



Corporate lobbying and firm performance variability[☆]

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ABSTRACT

This paper is the first to provide empirical evidence that higher lobbying expenditures are associated with higher operational performance variability. Using data from S&P1500 firms over the 2000–2020 period, our estimates indicate a positive relationship between lobbying expenditures and the variability of return on asset and return on equity. Addressing the endogeneity concerns by applying a control function approach, we find results consistent with the view that the management of lobbying firms takes riskier investment decisions.

1. Introduction

The relation between lobbying expenditures and firm performance is an ongoing debate in the finance literature. While some studies document a positive relationship (Hill et al., 2013; Chen et al., 2015), others show a negative relationship between lobbying expenditures and levels of firm performance (Coates, 2012; Hadani and Schuler, 2013; Cao et al., 2018). The main argument to justify a negative association refers to agency issues. Nevertheless, these prior studies only focus on the levels of firm performance without paying attention to performance variability. This paper is the first to extend the literature by empirically documenting that firms with larger lobbying expenditures have more variable performance.

Agency theory suggests that information asymmetries between the CEO's decisions and the shareholders' goal, for example because the CEO decides to push for future career opportunities instead of aiming for profit maximization, are costly to the firm (Jensen and Meckling, 1976). The empirical lobbying literature that connects with the agency view documents that firms with less effective oversight mechanisms on CEO's decisions tend to lobby more (Hadani and Schuler, 2013). This idea is at the crossroad with the literature on CEO's decision making power (Adams et al., 2005) and moral hazard studies (Allen et al., 2015). In both cases, whether the CEO's decision power is less diversified (Sah and Stiglitz, 1986) or when the decision makers know that they will receive governmental support¹ in situations of financial distress (Kostovetsky, 2015), the decisions are more extreme. In particular for the banking sector and the governmental support situation, Lambert (2019) shows that lobbying banks take riskier investment decisions compared to their non-lobbying peers.

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¹ The empirical political connections literature documents the lower probability for a firm to be sanctioned or regulated by a federal agency and the higher likelihood of benefiting from government rule (Correia, 2014).

Table 1
Descriptive statistics for S&P1500 firms over the 2000–2020 period.

Variables	Unit	Mean	Median	SD	Max	Min	Observations
Independent variables							
Tobins'Q	Ratio	2.07	1.55	2.30	173.638	0.091	25,672
ROA	Ratio	0.028	0.044	0.47	40.03	−38	26,373
ROE	Ratio	0.89	0.82	3.73	209.444	−180.735	25,666
Explanatory variables							
Lobbying expenditures	US\$M	0.47	0	1.75	45.50	0	29,256
Firm controls							
LN(board size)	Num	1.86	1.79	0.19	2.71	0.69	26,472
CEO compensation	Ratio	0.70	0.77	0.22	1.26	0	25,945
Intangibles	Num	2352	201.84	9505	310,197	0	28,409
Leverage	Ratio	0.002	0.53	112.79	3569	−14,602	28,922
LN(market val.)	Num	7.70	7.62	1.81	14.49	0.02	27,008
PAC	US\$M	0.02	0	0.78	86.10	0	29,256
R&D	US\$B	0.15e ^{−6}	0	0.94e ^{−6}	42.74	0	29,256
LN(ROA)	Num	0.03	0.04	0.158	3.71	0	26,256
L.LN(ROA)	Num	0.03	0.04	0.156	3.71	0	24,717
L2.LN(ROA)	Num	0.03	0.04	0.157	3.71	0	23,234
LN(total asset)	Num	7.89	7.82	1.93	15.19	0	29,256

We empirically examine these predictions using the variability of the three fundamental firm performance measures in the finance literature: the Tobin's Q, the return on assets (ROA) and the return on equity (ROE). Our sample is composed by panel data of S&P1500 firms over the 2000–2020 period and the explanatory variable is the logarithmic transformation of one plus the firm's lobbying expenditures. Controlling for firm characteristics, time and firm fixed effects, our results show a positive association between lobbying expenditures and the variability the accounting measure of firm performance. The results are consistent with the view that lobbying can be used as an insurance devise leading firms active in lobby to take on more risk. This result is robust to endogeneity that we treat with a control function approach including an additional exogenous variable.

The paper is organized as follows. Section 2 describes the data and Section 3 develops the empirical strategy. The fourth section, Section 4, presents the results, Section 5 includes robustness checks and Section 6 concludes.

