

LBS Research Online

A Kleymenova and I Tuna

Regulation of Compensation and Systemic Risk: Evidence from the UK

Article

This version is available in the LBS Research Online repository: <https://lbsresearch.london.edu/id/eprint/1714/>

Kleymenova, A and Tuna, I

(2021)

Regulation of Compensation and Systemic Risk: Evidence from the UK.

Journal of Accounting Research, 59 (3). pp. 1123-1175. ISSN 0021-8456

DOI: <https://doi.org/10.1111/1475-679X.12355>

Wiley

<https://onlinelibrary.wiley.com/doi/10.1111/1475-6...>

Users may download and/or print one copy of any article(s) in LBS Research Online for purposes of research and/or private study. Further distribution of the material, or use for any commercial gain, is not permitted.

Internet Appendix for
Regulation of Compensation and Systemic Risk: Evidence from the UK

Anya Kleymenova

Anya.Kleymenova@frb.gov

Board of Governors of the Federal Reserve System

İrem Tuna

ituna@london.edu

London Business School

February 2021

Table IA1: Compensation sample descriptive statistics

This table presents the descriptive statistics for the compensation variables used in our supplemental analyses in the Internet Appendix for UK banks subject to the Remuneration Code, the largest UK companies (constituents of FTSE 350, excluding UK banks), and matched UK and US banks. All values are in real, 2012 thousands of pound sterling (£thousands) unless otherwise indicated. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. All variables are defined in Appendix A of the manuscript.

UK Banks	2006-2009				2010-2012			
	N	Mean	Std dev	Median	N	Mean	Std dev	Median
<i>Descriptive variables: Compensation</i>								
Total compensation	65	3,462.58	2,796.31	2,884.00	45	4,699.21	5,538.61	3,467.00
Take home pay	65	1,961.94	1,550.53	1,504.02	45	2,267.05	1,704.81	1,646.00
% Salary in total comp.	65	0.4163	0.3272	0.3443	45	0.3556	0.2997	0.2671
% Total bonus in total comp.	65	0.3627	0.2939	0.3473	45	0.3772	0.2931	0.2983
% Incentives pay in total comp.	65	0.0412	0.1333	0.0003	45	0.0411	0.1454	0.0004
% Deferred bonus in total comp.	65	0.1759	0.2473	0.0000	45	0.3075	0.2194	0.2870
UK Other Firms								
<i>Descriptive variables: Compensation</i>								
Total compensation	858	1,766.63	1,956.96	1,180.03	572	2,604.49	2,554.43	1,747.35
Take home pay	858	1,014.55	736.76	781.78	572	1,423.93	931.91	1,155.40
% Salary in total comp.	858	0.5585799	0.2108	0.5329	572	0.5189	0.2090	0.4891
% Total bonus in total comp.	858	0.2319029	0.1678	0.2242	573	0.2526	0.1723	0.2445
% Incentives pay in total comp.	858	0.0418	0.1307	0.0002	572	0.0355	0.1245	0.0004
% Deferred bonus in total comp.	858	0.0784164	0.1333	0.0000	572	0.1354	0.3849	0.0296
US Banks								
<i>Descriptive variables: Compensation</i>								
Total compensation	56	5,857.90	6,708.63	2,623.84	61	4,883.86	5,936.47	1,761.14
Take home pay	56	1,018.32	1,125.04	584.26	61	1,423.02	1,470.65	695.95
% Salary in total comp.	56	0.2907	0.3108	0.1350	61	0.3473	0.3005	0.2740
% Total bonus in total comp.	56	0.1924	0.2346	0.0786	61	0.1627	0.2042	0.1131
% Incentives pay in total comp.	47	0.3381	0.3567	0.2267	60	0.1722	0.2472	0.0206
EU Banks								
<i>Descriptive variables: Compensation</i>								
Total compensation	39	1,704.79	2,065.48	1,090.74	27	1,942.42	2,054.87	1,309.08
Take home pay	37	1,481.75	1,627.59	891.70	25	1,541.63	1,420.47	1,449.76
% Salary in total comp.	39	0.5802	0.2719	0.6101	26	0.6129	0.2881	0.5470
% Total bonus in total comp.	40	0.3360	0.2528	0.3152	27	0.2406	0.2093	0.2334
% Incentives pay in total comp.	4	0.0027	0.0054	0.0000	11	0.0596	0.0731	0.0000

Table IA2: Determinants of CEO compensation

This table presents the results of OLS regression estimation of the determinants of CEO compensation for CEOs of the largest UK banks and other UK firms in Panel A. Panel B and Panel C present the same estimation using the propensity-score matched samples of US and EU banks, respectively. *Log CEO Total Compensation* is the natural logarithm of CEOs' total compensation computed as the sum of basic salary, total bonus, other benefits, options granted valued using the Black Scholes method, and LTIPs valued as options, restricted stock or cash depending on their respective category. *Log CEO Salary* is the natural logarithm of CEOs' base salary. *Log CEO Incentive Grants* is the natural logarithm of CEOs' incentive pay computed as the sum of values of deferred bonus, options granted, and LTIPs granted. *Log CEO Deferred Bonus* is the natural logarithm of CEOs' total deferred bonus in a given year. *UK bank* is equal to 1 for UK banks subject to the FSA Remuneration Code. *Post 2010* takes the value of 1 for years starting from 2010. All other variables are defined in Appendix A. The sample period is 2006-2012. Panels A, B, and C use 110 year-observations corresponding to 26 UK banks (note that not all firms are present in all years due to mergers and failures). Tests in Panel A are for the UK market and include the largest UK FTSE 350 firms (1,429 firm-year observations). Panel B has matched US banks, which represent 116 bank-year observations. Panel C includes matched EU banks, which represent 66 bank-year observations. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. Values of *t*-statistics (reported in parentheses) are computed based on robust standard errors clustered at the industry level (Panel A) and robust standard errors (Panels B and C). ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

