Lobbying activity over business cycles[†]

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Abstract

This study investigates how firms' lobbying activities change over business cycles. We show that firms are more likely to participate in and incur greater expenditure on lobbying in times of recessions (especially aggregate economic recessions). Furthermore, non-lobbying firms are more likely to start lobbying during recessions. We further explore two channels for this result: financial constraints and executive's motivation. Because recession causes the external financing environment to deteriorate, we show that firms facing more constraints because of recessions lobby more. Moreover, executives have stronger motivation to lobby during recessions because doing so helps them to obtain more personal compensation.

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1 Introduction

The 2007–2009 global financial crisis and subsequent sharp economic recession have sparked substantial interest in the link between macroeconomic conditions and policy risk. Based on Davis (2016), global economic policy uncertainty increased noticeably and has remained at a high level since 2008. Many researchers (e.g. Julio and Yook, 2012; Baker et al., 2016; Gulen and Ion, 2016; Hassen et al., 2016; Leduc and Liu, 2016) have concluded that policy risk or uncertainty has hampered economic recovery since the 2007–2009 Great Recession, and is detrimental for the economy through decreasing economic activity and increasing unemployment.

How is economic policy developed effectively? How do firms manage political risk associated with policy development? The mechanism of lobbying is one possible answer to these questions. From a government's perspective, lobbying is an important lever for a productive government, because it helps the government to sort out the multitudinous competing interests of its citizens.[1] For firms, lobbying is one of the primary approaches by which firms attempt to change economic policy. As Kerr et al. (2014) summarise, total expenditure of lobbying exceeds the size of contributions to political action committees (PACs). The return on lobbying for firms is also large: Kang (2016) estimates that the average returns from lobbying expenditure are over 130%.

The literature has given attention to the role and effect of lobbying for decades because of its importance. As Bombardini and Trebbi (2019) summarise, earlier works related to lobbying put

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[1] Interested readers can refer to Bombardini and Trebbi (2019) for an introduction to and review of lobbying.

large effort into theoretical analysis owing to data unavailability.[2] Two seminal works on this are by Grossman and Helpman (1994, 1996), who emphasise the influence exerted by special-interest groups on policy. With the introduction of the Lobbying Disclosure Act of 1995 in the United States, the Senate Office of Public Records (SOPR) now offers data sources for lobbying, leading to a surge in empirical studies on lobbying. Previous studies have illustrated that entry barrier (Kerr, 2014), CEO characteristics (Kim, 2008; Skaife et al., 2013; Unsal et al., 2016; Brodmann et al., 2019), firm size (Hill et al., 2013; Kerr et al., 2014), age (Campos and Giovannoni, 2007), and financial health (Blau et al., 2013; Adelino and Dinc, 2014) affect firms' lobbying.

Surprisingly little is known about the business cycle dynamics of firms' lobbying activity. Several events and news show that lobbying may be linked to business cycles. For example, according to a CNN report, companies and interest groups spent a record 3.47 billion dollars on lobbying in 2009, a 5% increase over the year before; this period corresponds to a persistent recession, declining dollar, and soaring unemployment.[3] According to another news report by Courthouse News, firms 'engaging in political and lobbying activities are in dire need of obtaining funds amid the economic downturn caused by COVID-19'.[4] These examples illustrate how the business cycle incentivises corporate lobbying. The purpose of this study is to explore corporate lobbying behaviour over business cycles.

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[2] Milyo et al. (2000) highlight that earlier empirical works place much emphasis on PACs owing to their early data availability.
[3] https://money.cnn.com/2010/02/12/news/economy/lobbying/
[4] https://www.courthousenews.com/lobbyists-fighting-for-bailout-money-promise-not-to-play-politics/

Using Center for Responsive Politics (CRP) data, we show that firms' lobbying behaviour tends to be countercyclical, because we observe lobbying participation and lobby expenditure increase significantly in recessions. Instead of using a recession dummy, we employ GDP growth and unemployment rate as proxies for aggregate business cycle. The results remain robust as lobbying activities increase with the unemployment rate, but decrease with GDP growth. This conclusion is robust after controlling for political factors, such as political risk and elections, and is robust to the choice of business cycle proxy, alternative dataset of lobbying activity, and for subgroup samples (financial and utilities firms). Our results further show that non-lobbying firms are more likely to start participating in lobbying during recessions, even when the entry cost is higher during recessions. By comparing national and local economic conditions, we observe that firms are more sensitive to national economic recessions rather than local economic cycles.

Moreover, we explore two mechanisms behind this phenomenon: financial constraints and executive's motivation. During economic recessions, the external financing environment generally worsens, and firms face greater financial constraints, increasing their need to seek government help. We provide evidence that firms with worse financial health tend to lobby more during recessions, which supports our hypothesis. Second, executives of firms have incentives to lobby, because successful lobbying can increase compensation and firm value. The former incentive is perhaps stronger during recessions, because CEO compensation, especially that related to equity markets, is lower during recessions. We show that firms whose CEOs have decreasing compensation lobby more during recessions. Lobbying also helps firms to achieve better

performance during recessions, showing that it also provides benefits to shareholders, which further strengthen executive's motivation.

The contributions of this study are twofold. First, the present analysis is related to the growing literature on firm lobbying activity. As mentioned, we observe a new factor that can explain lobbying activity. Second, the investigation about corporate lobbying is connected to the broader literature on political connections of firms. This empirical literature is vast; some seminal works include Fisman (2001), Khwaja and Mian (2005), Faccio (2006), Li et al. (2008), Goldman et al. (2009), Chaney et al. (2011), Correia (2014), Fisman and Wang (2015), and Borisov et al. (2016).

