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Financial penalties and the systemic risk of banks

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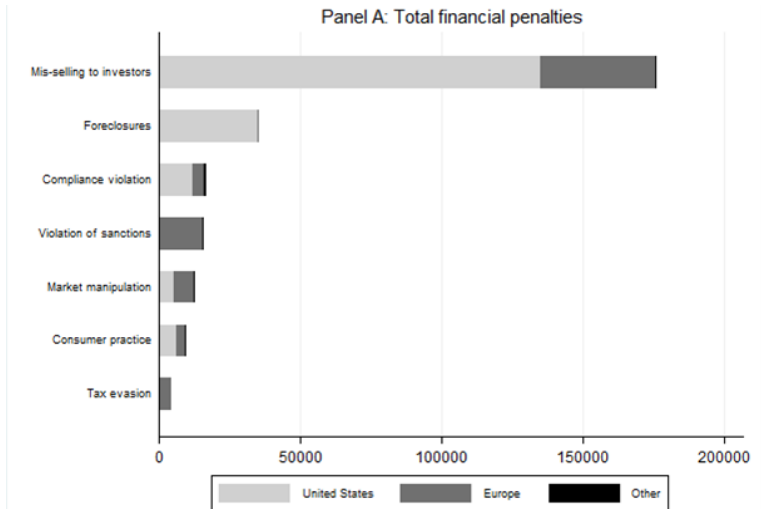
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Scope of the paper

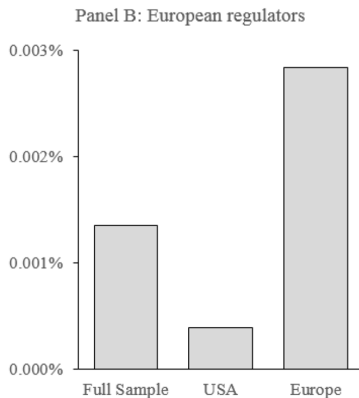
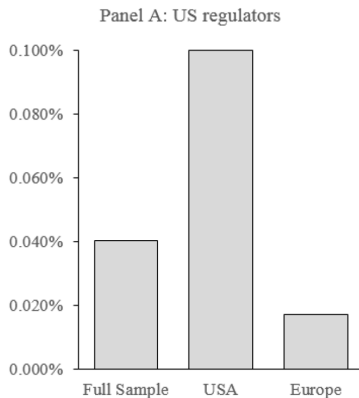


- Continuously increasing financial penalties over the last few years
- Concerns about the impact of these penalties on the banking industry have been voiced
- ESRB warns that the levels of financial penalties might pose systemic risk

Total financial penalties (in Mio. USD)



Origin of financial penalties (fraction of TA)



Contribution

- First paper that investigates the relationship between financial penalties and the systemic risk of banks:
 - Informs the debate on the design of a well-functioning regulatory environment
 - Extends the literature on the determinants of systemic risk
 - Contributes to the literature on corporate misconduct by focusing on the dimension of risk
 - Results will be helpful for banking supervisors and policymakers

Hypothesis development

- Financial penalties might ...
 - restore the investors' and customers' confidence in the banking system after a misconduct scandal
 - prevent repeated future offenses of banks
 - encourage banks not to enter specific businesses that are associated with excessive risk-taking and thus are related with a higher systemic risk
- Financial penalties might debilitate banks to such extent that they ...
 - are more vulnerable for global crises
 - might collapse and initiate a cascade of bank failures via direct linkages
 - might transmit losses via indirect linkages between banks (fire sales, information spillovers)
 - discontinue specific financial services and no substitutes are readily available

Hypothesis development

- **Systemic risk exposure:** Measures the extent to which a bank is affected by a system-wide collapse.
 - Financial penalties may weaken the banks and make them more vulnerable for systemic events.
- **Systemic risk contribution:** Measures the sensitivity of the financial system to a negative shock in a single bank.
 - Financial penalties could increase public concerns about the business model and solvency of banks.
 - Bank may withdraw from specific financial markets, such that the functioning of a particular market is undermined.
- **H1:** The financial penalties of a bank will increase a bank's systemic risk.