Panel A: UK Banks vs. Other UK Firms

	Log CEO Total Compensation		Log CEO Salary		Log CEO Incentive Grants		Log CEO Deferred Bonus	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
UK bank	0.52*** (20.811)	0.49*** (11.226)	-0.15*** (-18.849)	-0.16*** (-15.517)	0.40*** (7.014)	0.42*** (6.656)	0.91*** (11.236)	0.23*** (3.477)
Post 2010		-0.12 (-1.436)		-0.14*** (-5.008)		-0.32** (-2.230)		0.37 (1.588)
UK bank x Post 2010		0.09 (1.048)		0.03 (1.574)		-0.04 (-0.298)		1.64*** (10.867)
Log(Sales) _{t-1}	0.26*** (13.129)	0.28*** (11.467)	0.19*** (11.169)	0.21*** (11.097)	0.17** (2.546)	0.21** (2.833)	0.40*** (6.702)	0.34*** (3.971)
Book to market _{t-1}	-0.04 (-0.206)	-0.03 (-0.125)	0.08** (2.426)	0.10*** (3.747)	0.48 (1.381)	0.54 (1.697)	0.65** (2.786)	0.52** (2.368)
Log(Idio. Risk) _{t-1}	-0.30** (-2.640)	-0.32** (-2.890)	-0.09 (-1.548)	-0.11* (-2.057)	-0.05 (-0.414)	-0.11 (-0.903)	-1.11*** (-4.426)	-1.03*** (-3.541)
Log(Tenure) _{t-1}	0.11 (1.638)	0.12 (1.756)	0.01 (0.198)	0.01 (0.543)	0.05 (0.629)	0.07 (0.864)	0.10 (0.893)	0.07 (0.606)
Leverage _{t-1}	0.20 (1.709)	0.15 (1.241)	-0.14*** (-3.078)	-0.21*** (-4.419)	-0.50 (-1.676)	-0.67** (-2.172)	-0.19 (-0.590)	0.14 (0.351)
Shareholder return _t	0.01 (0.183)	0.01 (0.171)	-0.01 (-0.547)	-0.01 (-0.667)	-0.03 (-0.386)	-0.03 (-0.411)	0.07 (0.557)	0.06 (0.510)
Industry Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,539	1,539	1,539	1,539	1,539	1,539	1,539	1,539
Adjusted R-squared	0.167	0.167	0.118	0.118	0.055	0.059	0.180	0.192

Panel B: UK Banks vs. US Banks

	Log CEO Total Compensation		Log CEO Salary		Log CEO Incentive Grants		Log CEO Deferred Bonus	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
UK bank	0.18	0.10	-0.09	-0.10	-0.43	-0.35	0.83**	-0.09
	(1.046)	(0.481)	(-1.555)	(-1.156)	(-1.603)	(-0.866)	(1.997)	(-0.167)
Post 2010		-0.32		-0.08		-0.01		0.02
		(-1.535)		(-0.664)		(-0.020)		(0.053)
UK bank x Post 2010		0.16		0.01		-0.19		2.16***
		(0.442)		(0.073)		(-0.311)		(2.882)
Log(Sales) _{t-1}	0.28***	0.30***	0.19***	0.20***	0.10	0.11	0.19**	0.12
	(6.805)	(7.064)	(7.508)	(7.975)	(1.141)	(1.143)	(2.032)	(1.274)
Book to market _{t-1}	0.08	0.08	0.08**	0.09***	0.47***	0.48***	0.76***	0.68***
	(1.121)	(1.248)	(2.557)	(2.711)	(2.635)	(2.709)	(5.740)	(4.119)
Log(Idio. Risk) _{t-1}	0.01	0.01	-0.08	-0.08	1.08***	1.09***	-0.35	-0.40
	(0.074)	(0.155)	(-1.142)	(-1.112)	(4.781)	(4.777)	(-1.322)	(-1.483)
Log(Tenure) _{t-1}	0.12	0.14	-0.04	-0.03	0.27	0.27	0.11	0.06
	(1.313)	(1.571)	(-0.593)	(-0.482)	(1.376)	(1.380)	(0.547)	(0.274)
Leverage _{t-1}	0.13	0.08	0.03	0.01	0.36	0.32	0.67	1.16
	(0.449)	(0.271)	(0.252)	(0.104)	(0.544)	(0.484)	(0.915)	(1.548)
Shareholder return _t	0.31*	0.31**	0.10	0.11	-0.29	-0.29	-0.54*	-0.57*
	(1.946)	(1.999)	(1.381)	(1.407)	(-0.896)	(-0.887)	(-1.778)	(-1.801)
Intercept	3.68***	3.55***	3.54***	3.49***	0.52	0.46	-1.87*	-1.17
	(8.073)	(7.697)	(11.761)	(11.622)	(0.496)	(0.427)	(-1.669)	(-1.060)
Observations	307	307	307	307	307	307	287	287
Adjusted R-squared	0.170	0.171	0.269	0.266	0.133	0.127	0.076	0.112

