

Distressed Acquisitions

-Evidence from European Emerging Markets-

Ichiro Iwasaki, Evžen Kočenda, and Yoshisada Shida

Motivation

- Some companies that have gone bankrupt are not liquidated via legal process, but are acquired by another company. That is "distressed acquisition" (DA).
- What are the factors that push a bankrupt company into liquidation or DA? This is a major issue in the corporate finance literature, but the previous research that tackled this issue is very limited.
- In Europe, since the early 1990s, multinational corporations in developed countries have actively acquired companies in Central and Eastern Europe, triggered by the large-scale privatization of companies in the post-communist world.
- In recent years, there have been many DAs of Central and Eastern European companies that went bankrupt under the influence of the 2008 global financial crisis.
- However, the knowledge about the actual situation and the background factors of DAs is very limited.
- This study aims to eliminate the above gap through empirical analysis using large-scale data from companies in 17 European emerging markets.

Research Summary

- We analyze factors behind 22,608 distress acquisitions in European emerging markets during 2007–2017.
- Besides of the impact of financial ratios, legal form, ownership structure, firm size and age, we emphasize the role of institutions and channels of their propagation.
- We show that the quality and enforcement of insolvency law are linked to lower probability of distressed acquisitions, followed by the corruption control and progress in banking reforms.
- The impact of institutions is larger in less-advanced countries when compared to economically stronger ones.
- The effect of institutions increased after the financial crisis but declined as the economic situation improved.

Hypothesis / Data / Empirical Strategy

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Section 1

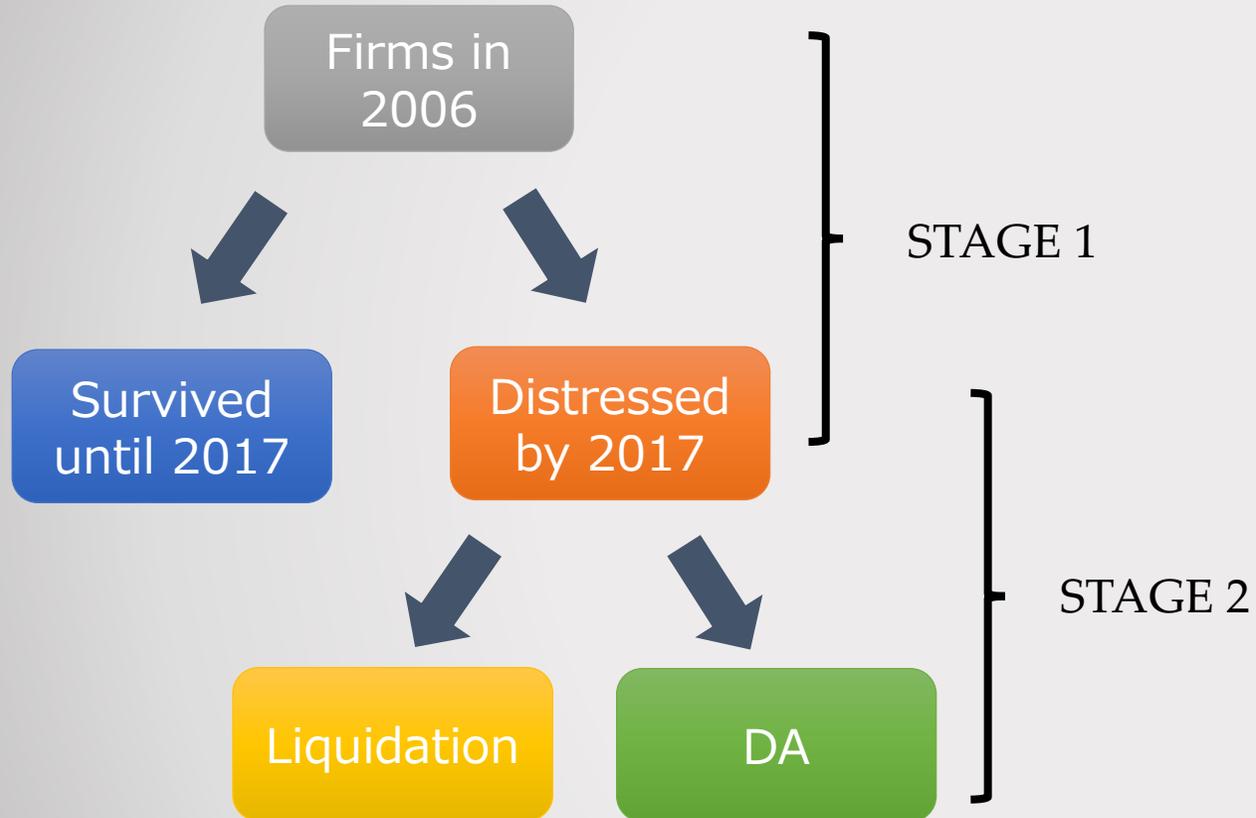
Hypotheses to Test

- H1: The difference in corporate form correlates with the probability of DA, because it affects the transaction costs of the transfer of ownership.
- H2: The existence of large shareholder and the state as an owner increases the probability of DA because it facilitates the transfer of ownership.
- H3: Foreign investors with strong motivation for residual claims prefer DAs to liquidations.
- H4: The higher the rate of return, solvency, and productivity before the distress, the more likely a firm is to be bailed out via DA rather than by liquidation.
- H5: The larger the company and the longer it has been in business, the more likely the DA is to happen.
- H6: In countries with well-developed bankruptcy systems and high legal enforcement power, the frequency of DA is low.
- H7: In countries where corruption is suppressed and therefore the risk of asset stripping is low, the frequency of DA is low.
- H8: In countries where the financial system is developing, the frequency of DA is low.