The closet studies to ours are Blau et al. (2013) and Adelino and Dinc (2014). Both works show that firms lobby more to obtain funds issued by government in recessions. Blau et al. (2013) focus on Troubled Asset Relief Program (TARP) support[5] and Adelino and Dinc (2014) focus on The American Recovery and Reinvestment Act of 2009. Different to these works, in this study, we focus on how lobbying behaviour co-moves with business cycles, not specific policy aid, a specific recession period, or lobbying in specific industry. We show that lobbying behaviour co-moves with business cycles. Business cycles not only affect existing lobbying firms' decisions, but also incentivise non-lobbying firms to start lobbying. We discuss the possible mechanisms behind this phenomenon, which complements the previous studies. Furthermore, we complement their studies by showing that financial firms are less likely to

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[5] The TARP is a program of the U.S. government to strengthen the country's financial industry and stability through purchasing toxic assets and equity from financial institutions.

respond to business cycles.

The remainder of this paper is structured as follows. Section 2 describes the data sources and the basic descriptive statistics of key variables. Section 3 reports the empirical strategy for analysis and presents the main empirical findings. Section 4 presents the conclusions.

2   Data and basic statistics

Our key independent variable is business cycle measures. We first define a recession dummy which takes the value one if the sample period falls within an NBER peak-to-trough period, and otherwise zero for an expansion.[6] Since there are only four recession years in our sample (2001, 2007–2009), the sample period may be too small. We further select GDP growth and change of the unemployment collected from Federal Reserve Economic Data as proxies for business cycles.

Our firm-level control variables are from the S&P Capital IQ's Compustat annual file. In line with the existing literature (e.g. Bombardini, 2008; Hill et al., 2013; Adelino and Dinc, 2014; Kerr et al., 2014; Unsal et al., 2016), we control for firm characteristics, namely, *Size, Tobin's Q, CAPX/Assets ratio* (investment rate)*, Leverage, Cash flow,* and *Sales*. The definitions of the variables used and details of the data sources are summarised in the Appendix.

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[6] For more information, refer to the NBER's business cycle dating website for details.
https://www.nber.org/research/business-cycle-dating.

Data for lobbying expenses come from the CRP (www.opensecrets.org/lobby). CRP is non-profit organisation that tracks the effects of money and lobbying on elections and public policy. It compiles lobbying data from the SOPR records, which cover all records submitted by lobbying companies, and standardises company names. The dataset begins from 1999, and is filed on a semi-annual basis. Since the implementation of the Honest Leadership and Open Government Act in 2007, lobbying records have had to be filed every quarter (January, April, July, and October) after 2008. Note that the lobbyist can report the expense as zero if lobbying expenses are below 5,000 dollars in a quarter (10,000 dollars in a half year). Thus, we construct another lobbying dummy variable that equals one if a firm has lobbying activities in a year, and zero otherwise. This dummy simply reflects firms' participation in lobbying activities regardless of expenditure.

Figure 1 illustrates the total spending on lobbying averaged across firms, where the grey area indicates a recession period as defined by the National Bureau of Economic Research (NBER). As shown, lobbying expenditure increased significantly from 1999 (around 300,000 dollars) to 2009 (over 800,000 dollars). This expenditure has since remained at high levels. Lobbying spending increased in the last four years, peaking in 2019 at nearly 900,000 dollars.

Table 1 reports the summary statistics of the key variables used in this study. The sample period ranges from 1999 to 2019. Following the corporate finance literature (e.g. Chetty and Saez, 2005; Ferreira and Laux, 2007; Lockhart and Unlu, 2018; Unsal et al., 2018), we exclude firms that operated in the financial industry (SIC code 6000–6999) and utility industry (SIC code 4900–4999) owing to their unique regulatory and reporting requirements. We manually match

the lobbying firm's name with the Compustat annual file. By combining data from several

sources and ensuring that there are no missing data, we obtain an unbalanced panel with 2,752

firms and 33,140 firm-year observations. All continuous variables are winsorised at the 1st and

99th percentiles to reduce the influence of extreme outliers.[7]

As shown in Table 1, we observe that an average firm has 597,066 dollars' worth of

lobbying. Our sample firms have an average Tobin's Q equal to 2.76, cash flow of -4.0%, size of

6.716, CAPX/Assets ratio of 4.9%, and leverage ratio of 27.8%. During the sample period, the

average GDP growth rate is 0.957% and the unemployment rate is around 5.8%. There are four

recession years.

Table 2 reports industry composition, as well as relevant lobbying expense. We classify

the sample based on two-digit SIC codes. Manufacturing firms account for the largest proportion

(nearly 55%) in our sample followed by service firms (1,502 firms). Other industry has the least

firms in our sample. By looking at the average lobbying spending, we observe that lobbying

behaviour is quite different across sectors. The top sector is transportation and public utilities,

suggesting that firms in this sector may be sensitive to policies and regulations, so that they

lobby more to influence policy-makers.

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[7] We also test the results using data winsorised for the top and bottom 5%, and the conclusions remain robust. The results are available upon request.