Panel C: UK Banks vs. EU Banks

	Log CEO Total Compensation		Log CEO Salary		Log CEO Incentive Grants		Log CEO Deferred Bonus	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
UK bank	0.41*	0.33	-0.06	-0.15	0.38	0.81**	0.13	-0.69
	(1.943)	(1.410)	(-0.722)	(-1.202)	(1.271)	(2.329)	(0.282)	(-1.201)
Post 2010		-0.34		-0.32*		0.75**		0.42
		(-1.355)		(-1.832)		(1.979)		(0.678)
UK bank x Post 2010		0.16		0.18		-0.96*		1.86**
		(0.414)		(0.876)		(-1.905)		(2.265)
Log(Sales) _{t-1}	0.24***	0.27***	0.22***	0.25***	0.05	0.01	0.25**	0.13
	(4.536)	(5.022)	(6.696)	(7.905)	(0.912)	(0.193)	(2.263)	(1.004)
Book to market _{t-1}	0.21***	0.23***	0.13**	0.14**	0.78***	0.77***	0.65***	0.54***
	(3.247)	(3.433)	(2.550)	(2.550)	(4.223)	(4.087)	(4.698)	(3.607)
Log(Idio. Risk) _{t-1}	-0.48***	-0.49***	-0.11	-0.12	-0.19	-0.16	0.40	0.40
	(-4.028)	(-3.930)	(-1.528)	(-1.614)	(-0.971)	(-0.803)	(1.337)	(1.362)
Log(Tenure) _{t-1}	0.05	0.05	0.04	0.05	-0.06	-0.06	0.20	0.15
	(0.481)	(0.504)	(0.797)	(0.842)	(-0.382)	(-0.334)	(0.857)	(0.695)
Leverage _{t-1}	-0.15	-0.25	-0.08	-0.17	-0.36	-0.28	1.23*	1.91**
	(-0.420)	(-0.700)	(-0.324)	(-0.687)	(-0.808)	(-0.642)	(1.677)	(2.501)
Shareholder return _t	0.03	0.05	-0.20*	-0.18*	-0.12	-0.15	-0.35	-0.41
	(0.116)	(0.194)	(-1.818)	(-1.668)	(-0.410)	(-0.523)	(-0.845)	(-0.928)
Intercept	3.55***	3.37***	3.02***	2.84***	-0.34	-0.17	-1.46	-0.26
	(6.056)	(5.613)	(10.257)	(9.182)	(-0.381)	(-0.183)	(-1.125)	(-0.189)
Observations	245	245	245	245	245	245	226	226
Adjusted R-squared	0.217	0.217	0.335	0.346	0.060	0.070	0.101	0.152

Table IA3: Effect of new regulation on systemic risk (full sample)

This table presents the results of OLS regressions to estimate the effect of new regulation on systemic risk for all banks in our sample. $\Delta CoVaR$ corresponds to contributions to systemic risk ($system|i$) or sensitivity to systemic risk ($i|system$). VaR is the measure of value at risk. $LRMES$ measures the expected equity losses for a financial institution conditional on a prolonged market decline. $SRISK$ % measures capital shortfall relative to the overall system. $UK\ bank$ is equal to 1 for UK banks subject to the FSA Remuneration Code. $Post\ 2010$ takes the value of 1 for years starting from 2010. All other variables are defined in Appendix A. The sample period is 2006-2012. Panels A, B, and C use 110 year-observations corresponding to 26 UK banks (note that not all firms are present in all years due to mergers and failures). Tests in Panel A are for the UK market and include the largest UK FTSE 350 firms (1,054 firm-year observations). Panel B has matched US banks, which represent 116 bank-year observations. Panel C includes matched EU banks, which represent 66 bank-year observations. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. Values of t -statistics (reported in parentheses) are computed based on robust standard errors clustered at the industry level (Panel A) and robust standard errors (Panels B and C). ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

Panel A: UK Banks vs. Other UK Firms

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$VaR_{99\%,t}^i$
	(1)	(2)	(3)
UK bank	0.16*** (5.298)	-0.34*** (-5.421)	0.01 (0.092)
Post 2010	-0.24** (-2.368)	-0.54*** (-4.231)	-0.06 (-0.281)
UK bank x Post 2010	0.24*** (6.593)	0.56*** (10.431)	0.56*** (6.101)
Log(Sales) _{t-1}	0.10* (1.870)	0.21** (2.956)	-0.14 (-1.285)
Book to market _{t-1}	0.30** (2.288)	1.03*** (3.943)	0.51* (1.969)
Leverage _{t-1}	-0.21 (-1.138)	-0.36 (-0.956)	0.42 (0.499)
Industry Indicators	Yes	Yes	Yes
Observations	1,164	1,164	1,164
Adjusted R-squared	0.186	0.203	0.168

Panel B: Banks-specific comparisons of systemic risk (UK Banks vs. US Banks)

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$VaR_{99\%,t}^i$	LRMES	SRISK % (relative to system)
	(1)	(2)	(3)	(4)	(5)
UK bank	-0.74*** (-3.341)	0.92*** (2.908)	-1.01** (-2.054)	0.02 (0.877)	0.00** (2.175)
Post 2010	-0.46* (-1.656)	-0.54*** (-2.620)	-1.24** (-2.502)	-0.02 (-0.998)	-0.00* (-1.916)
UK bank x Post 2010	-0.75*** (-3.268)	0.97*** (3.361)	-0.89* (-1.731)	0.01 (0.584)	0.00 (0.808)
Log(Sales) _{t-1}	0.14** (2.344)	0.15*** (3.409)	0.18** (2.074)	0.02*** (4.697)	0.00*** (6.871)
Book to market _{t-1}	-0.23 (-0.403)	1.61** (2.439)	-1.98* (-1.679)	0.02 (0.228)	0.00 (0.306)
Leverage _{t-1}	0.99* (1.959)	-0.73 (-1.385)	2.22** (2.319)	-0.17*** (-2.823)	0.00 (0.569)
Intercept	-0.16 (-0.256)	-1.48** (-2.234)	2.77*** (2.733)	0.23*** (3.447)	-0.00*** (-6.036)
Observations	249	249	249	136	136
Adjusted R-squared	0.124	0.162	0.043	0.188	0.404

Panel C: Banks-specific comparisons of systemic risk (UK Banks vs. EU Banks)

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$VaR_{99\%,t}^i$	LRMES	SRISK % (relative to system)
	(1)	(2)	(3)	(4)	(5)
UK bank	-1.28 (-1.489)	1.48*** (3.892)	0.47 (1.349)	0.02 (0.811)	-0.00*** (-3.495)
Post 2010	-0.12 (-0.160)	1.17* (1.872)	0.67* (1.816)	0.08*** (2.843)	-0.00** (-2.223)
UK bank x Post 2010	-0.77 (-1.605)	1.56*** (4.079)	0.73* (1.953)	0.01 (0.228)	-0.00*** (-4.160)
Log(Sales) _{t-1}	-0.20 (-0.548)	0.17 (1.419)	0.04 (0.492)	0.03*** (6.119)	0.00*** (6.912)
Book to market _{t-1}	0.56 (0.700)	-0.31 (-0.463)	-2.21*** (-3.841)	-0.08* (-1.816)	-0.00*** (-2.949)
Leverage _{t-1}	1.82 (0.978)	0.11 (0.170)	1.11** (2.534)	-0.13*** (-3.748)	0.00** (2.105)
Intercept	3.38 (0.781)	-1.24 (-0.893)	3.84*** (3.589)	0.17** (2.360)	-0.00*** (-3.265)
Observations	169	169	169	109	109
Adjusted R-squared	0.015	0.080	0.053	0.366	0.440