Data

- The 2006/2018 archive data of the Orbis corporate database operated by Bureau van Dike (BvD) is adopted.
- Referring to the 2006 archive data, we listed 247,501 companies in 17 emerging market countries in Europe (4 Central Europe, 7 Eastern Europe, 3 Baltic states, Moldova, Ukraine, Russia) whose "survival" is confirmed as of the end of 2006.
- Using the 2018 data, we tracked the survival status of the above 247,501 companies by the end of 2017.
- We classified companies that continued their management activities from the beginning of 2007 to the end of 2017 (survivors), companies that fell into a dormant state after bankruptcy, liquidated companies, and companies rescued by DAs.
- Other company-level data is also obtained from the Orbis database.
- Country-level data is available from the ERBD and Freedom House.

Empirical Strategy



- Firms operating at the end of 2006 are divided into surviving companies and distressed ones by the end of 2017 (STAGE 1)
- Firms under distress are divided into liquidated ones and those saved via distressed acquisitions DAs (STAGE 2).
- If two-stage process is ignored and only STAGE 2 is modeled, the impact of the independent variable may be overestimated or, conversely, underestimated by the so-called sample selection bias.

Empirical Strategy

- The selection model with the distress probability (D_i) of the i -th company as the dependent variable is estimated in the first stage, and the outcome model with the acquisition probability (A_i) as the dependent variable is estimated in the second stage.

$$\text{Distress model: } Pr(D_i = 1|Z_{ij}) = \mu + \alpha Z_{ij} + \varepsilon_i \quad (1)$$

$$\text{Acquisition model: } Pr(A_i = 1|W_{ij}) = \eta + \beta W_{ij} + \lambda_i + \epsilon_i \quad (2)$$

- Z_{ij} and W_{ij} are the vectors of variables that can affect the failure probability and acquisition probability of the i company in country j , respectively, λ_i is the selection bias correction term obtained from the estimation of the first stage, and α and β are the parameters, μ and η , are constant terms, and ε_i and ϵ_i are error terms assuming that the following conditions are met:

$$\begin{pmatrix} \varepsilon_i \\ \epsilon_i \end{pmatrix} \sim i.i.d. \left(\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_\varepsilon^2 & \rho_{\varepsilon\epsilon} \\ \rho_{\varepsilon\epsilon} & \sigma_\epsilon^2 \end{pmatrix} \right) \quad (3)$$

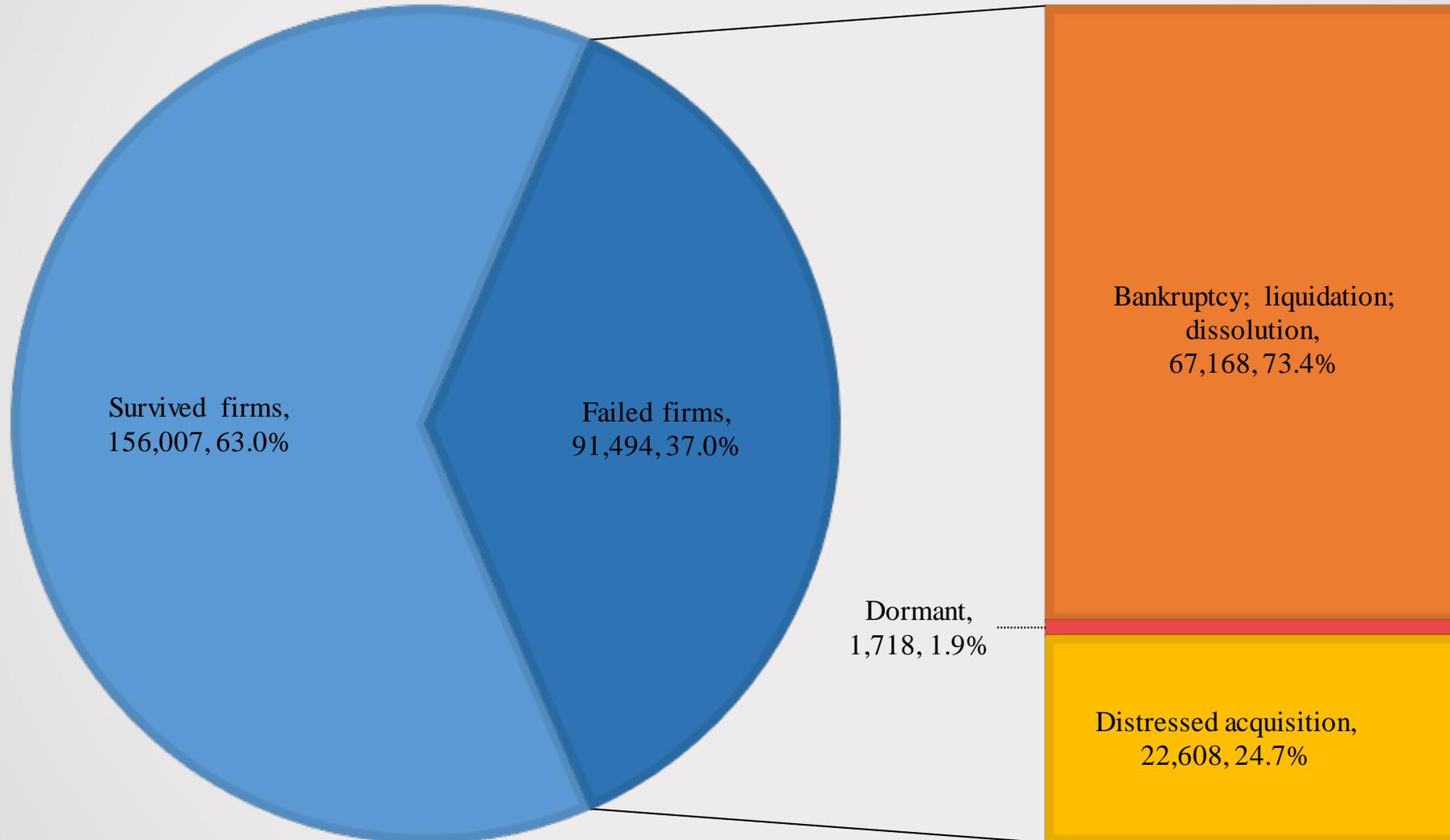
- The presence or absence of selection bias is verified by LR test of the null hypothesis that ρ in Eq. (3) is zero.