3 Empirical specification and results

3.1 Empirical strategy

Based on the literature (e.g. Bombardini, 2008; Hill et al., 2013; Adelino and Dinc, 2014; Kerr et al., 2014; Unsal et al., 2016), we test how corporate lobbying behaviour changes over business cycles by controlling other firm characteristics. The baseline empirical model is specified as follows:

$$\text{Lobbying}_{i,t} = \alpha + \beta_1 BC_t + \gamma X_{i,t} + \varphi_i + industry\ dummies + \varepsilon_{i,t}, \qquad (1)$$

where i denotes the state; t denotes the time; φ_i is the firm fixed effect, capturing firm-specific differences, while industry dummies are used to control for industry-specific difference. $\text{Lobbying}_{i,t}$ is the measure of lobbying activity. We use two different dependent variables. The first lobby variable is a dummy variable equal to one if a firm has lobbying activities in year t, zero otherwise. The second lobby variable is the expense of firms that invest in lobbying, defined as the natural logarithm of 1 dollar plus the annual lobbying expenditure. We apply both an ordinary least square (OLS) regression model and a Tobit model for the estimation, where the latter is used to handle the mass of zero observations for our lobbying expense variables. Moreover, we apply a probit model when the dependent variable is the lobby dummy variable by controlling the same variables.

BC_t is the business cycle measure. We select three aggregate business cycle variables: a recession dummy based on the NBER; GDP growth rate; and the change of unemployment rate. The main interest in both models is the coefficient of BC_t (β_1), which captures the average effect of business cycle on lobbying behaviour. If lobbying activity is significantly positively (negatively) correlated with a procyclical (countercyclical) measure, we conclude that lobbying activity is procyclical. Meanwhile, if lobbying activity is significantly negatively (positively) correlated with the procyclical (countercyclical) measure, we conclude that lobbying activity is countercyclical.

The control variables ($X_{i,t}$) include six firm characteristic variables (*Size, Tobin's Q, CAPX/Assets, Cash flow, and Sales*), which are shown as determinants in the literature. The definitions of the variables used and details of the data sources are summarised in the Appendix. We also include the linear trend of lobbying activity, because the lobbying activity usually persists (Kerr et al., 2014) and showed a trend before 2009 (see Figure 1). The standard errors are clustered by year and firm (two-way clustering) to control for potential cross-sectional and serial correlation in the error term.[8]

3.2 Main results

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[8] The results are robust if we cluster the errors by firm or year only.

Based on our estimation results of Table 3, we find that firms tend to lobby more times and spend larger amounts of money on lobbying during recessions than during expansions. For example, in column 1 of Table 3, we observe that the coefficients of Recession increased by around 28.9%. This conclusion remains robust if we use Tobit regression (column 4), and the economic magnitude is even stronger. Turning to the results using the change of unemployment rate, OLS estimation suggests that a 1% increase in the unemployment rate leads to around a 13.4% increase in lobbying expense. Firms are more likely to participate in lobbying when the change of unemployment rate is higher. A similar conclusion is obtained from GDP growth with lobbying measures (columns 3, 6, and 9). We observe that firms are less likely to lobby when the GDP growth rate is higher.

Regarding other controls, similar to the results of Hill et al. (2009) and Kerr et al. (2014), we find that firm size is positively related to lobbying activity, whereas leverage and cash flow ratio are both negatively associated with lobbying. Sales are positively correlated with lobbying activity.

In summary, our results confirm that lobbying activities are countercyclical, that is, they increase in times of economic recessions. This evidence is consistent with Blau (2013) and Adelino and Dinc (2014), who observe that financial and non-financial firms, respectively, tend to lobby more when they face problems.

3.3 Robustness checks

3.3.1 Control for political risk and events

One potential factor that we do not consider in our baseline models is political risk. Firms probably actively manage political risk through lobbying (Stigler, 1971; Peltzman, 1976). This argument is supported by empirical evidence from (Solé-Ollé and Viladecans-Marsal, 2012; Blau et al., 2013; Hassan et al., 2016). Solé-Ollé and Viladecans-Marsal (2012) show that more competitive local elections allow more land to be developed, resulting from more lobbying by land developers. Blau et al. (2013) show that banks that actively engage in lobbying receive more TARP funds.[9] Agca et al. (2019) show that corporate lobbying and federal procurement are positively related. Hassan et al. (2019) develop a set of firm-level political risk based on textual analysis of quarterly conference call transcripts, and demonstrate that firms exposed to political risk actively lobby and donate to politicians.

In accordance with these findings, we include Hassan et al.'s (2016) firm-level political risk index, presidential election dummy, and the change of federal government spending to reduce the concern that our results are driven by political factors. Hassan et al.'s (2016) firm-level political risk index reflects the firm-level political risk, such as uncertainty about tax policy, regulatory changes, security and defence, and trade policy.[10] Table 4 reports the results. We still observe that

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[9] Duchin and Sosyura (2012) also show that increase in lobbying expenditures increases the likelihood of gaining approval for TARP funds.
[10] Hassan et al.'s (2002) political risk index begins in 2002, and thus, the number of observations reported in Table 3 decreases.

lobbying activity demonstrates countercyclicality, because it is positively related to a recession dummy and the unemployment rate but negatively related to GDP growth.

3.3.2 Alternative data of lobbying activity

We note that alternative data sources are constructed by Kim (2018) and Kim and Kunisky (2020), who apply the bipartite link community model to link the number of congressional bills that are lobbied by clients and sponsored by legislators for a given year.[11] We merge our dataset with their data using GVKEY and investigate whether the number of such lobbied bills changes over business cycles by controlling other factors. Overall, we observe that the number of congressional bills that are lobbied by the client and sponsored by the legislator increase significantly during recessions or the change of unemployment rate (see Table 5), which verifies our main findings. Similarly, when the GDP growth rate is higher, we observe lower lobbied congressional bills.