Table IA4: Effect of new regulation on systemic risk (parallel trends)

This table presents the results of OLS regressions to estimate the effect of new regulation on systemic risk. $\Delta CoVaR$ corresponds to contributions to systemic risk ($system|i$) or sensitivity to systemic risk ($i|system$). VaR is the measure of value at risk. $LRMES$ measures the expected equity losses for a financial institution conditional on a prolonged market decline. $SRISK$ % measures capital shortfall relative to the overall system. $UK\ bank$ is equal to one for UK banks subject to the FSA Remuneration Code. We show all indicator variables for years relative to the start of the period in 2006. The year of change is 2010. All other variables are defined in Appendix A of the manuscript. The sample period is 2006-2012. Tests in Panel A are for the 10 largest UK banks and the 10 largest UK firms by asset size. Panels A, B, and C include 62 bank-year observations for the 10 largest UK banks. Panel B includes matched US banks, which represent 66 bank-year observations for the largest 10 US banks. Panel C includes matched EU banks, which represent 47 matched bank-year observations for the 10 largest EU banks. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. Values of t -statistics (reported in parentheses) are computed based on robust standard errors clustered at the industry level (Panel A) and robust standard errors (Panels B and C). ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

Panel A: Dynamics of risk comparisons (Largest UK Banks vs. Other Largest UK Firms)

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$VaR_{99\%,t}^i$
	(1)	(2)	(3)
UK bank	-0.47** (-2.894)	-0.88* (-2.261)	-0.20 (-0.561)
2007	0.19 (1.222)	-0.12 (-0.541)	0.51 (1.785)
2008	0.87** (2.762)	2.29** (3.180)	2.50*** (4.802)
2009	0.47 (1.656)	1.78** (2.708)	1.77*** (3.770)
2010	-0.50** (-3.277)	0.19 (0.545)	0.28 (0.884)
2011	-0.53** (-3.286)	0.18 (0.465)	0.51 (1.402)
2012	-0.66*** (-5.137)	0.49 (1.170)	0.92** (3.087)
UK bank x 2007	-0.31 (-1.909)	0.49* (2.120)	-0.37 (-1.242)
UK bank x 2008	0.04 (0.118)	0.92 (1.273)	-0.39 (-0.724)
UK bank x 2009	0.53 (1.756)	0.94 (1.418)	0.47 (0.928)
UK bank x 2010	0.89*** (5.601)	1.21** (3.341)	0.99** (2.920)
UK bank x 2011	0.85*** (5.180)	1.78*** (4.485)	0.89* (2.385)
UK bank x 2012	0.77*** (5.464)	0.69 (1.599)	0.44 (1.266)
Log(Sales) _{t-1}	0.26*** (20.363)	0.29*** (28.455)	0.03 (1.214)

Book to market $t-1$	0.16 (1.148)	-0.87*** (-4.425)	1.27*** (4.270)
Leverage $t-1$	-0.39** (-3.323)	1.14*** (9.200)	-0.54* (-2.035)
Industry Indicators	Yes	Yes	Yes
Observations	132	132	132
Adjusted R-squared	0.586	0.556	0.353

Panel B: Dynamics of banks-specific comparisons of systemic risk (Largest UK Banks vs. Largest US Banks)

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$VaR_{99\%,t}^i$	LRMES	SRISK % (relative to system)
	(1)	(2)	(3)	(4)	(5)
UK bank	-0.60 (-1.500)	0.39 (0.840)	-0.13 (-0.200)	0.03 (0.797)	0.00 (0.388)
2007	0.44 (0.625)	0.14 (0.169)	2.64** (2.207)	-0.02 (-0.741)	-0.00 (-0.311)
2008	3.71*** (6.766)	0.08 (0.204)	6.05*** (4.870)	0.08** (2.266)	0.00 (0.036)
2009	2.95*** (6.706)	-0.34 (-0.855)	5.98*** (2.913)	0.13*** (2.969)	-0.00 (-0.052)
2010	1.13** (2.377)	-0.60 (-1.621)	1.90* (1.871)	0.06** (2.433)	-0.00 (-0.216)
2011	1.46*** (3.009)	-0.48 (-1.108)	2.24* (1.883)	-0.01 (-0.220)	-0.00 (-0.951)
2012	0.84* (1.806)	-0.60 (-1.300)	3.95** (2.247)	0.05 (1.498)	-0.00* (-1.832)
UK bank x 2007	-0.48 (-0.665)	0.35 (0.376)	-2.35* (-1.802)	0.04 (0.812)	0.00 (0.194)
UK bank x 2008	-2.78*** (-4.711)	3.22*** (3.644)	-3.43** (-2.381)	-0.02 (-0.410)	0.00 (0.792)
UK bank x 2009	-1.86*** (-3.832)	3.14*** (3.607)	-2.92 (-1.371)	-0.05 (-0.952)	0.00 (0.989)
UK bank x 2010	-0.67 (-1.333)	2.15*** (3.546)	0.17 (0.133)	-0.01 (-0.254)	0.00 (0.705)
UK bank x 2011	-0.88* (-1.799)	2.84*** (3.696)	-0.62 (-0.491)	0.02 (0.460)	0.00 (0.783)
UK bank x 2012	-0.41 (-0.921)	2.10*** (3.037)	-1.71 (-0.936)	0.02 (0.498)	0.00 (0.809)
Log(Sales) _{t-1}	0.11* (1.873)	0.07 (0.838)	0.12 (0.779)	0.02*** (3.822)	0.00*** (6.351)
Book to market _{t-1}	-0.11 (-0.153)	0.69 (0.631)	-5.37* (-1.672)	0.06 (0.767)	-0.00 (-0.724)
Leverage _{t-1}	0.16 (0.270)	1.04 (1.019)	5.85** (2.189)	-0.20*** (-2.991)	0.00 (1.249)
Industry Indicators	No	No	No	No	No
Observations	128	128	128	106	106
Adjusted R-squared	0.714	0.516	0.234	0.330	0.393