Bankruptcies and distressed acquisition in 17 European emerging markets: A statistical overview

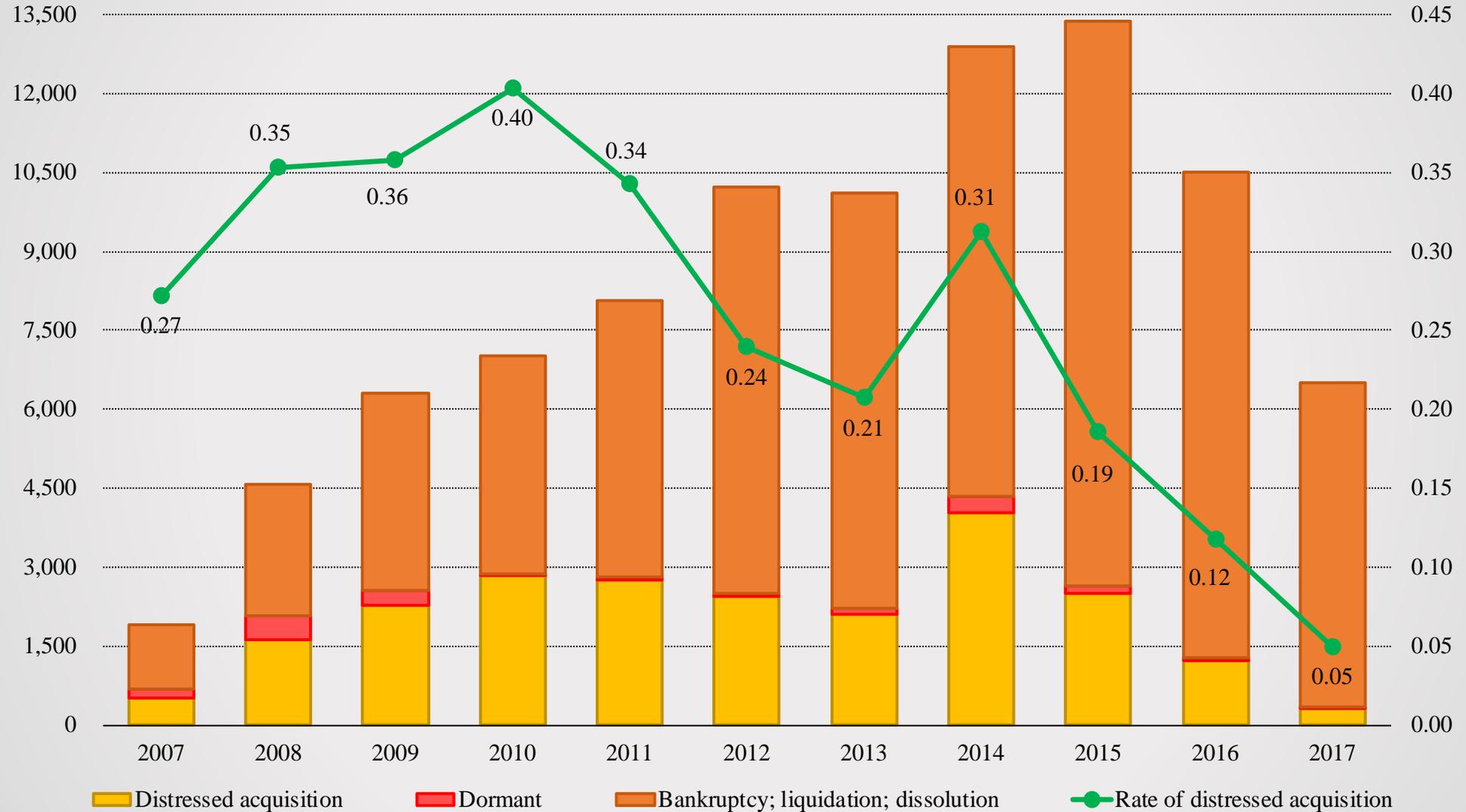
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Section 2

Survival status of 247,501 firms in 17 European emerging economies at the end of 2017