Data

- Hand-collected database
 - 671 cases of financial penalties (2007-2014)
 - 68 banks from 20 countries
 - Newspaper archives and banking authorities databases
- Thomson Worldscope database
- Thomson Reuters Financial Datastream

Methodology I

- Fixed effects panel regressions

$$\begin{aligned}
 \text{Systemic risk}_{it} = & \alpha + \beta_1 \text{PENALTY}_{it} + \sum_{j=2}^J \beta_j X_{it}^j \\
 & + \sum_{k=1}^T \gamma_k \text{Year}_{-(k)}_{it} + \sum_{k=1}^N \kappa_k \text{Bank}_{-(k)}_{it} + \epsilon_{it}
 \end{aligned}$$

- $\text{Systemic risk}_{it}$: MES and ΔCoVaR
- PENALTY_{it} : Sum of financial penalties to total assets
- X_{it} : control variables (SIZE, INC, FUND, ...)
- time-fixed and bank-fixed effects to control for unobserved heterogeneity

Methodology II

- Marginal Expected Shortfall (ES): systemic risk exposure
 - Measures the extent to which a bank is affected by a system-wide collapse
 - Measures the average return of each bank during days when the market as a whole experiences enormous downward movements
- Conditional Value at Risk (ΔCoVaR): systemic risk contribution
 - Measures the sensitivity of the financial system to a negative shock in a single bank
 - Measures the difference between CoVaR conditional on the financial institution being in distress and the CoVaR conditional on the normal (median) state of the financial institution

Systemic risk I

	(1) Dyn. MES	(2) Δ CoVaR
PENALTY	0.0186** (0.008)	-0.0011 (0.001)
Bank-fixed effects	YES	YES
Time-fixed effects	YES	YES
Observations	529	529
No. of banks	68	68
F-test (p-value)	16.19 (1.000)	73.97 (1.000)
adj. Rsquared	0.434	0.541

Distance to default

	(1) ln Z-Score
PENALTY	-0.2453** (0.114)
Other controls	Yes
Bank-fixed effects	Yes
Time-fixed effects	Yes
Observations	546
No. of banks	68
F-test (p-value)	18.47 (0.000)
adj. Rsquared	0.475

Systemic risk II

■ Dependent variable : Dynamic MES

	(1)	(2)	(3)	(4)	(5)
PENALTY	0.0710*** (0.020)	0.0304** (0.014)	0.0393** (0.015)	0.0187** (0.008)	0.0301* (0.017)
CAP_STRING	-0.0008 (0.001)				
PENALTY x CAP_STRING	-0.0779*** (0.025)				
PROMPT_CORR		0.0005 (0.001)			
PENALTY x PROMPT_CORR		-0.0114* (0.006)			
DECL_INSOLV			0.0116** (0.005)		
PENALTY x DECL_INSOLV			0.0402** (0.019)		
EXT_MONITOR				0.0017 (0.005)	
PENALTY x EXT_MONITOR				0.2699** (0.131)	
DEPOSIT_INSUR					-0.0002** (0.000)
PENALTY x DEPOSIT_INSUR					-0.0008 (0.001)

Robustness checks I

	Alternative systemic risk measures		Alternative specification of dyn. MES	
	(1) SRISK	(2) LTD	(3) dyn. MES _{MSCIWorld}	(4) dyn. MES _{regional}
PENALTY	4.6121*** (1.012)	0.0039* (0.002)	0.0156* (0.008)	0.0133* (0.008)
Other controls	Yes	Yes	Yes	Yes
Bank-fixed effects	Yes	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes
Observations	524	528	529	529
No. of banks	68	68	68	68
F-test (p-value)	6.887 (0.000)	6.826 (0.000)	18.84 (0.000)	2.870 (0.001)
adj. R ²	0.242	0.138	0.369	0.0609

Robustness checks II

	Additional control variables			
	(5) RECAP	(6) RECAP x PENALTY	(7) Macro- economic variables	(8) GGDP x PENALTY
PENALTY	0.0190** (0.009)	0.0193** (0.009)	0.0186** (0.008)	0.0638*** (0.019)
RECAP	0.0111 (0.009)	0.0124 (0.010)		
RECAP x PENALTY		-0.1528 (0.145)		
INT			-0.0030 (0.003)	-0.0026 (0.003)
GGDP			-0.0030** (0.001)	-0.0027* (0.001)
GGDP x PENALTY				-0.0276** (0.011)
Other controls	Yes	Yes	Yes	Yes
Bank-fixed effects	Yes	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes
Observations	529	529	524	529
No. of banks	68	68	68	68
F-test	17.45	17.32	15.45	15.87
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)

Robustness checks III

	Alternative sample selection criteria		Methodological robustness	
	(9) Excl. non-commercial banks	(10) Excl. exit banks	(11) Outlier	(12) system GMM
PENALTY	0.0199** (0.009)	0.0135** (0.005)	0.0184** (0.009)	0.0220** (0.010)
Other controls	Yes	Yes	Yes	Yes
Bank-fixed effects	Yes	Yes	Yes	Yes
Time-fixed effects	Yes	Yes	Yes	Yes
Observations	514	502	529	529
No. of banks	64	62	68	68
F-test	17	22.23	16.61	16.85
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)
adj. R ²	0.435	0.507	0.434	
Hansen				54.21
(p-value)				(1.000)
AR1				-4.931
(p-value)				(0.000)
AR2				-0.407
(p-value)				(0.684)