Panel C: Dynamics of banks-specific comparisons of systemic risk (Largest UK Banks vs. Largest EU Banks)

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$VaR_{99\%,t}^i$	LRMES	SRISK % (relative to system)
	(1)	(2)	(3)	(4)	(5)
UK bank	-3.65*	1.77***	-0.26	-0.07*	-0.00***
	(-1.765)	(2.757)	(-0.449)	(-1.710)	(-2.809)
2007	-0.30	0.55	-0.31	-0.06	0.00
	(-0.079)	(0.766)	(-0.433)	(-1.643)	(0.436)
2008	-2.24	-0.12	0.89	-0.04	-0.00
	(-0.457)	(-0.179)	(1.358)	(-0.731)	(-0.234)
2009	0.08	0.50	1.96***	0.03	-0.00
	(0.034)	(0.783)	(3.455)	(0.525)	(-0.388)
2010	1.35	0.20	1.14**	0.02	-0.00
	(0.587)	(0.286)	(2.030)	(0.509)	(-0.889)
2011	2.09	0.43	1.34*	0.02	-0.00*
	(1.013)	(0.606)	(1.965)	(0.521)	(-1.668)
2012	-3.47	5.96*	3.13*	0.09**	-0.00
	(-0.904)	(1.885)	(1.705)	(2.350)	(-0.728)
UK bank x 2007	0.55	-0.06	0.53	0.08	-0.00
	(0.144)	(-0.066)	(0.612)	(1.237)	(-0.475)
UK bank x 2008	3.32	3.43***	1.41	0.10	0.00
	(0.682)	(3.420)	(1.522)	(1.489)	(0.615)
UK bank x 2009	1.30	2.28**	0.59	0.05	0.00
	(0.550)	(2.335)	(0.612)	(0.770)	(0.720)
UK bank x 2010	-0.57	1.34	0.43	0.04	0.00
	(-0.257)	(1.659)	(0.484)	(0.881)	(1.144)
UK bank x 2011	-0.66	1.93**	0.20	-0.02	0.00
	(-0.300)	(2.185)	(0.222)	(-0.353)	(1.462)
UK bank x 2012	4.88	-4.52	-1.39	-0.02	0.00
	(1.255)	(-1.373)	(-0.683)	(-0.373)	(0.397)
Log(Sales) _{t-1}	-0.37	0.08	0.03	0.04***	0.00***
	(-0.711)	(0.505)	(0.215)	(5.474)	(6.116)
Book to market _{t-1}	-0.36	1.39***	-0.98**	-0.09*	-0.00***
	(-0.207)	(3.082)	(-2.224)	(-1.805)	(-2.875)
Leverage _{t-1}	1.85	0.65	1.77***	-0.13***	0.00
	(0.756)	(1.287)	(3.359)	(-2.946)	(1.259)
Industry Indicators	No	No	No	No	No
Observations	106	106	106	94	94
Adjusted R-squared	0.024	0.353	0.184	0.434	0.435

Table IA5: Effect of the new regulation on systemic risk (cross-sectional UK results)

This table presents the results of OLS regressions to estimate the effect of new regulation on systemic risk. $\Delta CoVaR$ corresponds to contributions to systemic risk ($system|i$) or sensitivity to systemic risk ($i|system$). Var is the measure of value at risk. $LRMES$ measures the expected equity losses for a financial institution conditional on a prolonged market decline. $SRISK$ % measures capital shortfall relative to the overall system. $UK\ bank$ is equal to one for UK banks subject to the FSA Remuneration Code. $Post\ 2010$ takes the value of 1 for years starting from 2010. The *Number of Contract Changes (weighted)* is defined as the number of contractual features that change in a given component of compensation scaled by the number of contractual features present in that component at the beginning of the year, summed across the components with weights applied as the proportion that the corresponding compensation component represents in total pay. *Contract Change (indicator)* is an indicator variable that takes the value of one if a contract has any change relative to the prior year. The *Number of Contract Changes (number)* is the unweighted total number of contract changes in a given year. All other variables are defined in Appendix A of the revised manuscript. IDS data coverage of option-based compensation starts in 2007; therefore, our sample in this analysis includes 2008 to 2012 to allow us to compute changes in contractual features. Tests in Panel A are for the 10 largest UK banks and the 10 largest other UK firms by asset size and include 62 bank-year observations for the 10 largest UK banks. Panel B presents the results for the full UK sample, consisting of 75 bank-year observations for UK banks consisting of 26 UK banks. Panels C and D show the results for the indicator variable for contract changes (Panel C) and the total count of contract changes (Panel D) for the 10 largest UK banks and the 10 largest UK firms by asset size and include 62 bank-year observations for the 10 largest UK banks. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. Values of t -statistics (reported in parentheses) are computed based on robust standard errors clustered at the industry level. ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

Panel A: UK Banks vs. Other UK Firms (Largest UK Banks vs. Largest Other UK Firms)

	$\Delta CoVaR_{99\%,t}^{system i}$	$\Delta CoVaR_{99\%,t}^{i system}$	$Var_{99\%,t}^i$
	(1)	(2)	(3)
UK bank	0.25*** (3.720)	0.83*** (14.740)	0.63*** (13.430)
Post 2010	-0.98*** (-6.751)	-0.96*** (-20.735)	-0.88*** (-23.804)
UK bank x Post 2010	0.03 (0.207)	-0.50*** (-8.068)	0.14*** (4.820)
Number of contract changes (weighted)	-0.17*** (-3.784)	-0.49*** (-4.344)	-0.28* (-2.394)
Number of contract changes (weighted) x Post 2010	-0.00*** (-4.723)	-0.00** (-2.570)	-0.00*** (-14.570)
UK bank x Number of contract changes (weighted)	-0.17*** (-25.178)	0.21*** (10.683)	0.12*** (7.196)
UK bank x Number of contract changes (weighted) x Post 2010	0.33*** (24.476)	0.07*** (3.710)	-0.34*** (-20.945)
Log(Sales) _{t-1}	0.28*** (18.103)	0.37*** (52.465)	0.14*** (6.338)
Book to market _{t-1}	-0.19 (-1.155)	-1.53** (-2.722)	0.76** (2.518)
Leverage _{t-1}	-0.27*** (-4.873)	1.63*** (4.725)	-0.25* (-2.004)
Industry Indicators	Yes	Yes	Yes
Observations	114	114	114
Adjusted R-squared	0.563	0.433	0.234