3.3.3 Alternative business cycle proxies

Instead of using changes of economic indicators as a proxy for business cycle measures, another possible proxy is to follow Aguiar et al. (2013) and Haltiwanger et al. (2018) to use the cyclical components of economic indicators. Here, we employ Hamilton's (2018) approach to

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[11] This dataset is available at https://www.lobbyview.org/

filter the unemployment rate and GDP based on a two-year sample length (h = 2).[12] This

approach overcomes the possible problems of the Hodrick–Prescott filter (another very popular

detrending method), wherein the filter produces a series with spurious dynamic relationships

with no basis in the underlying data-generation process, and generates cyclical components for

an integrated series even if these are not present in the original data. Then, we replace our main

independent variable with the cyclical unemployment rate or GDP in the baseline regression, and

re-estimate it. Based on the results summarised in Table 6, we conclude that lobbying behaviour

is positively related to the cyclical unemployment rate and negatively associated with cyclical

GDP.

Based on the robustness checks presented in this subsection, we confirm that firms'

lobbying behaviour is countercyclical. Furthermore, we show that this conclusion is not sensitive

to the choice of business cycle proxy, or alternative dataset of lobbying activity, and is not driven

by political factors.

3.4   Local or national phenomenon?

Thus far, we have documented that corporate lobbying activity increase during recessions.

One unexplored issue is whether this phenomenon is state-specific or national. To test it, we extent

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[12] Hamilton's approach involves conducting an OLS regression of the variable at date $t + h$ on the four most recent values of date t, to avoid these drawbacks and obtain a cyclical component series. The OLS regression is as follows: $x_t = \beta_0 + \beta_1 x_{t-h} + \beta_2 x_{t-h-1} + \beta_3 x_{t-h-2} + \beta_4 x_{t-h-3} + v_t$ where the cyclical components are the residuals, v_t.

our baseline equation by including firm's headquarter state's GDP growth or unemployment rate. We then re-estimate the equation, and the results are reported in Table 7. The main interest is to compare the coefficients of aggregate and state-level business cycle measures.

Looking at the results in Table 7, the national GDP growth (unemployment rate) significant and negative (positive) correlated with corporate lobbying across all specifications. However, the state business cycle measures are generally insignificant when national ones included in the regressions.[13] Thus, we conclude that firm lobby activity are more responsible to national business cycle fluctuations, rather than regional one.

3.5 Why countercyclicality?

Up to now, we have documented that firms' lobbying behaviour is countercyclical. It is natural to explore the mechanism behind this phenomenon. In this subsection, we explore two possible mechanisms by providing some evidence in support of each.

3.4.1 Financial constraint

The first possible mechanism is financial constraints. During times of recession, firms typically face more financing risk and financial constraints. For example, Duchin et al. (2010)

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[13] Note that the coefficients of state-level business cycles are significant if we do not include national business cycle measures.

explore whether the external financing shocks caused by recession reduce corporate investment, especially for firms that are financially constrained or that depend on external finance. In this situation, firms generally have higher demand for help from policy-makers. Thus, we observe that firms lobby more during recessions

To test this hypothesis, we follow Campello et al. (2010) in using two indicators of financial constraints. The first is credit rating, which is also used in Kashyap et al. (1994), and Cummins et al. (1999). We classify our sample into investment grade (BBB- or above) and non-investment grade groups. Firms that are least financially constrained are those whose bonds are designated as investment grade, while speculative and unrated firms face greater financial constraints.

The second measure is firm size, because smaller firms usually have less capacity to access capital markets and are more likely to be in financial distress (Fama and French, 1992). Duygan-Bump et al. (2015) provide evidence in support of this view. They show that workers in small firms, especially in firm with high financing needs, are more likely to become unemployed because there is a reduction in bank loan supply during recessions. We define small firms as those whose firm size is in the bottom quartile of the sample. We expect that countercyclicality is stronger for firms with weaker financial health.

We understand that these two measures might not be enough to reflect the financial constraints of firms. Thus, we follow Hadlock and Pierce (HP) (Hadlock and Pierce, 2010) to calculate the HP index, which improves the approach of Kaplan and Zingales (1997) for measuring financial constraint. Following Farre-Mensa and Ljungqvist (2016), we calculate the HP index as

$-0.737 * Size + 0.043 * Size^2 - 0.04 * Age$. Size is capped at (the log of) 4.5million dollars and age is capped at 37 years. We then define constrained firms as those in the top quartile based on the HP index.

As shown in Panel A of Table 8, the coefficients of recession and unemployment are significantly positive across all specifications for the speculative and unrated groups. The GDP growth rate is significantly negatively associated with lobbying for both groups. However, the coefficients of unemployment and recession are generally insignificant for the investment grade group. The economic significance and the statistical significance of business cycle measures are noticeably weaker than those of the other groups. These findings support the view that firms that face more financial constraints demonstrate strong countercyclicality in their lobbying behaviour. Firms that face the least financial constraints demonstrate only weaker countercyclicality.