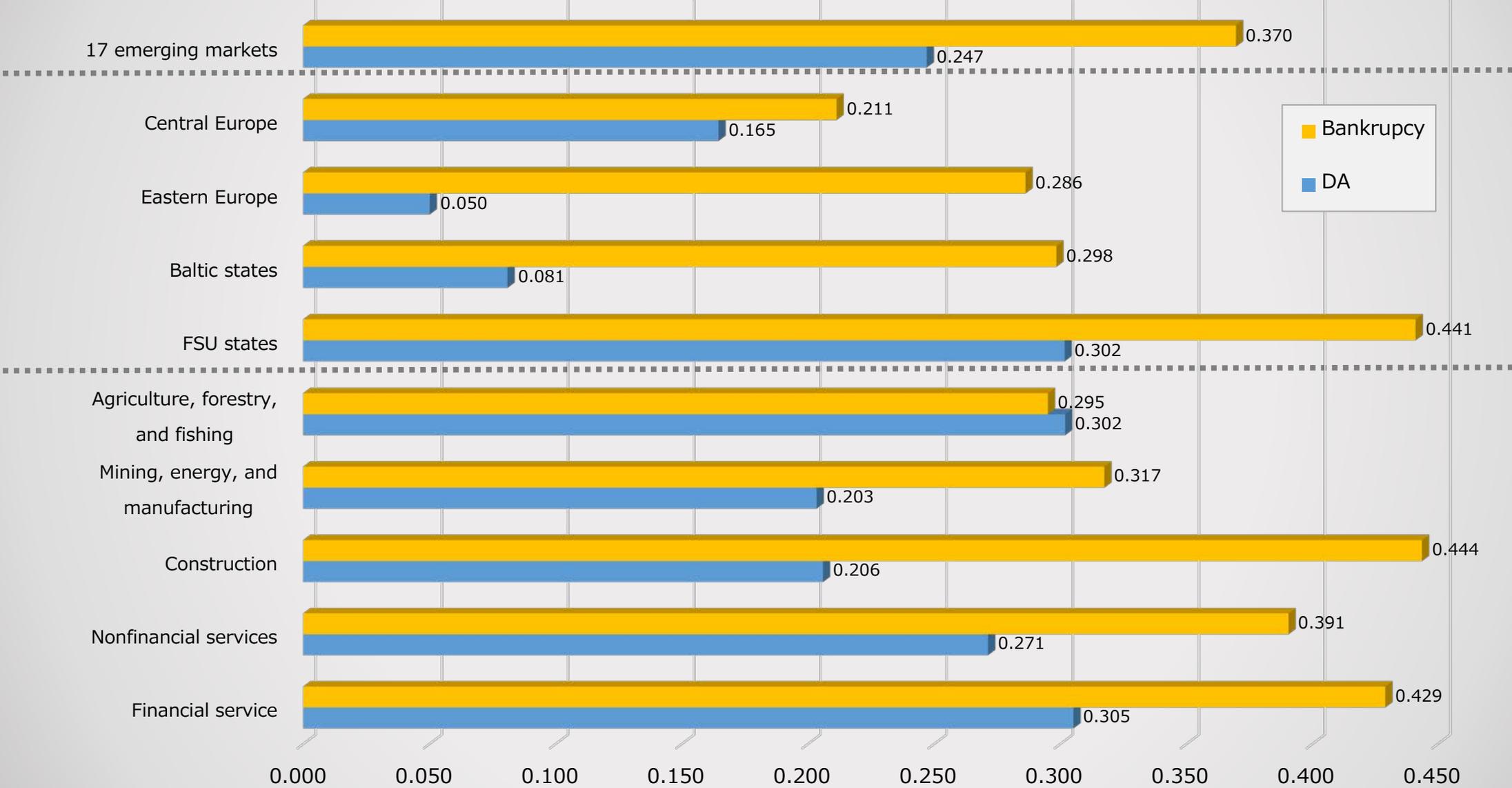


Dynamics of firm failure and distressed acquisitions in 17 European emerging economies during the period from 2007 to 2017



Note: The left axis is number of failed firms, while the right axis is the rate of distressed acquisitions (i.e., the share of distressed acquisitions in failed firms).

Bankrupcy and DA by region and industry



Empirical Analysis

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Section 3

Univariate comparison between companies with different survival status

Variable name	Survival status						Univariate comparison between three survival statuses			Univariate comparison between bankruptcy/liquidation/dissolution and distressed acquisition	
	Survivor		Bankruptcy; liquidation; dissolution		Distressed acquisition		ANOVA (<i>F</i>)	Bartlett's test (χ^2)	Kruskal-Wallis equality-of- populations rank test (χ^2)	Test for equality of means (<i>t</i>) or test for equality of proportions (<i>z</i>)	Wilcoxon rank- sum test (<i>z</i>)
	Mean	Median	Mean	Median	Mean	Median					
Joint-stock company	0.204	0	0.183	0	0.144	0	263.800 ***	785.129 ***	245.759 ***	13.522 ***	13.522 ***
Limited liability company	0.533	1	0.589	1	0.631	1	580.020 ***	52.764 ***	854.603 ***	-10.988 ***	-10.988 ***
Large shareholding	0.854	1	0.709	1	0.775	1	3339.430 ***	6600.000 ***	3034.346 ***	-19.223 ***	-19.223 ***
Foreign ownership	0.052	0	0.022	0	0.034	0	538.070 ***	15000.000 ***	128.907 ***	-10.117 ***	-10.117 ***
State ownership	0.056	0	0.033	0	0.074	0	367.420 ***	6800.000 ***	106.906 ***	-25.581 ***	-25.581 ***
Board size	2.058	1	1.568	1	1.307	1	2043.290 ***	12000.000 ***	5177.834 ***	19.664 ***	12.695 ***
International audit firm	0.016	0	0.005	0	0.018	0	239.590 ***	27000.000 ***	18.816 ***	-18.716 ***	-18.716 ***
ROA	0.833	1.179	-0.253	-1.404	-0.073	-1.237	2448.740 ***	65.642 ***	5087.818 ***	-6.527 ***	-6.476 ***
Liquidity	0.280	0.200	0.058	-0.265	0.182	-0.141	1047.540 ***	1300.000 ***	2649.824 ***	-16.303 ***	-13.822 ***
Solvency	1.013	2.618	-1.461	-3.333	-0.514	-2.587	5611.440 ***	154.849 ***	10078.284 ***	-24.198 ***	-22.458 ***
Labor productivity	1.687	0.925	0.950	-0.720	0.864	-1.226	412.900 ***	365.457 ***	919.270 ***	1.856 *	8.014 ***
Listed on stock market	0.026	0	0.014	0	0.003	0	344.630 ***	31000.000 ***	41.425 ***	13.688 ***	13.687 ***
Firm size	25.644	8.043	13.033	-9.088	15.203	-10.684	366.750 ***	39000.000 ***	983.511 ***	-4.332 ***	2.753 ***
Firm age	0.468	1.000	-0.368	-1.414	-0.662	-1.414	4609.180 ***	767.330 ***	10017.330 ***	17.383 ***	14.427 ***
Compliance with insolvency law	-0.232	0.000	-0.068	0.000	-0.778	0.000	4982.790 ***	5700.000 ***	6337.784 ***	111.097 ***	97.424 ***
Extensiveness of insolvency law	-0.268	-0.030	-0.103	-0.030	-0.720	-0.030	4377.100 ***	4400.000 ***	5813.608 ***	103.833 ***	89.708 ***
Enforceability of insolvency law	-0.412	-0.342	-0.644	-1.067	-0.684	-1.067	2827.240 ***	8700.000 ***	3809.351 ***	7.905 ***	-17.094 ***
Comprehensive insolvency law index	-0.032	0.564	0.300	0.564	-0.671	0.564	4056.420 ***	4700.000 ***	5019.515 ***	97.446 ***	80.494 ***
Corruption control	-0.532	-1.419	-0.858	-1.419	-1.195	-1.419	6153.680 ***	6600.000 ***	9090.681 ***	51.624 ***	55.438 ***
Banking reform	-0.349	-0.609	-0.679	-1.126	-0.764	-1.126	5406.500 ***	9600.000 ***	8838.249 ***	15.783 ***	-19.545 ***