Panel B: UK Banks vs. Other UK Firms

	$\Delta\text{CoVaR}_{99\%,t}^{\text{system} i}$	$\Delta\text{CoVaR}_{99\%,t}^{\text{system}}$	$\text{VaR}_{99\%,t}^i$
	(1)	(2)	(3)
UK bank	0.81*** (15.549)	0.66*** (6.318)	-0.20** (-2.278)
Post 2010	-0.35*** (-3.118)	-0.69** (-2.471)	-1.18*** (-6.126)
UK bank x Post 2010	-0.43*** (-9.856)	-0.14 (-0.976)	0.27** (2.873)
Number of contract changes (weighted)	0.02 (0.387)	0.00 (0.024)	0.02 (0.193)
Number of contract changes (weighted) x Post 2010	0.00 (0.257)	-0.00** (-2.785)	0.00*** (3.530)
UK bank x Number of contract changes (weighted)	-0.19*** (-13.431)	-0.08** (-2.870)	0.19*** (8.010)
UK bank x Number of contract changes (weighted) x Post 2010	0.18*** (4.196)	-0.17 (-1.448)	-0.25*** (-4.683)
Log(Sales) _{t-1}	0.10 (1.511)	-0.21 (-1.645)	0.14 (1.725)
Book to market _{t-1}	0.23 (1.247)	0.22 (0.758)	0.76** (2.319)
Leverage _{t-1}	-0.10 (-0.434)	0.71 (0.798)	0.02 (0.042)
Industry Indicators	Yes	Yes	Yes
Observations	832	832	832
Adjusted R-squared	0.228	0.274	0.311

Panel C: UK Banks vs. Other UK Firms (Largest UK Banks vs. Largest Other UK Firms, an indicator variable for contract changes)

	$\Delta\text{CoVaR}_{99\%,t}^{\text{system} i}$	$\Delta\text{CoVaR}_{99\%,t}^{\text{system}}$	$\text{VaR}_{99\%,t}^i$
	(1)	(2)	(3)
UK bank	-0.19 (-1.154)	0.03 (0.144)	-0.75*** (-19.230)
Post 2010	-1.04*** (-5.587)	-2.22*** (-8.312)	-1.93*** (-14.267)
UK bank x Post 2010	0.49** (3.209)	1.98*** (7.597)	3.22*** (24.505)
Contract change (indicator)	-0.15 (-1.089)	-0.50* (-1.985)	-0.21*** (-9.564)
Contract change (indicator) x Post 2010	-0.32** (-2.491)	-0.44 (-1.772)	0.29*** (15.008)
UK bank x Contract change (indicator)	-0.06 (-0.581)	1.02** (3.683)	0.66*** (5.967)
UK bank x Contract change (indicator) x Post 2010	0.34** (3.549)	-1.45*** (-5.159)	-2.38*** (-18.585)
Log(Sales) _{t-1}	0.27*** (18.264)	0.34*** (27.204)	0.11*** (4.279)
Book to market _{t-1}	-0.55 (-1.913)	-0.40** (-2.953)	2.06*** (4.360)
Leverage _{t-1}	-0.11 (-0.720)	0.27 (1.917)	-1.65*** (-4.058)
Industry Indicators	No	No	No
Observations	113	113	113
Adjusted R-squared	0.480	0.385	0.161

Panel D: UK Banks vs. Other UK Firms (Largest UK Banks vs. Largest Other UK Firms, unweighted number of contract changes)

	$\Delta\text{CoVaR}_{99\%,t}^{\text{system} i}$	$\Delta\text{CoVaR}_{99\%,t}^{\text{system}}$	$\text{VaR}_{99\%,t}^i$
	(1)	(2)	(3)
UK bank	-0.37*** (-3.919)	-0.66*** (-12.621)	-0.43*** (-4.263)
Post 2010	-1.02*** (-7.190)	-0.94*** (-15.039)	-0.67*** (-7.543)
UK bank x Post 2010	0.70*** (5.531)	0.90*** (13.676)	1.07*** (14.389)
Number of contract changes (number)	-0.04 (-0.650)	-0.13 (-1.198)	0.03 (0.225)
Number of contract changes (number) x Post 2010	-0.07 (-1.144)	0.28** (2.515)	0.07 (0.547)
UK bank x Number of contract changes (number)	0.05 (1.289)	0.01 (0.148)	-0.21 (-1.543)
UK bank x Number of contract changes (number) x Post 2010	0.11** (3.195)	0.08 (0.865)	-0.28* (-2.114)
Log(Sales) _{t-1}	0.28*** (23.689)	0.36*** (56.274)	0.10*** (5.698)
Book to market _{t-1}	-0.06 (-0.518)	-1.33*** (-4.040)	1.03** (3.533)
Leverage _{t-1}	-0.48*** (-14.500)	0.84*** (4.525)	-0.80*** (-9.874)
Industry Indicators	No	No	No
Observations	132	132	132
Adjusted R-squared	0.445	0.253	0.099

Table IA6: Effect of the new regulation on risk-taking (cross-sectional UK results)