This conclusion is supported when we use size as a proxy for financial constraints. The coefficient of the interaction term *Recession*Size* (*Unemployment*Size*) is significantly negative at the 1% level. This suggests that during the recession, firms facing fewer financial constraints (larger firms) lobby less than do firms facing more financial constraints (smaller firms). Lastly, firms with greater financial constraints lobby more when we use the HP index as the proxy for financial constraints. By comparing corresponding columns in Panel C, we observe that the coefficients of business cycle measures are more significant in the group of financially constrained firms.

3.4.2 Executive's motivation

The second possible mechanism is executive's motivation. The literature has documented that lobbying activity varies across CEO characteristics. CEO compensation is positively associated with lobbying (Kim, 2008; Skaife et al., 2013; Brodmann et al., 2019). These studies have shown that firms whose CEOs have higher pay are more likely to lobby, and CEOs who are successful in political lobbying can be awarded additional compensation.[14] CEO compensation probably varies over the business cycle, especially for those CEOs who have equity or options compensation. In such situations, CEOs may have more incentive to participate in lobbying, especially during recessions, because their compensation is typically lower during bad times.

To test this channel, we first use the change of total compensation from the ExecuComp database. We use the change of compensation instead of nominal value, because we are interested in comparing the role of compensation in lobbying over the business cycle. We believe this measure is more suitable for reflecting an executive's motivation over the business cycle. If the executive experiences more wealth loss, he or she might have stronger motivation to lobby and gain the potential benefits of lobbying. Moreover, we follow the literature by using the ratio of equity compensation to total compensation (e.g. Cheng and Farber, 2008; Low, 2009). Because equity market generally declines during recessions, we expect that firms whose executives have greater proportion of equity compensation are more likely to lobby.

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[14] One example of a executive earning more pay due to successful lobbying involves Pfizer, a pharmaceutical giant. The company gave former CEO Jeff Kindler a raise of 12.5% in salary and bonuses in 2010, partly because he was a good lobbyist on healthcare reform. Refer to http://www.allgov.com/news/controversies/pfizer-ceo-gets-125-raise-for-successful-lobbying?news=840489

Panel A of Table 9 shows that executives whose total compensation decreases more are more likely to lobby or to lobby more during recessions. The interaction of compensation with the recession dummy or unemployment is significantly negative, while the interaction of compensation with GDP growth is positive. These findings support our hypothesis that executives who experience greater loss in compensation are more likely to participate in lobbying.

Panel B of Table 9 indicates that firms whose executives have a greater proportion of equity-related compensation lobby more during economic recessions. This finding supports our other hypothesis that executives with greater equity-related compensation have greater incentives to lobby during recessions, because equity return is lower during recessions.

3.6 Entry to lobbying

Kerr et al. (2014) show that upfront costs and returns to experience create entry barriers for non-lobbying firms to start participation in lobbying. Upfront costs include the search cost of lobbyists, development of a lobbying agenda, and so on, while return to experience simply refers to firms with greater experience in lobbying having a more effective lobbying strategy. Based on these findings, it is natural to test whether non-lobbying firms start lobbying during recessions.

Before investigating this issue, we first need to identify the first time that these firms accessed the lobbying process. Based on the lobbying procedure, the lobbyist should file a registration record for the client before starting lobbying. Thus, we identify each firms' earliest

registration record as the timing of a non-lobbying firm's first entry. In practice, each firm could have multiple registration records because once it changes a lobbyist, the new lobbyist could file a new registration record on its behalf. However, we focus only on the earliest timing. Moreover, we add the following requirement: if there is a record of lobbying expense before the date of the earliest registration record, we exclude firms from this analysis. For example, the first time that The Hershey Company, one of the largest chocolate manufacturers in the world, registered as a lobbyist was in 2000, but it had multiple counts of lobbying records in 1999.[15] By checking the name of the lobbyist in these records, we observe that the registration record in 2000 is simply because The Hershey Company changed its lobbyist. In this case, we believe it is better to exclude such firms, because we are unable to identify the correct entry year (SOPR data are available only from 1999, and thus, we cannot track the data before 1999).

Figure 2 reports the number of firms with first access over the years, showing a total of 1,809 firms. Clearly, the general trend is that the number of new-entry firms decreases over time, even though the number fluctuates. The peak in 1999 is for a total of 147 firms that started lobbying in that year. The lowest number is 35 in 2016.

We then employ a similar probit model to test whether the business cycle influences firms' entry to lobbying, where the dependent variable is a first access dummies indicating the first year that non-lobbying firms began to lobby. We control for firm characteristics, and entry cost proxy by the average lobbying expenses of all existing lobbying firms in the year. We believe this is good

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[15] We provide the screenshot for the filing records at SOPR for The Hershey Company in the appendix.

proxy for entry cost because non-lobbying firms may expect to pay at least a similar amount to existing lobbying firms to attract lobbyists and politicians. Table 10 shows that probit model estimations. Clearly, non-lobbying firms tend to start lobbying during bad times, because we observe that the unemployment and recession dummy is significantly positive with first access to lobbying. The results are valid after controlling for entry cost and firm characteristics. This result remains robust if we use the GDP growth rate to proxy for the business cycle. In summary, non-lobbying firms have higher probability of participating in lobbying during economic recessions.

Regarding other factors, entry cost creates barriers to non-lobbying firms because they are less likely to start lobbying when the cost is high, which is consistent with Kerr et al. (2014). Larger non-lobbying firms and firms with larger capital investment are more likely to lobby. Firms with greater sales growth are less likely to start lobbying.

