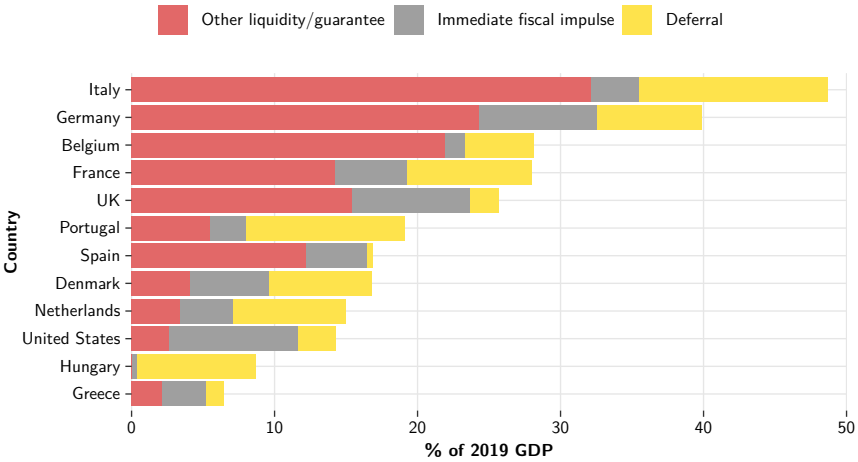

Source: Bruegel

Credit Rating Data

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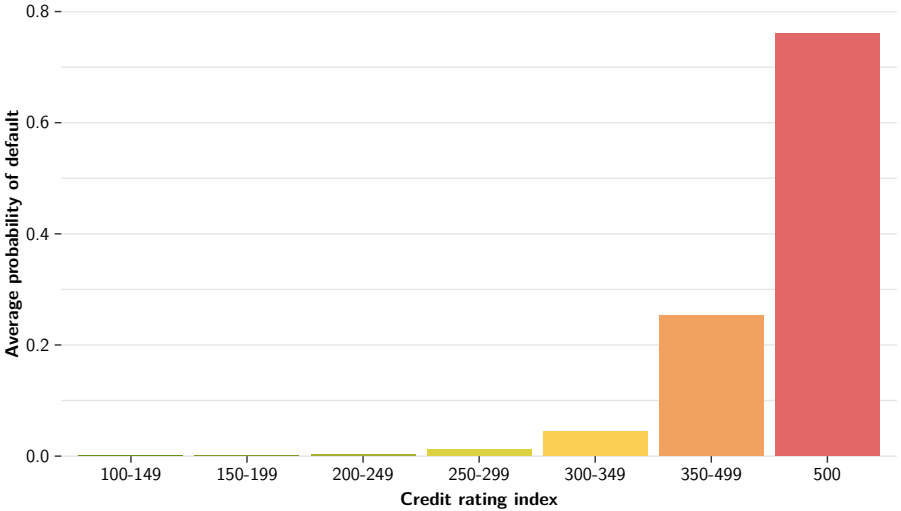
Commonly used by banks (probability of default of debtors) and by research (insolvency risk estimation)



Source: Creditreform

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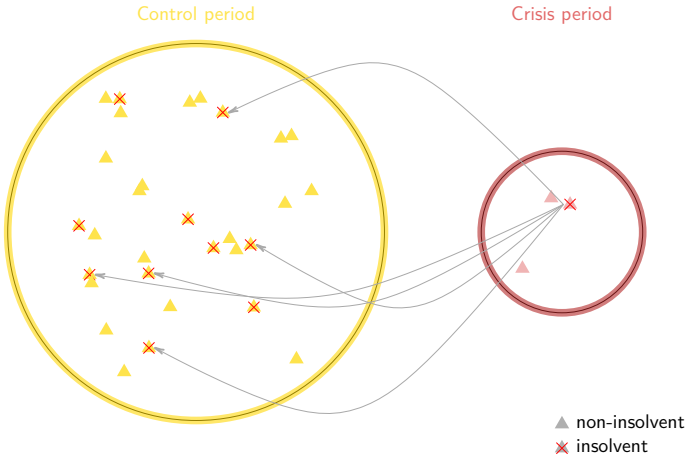