Determinants of distressed acquisition in 17 European emerging economies: Baseline estimation

Model	[1]	[2]	[3]	[4]	[5]	[6]
Joint-stock company	-0.23741 *** (0.0150)	-0.23434 *** (0.0144)	-0.07961 *** (0.0128)	-0.18743 *** (0.0123)	-0.16548 *** (0.0134)	-0.09281 *** (0.0129)
Limited liability company	-0.14563 *** (0.0133)	-0.15098 *** (0.0127)	-0.03522 *** (0.0108)	-0.12939 *** (0.0108)	-0.01089 (0.0114)	-0.06052 *** (0.0108)
Large shareholding	0.80117 *** (0.0123)	0.78620 *** (0.0116)	0.23023 *** (0.0103)	0.80605 *** (0.0101)	0.19263 *** (0.0105)	0.22548 *** (0.0103)
Foreign ownership	0.30737 *** (0.0277)	0.31599 *** (0.0265)	0.00241 (0.0211)	0.28259 *** (0.0226)	0.12959 *** (0.0225)	0.04354 ** (0.0213)
State ownership	0.03778 * (0.0227)	0.02691 (0.0219)	0.32809 *** (0.0170)	0.01797 (0.0184)	0.27311 *** (0.0177)	0.32092 *** (0.0171)
ROA	0.02668 *** (0.0015)	0.02709 *** (0.0014)	0.02461 *** (0.0012)	0.02940 *** (0.0012)	0.02147 *** (0.0012)	0.02506 *** (0.0012)
Liquidity	0.01929 *** (0.0050)	0.01540 *** (0.0048)	0.02214 *** (0.0042)	0.00712 * (0.0042)	0.02505 *** (0.0042)	0.02339 *** (0.0042)
Solvency	0.02812 *** (0.0012)	0.02985 *** (0.0012)	0.00574 *** (0.0009)	0.03388 *** (0.0009)	0.00614 *** (0.0010)	0.00466 *** (0.0009)
Labor productivity	0.00682 *** (0.0008)	0.00555 *** (0.0008)	0.00527 *** (0.0007)	0.00694 *** (0.0007)	0.00020 (0.0007)	0.00086 (0.0007)
Listed on stock market	-0.18350 *** (0.0622)	-0.15395 *** (0.0586)	-0.45057 *** (0.0518)	-0.09948 ** (0.0461)	-0.40670 *** (0.0527)	-0.52947 *** (0.0517)
Firm size	0.00065 *** (0.0001)	0.00058 *** (0.0001)	0.00001 (0.0001)	0.00054 *** (0.0001)	0.00018 *** (0.0001)	0.00011 * (0.0001)
Firm age	-0.01286 *** (0.0031)	-0.01742 *** (0.0030)	-0.07773 *** (0.0019)	-0.03390 *** (0.0022)	-0.05756 *** (0.0020)	-0.06558 *** (0.0019)
Compliance with insolvency law	-0.58022 *** (0.0087)					
Extensiveness of insolvency law		-0.59874 *** (0.0094)				
Enforceability of insolvency law			-0.19699 *** (0.0068)			
Comprehensive insolvency law index				-0.30818 *** (0.0043)		
Corruption control					-0.32638 *** (0.0060)	
Banking reform						-0.25361 *** (0.0068)
NACE division-level fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	213750	213750	213750	213750	213750	213750
Censored observations	133766	133766	133766	133766	133766	133766
Uncensored observations	79987	79987	79987	79987	79987	79987
Log likelihood	-161065.300	-161396.300	-164734.300	-161541.100	-163426.400	-164425.400
Wald test (χ^2)	17714.850 ***	18218.530 ***	6540.740 ***	21656.770 ***	8034.150 ***	6957.810 ***
ρ	-0.737	-0.785	0.982	-0.928	0.962	0.981
LR test (χ^2)	413.21 ***	436.75 ***	3552.48 ***	943.84 ***	4215.81 ***	4217.48 ***

Hypothesis 1 is supported.

Hypotheses 2 and 3 are supported

Hypothesis 4 is supported.

Hypothesis 5 is partially supported for firm size.

Hypothesis 6 is supported.

Hypotheses 7 and 8 are supported.

LR test rejects the null-hypothesis that ρ is zero.

