

Online Appendix for

“Say on Pay Laws, Executive Compensation, Pay Slice, and Firm Valuation around the World”

Ricardo Correa* and Ugur Lel**

* Board of Governors of the Federal Reserve System
20th Street and Constitution Avenue NW
Washington, DC 20551
United States

** Department of Finance, Terry College of Business
437 Brooks Hall
University of Georgia
Athens, GA 30602

This online appendix contains supplemental results to the paper. It is organized as follows. Table OA1 presents estimates of changes in CEO pay and the sensitivity of CEO pay to firm performance around the passage of SoP laws after controlling for both one-year lagged and current firm performance, and CEO age and tenure. Table OA2 presents descriptive statistics for the variables used to measure the strength of corporate governance and problematic pay practices. Table OA3 reports additional information about the excess pay calculation and robustness of the results in column 2 of Table 3 of the paper to alternative calculations of excess pay. Panel A provides summary statistics, Panel B reports results from regressions that are used to estimate excess pay, and Panel C reports estimates of changes in the level of CEO pay and the sensitivity of CEO pay to firm performance around the passage of SoP laws using alternative definitions of excess pay. Table OA4 presents estimates of changes in the sensitivity of CEO pay to firm performance around the passage of SoP laws separately for subsamples based on the compensation structure, the strength of corporate governance, and shareholder dissent. Table OA5 presents results from robustness tests for the matched sample in Table 5. Panel A presents results from an instrumental variable estimation about changes in CEO pay, CEO pay gap, and firm valuation around the passage of SoP laws. Panel B presents estimates of changes in CEO pay, CEO pay gap, and firm valuation under different subsamples and various controls around the passage of SoP laws. Table OA6 presents estimates of changes in CEO pay, the sensitivity of CEO pay to realized firm performance, CEO pay gap, and firm valuation around voluntary SoP regimes and Table OA7 reports the results around binding and advisory SoP laws.

Table OA1.

Controlling for Present and Past Firm Performance

This table presents estimates of changes in chief executive officer (CEO) pay and the sensitivity of CEO pay to firm performance around the passage of SoP laws after controlling for both one-year lagged and current firm performance, and CEO age and tenure. Firm performance is measured by industry-adjusted stock returns. We only report the key coefficient estimates for brevity but all columns include control variables from Table 2 in the paper. Table A1 in the paper provides variable definitions and data sources. We winsorize all continuous variables at the one percent level and use one-year lagged values of time-varying independent variables. The t -statistics appear in brackets below parameter estimates. Robust standard errors are estimated by clustering at the country and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Variables	Log (CEO Pay)		
	(1)	(2)	(3)
<i>SoP</i>	-0.075** [-2.488]		-0.071* [-1.766]
<i>SoP</i> * Firm performance	0.054*** [4.274]	0.056*** [6.253]	0.044*** [2.603]
<i>SoP</i> * Current firm performance	0.045*** [4.412]	0.045*** [3.764]	
Log (CEO age)			-0.090 [-1.395]
Log (CEO tenure)			-0.008 [-0.812]
Firm performance	0.036*** [6.518]	0.041*** [7.522]	0.031*** [6.887]
Current firm performance	0.017** [2.273]	0.018** [2.346]	
Control variables	Yes	Yes	Yes
Firm and Year F.E.	Yes	Yes	Yes
Country-specific time trends	Yes	No	Yes
Country*Year F.E.	No	Yes	No
Observations	83,682	83,682	66,484
R-squared	0.145	0.170	0.152

Table OA2.

Additional information on descriptive statistics

This table presents descriptive statistics for variables used to measure the strength of corporate governance and problematic pay practices. We report descriptive statistics separately for all firms and for two subsamples based on the compensation policies and the strength of corporate governance in the pre-SoP period in these tables.