This table presents the results of OLS regressions to estimate the effect of new regulation on risk using the idiosyncratic measure of volatility (*Idiosyncratic risk*) computed from the market model, *Total Volatility*, *Leverage*, *Z-score* (as a measure of default risk), and *CDS spread* (5-year average annual credit default spread) for the UK sample. *UK bank* is equal to one for UK banks subject to the FSA Remuneration Code. *Post 2010* takes the value of 1 for years starting from 2010. The *Number of Contract Changes (weighted)* is defined as the number of contractual features that change in a given component of compensation scaled by the number of contractual features present in that component at the beginning of the year, summed across the components with weights applied as the proportion that the corresponding compensation component represents in total pay. The coefficients on the interaction of the number of contract changes are in percentage terms for ease of interpretation. All other variables are defined in Appendix A of the revised manuscript. IDS data coverage of option-based compensation starts in 2007; therefore, our sample in this analysis includes 2008 to 2012 to allow us to compute changes in contractual features. Tests are for the UK market and use 75 bank-year observations for UK banks consisting of 26 UK banks (note that not all firms are present in all years due to mergers and failures) and other largest UK FTSE 350 firms (1,007 firm-year observations). For CDS spread data, we have 11 UK bank-year observations for the largest UK banks with available data. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. Values of t-statistics (reported in parentheses) are computed based on robust standard errors clustered at the industry level. ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

	Idiosyncratic Risk	Total Volatility	Leverage	Z-score	CDS-spread
	(1)	(2)	(3)	(4)	(5)
UK bank	0.06*** (6.742)	0.06*** (5.809)	0.07*** (13.119)	0.08* (1.890)	0.00*** (3.501)
Post 2010	-0.15*** (-7.475)	-0.19*** (-7.170)	-0.07*** (-7.472)	0.29*** (3.779)	0.00 (0.003)
UK bank x Post 2010	-0.04** (-2.793)	-0.07*** (-3.532)	0.03*** (4.299)	-0.11 (-1.269)	-0.01** (-2.955)
Number of changes (weighted)	-0.04*** (-3.632)	-0.05*** (-4.479)	-0.01 (-0.657)	0.03 (0.731)	-0.01** (-2.991)
Number of changes (weighted) x Post 2010	-0.02 (-1.287)	-0.02 (-1.173)	0.01 (0.175)	0.02 (0.089)	-0.00 (-0.097)
UK bank x Number of changes (weighted)	0.58*** (12.729)	0.55*** (12.363)	-0.34*** (-8.703)	-1.43*** (-6.969)	-0.03*** (-5.768)
UK bank x Number of changes (weighted) x Post 2010	-0.70*** (-15.190)	-0.68*** (-13.310)	-0.07 (-1.346)	0.16 (0.486)	-0.02 (-0.362)
Log(Sales) _{t-1}	-0.03*** (-4.417)	-0.01 (-1.258)	0.00 (0.405)	0.09*** (4.460)	-0.00** (-2.617)
Book to market _{t-1}	0.01 (1.098)	0.01 (0.962)	0.08*** (3.090)	0.06 (0.325)	0.00 (0.784)
Leverage _{t-1}	0.14*** (3.044)	0.11* (1.893)	0.47*** (6.263)	0.42* (1.912)	0.00 (0.605)
Industry Indicators	Yes	Yes	Yes	Yes	Yes
Observations	1,082	1,082	1,082	1,020	226
Adjusted R-squared	0.453	0.448	0.496	0.279	0.159

Table IA7: Effect of the new regulation on the sensitivity of equity-based compensation (cross-sectional UK results)

This table presents the results of OLS regressions to estimate CEOs' pay sensitivity to performance. *Vega* is the natural logarithm of the partial derivative of the value of the CEO's portfolio of options to changes in the annual standard deviation of equity returns multiplied by 0.01 to attain the dollar change in CEO wealth associated with a 1% change in the standard deviation of the firm's annual returns. *Wealth* is the natural logarithm of the CEO's total market value of equity holdings and equity incentives in a given year. *Delta* is the natural logarithm of the dollar change in CEO wealth generated by a 1% increase in the stock price. *UK bank* is equal to 1 for UK banks subject to the FSA Remuneration Code. *Post 2010* takes the value of 1 for years starting from 2010. The *Number of Contract Changes (weighted)* is defined as the number of contractual features that change in a given component of compensation scaled by the number of contractual features present in that component at the beginning of the year, summed across the components with weights applied as the proportion that the corresponding compensation component represents in total pay. All other variables are defined in Appendix A of the revised manuscript. IDS data coverage of option-based compensation starts in 2007; therefore, our sample in this analysis includes 2008 to 2012 to allow us to compute changes in contractual features. Tests are for the UK market and use 75 bank-year observations for UK banks consisting of 26 UK banks (note that not all firms are present in all years due to mergers and failures) and other largest UK FTSE 350 firms. To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. Values of t-statistics (reported in parentheses) are computed based on robust standard errors clustered at the industry level. ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

	Vega	Wealth	Delta
	(1)	(2)	(3)
UK bank	0.29*** (6.813)	-0.71*** (-3.903)	1.65*** (20.706)
Post 2010 indicator	0.13 (1.406)	0.35 (1.437)	0.06 (0.724)
UK bank x Post 2010	1.44*** (54.158)	0.82*** (3.519)	0.94*** (14.131)
Number of changes (weighted)	0.04 (0.843)	-0.29 (-1.443)	-0.02 (-1.197)
Number of changes (weighted) x Post 2010	0.00 (0.724)	0.00*** (3.204)	0.00 (0.188)
UK bank x Number of changes (weighted)	0.41*** (13.273)	0.60*** (9.781)	0.39*** (8.393)
UK bank x Number of changes (weighted) x Post 2010	-0.14* (-1.774)	-0.39*** (-3.312)	0.28*** (4.673)
Log(Sales) _{t-1}	-0.08 (-1.335)	0.47*** (4.303)	-0.13 (-1.577)
Book to market _{t-1}	-0.31*** (-13.167)	-0.06 (-0.416)	-0.48*** (-13.563)
Log(Idio. Risk) _{t-1}		-0.10 (-0.315)	-0.22*** (-3.442)
Log(Tenure) _{t-1}	0.06 (1.274)	1.20*** (6.011)	0.06 (1.316)
Leverage _{t-1}	1.50* (1.966)	-3.14*** (-6.216)	2.37* (2.101)
Industry Indicators	Yes	Yes	Yes
Observations	1,039	1,039	1,039
Adjusted R-squared	0.271	0.192	0.327