Determinants of distressed acquisition: Estimation by industry

Target industry	Agriculture, forestry, and fishing (Section A)			Mining, energy, and manufacturing (Sections B–E)			Construction (Section F)			Nonfinancial services (Sections G–J, L–S)			Financial service (Section K)		
Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]	[14]	[15]
Joint-stock company	-0.04067 (0.0591)	-0.10973 ** (0.0480)	-0.07632 (0.0483)	-0.14791 *** (0.0197)	-0.05184 ** (0.0250)	0.03192 (0.0238)	-0.12643 ** (0.0520)	-0.22762 *** (0.0404)	-0.08344 ** (0.0378)	-0.17617 *** (0.0185)	-0.25014 *** (0.0199)	-0.17819 *** (0.0191)	-0.16610 (0.2113)	-0.23401 (0.1562)	-0.23590 (0.1621)
Limited liability company	0.09890 * (0.0534)	0.17405 *** (0.0400)	0.21514 *** (0.0404)	0.00101 (0.0185)	0.12682 *** (0.0224)	0.16953 *** (0.0214)	-0.03958 (0.0456)	-0.03063 (0.0346)	-0.09031 *** (0.0315)	-0.14620 *** (0.0157)	-0.09125 *** (0.0163)	-0.03576 ** (0.0155)	-0.36703 * (0.2163)	-0.45904 *** (0.1634)	-0.46634 *** (0.1695)
Large shareholding	0.82692 *** (0.0520)	0.08807 ** (0.0393)	0.05946 (0.0442)	0.82527 *** (0.0173)	0.23338 *** (0.0210)	0.24928 *** (0.0207)	0.50998 *** (0.0779)	0.21815 *** (0.0285)	0.25386 *** (0.0280)	0.80033 *** (0.0146)	0.18649 *** (0.0147)	0.22868 *** (0.0145)	0.65423 *** (0.1756)	0.12478 (0.1132)	0.15503 (0.1215)
Foreign ownership	0.65989 *** (0.1801)	0.61582 *** (0.1417)	0.53477 *** (0.1399)	0.25969 (0.0321)	0.06399 * (0.0370)	-0.00591 (0.0346)	-0.07006 (0.1566)	0.15800 (0.1185)	-0.01218 (0.1113)	0.21239 *** (0.0322)	0.17573 *** (0.0318)	0.09222 *** (0.0304)	-0.02492 (0.2235)	0.02542 (0.1707)	-0.03700 (0.1794)
State ownership	0.01511 (0.0912)	0.15588 ** (0.0700)	0.16092 ** (0.0711)	0.01056 (0.0294)	0.29954 *** (0.0322)	0.34289 *** (0.0309)	0.58535 *** (0.0807)	0.47093 *** (0.0591)	0.53143 *** (0.0570)	0.11492 *** (0.0267)	0.28756 *** (0.0249)	0.34490 *** (0.0240)	0.03150 (0.2477)	0.11237 (0.1873)	0.13145 (0.1937)
ROA	0.05775 *** (0.0087)	0.02693 *** (0.0058)	0.02500 *** (0.0061) ***	0.03886 *** (0.0022)	0.02058 *** (0.0026)	0.02370 *** (0.0025)	-0.00193 (0.0051)	-0.01257 *** (0.0036)	-0.01930 *** (0.0035)	0.02268 *** (0.0016)	0.02082 *** (0.0017)	0.02378 *** (0.0017)	0.00338 (0.0181)	-0.02344 * (0.0127)	-0.02510 * (0.0129)
Liquidity	0.06283 *** (0.0226)	-0.01461 (0.0175)	-0.02346 (0.0180)	0.01694 ** (0.0085)	0.03851 *** (0.0095)	0.03695 *** (0.0092)	0.04721 ** (0.0197)	0.02534 * (0.0150)	0.01837 (0.0149)	0.02239 *** (0.0055)	0.03061 *** (0.0056)	0.03090 *** (0.0055)	0.05201 ** (0.0241)	0.03664 * (0.0190)	0.03895 ** (0.0196)
Solvency	0.03215 *** (0.0048)	-0.00428 (0.0037)	-0.00044 (0.0038)	0.04469 *** (0.0016)	0.00476 ** (0.0019)	0.00466 ** (0.0018)	0.00990 * (0.0054)	-0.00168 (0.0031)	0.00224 (0.0030)	0.03423 *** (0.0013)	0.00989 *** (0.0013)	0.00840 *** (0.0013)	-0.01582 (0.0118)	-0.02108 ** (0.0086)	-0.02059 ** (0.0089)
Labor productivity	-0.01063 (0.0075)	-0.04078 *** (0.0061)	-0.05733 *** (0.0063)	0.01062 *** (0.0014)	0.00332 ** (0.0015)	0.00166 (0.0015)	0.00172 (0.0034)	0.00034 (0.0028)	0.00048 (0.0027)	0.00536 *** (0.0009)	0.00072 (0.0009)	-0.00021 (0.0008)	-0.01002 (0.0066)	-0.00477 (0.0051)	-0.00621 (0.0053)
Listed on stock market	0.06552 (0.4312)	-0.28409 (0.3772)	-0.69578 * (0.3848)	-0.10976 ** (0.0499)	-0.35801 *** (0.0681)	-0.46184 *** (0.0667)	-0.71388 ** (0.3054)	-0.78461 *** (0.2384)	-0.90720 *** (0.2357)	-0.02094 (0.0909)	-0.51874 *** (0.1061)	-0.64091 *** (0.1021)	0.30049 (0.5235)	0.13989 (0.3690)	0.11820 (0.3851)
Firm size	-0.00010 (0.0005)	-0.00096 ** (0.0004)	-0.00095 ** (0.0004)	0.00038 *** (0.0001)	0.00029 *** (0.0001)	0.00023 ** (0.0001)	-0.00045 (0.0004)	-0.00045 (0.0003)	-0.00054 ** (0.0003)	0.00080 *** (0.0001)	0.00025 ** (0.0001)	0.00019 * (0.0001)	0.00052 (0.0005)	-0.00050 (0.0004)	-0.00053 (0.0004)
Firm age	-0.02597 ** (0.0113)	-0.04724 *** (0.0081)	-0.06168 *** (0.0083)	-0.01812 *** (0.0030)	-0.03386 *** (0.0034)	-0.03948 *** (0.0033)	-0.09924 *** (0.0100)	-0.07057 *** (0.0062)	-0.08212 *** (0.0060)	-0.05974 *** (0.0036)	-0.07361 *** (0.0030)	-0.08476 *** (0.0029)	-0.03818 (0.0322)	-0.07331 *** (0.0229)	-0.07610 *** (0.0233)
Comprehensive insolvency law index	-0.41799 *** (0.0165)			-0.22853 *** (0.0062)			-0.38418 *** (0.0224)			-0.30268 *** (0.0065)			-0.37073 *** (0.0659)		
Corruption control		-0.43025 *** (0.0362)			-0.28056 *** (0.0100)			-0.43377 *** (0.0196)			-0.33214 *** (0.0090)			-0.07548 (0.0705)	
Banking reform			-0.18228 *** (0.0438)			-0.23718 *** (0.0117)			-0.29851 *** (0.0199)			-0.24479 *** (0.0100)			0.05148 (0.1109)
NACE division-level fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	15253	15253	15253	60671	60671	60671	26190	26190	26190	109618	109618	109618	2023	2023	2023
Censored observations	10764	10764	10764	41436	41436	41436	14451	14451	14451	66032	66032	66032	1083	1083	1083
Uncensored observations	4489	4489	4489	19235	19235	19235	11739	11739	11739	43586	43586	43586	940	940	940
Log likelihood	-9931.863	-10073.150	-10144.090	-41364.220	-42053.030	-42286.210	-21080.860	-21127.670	-21326.210	-85567.860	-86546.700	-87037.140	-1742.939	-1761.735	-1762.180
Wald test (χ^2)	1466.78 ***	483.97 ***	394.41 ***	6345.34 ***	1632.81 ***	1304.84 ***	1143.88 ***	1044.69 ***	849.67 ***	11464.22 ***	4448.84 ***	4002.51 ***	70.41 ***	41.00 ***	38.35 ***
ρ	-0.735	0.920	0.897	-0.976	0.956	0.984	-0.078	0.963	0.985	-0.935	0.958	0.978	-0.439	0.907	0.861
LR test (χ^2)	19.53 ***	295.46 ***	114.14 ***	540.06 ***	740.87 ***	743.88 ***	1.50	784.43 ***	914.32 ***	406.36 ***	1809.98 ***	1725.70 ***	0.21	29.67 ***	16.81 ***