Variable	All firms			Above or at median			Below median		
	Mean	Median	Std. dev.	Mean	Median	Std. dev.	Mean	Median	Std. dev.
Pay gap (in 2005 \$US)	735,520	224,508	1,507,756	1,257,350	409,237	2,082,735	550,750	178,441	1,188,224
CEO pay slice	0.476	0.446	0.204	0.529	0.510	0.169	0.417	0.372	0.211
Excess pay	-0.001	0.063	1.279	0.941	0.785	0.688	-0.943	-0.623	0.807
PPS	0.027	0.029	0.481	0.518	0.472	0.237	-0.269	-0.205	0.321
Vote Against	0.121	0.076	0.138	0.262	0.258	0.151	0.059	0.046	0.053
Total number of directorships held by outsiders	2.132	1.818	1.674	2.924	2.500	2.080	1.349	1.334	0.257
CEO tenure	8.940	7.000	7.804	14.402	12.000	7.288	3.120	3.000	1.876
Board independence	0.572	0.600	0.245	0.751	0.733	0.118	0.367	0.428	0.186
Institutional ownership	0.130	0.009	0.219	0.260	0.164	0.249	0.001	0.000	0.001
Antitakeover defenses	3.270	3.000	1.524	4.259	5.000	0.831	1.463	1.000	0.498
Governance index	0.591	0.636	0.285	0.836	0.841	0.104	0.348	0.363	0.182
HHI index	0.241	0.093	0.332	0.415	0.206	0.378	0.044	0.043	0.024

Table OA3.
Excess CEO Pay and Say on Pay Laws

This table reports additional information about the excess pay calculation and robustness of the results in column 2 of Table 3 of the paper to alternative calculations of excess pay. Panel A provides summary statistics for variables used in excess pay estimation. Panel B reports results from regressions that are used to estimate excess pay. Panel C reports estimates of changes in the level of chief executive officer (CEO) pay and the sensitivity of CEO pay to firm performance around the passage of SoP laws using alternative definitions of excess pay. In Panel B, column 1 reports results from the regression that is used in column 2 of Table 3 in the paper. Column 2 adds the natural logarithm of the firm's market capitalization as an additional independent variable. Column 3 estimates the regression specification of the previous column based on observations from the pre-SoP law period for countries that eventually pass SoP laws during the sample period as well as observations from the countries that never pass SoP laws in the sample period. In Panel C, column 1 reports results based on excess pay calculation from column 2 of Panel B where the natural logarithm of the firm's market capitalization as an additional independent variable. Column 2 reports results where excess pay is estimated in separate samples by country and also includes the natural logarithm of the firm's market capitalization. Column 3 reports results based on the excess pay calculation from column 3 of Panel B, where observations from the countries that never pass SoP laws are included in excess pay calculations and the natural logarithm of the firm's market capitalization is added as an additional independent variable for excess pay calculations. Column 4 reports results based on excess pay that is calculated based on the average values of excess pay obtained from year-by-year regressions. Table A1 in the paper provides variable definitions and data sources. We winsorize all continuous variables at the one percent level and use one-year lagged values of time-varying independent variables. The *t*-statistics appear in brackets below parameter estimates. Robust standard errors are estimated by clustering at the country and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A. Summary statistics

Variables	Mean	Median	Standard deviation
Total CEO pay (in 2005 \$US)	1,091,843	364,703	8,296,781
Industry-adjusted stock returns	0.195	0.009	0.938
Log (net sales)	16.449	18.088	6.173
Leverage	0.134	0.052	0.190
Mkbk ratio	1.658	1.570	0.543
Annualized stock return volatility	0.058	0.058	0.020
Log (market capitalization)	5.438	5.318	2.547
GDP growth (%)	2.732	2.653	3.043

Panel B. Estimating excess pay

	The base excess pay calculation	Including log (market cap)	Including log (market cap) and non-SoP countries
Variables	(1)	(2)	(3)
Firm performance	0.052*** [7.022]	-0.025 [-1.325]	-0.017 [-1.057]
Log (sales)	0.144*** [10.932]	0.048*** [8.452]	0.050*** [2.856]
Leverage	0.408*** [11.677]	0.407*** [8.272]	0.349*** [2.887]
Mkbk ratio	0.005*** [7.421]	-0.005 [-1.483]	-0.001 [-0.240]
Stock return volatility	-9.135*** [-7.131]	1.023 [0.874]	-1.320 [-0.622]
GDP growth	-0.258*** [-5.318]	-0.320*** [-3.639]	-0.297*** [-7.211]
Log (market cap)		0.308*** [6.732]	0.233*** [4.505]
Constant	11.623*** [61.037]	6.829*** [8.400]	7.389*** [10.232]
Industry and Year F.E.	Yes	Yes	Yes
Observations	27,731	27,731	64,283
R-squared	0.326	0.484	0.395