2. Data

2.1. Performance measures and firm characteristics

The sample is based on S&P1500 firms that we collect from *Compustat* over the 2000–2020 period. The sample is composed by 1633 publicly traded US firms, which translates into 29,256 observations. As usually done in the literature, we consider Tobin's Q, ROA, and ROE as performance measures. Tobin's Q is the sum of total assets and market value minus common equity, divided by total assets. ROA is the ratio of net income to total assets and ROE is the ratio of net income to equity. The choice for firms characteristics is based on the literature of performance variability (Cheng, 2008) and the studies on lobbying and firm performance (Cao et al., 2018; Girard et al., 2023b). We control for firm size firms' total assets, market capitalization,² financial leverage, board size, CEO compensation, intangibles, political contributions (PAC), R&D expenditures and return on asset and its lagged values. Because of missing data (e.g. for CEO compensation or board size) our main specifications include 20,715 observations when we take the Tobin's Q as dependent variable and 17,228 when we consider the ROA or the ROE as dependent variables.

2.2. Lobbying expenditures

Using the Lobbying Disclosure Reports, we collect the data on lobbying expenditures for S&P1500 companies. The Lobbying Disclosure Act (1995) and the Open Government Act (2007) require lobbyists to register and disclose information on their lobbying activities to the Senate Office of Public Records. The data are collected directly from the Center for Responsive Politics (CRP) that compile the information of the Senate Office of Public Records. In line with the majority of empirical research on lobbying, we assess lobbying activities at the parent institution level rather than the subsidiary level (Igan and Mishra, 2014). Descriptive statistics and definitions of all data are available in Tables 1 and 2, respectively.

² In a recent working paper, Girard et al. (2023a) demonstrate the non-interchangeability between firm size proxies. The best performing specification always include both total asset and market capitalization.

Table 2
Variable definitions.

Variables	Definition
Independent variables	
Tobins'Q	(Total assets + market value - common ordinary equity)/Total asset
ROA	Net income/Total assets
ROE	Net income/Shareholder's equity
Explanatory variables	
Lobbying expenditures	Amount of lobbying expenditures
Firm controls	
Board size	The number of executives
CEO compensation	1-(CEO salary/Total compensation)
Intangibles	Non-monetary assets
Leverage	Total liabilities/Total assets
Market value	Value of a firm's share (31st December) times the number of shares
PAC	Campaign contribution expenditures
R&D	Research and development expenditures
Total assets	Sum of the assets own by the firm

3. Empirical strategy

Based on the empirical lobbying literature, we argue that lobbying is associated with riskier decision-making. As, riskier decision-making is associated with performance variability, by transitivity, lobbying should be associated with performance variability. We do not directly observe decision risk, but we can empirically test the outcome of this relationship through triangulation. In other words, we posit that variability in firm performance increases with the level of lobbying expenditures. To test the difference in performance variability, we transform our dependent variables to get their variance per firm along the sample period (Adams et al., 2005; Cheng, 2008). For example, the variance of the ROA for the firm i over the 2000–2020 period will be $\Delta ROA = |ROA_{i,t} - \overline{ROA}_i|^2$. To evaluate the impact of lobbying expenditures on firm performance variability we regress the following model:

$$\Delta Firm\ performance_{i,t} = \sum_{i=1} \beta_0 X_{i,t} + \beta_1 Lobbying\ expenditures_{i,t} \quad (1)$$

$$+ \gamma_i + \Gamma_t + \epsilon_{i,t} \quad (2)$$

where $X_{i,t}$ contains the control variables, γ_i and Γ_t are the firm and time fixed effects parameters and $\epsilon_{i,t}$ is the error term. For each regression, standard errors are clustered at the firm level.

4. Empirical results

4.1. Main results

Table 3 reports the lobbying expenditures impact on firm performance variability over the sample period (taking the mean of the firm performance over the all sample period when we compute the variance). Based on Delis et al. (2017), we consider the logarithmic transformation of the firm performance measures to limit the potential influence of outliers. Specifications (1) and (4) consider Δ Tobin's Q as dependent variable, specifications (2) and (5) evaluate Δ ROA and the columns (3) and (6) take Δ ROE. In all specification, we control for firm characteristics that are included in Table 1. While the three first specifications include firm fixed effects, the three last ones consider the industry fixed effects. For four out of six specifications, our estimates report positive and statistically significant explanatory variable's coefficients. Taking the accounting measures of firm performance, the ROA and the ROE, we observe that for a 1% increase in lobbying expenditures the performance variability increases by $0.11e^{-3}\%$ and 0.006%, respectively. Specifically for the ROE, this positive association is persistent when we include either firm or industry fixed effects (NAICS taxonomy with 438 categories).³ If we take the sample mean of Δ ROE (12.11) and lobbying expenditures (0.47M), our results translate into an ROE variability increase of 232 (roughly 19 times the Δ ROE average) for each \$1 invested in lobbying $\left(\frac{\partial \Delta ROE * lobby}{\partial lobby * \Delta ROE} = 0.006 * \frac{0.47M}{12.11} = 232\right)$. This sizeable effect is driven by the high sample mean of lobbying expenditures and does not hold when we take into account the median firm, that does not engage in lobbying activities. These results are therefore difficult to interpret.