3.7 Lobbying by financial firms over business cycles

Lastly, we focus on the lobbying activity of financial firms only. As discussed, some studies (e.g. Adelino and Dinc, 2014) have documented that financial institutions lobbied more to receive government aid in response to the 2007–2009 recession. It is well known that this recession was caused by the subprime mortgage crisis and ensuing crisis in financial markets. This raises the interesting question of whether financial institutions lobbied more only in response to that recession, or whether they systematically respond to all recessions, just like firms in other industries.

We repeat the baseline regressions for financial firms only and report the regression results in Table 11. Different to the main results in Table 3, the coefficient of unemployment and recession dummy is insignificant in all specifications. However, the coefficient of GDP growth is negatively correlated to lobbying measures, showing that lobbying is lower when GDP growth is higher (significant at the 5% level). These findings suggest that lobbying activities in the financial industry do not demonstrate obvious cyclicality, and are sensitive to the choice of business cycle indicators. Financial firms do not systematically respond to business cycles, at least not as obviously as firms in other industries do in our sample.

4   Conclusion

Although there is a large body of literature focusing on lobbying activity, surprisingly few articles directly link business cycles with lobbying. In this study, we examine how firms' lobbying behaviour changes over business cycles. We first document that lobbying varies across industries and over time. Furthermore, we document a link between lobbying activities and business cycles. We show that lobbying activities increase during times of recession. Our results indicate that firms tend to participate in lobbying activity, spend larger amounts on lobbying, and lobby around a larger number of bills. These findings are robust for alternative tests. Firms' lobbying are more responsive to national economic fluctuations not local ones. However, financial firms do not have clear cyclicality, unlike other firms. Lastly, we demonstrate that non-lobbying firms are more

likely to begin lobbying activities during economic recessions. The results are valid after controlling for entry cost and firm characteristics. This may imply that the firm's expected return on lobbying is higher than the cost.

We further explore the possible mechanisms for this phenomenon. The first channel is through financial constraints. During times of recession, firms typically face more financing risk and constraints, which increases demand for seeking help from policy-makers. The second channel is by increasing executive's motivation. Given that successful lobbying can increase CEO compensation, we argue that especially firms whose executive's compensation package includes compensation related to equity are more sensitive to business cycles and those firms could lobby more during recessions. The reason is that during recessions, individual wealth and compensation typically decrease, so that executives have more incentives to lobby and gain potential compensation from lobbying. We provide evidence in support of these two channels.

Overall, our study contributes to the literature by showing that business cycles are important for lobbying or rent-seeking activities. However, in response to recession, firms may participate in other political activities, such as appointing politically connected boards (e.g. Faccio et al., 2006; Goldman et al., 2009) or politically connected executives (Fisman and Wang, 2015) or increasing their campaign contributions (e.g. Claessens et al., 2008). A potential direction for future research would be to observe whether other corporate political activities increase during economic recessions.

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Appendix A. Variable definitions and data sources

Variables	Definition	Source
Lobby expense	Firm's lobbying expenses in a year.	Center for Responsive Politics
Lobby dummy	The dummy variables that equals to one if a firm has lobbying activities in a year, zero otherwise.	Center for Responsive Politics
First entry	A dummy variable that indicates one if a non-lobbying firm gets first access to lobbying process, zero otherwise.	Senate Office of Public Records
Entry cost	Defined as average lobbying expenses that lobbying firms spent each year.	Center for Responsive Politics
CAPX/Assets	Investment ratio. The ratio of capital expenditure (capx) to book value of total assets (at).	Compustat
Size	logarithm of the book value of total assets	Compustat
Cash flow	Firm's cash flows. It is defined as income before extraordinary items (ib) plus depreciation and amortization (dp) divided by book value of total assets (at)	Compustat
Tobin's Q	The market value of equity [(prcc_f* csho) plus book value of assets (at) minus book value of equity (ceq) minus balance sheet deferred taxes (txdb)] divided by book value of asset (at),	Compustat
Leverage	The ratio of total debt (dlc+dltt) to the book value of assets (at).	Compustat
Sales	Defined as natural logarithm of one plus the net sales/turnover (sale).	Compustat
GDP	Annual GDP growth rate (proxy for business cycle)	FRED database by Federal Reserve Bank of St Louis

Unemployment	The annual change of unemployment rate (proxy for business cycle).	FRED database by Federal Reserve Bank of St Louis
Rec	Recession dummy that equals to one if a period of time has a recession.	NBER
Political risk	Firm's overall political uncertainty. Hassen et al. (2019) searching technique for quarterly earnings conference-call transcripts for each public listed companies to construct firm-level measure	Hassan et al. (2019)
Election	Election dummy indicating the timing of presidential election.	Wikipedia
Govt' Spending	The change of government spending, proxy for fiscal policy change.	FRED database by Federal Reserve Bank of St Louis
EquityComp	Ratio of the value of stock and options grants to total pay for the average top five officer.	ExecuComp
CompChange	The average annual change of total compensation of top five officers.	ExecuComp