Panel C. Excess pay and changes in CEO pay around SoP laws

	Including log (market cap)	Including log (market cap) and estimating excess pay by country	Including log (market cap) and non-SoP law countries	Including log (market cap) and estimating excess pay by year
Variables	(1)	(2)	(3)	(4)
SoP * Excess pay	-0.293*** [-2.841]	-0.325*** [-4.059]	-0.327*** [-3.238]	-0.340*** [-4.524]
SoP * Firm performance * Excess pay	0.032*** [4.691]	0.026*** [3.614]	0.030*** [12.232]	0.032*** [5.952]
Firm performance	0.037*** [11.859]	0.036*** [11.419]	0.037*** [11.801]	0.037*** [11.860]
SoP * Firm performance	0.038*** [4.227]	0.040*** [4.458]	0.038*** [3.528]	0.038*** [3.778]
Control variables	Yes	Yes	Yes	Yes
Firm and Year F.E.	Yes	Yes	Yes	Yes
Country*Year F.E.	Yes	Yes	Yes	Yes
Observations	89,175	89,175	89,175	89,175
R-squared	0.170	0.171	0.171	0.171

Table OA4.
Subsample analysis

This table presents estimates of changes in the sensitivity of chief executive officer (CEO) pay to firm performance around the passage of SoP laws separately for subsamples based on the compensation structure, the strength of corporate governance, and shareholder dissent. The dependent variable is the natural logarithm of total annual CEO compensation (total CEO pay). We put firms that are to be subject to SoP laws into two subgroups based on the compensation policies and the strength of corporate governance in the pre-SoP period. Subsample 1 reports the coefficient estimates on the double interaction term between the SoP law dummy and firm performance for firms with problematic pay practises and weak governance policies. Subsample 2 reports the coefficient estimates for firms with relatively sound pay practises and strong governance policies. Each column represents results from a regression specification that includes all the independent variables in the regression specification in column 3 of Table 2 in the paper as control variables. All columns include country * year fixed effects. All variable definitions are provided in Table 3, Table 5, and Table A1 in the paper. We winsorize all continuous variables at the one percent level and use one-year lagged values of time-varying independent variables. The *t*-statistics appear in brackets below parameter estimates. Robust standard errors are estimated at the country and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Shareholder dissent	Excess pay	PPS	Board busyness	CEO tenure	Board independence	Institutional ownership	Antitakeover defenses	Governance index	Competitive industry
Subsample 1: High shareholder dissent, problematic pay policies, or weak governance										
SoP*Firm performance	0.122*** [4.209]	0.068** [2.065]	0.052** [2.192]	0.018** [2.463]	0.011** [1.972]	0.060** [2.025]	0.073** [2.394]	0.107*** [10.558]	0.072*** [5.840]	0.057*** [4.915]
Subsample 2: Low shareholder dissent, non-problematic pay policies, or strong governance										
SoP*Firm performance	0.064 [0.967]	-0.042 [-0.314]	-0.025 [-1.030]	-0.016 [-0.363]	-0.009 [-0.388]	0.047 [0.329]	0.064 [1.201]	0.032* [1.799]	0.035* [1.867]	0.036 [1.344]

Table OA5.

Instrumental Variable Estimation and Other Robustness Tests Using the Matched Sample

This table presents results from robustness tests for the matched sample in Table 5. Panel A presents results from an instrumental variable estimation about changes in chief executive officer (CEO) pay, CEO pay gap, and firm valuation around the passage of SoP laws. The time-varying instrumental variables for the passage of SoP laws are indicator variables denoting if the party orientation with respect to economic policy is right or left leaning, the largest opposition party's voting share, and the margin of majority. Results from diagnostic tests for the instrumental variables are reported at the bottom for each column. Panel B presents estimates of changes in CEO pay, CEO pay gap, and firm valuation under different subsamples and various controls around the passage of SoP laws. FP refers to industry-adjusted total stock returns. Panel B1 reports results using double clustering of standard errors by country and year. Panel B2 excludes US firms. Panel B3 reports results for the subsample of countries that mandate the disclosure of CEO pay. Panel B4 controls for industry and time-varying effects through industry * year fixed effects, and Panel B5 excludes the year of turnover for firms that experience a CEO turnover event. We only report the key coefficient estimates for brevity but all columns include control variables from the previously reported corresponding tables. Table A1 in the paper provides variable definitions and data sources. We winsorize all continuous variables at the one percent level and use one-year lagged values of time-varying independent variables. The t -statistics appear in brackets below parameter estimates. Robust standard errors are estimated by clustering at the country and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A. Second-stage results of the instrumental variable estimation