Determinants of distressed acquisition: Estimation by year focusing on the impacts of country-level factors

Observation year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Comprehensive insolvency law index	0.12917 *** (0.0072)	0.01650 *** (0.0053)	-0.00168 (0.0044)	-0.06137 *** (0.0046)	-0.11460 *** (0.0046)	-0.14921 *** (0.0046)	-0.13027 *** (0.0047)	-0.22255 *** (0.0026)	-0.13644 *** (0.0033)	-0.05829 *** (0.0065)	-0.02594 *** (0.0066)
Corruption control	-0.01093 (0.0175)	-0.10207 *** (0.0115)	-0.13412 *** (0.0098)	-0.17408 *** (0.0111)	-0.32333 *** (0.0113)	-0.24263 *** (0.0085)	-0.16855 *** (0.0084)	-0.26402 *** (0.0072)	-0.19521 *** (0.0090)	0.05154 *** (0.0039)	0.04425 *** (0.0066)
Banking reform	-0.24467 *** (0.0209)	-0.14256 *** (0.0168)	-0.14616 *** (0.0129)	-0.05033 *** (0.0132)	-0.20199 *** (0.0141)	-0.24246 *** (0.0131)	-0.19711 *** (0.0143)	-0.06740 *** (0.0112)	-0.18915 *** (0.0138)	0.05343 *** (0.0050)	0.04207 *** (0.0083)
N	213756	212446	209046	203842	197780	190598	181416	172527	161157	148926	139764
Censored observations	212446	209046	203842	197780	190598	181416	172527	161157	148926	139764	132924
Uncensored observations	1310	3400	5204	6062	7182	9182	8889	11370	12231	9162	5998

Determinants of distressed acquisition: Estimation by country group for robustness check