Appendix B The Screenshot of Hershey's lobbying records

Registrant Name	Client Name	Filing Type	Amount Reported	Date Posted	Filing Year
Arnold & Porter Kaye Scholer LLP	HERSHEY FOODS CORP	YEAR-END (NO ACTIVITY)		02/14/2000	1999
Arnold & Porter Kaye Scholer LLP	HERSHEY FOODS CORP	MID-YEAR (NO ACTIVITY)		08/12/1999	1999
THE HERSHEY COMPANY	HERSHEY COMPANY	YEAR-END REPORT	$200,000.00	02/14/2000	1999
THE HERSHEY COMPANY	HERSHEY COMPANY	MID-YEAR REPORT	$180,000.00	08/16/1999	1999
Arnold & Porter Kaye Scholer LLP	HERSHEY FOODS CORP	YEAR-END TERMINATION (NO ACTIVITY)		02/14/2001	2000
Arnold & Porter Kaye Scholer LLP	HERSHEY FOODS CORP	MID-YEAR (NO ACTIVITY)		08/14/2000	2000
Delta Development Group, Inc.	HERSHEY TRUST CO TRUSTEE FOR MILTON HERSHEY SCHOOL	YEAR-END REPORT	$20,000.00	02/12/2001	2000
Delta Development Group, Inc.	HERSHEY TRUST CO TRUSTEE FOR MILTON HERSHEY SCHOOL	MID-YEAR REPORT	$20,000.00	07/26/2000	2000
Delta Development Group, Inc.	HERSHEY TRUST CO TRUSTEE FOR MILTON HERSHEY SCHOOL	REGISTRATION		07/26/2000	2000
THE HERSHEY COMPANY	HERSHEY COMPANY	YEAR-END REPORT	$200,000.00	02/14/2001	2000
THE HERSHEY COMPANY	HERSHEY COMPANY	MID-YEAR REPORT	$160,000.00	08/14/2000	2000
COLLIER SHANNON SCOTT, PLLC	HERSHEY FOODS CORP	REGISTRATION		03/01/2002	2001
COLLIER SHANNON SCOTT, PLLC	HERSHEY FOODS CORP	YEAR-END REPORT		03/01/2002	2001
Delta Development Group, Inc.	HERSHEY TRUST CO TRUSTEE FOR MILTON HERSHEY SCHOOL	YEAR-END REPORT	$20,000.00	02/28/2002	2001
Delta Development Group, Inc.	HERSHEY TRUST CO TRUSTEE FOR MILTON HERSHEY SCHOOL	REGISTRATION AMENDMENT		04/16/2001	2001
Delta Development Group, Inc.	HERSHEY TRUST CO TRUSTEE FOR MILTON HERSHEY SCHOOL	MID-YEAR REPORT	$20,000.00	08/13/2001	2001
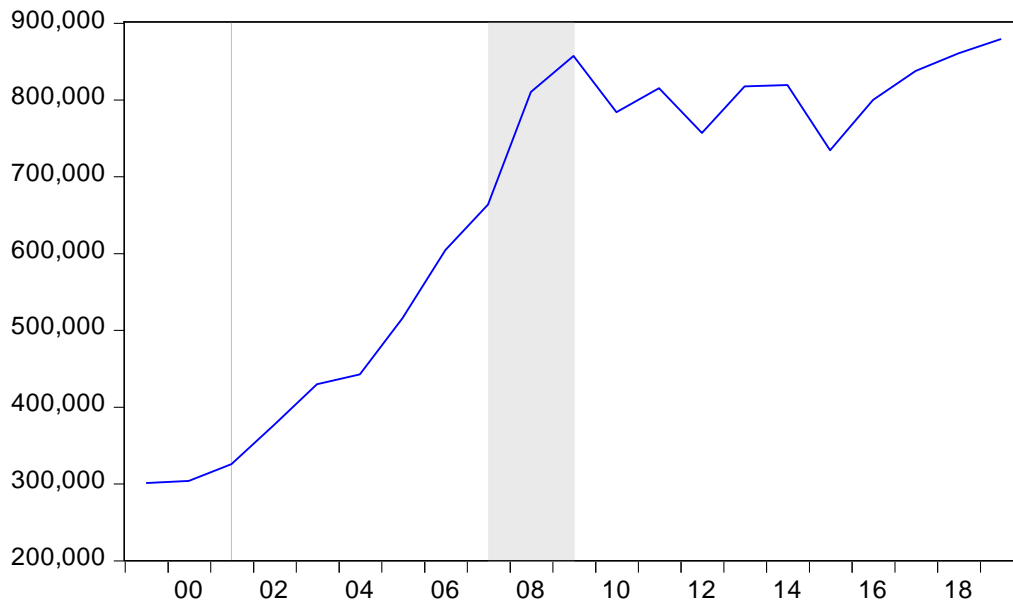
Figure 1. Annual total lobbying expenditure (dollar amount) averaged cross firms, 1999 to 2019
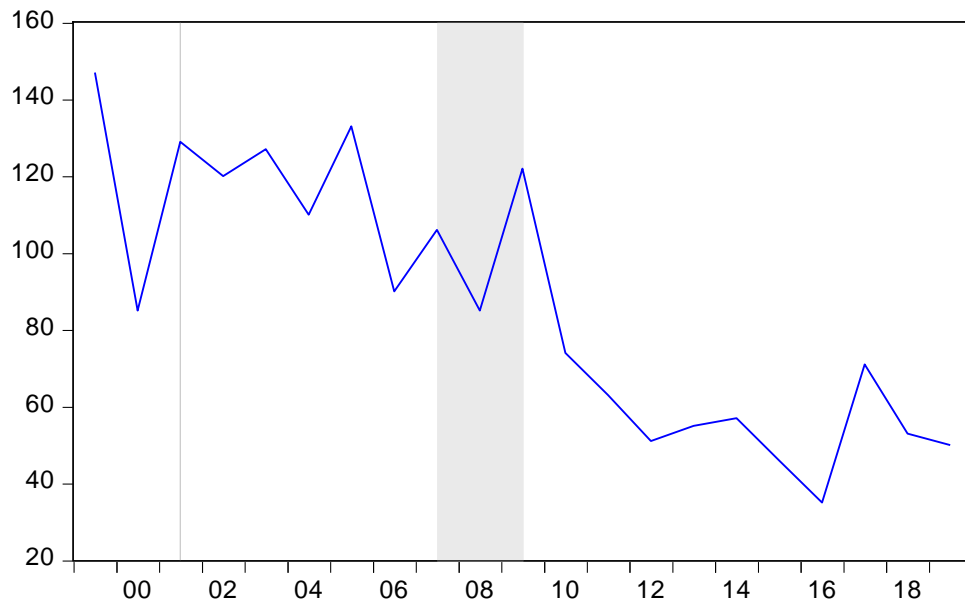
Figure 2. Total number of firms that first access to lobbying, 1999-2019