Variables	Log (CEO pay) (1)	Log (CEO pay gap) (2)	Log (industry adjusted Q) (3)
<i>SoP</i>	-0.378 [-0.758]	-0.095** [-2.404]	0.047** [2.520]
<i>SoP</i> * Firm performance	0.057*** [2.812]		
Firm performance	0.025* [1.890]	0.521*** [4.779]	0.003 [0.131]
Control variables	Yes	Yes	Yes
Firm and Year F.E.	Yes	Yes	Yes
Country-specific time trends	Yes	Yes	Yes
Under-identification test (p-value)	<0.010	<0.010	<0.010
Weak identification test (p-value)	<0.010	<0.010	<0.010
Over-identification test (p-value)	0.779	<0.010	<0.010
Observations	19,198	11,253	17,518
R-squared	0.167	0.095	0.150

Panel B. Additional Robustness Tests

Dependent variable	No. of Observations	SoP	SoP*Financial performance	R-squared
<u>B1. Clustering by country and year</u>				
Log (total CEO pay)	23,127	-0.089** [-2.575]	0.047** [2.100]	0.184
Log (CEO pay gap)	14,276	-0.074* [-1.715]		0.096
Log (industry adjusted Q)	21,043	0.021* [1.884]		0.153
<u>B2. US firms excluded</u>				
Log (total CEO pay)	20,036	-0.125*** [-4.094]	0.045* [1.658]	0.188
Log (CEO pay gap)	11,893	-0.078* [-1.949]		0.096
Log (industry adjusted Q)	18,230	0.012 [0.821]		0.148
<u>B3. Mandated disclosure</u>				
Log (total CEO pay)	19,300	-0.098** [-2.226]	0.043** [1.976]	0.187
Log (CEO pay gap)	12,446	-0.069* [-1.689]		0.095
Log (industry adjusted Q)	17,529	0.018 [1.363]		0.172
<u>B4. Industry * year FE</u>				
Log (total CEO pay)	23,127	-0.061 [-1.541]	0.040* [1.935]	0.212
Log (CEO pay gap)	14,276	-0.034 [-1.108]		0.119
Log (industry adjusted Q)	21,043	0.023*** [3.283]		0.184
<u>B5. CEO turnover years excluded</u>				
Log (total CEO pay)	20,746	-0.082* [-1.839]	0.038* [1.656]	0.216
Log (CEO pay gap)	12,870	-0.065 [-1.539]		0.103
Log (industry adjusted Q)	18,964	0.021* [1.733]		0.151

Table OA6.

Voluntary Say on Pay Regimes

This table presents estimates of changes in chief executive officer (CEO) pay, the sensitivity of CEO pay to realized firm performance, CEO pay gap, and firm valuation around voluntary SoP regimes. The dependent variable is the natural logarithm of total annual CEO compensation in the first two columns, the natural logarithm of the difference between CEO pay and the median value of total annual pay among the top five managers in the third column, and the industry-adjusted natural logarithm of Tobin's Q in the final column. In Panel A, voluntary SoP regime is a country-level indicator variable that equals one for countries that allow for voluntary SoP regimes, and zero otherwise. In Panel B, voluntary SoP regime is a firm-level indicator that represents firms that hold shareholder votes on executive pay on a periodical basis in absence of SoP laws. The sample is limited to firms for which information about voluntary SoP regime adoption could be gathered. We only report the key coefficient estimates for brevity but all columns include control variables from the corresponding previous tables. Table A1 in the paper provides variable definitions and data sources. We winsorize all continuous variables at the one percent level and use one-year lagged values of time-varying independent variables. The *t*-statistics appear in brackets below parameter estimates. Robust standard errors are estimated by clustering at the country and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Panel A. Country-level voluntary SoP regimes