Table IA8: Effect of the new regulation on CEO turnover (cross-sectional UK results)

This table presents conditional logistic regression to estimate the effect of new regulation on the likelihood of CEO turnover. The *Number of Contract Changes (weighted)* is defined as the number of contractual features that change in a given component of compensation scaled by the number of contractual features present in that component at the beginning of the year, summed across the components with weights applied as the proportion that the corresponding compensation component represents in total pay. *UK bank* is equal to 1 for UK banks subject to the FSA Remuneration Code. *Post 2010* takes the value of 1 for years starting from 2010. All other variables are defined in Appendix A of the revised manuscript. IDS data coverage of option-based compensation starts in 2007; therefore, our sample in this analysis includes 2008 to 2012 to allow us to compute changes in contractual features. The sample includes information for CEOs with partial years and does not impose restrictions on all variables being available as in other tables. Column (1) shows results for the UK market and uses 77 bank-year observations corresponding to 26 UK banks (note that not all firms are present in all years due to mergers and failures) and other largest UK FTSE 350 firms (1,081 firm-year observations). To mitigate the effects of extreme observations, all continuous variables are winsorized at the 1% and 99% tails of their respective distributions in each sample year. The values of *z*-statistics (reported in parentheses) are computed based on robust standard errors. ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

	UK Banks vs. UK Firms
	(1)
UK bank	0.48*** (6.516)
Post 2010	-0.19 (-1.201)
UK bank x Post 2010	0.42*** (2.735)
Number of changes (weighted)	0.01 (0.044)
Number of changes (weighted) x Post 2010	0.00 (0.555)
UK bank x Number of changes (weighted)	-0.19*** (-7.193)
UK bank x Number of changes (weighted) x Post 2010	0.14*** (5.616)
Shareholder return $t-1$	0.10 (0.990)
ROA $t-1$	-2.07*** (-3.617)
Book to market $t-1$	0.24*** (3.278)
Log(Tenure) $t-1$	-0.43*** (-2.932)
Age t	0.04** (2.221)
Industry Indicators	Yes
Observations	1,081
Pseudo R-squared	0.0362

Table IA9: Market reaction tests to UK and EU compensation regulation

This table presents the results from estimating the market reaction to the 17 regulatory events concerning executive compensation for financial institutions in the UK and the EU. Cumulative abnormal returns computed around the day of the announcement ($-1, +1$) are relative to the UK FTSE All-Share value-weighted market index. Raw CDS spread results are for the 5-year CDS contracts for which data is available. The results are insensitive to the choice of the reference market index measure as well as to the usage of a global index. *Size* is the natural logarithm of market value, *Book to market* is the ratio of book value to market value, and *Momentum* is the market-adjusted return for a given stock in the sample over the previous 60 days. All variables are defined in Appendix A. The events are summarized below in column (3). The values of *t*-statistics (reported in parentheses) are computed based on robust standard errors. ***, **, * designate significance at 1%, 5% and 10% levels, respectively.

Events	Date	Legislative or regulatory event	CAR		CDS spread	
			UK Banks	All UK without UK banks	UK Banks	All UK without UK Banks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	2/26/2009	FSA proposes its Remuneration Code (potentially applicable to 40-50 UK banks)	0.0504***	0.0211***	-0.0315***	0.1165***
2	8/12/2009	FSA publishes its final version of the Remuneration Code (applicable to 26 UK banks)	-0.011***	0.0011	-0.0095***	0.0898***
3	1/1/2010	Remuneration Code becomes effective (retroactively applies to all compensation granted in 2010 that relates to 2009 performance, applicable to 26 UK banks)	0.0138***	0.0031***	-0.0021*	0.0604***
4	6/30/2010	EU proposes to introduce tougher regulations for financial institutions' employees compensation	-0.0041	-0.0167	-0.0041**	0.0085
5	7/29/2010	FSA proposes a revised version of the Remuneration Code with wider application to more than 2,500 financial institutions	0.0096***	-0.0243*	-0.0003	0.0317***
6	10/8/2010	CEBS introduces guidelines that are tougher than the Remuneration Code and require deferral of up to 60% of variable pay	0.0083***	0.0000	-0.0008	0.0490***
7	12/10/2010	EU proposes to introduce tougher regulations	-0.0051	0.0037***	0.0035**	0.0517***
8	12/17/2010	FSA publishes the revised version of the Remuneration Code with wider application to more than 2,500 financial institutions	-0.0092***	0.0043***	0.0028	0.0487***
9	1/1/2011	Revised Remuneration Code becomes effective (applies to compensation relating to 2010 performance)	0.0037***	0.0025***	-0.0035	0.0646***
10	5/15/2012	EU proposes bonus caps	-0.0009	0.0013*	0.0032	0.0432***
11	2/27/2013	EU announces the decision to cap bonuses at 1x salary (with 2x max variable component if approved by the supermajority of shareholders)	-0.0225***	-0.0003	-0.0036*	0.0359***
12	9/25/2013	UK appeals the bonus cap decision	-0.0009	0.0000	-0.0020	0.0303***
13	6/12/2013	UK Parliamentary Commission on Banking Supervision standards proposes stricter rules	-0.0181***	-0.0034***	-0.0015	0.0420***
14	10/24/2013	FSA announcement of proposals to implement the UK Parliamentary Commission recommendations	-0.0006	-0.0032***	-0.0028*	0.0249***

Events	Date	Legislative or regulatory event	CAR		CDS spread	
			UK Banks	All UK without UK banks	UK Banks	All UK without UK Banks
(1)	(2)	(3)	(4)	(5)	(6)	(7)
15	1/1/2014	Bonus caps are in effect	0.0096***	0.0006	-0.0016	0.0228***
16	3/13/2014	UK proposes bonus clawbacks (more restrictive than EU)	-0.0008	0.0096	-0.0022**	0.0203***
17	11/20/2014	UK drops appeal against bonus caps	-0.0049**	-0.0060***	-0.0055***	0.0012
Observations			91	1,469	30	721