Conclusion

- Financial penalties increase the systemic risk **exposure** of banks, whereas they do not significantly affect banks' **contribution** to systemic risk
 - Financial penalties raise banks' default probability and makes them more vulnerable for systemic events
 - Financial penalties neither promote nor prevent the possibility that individual shocks will propagate throughout the banking system
- **The design of the regulatory and supervisory framework** of a country influences the effects of financial penalties on systemic risk exposure
 - More stringent capital requirements and more prompt corrective power of national authorities mitigate the positive relationship

Conclusion

- Stronger power of supervisory authorities to declare insolvency and a greater external monitoring culture exacerbate the positive relationship

Conclusion

- Policy implications:
 - Findings suggest that authorities should take the macro-prudential perspective into consideration when they impose financial penalties on banks
 - Findings support the efforts by supervisory authorities to strictly monitor misconduct risk and the corresponding financial penalties of banks
 - Findings indicate that authorities around the world should coordinate their efforts before imposing significant financial penalties on banks

Hypothesis development: bank risk

- Aim of financial penalties is to enforce banking discipline and to deter banks from engaging in unsound risky behavior
 - Penalties may discourage illegal und unethical behavior
 - Penalties may also change the general risk policy
 - Penalties may jeopardize profitability targets of managers who in turn may be drawn to riskier business
- **H2:** The financial penalties of a bank will have a significant negative impact on its risk-taking behavior.
- Note: A bank's willingness to engage in illegal or unethical practices may not be captured by standard risk measures as this kind of practices does not appear in banks' balance sheets and is unknown to investors if undetected

Bank risk-taking behavior

	Panel A: risk taking				Panel B: change in risk taking			
	(1) lnZScore	(2) RWAtTA	(3) VaR	(4) ES	(1) Δ lnZScore	(2) Δ RWAtTA	(4) Δ VaR	(3) Δ ES
PENALTY	-0.3225* (0.185)	-0.7633 (1.797)	0.0046 (0.004)	0.0048 (0.006)	-0.0089 (0.031)	0.0111 (0.012)	0.0197 (0.032)	-0.0758 (0.082)
Other controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	419	396	409	409	389	382	395	395
No. of banks	66	64	63	63	64	62	63	63
F-test (p-val.)	50.59 (0.000)	828.3 (0.000)	84.71 (0.000)	83.48 (0.000)	3.814 (0.000)	7.551 (0.000)	89.81 (0.000)	76.27 (0.000)
Hansen test (p-val.)	52.94 0.878	45.17 0.737	57.97 0.264	53.02 0.434	53.19 0.933	44.37 0.993	50.82 0.520	52.38 0.459
AB test AR(1) (p-val.)	-4.733 (0.000)	-3.937 (0.000)	-2.534 (0.011)	-3.448 (0.001)	-3.572 (0.001)	-4.097 (0.000)	-5.854 (0.000)	-4.776 (0.000)
AB test AR(2) (p-val.)	0.207 (0.836)	0.653 (0.514)	-0.217 (0.828)	0.450 (0.653)	-1.036 (0.300)	0.807 (0.420)	0.0436 (0.965)	0.481 (0.630)

- Financial penalties do not seem to have enough power to change the general risk policy of a bank

Bank stock performance

	(1) Full	(2) USA	(3) Europe
PENALTY	0.1220** (0.056)	0.1665*** (0.048)	-0.0410 (0.074)
Other controls	YES	YES	YES
Observations	473	161	220
No. of banks	68	26	30
F-test (p-val.)	52.79 (0.000)	22.58 (0.000)	169.5 (0.000)
Hansen test (p-val.)	51.83 (1.000)	9.591 (1.000)	6.181 (1.000)
AB test AR(1) (p-val.)	-4.572 (0.000)	-2.325 (0.020)	-3.488 (0.000)
AB test AR(2) (p-val.)	1.402 (0.161)	0.404 (0.686)	1.205 (0.228)

- Investors are content that the financial penalty is smaller relative to the economic gain accrued from the banks' misconduct
- European banks:
 - Financial penalties have a significant negative impact on after-tax profitability
 - No significant positive stock market adjustment in contrast to US banks

Conclusions

■ Bank risk

- Significant negative relation between financial penalties and distance-to-default
- No significant correlations with bank risk taking behavior
- (Positive correlations with systemic risk exposure, but no correlations with systemic risk contributions)

■ Stock performance

- Significant positive relation between financial penalties and buy-and-hold returns
 - ▶ Investors are content that the financial penalties are smaller relative to the economic gains accrued from the banks' misconducts
 - ▶ supported by positive abnormal returns