³ We use the variance inflation factor (VIF) to test for multicollinearity, without finding any value bigger than 10. VIF estimates from Table 3 are available in Table 4. We also tested the robustness of our results by removing three of our non-stationary control variables, without noticing any change in our conclusion.

Table 3
Lobbying expenditures and firm performance variability.

	LN(Δ Tobin's Q) (1)	LN(Δ ROA) (2)	LN(Δ ROE) (3)	LN(Δ Tobin's Q) (4)	LN(Δ ROA) (5)	LN(Δ ROE) (6)
LN(Lobbying exp.) _{<i>i</i>}	0.002 (0.001)	0.11e ^{-3***} (0.000)	0.006*** (0.002)	0.005*** (0.001)	0.53e ⁻⁴ (0.000)	0.006*** (0.002)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	No	No	No
Industry FE	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.60	0.51	0.52	0.29	0.28	0.31
Observations	20,715	17,228	17,228	20,768	17,303	17,308
Wu–Hausman	0.624	0.068	0.001	0.548	0.075	0.287

This table presents the OLS estimates explaining the lobbying expenditures impact on the logarithmic transformation of firm performance variability. The three first specifications control for firm FE and the three following for industry FE. Columns (1) and (4) take the Tobin's Q as dependent variable, columns (2) and (5) consider the ROA and columns (3) and (6) the ROE. All specification includes the controls specified in Table 1. Standard errors are clustered at the firm level are the results in parentheses. P -value < 0.01***, p -value < 0.05**, p -value < 0.1*.

Table 4
VIF test for multicollinearity.

	LN(Δ Tobin's Q) VIF	LN(Δ Tobin's Q) 1/VIF	LN(Δ ROA) VIF	LN(Δ ROA) 1/VIF	LN(Δ ROE) VIF	LN(Δ ROE) 1/VIF
LN(lobby exp.) _{<i>i</i>}	1.56	0.639	1.59	0.627	1.56	0.639
LN(total assets) _{<i>i</i>}	4.56	0.219	7.48	0.133	4.56	0.219
LN(market val.) _{<i>i</i>}	5.00	0.199	7.50	0.133	5.00	0.199
LN(board size) _{<i>i</i>}	1.05	0.950	1.04	0.957	1.05	0.950
CEO comp _{<i>i</i>}	1.30	0.767	1.27	0.788	1.30	0.767
Intangibles _{<i>i</i>}	1.29	0.776	1.31	0.764	1.29	0.777
Leverage _{<i>i</i>}	1.00	0.999	1.00	0.999	1.00	0.999
PAC _{<i>i</i>}	1.28	0.781	1.30	0.770	1.28	0.780
R&D _{<i>i</i>}	1.23	0.814	1.26	0.795	1.23	0.814
LN(ROA)	1.36	0.736	1.58	0.633	1.36	0.736
L.LN(ROA)	1.41	0.708	1.35	0.740	1.41	0.708
L2.LN(ROA)	1.27	0.790	1.22	0.817	1.27	0.790

This table presents the VIF test on Table 3's explanatory and control variables.

4.2. Endogeneity

While the results from Table 3 suggest a causal link, previous studies emphasize the endogenous nature of lobbying expenditures (Cao et al., 2018; Lambert, 2019). If a firm expect to have positive returns from lobbying our estimates might suffer from self-selection issue. In line with Cheng (2008), we treat the endogeneity issue applying a control function approach (Wooldridge, 2010) using the lag transformation of our explanatory variable as an extra exogenous variable (see also Fidrmuc et al., 2018 and Girard et al., 2023b). Considering the high persistence in lobbying (Kerr et al., 2014), we argue that this instrument fulfills the relevance condition. The exclusion restriction requires the independence of the instrument from the error term of the main equation. As the US Congress cycle lasts two year⁴ and the work on proposals lasts for a period of approximately one year before the President's recommendations,⁵ we posit that a three years lagged value of lobbying expenditures is not directly related to the firm performance variability. We formalize the two-stage procedure taking following first stage model:

$$\text{Lobbying expenditures}_{it} = \beta_4 \text{Lobbying expenditures}_{i,t-3} + \sum_{i=1} \beta_3 X_{i,t} + \gamma_i + \Gamma_i + u_{i,t}$$