Target country group	Without Russia			EU member states			EU member states excluding Bulgaria, Croatia, and Romania		
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
Joint-stock company	0.00748 (0.0169)	0.11258 *** (0.0093)	0.11525 *** (0.0085)	0.50079 *** (0.0327)	0.18600 *** (0.0367)	0.41682 *** (0.0337)	-0.07046 * (0.0390)	0.05832 *** (0.0158)	0.00377 (0.0456)
Limited liability company	0.14646 *** (0.0121)	0.22215 *** (0.0066)	0.20255 *** (0.0064)	0.37816 *** (0.0243)	0.10053 *** (0.0251)	0.28051 *** (0.0275)	-0.11150 *** (0.0351)	0.09657 *** (0.0142)	-0.10927 *** (0.0406)
Large shareholding	0.45712 *** (0.0112)	0.18569 *** (0.0073)	0.01482 * (0.0089)	0.67774 *** (0.0212)	0.66876 *** (0.0216)	0.70567 *** (0.0198)	0.56686 *** (0.0251)	0.08010 *** (0.0117)	0.57624 *** (0.0287)
Foreign ownership	0.15855 *** (0.0210)	0.10416 *** (0.0127)	0.01684 (0.0119)	0.21216 *** (0.0308)	0.21595 *** (0.0318)	0.20835 *** (0.0290)	0.20289 *** (0.0388)	0.11531 *** (0.0165)	0.26687 *** (0.0443)
State ownership	-0.03841 (0.0257)	0.08796 *** (0.0140)	0.23680 *** (0.0131)	0.05420 (0.0528)	0.06430 (0.0548)	0.03884 (0.0507)	0.16877 *** (0.0620)	0.25697 *** (0.0256)	0.22413 *** (0.0674)
ROA	0.03522 *** (0.0016)	0.01795 *** (0.0010)	0.00218 ** (0.0010)	0.02335 *** (0.0029)	0.02237 *** (0.0030)	0.02530 *** (0.0028)	0.03328 *** (0.0038)	0.00400 *** (0.0015)	0.03523 *** (0.0043)
Liquidity	0.03225 *** (0.0060)	0.01697 *** (0.0034)	0.01432 *** (0.0031)	0.05729 *** (0.0119)	0.07105 *** (0.0123)	0.05597 *** (0.0112)	0.07628 *** (0.0154)	0.03510 *** (0.0062)	0.09189 *** (0.0177)
Solvency	0.03829 *** (0.0012)	0.02139 *** (0.0008)	0.00936 *** (0.0008)	0.04319 *** (0.0023)	0.04044 *** (0.0024)	0.04237 *** (0.0021)	0.04005 *** (0.0029)	0.00853 *** (0.0012)	0.03779 *** (0.0033)
Labor productivity	0.00312 *** (0.0008)	0.00280 *** (0.0005)	0.00244 *** (0.0004)	0.00699 *** (0.0013)	0.00778 *** (0.0014)	0.00520 *** (0.0014)	-0.00094 (0.0017)	0.00313 *** (0.0006)	0.00050 (0.0019)
Listed on stock market	-0.14337 *** (0.0380)	-0.24148 *** (0.0191)	-0.34289 *** (0.0178)	-0.38563 *** (0.0742)	-0.30980 *** (0.0762)	-0.35137 *** (0.0690)	-0.32054 (0.2365)	-0.12668 * (0.0754)	-0.59952 ** (0.2868)
Firm size	0.00013 * (0.0001)	-0.00002 (0.0000)	-0.00002 (0.0000)	0.00135 *** (0.0001)	0.00153 *** (0.0001)	0.00121 *** (0.0001)	0.00145 *** (0.0002)	0.00075 *** (0.0001)	0.00138 *** (0.0002)
Firm age	0.02128 *** (0.0022)	0.00925 *** (0.0013)	-0.01172 *** (0.0012)	0.04038 *** (0.0036)	0.03519 *** (0.0038)	0.03982 *** (0.0034)	0.01597 *** (0.0045)	0.00698 *** (0.0018)	0.01382 *** (0.0050)
Comprehensive insolvency law index	-0.15462 *** (0.0035)			-0.02210 *** (0.0085)			-0.13306 *** (0.0105)		
Corruption control		-0.21455 *** (0.0030)			-0.37488 *** (0.0269)			-0.19305 *** (0.0133)	
Banking reform			-0.20781 *** (0.0044)			-0.05751 *** (0.0208)			-0.13415 *** (0.0727)
NACE division-level fixed effects	Yes	Yes	Yes						
N	105968	105968	105968	61853	61853	61853	36481	36481	36481
Censored observations	77112	77112	77112	46887	46887	46887	29311	29311	29311
Uncensored observations	28856	28856	28856	14966	14966	14966	7170	7170	7170
Log likelihood	-69398.470	-70728.590	-72666.180	-34081.650	-33963.060	-34081.690	-18739.690	-18710.840	-18668.540
Wald test (χ^2)	7758.51 ***	8257.61 ***	5473.81 ***	4323.77 ***	4255.81 ***	4739.97 ***	1966.71 ***	1266.53 ***	1675.31 ***
p	-0.994	-0.855	-0.954	-0.931	-0.923	-0.954	-0.962	-0.337	0.788
LR test (χ^2)	466.27 ***	317.18 ***	512.19 ***	389.98 ***	377.80 ***	314.62 ***	358.90 ***	50.53 ***	16.86 ***

Summary and Interpretation of Results

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Section 4

Summary and Interpretation of Results 1

- In this study, we tracked the survival status of 247,501 companies in 17 emerging markets in Europe from 2007 to 2017.
- As a result, it was confirmed that by the end of 2017, 91,494 companies, which was 37% of the total sample, had gone bankrupt, and 22,608 companies, which was 24.7% of the bankrupt companies, had been bailed out by the merger.
- We also found that the rate of bailout mergers of bankrupt companies was much higher than that of the Central and Eastern European and Baltic countries in the former Soviet Union, while the deviation between industries was not so significant.
- The frequency of DAs remained at a high level for the four years immediately following the 2008 global financial crisis, and then declined year by year.

Summary and Interpretation of Results 2

- The estimation results of the Heckman two-stage probit model show that distressed companies are more likely to be rescued by the merger if:
- (1) there are large shareholder(s), the state, and foreign investors in terms of the ownership structure,
- (2) if the performance before the distress is good, and
- (3) if the firm size is large

Summary and Interpretation of Results 3

- Furthermore, the difference in corporate form also has a statistically significant effect on the probability of DA of a bankrupt company.
- The results of this study strongly suggested that the country-level institutional quality also greatly influences the probability of DA.
- In other words, the more efficiently the bankruptcy law is operated, corruption is effectively suppressed, and the degree of development of the banking system is high, the more the bankrupt company is liquidated according to the legal procedure, not by the DA.

Summary and Interpretation of Results 4

- The above empirical results are reproduced by industry and by each observation year, and even when restrictions are imposed on the countries to be analyzed, they are statistically robust.
- The results of this study show that the DA of distressed companies in European emerging markets works as a mean to complement the deficiencies of the institutions in order to effectively redistribute the tangible and intangible assets of bankrupt companies with relatively high potential.

COVID-19 Shock Prediction

- The problem of COVID-19 infection could bring macroeconomic shocks comparable to the 2008 global financial crisis to emerging market countries in Europe.
- The corona shock is expected to cause many Central and Eastern European companies to go bankrupt. There is a possibility that even well-managed companies might be subject to DAs.
- Basing on the results of this study, we predict that more active DAs will be observed after the end of the corona period, especially in Russia and other institutionally vulnerable countries in Europe.

Thank you for your attention!