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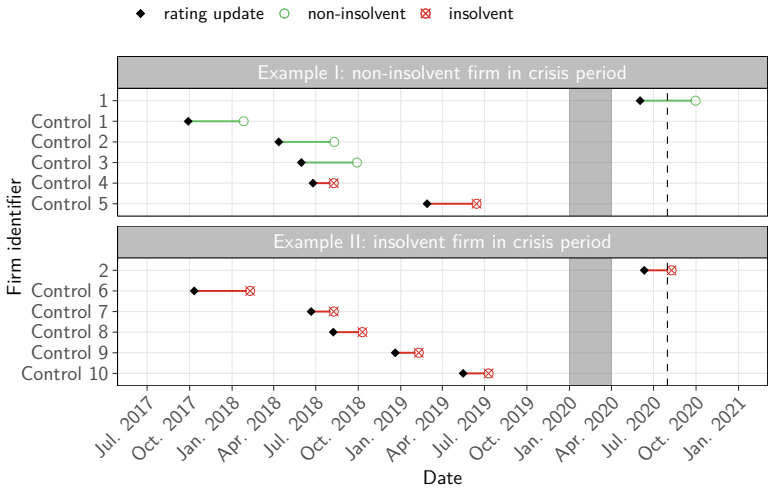

Company Size Definition

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	Size of company			
	Micro	Small	Medium	Large
Number of employees	≤ 10	11 – 49	50 – 249	≥ 250
Annual tunover in M €	≤ 2	2 – 10	10 – 50	> 50
Annual balance sheet total in M €	≤ 2	2 – 10	10 – 43	> 43

Note: Table shows translation of firm characteristics into company size classes used in this study as defined by European Commission (2003).

Insolvency Gap and Pre-Crisis Credit Rating

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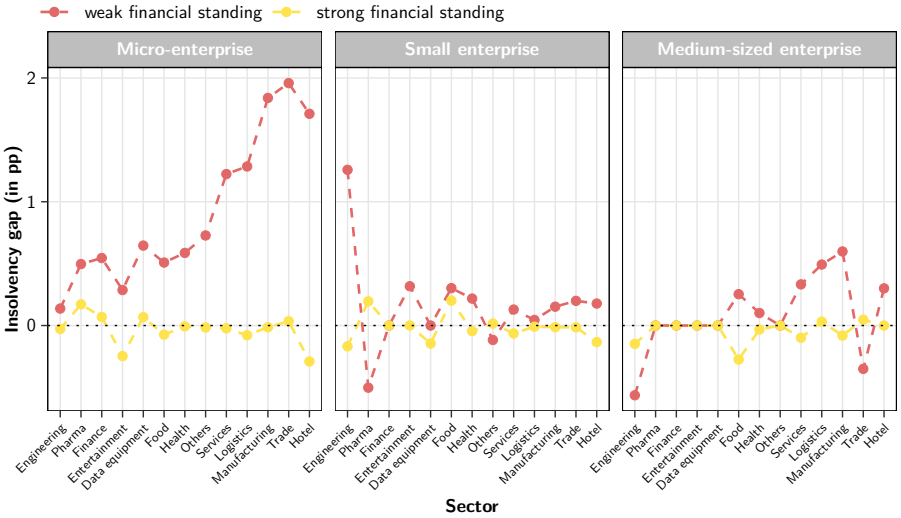
In most sectors, insolvency gap driven by firms with weak pre-crisis conditions



Insolvency Gap in Absolute Numbers I

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Sector	Size of company						$\sum$
	Micro		Small		Medium		
	N_s	IG_s (in %)	N_s	IG_s (in %)	N_s	IG_s (in %)	
Accommodation & catering	37,633	0.0115	4,852	0.0005	810	0.0028	
Creative industry & entertainment	16,057	0.0012	1,910	0.0017	476	0.0000	
Food production	8,191	0.0027	3,674	0.0024	1,962	-0.0019	
Health & social services	69,029	0.0037	12,331	0.0005	4,269	-0.0011	
Insurance & banking	46,670	0.0037	2,583	0.0000	1,290	0.0000	
Logistics & transport	43,899	0.0070	10,756	0.0002	2,773	0.0030	
Chemicals & pharmaceuticals	5,170	0.0033	3,980	0.0003	2,342	0.0000	
Manufacturing of data proc. eq.	4,270	0.0044	2,449	-0.0009	1,057	0.0000	
Mechanical engineering	10,567	0.0003	6,828	0.0018	3,386	-0.0025	
Business-related services	287,115	0.0070	40,448	-0.0001	9,871	-0.0005	
Manufacturing	251,027	0.0103	50,447	0.0002	12,399	-0.0004	
Others	37,695	0.0037	5,381	-0.0002	2,398	0.0000	
Wholesale & retail trade	201,838	0.0107	46,342	0.0004	10,549	0.0001	
Weighted insolvency gap (in %)	0.0080		0.0003		-0.0003		
Number of active firms (official statistics)	3,109,261		293,610		63,928		3,466,799
Insolvency gap (absolute)	24,933		90		-19		25,004

Note: Insolvency gap in absolute terms is calculated as product between the weighted insolvency gap and the total number of active German firms within the respective size class.

Insolvency Gap in Absolute Numbers II