In the second stage, we correct for endogeneity issues including the generated regressors from the first stage regression (Wooldridge, 2010):

$$\Delta \text{Performance}_{it} = \beta_5 \text{Lobbying expenditures}_{i,t} + \hat{u}_{i,t} + \sum_{i=1} \beta_5 X_{i,t} + \gamma_i + \Gamma_i + \epsilon_{i,t}$$

Similarly to Eq. (2), $X_{i,t}$ refers to the control variables, γ_i and Γ_i are the fixed effects parameters and $\epsilon_{i,t}$ is the error term. $\hat{u}_{i,t}$ contains the retrieved residuals from the first-stage regression. Table 5 displays the result from the control function process. The statistically significant result from the residual variable in column (3) is in line with Table 3's result of the Wu – Hausman test that

⁴ See, Congress.gov: <https://www.congress.gov>.

⁵ Congressional Budget and Impoundment Control Act of 1974.

Table 5
Lobbying expenditures and firm performance variability: control function.

	LN(Δ Tobin's Q) (1)	LN(Δ ROA) (2)	LN(Δ ROE) (3)	LN(Δ Tobin's Q) (4)	LN(Δ ROA) (5)	LN(Δ ROE) (6)
<i>First stage</i>						
LN(Lobbying exp.) _{<i>t-3</i>}	0.259*** (0.016)	0.259*** (0.016)	0.259*** (0.016)	0.691*** (0.012)	0.691*** (0.012)	0.691*** (0.012)
<i>Second stage</i>						
LN(Lobbying exp.) _{<i>t</i>}	-0.001 (0.001)	0.11e ⁻³ ** (0.000)	0.004*** (0.002)	0.004*** (0.002)	0.63e ⁻⁴ * (0.000)	0.006*** (0.002)
Residual	0.003 (0.005)	-0.46e ⁻⁴ (0.000)	0.032*** (0.002)	0.004 (0.001)	-0.12e ⁻³ * (0.000)	0.003* (0.002)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	No	No	No
Industry FE	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.59	0.47	0.52	0.27	0.36	0.31
Observations	17,996	15,145	15,145	18,073	15,239	15,239

This table presents the estimates from a two-stage (control function) regression explaining the lobbying expenditures impact on the logarithmic transformation of firm performance variability. In the first stage we regress lobbying expenditures on its lagged transformation. The second stage regression is similar to the baseline model while adding the generated residual from the first stage regression. The three first specifications control for firm FE and the three following for industry FE. Columns (1) and (4) take the Tobin's Q as dependent variable, columns (2) and (5) consider the ROA and columns (3) and (6) the ROE. All specification includes the controls specified in Table 1. Standard errors are clustered at the firm level are the results in parentheses. P -value < 0.01***, p -value < 0.05**, p -value < 0.1*.

Table 6
Lobbying expenditures in $t-1$ and firm performance variability.

	LN(Δ Tobin's Q) (1)	LN(Δ ROA) (2)	LN(Δ ROE) (3)	LN(Δ Tobin's Q) (4)	LN(Δ ROA) (5)	LN(Δ ROE) (6)
LN(Lobbying exp.) _{<i>t-1</i>}	-0.002* (0.000)	0.67e ⁻⁴ * (0.000)	0.005*** (0.002)	0.005*** (0.001)	0.36e ⁻⁵ (0.000)	0.004* (0.002)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	No	No	No
Industry FE	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.59	0.31	0.41	0.20	0.24	0.28
Observations	19,340	16,251	19,340	19,422	16,346	19,422

This table presents the OLS estimates explaining the lobbying expenditures in $t-1$ impact on the logarithmic transformation of firm performance variability. The three first specifications control for firm FE and the three following for industry FE. Columns (1) and (4) take the Tobin's Q as dependent variable, columns (2) and (5) consider the ROA (> 0) and columns (3) and (6) the ROE (> 0). Standard errors are clustered at the firm level are the results in parentheses. P -value < 0.01***, p -value < 0.05**, p -value < 0.1*.

indicates that our main regressor is endogenous when we take the variability of the ROE as dependent variable while controlling for firm fixed effects. Overall, the estimates are consistent with the results presented in Table 3, validating the positive association between lobbying expenditures and the variability of the ROA and ROE within industry and across firms.