Variables	Log (CEO Pay)		Log (CEO pay gap)	Log (industry adjusted Q)
	(1)	(2)	(3)	(4)
<i>SoP</i>	-0.074** [-2.480]		-0.120*** [-3.203]	0.023* [1.736]
<i>SoP</i> * Firm performance	0.050*** [3.373]	0.051** [4.558]		
Voluntary SoP	0.150*** [3.749]		0.074 [1.158]	0.056 [1.369]
Voluntary SoP * Firm performance	0.003 [0.061]	0.038 [1.482]		
Firm and Year F.E.	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	No	Yes	Yes
Country * year F.E.	No	Yes	No	No
Observations	89,175	89,175	50,635	83,828
R-squared	0.144	0.168	0.082	0.142

Panel B. Firm-level voluntary SoP regimes

Variables	Log (CEO Pay)		Log (CEO pay gap)	Log (industry adjusted Q)
	(1)	(2)	(3)	(4)
Voluntary SoP	-0.072 [-1.330]		-0.640*** [-4.883]	-0.082 [-1.316]
Voluntary SoP * Firm performance	0.024 [0.749]	0.04 [1.283]		
Firm and Year F.E.	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	No	Yes	Yes
Country * year F.E.	No	Yes	No	No
Observations	427	427	265	402
R-squared	0.326	0.409	0.282	0.269

Table OA7.
Binding and Advisory Say on Pay Laws

This table presents estimates of changes in chief executive officer (CEO) pay, the sensitivity of CEO pay to realized firm performance, CEO pay gap, and firm valuation around the passage of binding and advisory SoP laws. The dependent variable is the natural logarithm of total annual CEO compensation in the first two columns, the natural logarithm of the difference between CEO pay and the median value of total annual pay among the top five managers in the third column, and the industry-adjusted natural logarithm of Tobin's Q in the final two columns. Binding (advisory) SoP laws require (do not require) the board of directors to address shareholder disapproval of executive pay. Binding SoP laws also include the comply-or-explain SoP laws in the Netherlands. We only report the key coefficient estimates for brevity, but all columns include the corresponding control variables from the previously reported corresponding tables. The H_0 provides p -values of the joint Wald test that the sum of coefficients on binding SoP laws equal the sum of coefficients on advisory SoP laws. Table A1 in the paper provides variable definitions and data sources. We winsorize all continuous variables at the one percent level and use one-year lagged values of time-varying independent variables. The t -statistics appear in brackets below parameter estimates. Robust standard errors are estimated by clustering at the country and firm level. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

Variables	Log (CEO pay)		Log (CEO pay gap)	Log (industry adjusted Q)	
	(1)	(2)	(3)	(4)	(5)
Binding <i>SoP</i>	-0.059		-0.051	0.042*	0.032
	[-0.845]		[-0.546]	[1.725]	[1.300]
Advisory <i>SoP</i>	-0.074**		-0.128***	0.023*	0.016
	[-2.545]		[-3.365]	[1.745]	[0.658]
Binding <i>SoP</i> * Firm performance	-0.047	-0.049			
	[-0.807]	[-0.974]			
Advisory <i>SoP</i> * Firm performance	0.057***	0.057***			
	[4.008]	[5.417]			
Binding <i>SoP</i> * High CEO pay slice					0.009
					[0.735]
Advisory <i>SoP</i> * High CEO pay slice					0.034**
					[2.442]
Binding <i>SoP</i> * High CEO pay					-0.011
					[-1.201]
Advisory <i>SoP</i> * High CEO pay					0.014
					[1.078]
Control variables	Yes	Yes	Yes	Yes	Yes
Firm and year F.E.	Yes	Yes	Yes	Yes	Yes
Country-specific time trends	Yes	No	Yes	Yes	Yes
Country * Year F.E.	No	Yes	No	No	No
H_0 : Binding SoP = Advisory SoP	0.000	0.000	0.402	0.575	0.049
Observations	89,175	89,175	50,635	83,828	83,828
R-squared	0.144	0.168	0.082	0.142	0.142