5. Robustness checks

We also assess whether the coefficient of our variables of interest are modified when we use other models. Based on Unsal et al. (2016) and Cao et al. (2018), we first change our baseline model taking the one year lagged transformation of lobbying expenditures. Table 6 shows estimates in line with our main results. In Tables 7 and 8 we compute differently the firm performance variance, taking a rolling three years window (instead of computing the average taking the whole sampling period). The statistical significance of the lobbying effect on performance variability is more sensitive in the case of the market measure of firm performance (Tobin's Q) compared with the two accounting based measures of firm performance (ROA and ROE). Similarly to Section 4, the results are consistent with the view that lobbying can be used as an insurance devise leading firms to take on more risk.

6. Conclusion

This paper explores the effect of lobbying expenditures on the variability of firm performance. Consistent with the agency theory, our results indicate that an increase in lobbying expenditures are associated with more operational performance variability (Δ ROA and Δ ROE). Nevertheless, we do not find have any effect on the market performance variability (Δ Tobin's Q). The positive relationship is particularly persistent within industry and across firms for Δ ROE. This result contributes to the literature by

Table 7
Lobbying expenditures firm performance variability using rolling three years window.

	LN(Δ Tobin's Q) (1)	LN(Δ ROA) (2)	LN(Δ ROE) (3)	LN(Δ Tobin's Q) (4)	LN(Δ ROA) (5)	LN(Δ ROE) (6)
LN(Lobbying exp.) _{<i>t</i>}	0.001 (0.000)	0.35e ⁻⁴ (0.000)	0.005*** (0.002)	0.002*** (0.001)	0.94e ⁻⁴ * (0.000)	0.005*** (0.002)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	No	No	No
Industry FE	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.38	0.55	0.43	0.24	0.47	0.25
Observations	20,715	17,228	17,228	22,494	17,303	17,308

This table presents the OLS estimates explaining the lobbying expenditures impact on the logarithmic transformation of firm performance variability using specifications with rolling three years window. The three first specifications control for firm FE and the three following for industry FE. Columns (1) and (4) take the Tobin's Q as dependent variable, columns (2) and (5) consider the ROA (> 0) and columns (3) and (6) the ROE (> 0). Standard errors are clustered at the firm level are the results in parentheses. *P*-value < 0.01***, *p*-value < 0.05**, *p*-value < 0.1*.

Table 8
Lobbying expenditures in $t - 1$ firm performance variability using rolling three years window.

	LN(Δ Tobin's Q) (1)	LN(Δ ROA) (2)	LN(Δ ROE) (3)	LN(Δ Tobin's Q) (4)	LN(Δ ROA) (5)	LN(Δ ROE) (6)
LN(Lobbying exp.) _{<i>t-1</i>}	-0.001 (0.000)	0.24e ⁻³ * (0.000)	0.005*** (0.002)	0.001 (0.001)	0.87e ⁻⁴ * (0.000)	0.003* (0.002)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	No	No	No
Industry FE	No	No	No	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
R ²	0.41	0.55	0.40	0.22	0.47	0.19
Observations	21,073	17,581	17,228	22,097	17,628	17,635

This table presents the OLS estimates explaining the lobbying expenditures in $t - 1$ impact on the logarithmic transformation of firm performance variability using specifications with rolling three years window. The three first specifications control for firm FE and the three following for industry FE. Columns (1) and (4) take the Tobin's Q as dependent variable, columns (2) and (5) consider the ROA (> 0) and columns (3) and (6) the ROE (> 0). Standard errors are clustered at the firm level are the results in parentheses. *P*-value < 0.01***, *p*-value < 0.05**, *p*-value < 0.1*.

confirming that lobbying is associated with riskier investment and behavior. As described by [Arditti \(1967\)](#), shareholders facing higher risks will expect higher equity value, which might explain the higher ROE variability. Although we consider the most common performance measures to investigate our research question, our results call for a more in-depth study of the relationship between lobbying and investment risks. We leave this topic for future research.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Research ethics

We further confirm that any aspect of the work covered in this manuscript that has involved human patients has been conducted with the ethical approval of all relevant bodies and that such approvals are acknowledged within the manuscript.

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