Table 1. Summary statistics of key variables

This table reports the summary statistics of the sample with non-missing variables. All variables are measured at the annual frequency from 1999 to 2019.

	N	Mean	Median	Std. Dev.
Lobby expense	33,140	597,066.477	0.000	2316589.163
Lobby Dummy	33,140	0.512	1.000	0.500
Size	33,140	6.716	6.949	2.528
CAPX/Assets	33,140	0.049	0.032	0.052
Cash flow	33,140	-0.040	0.103	0.546
Tobin's Q	33,140	2.760	1.649	3.761
Leverage	33,140	0.278	0.216	0.339
Recession dummy	33,140	0.199	0.000	0.400
Unemployment rate (%)	33,140	5.808	5.275	1.752
GDP growth (%)	33,140	0.957	0.010	0.007

Table 2. Sector composition and corresponding lobbying expense

Sector	No. of firms	Average Expense
Mining	196	345231.272
Construction	39	189314.895
Manufacturing	1,502	565648.238
Transportation & Public Utilities	244	1386176.975
Wholesale Trade	56	244595.253
Retail Trade	121	452144.608
Services	571	405437.510
Other	23	3937971.17

Table 3. Baseline results

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and year dummies. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.372***			0.993***			0.079***		
	(0.054)			(0.174)			(0.018)		
Unemployment		0.178***			0.412***			0.051***	
		(0.022)			(0.070)			(0.008)	
GDP growth			-0.320***			-0.765***			-0.101***
			(0.337)			(0.106)			(0.011)
Sales	0.714***	0.714***	0.704***	0.246***	0.247***	0.236***	0.035***	0.034***	0.033***
	(0.048)	(0.048)	(0.048)	(0.070)	(0.070)	(0.070)	(0.007)	(0.007)	(0.007)
Cash flow	-0.817***	-0.815***	-0.795***	-2.461***	-2.468***	-2.427***	-0.261***	-0.260***	-0.255***
	(0.083)	(0.083)	(0.083)	(0.217)	(0.217)	(0.217)	(0.021)	(0.021)	(0.021)
Size	0.744***	0.757***	0.760***	2.400***	2.399***	2.409***	0.202***	0.203***	0.204***
	(0.054)	(0.054)	(0.054)	(0.079)	(0.079)	(0.079)	(0.008)	(0.008)	(0.008)
Tobin's Q	-0.008	-0.007	-0.004	0.108***	0.109***	0.114***	0.006**	0.006***	0.007***
	(0.010)	(0.010)	(0.010)	(0.027)	(0.027)	(0.027)	(0.003)	(0.003)	(0.003)
CAPX/Assets	-0.226	0.147	0.044	-7.252***	-6.841***	-7.006***	-0.813***	-0.772***	-0.790***
	(0.665)	(0.666)	(0.665)	(1.355)	(1.356)	(1.355)	(0.140)	(0.140)	(0.140)
Leverage	-0.325***	-0.324**	-0.313***	-1.309***	-1.320***	-1.302***	-0.080***	-0.082***	-0.080***
	(0.105)	(0.105)	(0.105)	(0.245)	(0.245)	(0.245)	(0.024)	(0.024)	(0.024)
Constant	-4.259***	-4.321***	-3.831***	-17.907***	-17.780***	-16.727***	-1.552***	-1.553***	-1.415***
	(0.278)	(0.278)	(0.280)	(0.307)	(0.303)	(0.318)	(0.029)	(0.029)	(0.031)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.653	0.653	0.653	--	--	--	0.112	0.113	0.114
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	33,140	33,140	33,140	33,140	33,140	33,140	33,140	33,140	33,140

Table 4. Control for political factors

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, industry dummies, political risk index by Hassan et al. (2019), presidential election dummy, and the change of government spending. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.767***			1.496***			0.078***		
	(0.087)			(0.245)			(0.029)		
Unemployment		0.218***			0.354***			0.046***	
		(0.030)			(0.088)			(0.011)	
GDP growth			-0.352***			-0.630***			-0.065***
			(0.044)			(0.128)			(0.015)
Political Risk	0.135***	0.131***	0.129***	0.987***	0.988***	0.982***	0.100***	0.098***	0.098***
	(0.028)	(0.028)	(0.028)	(0.069)	(0.069)	(0.069)	(0.008)	(0.008)	(0.008)
Election	-0.283***	-0.178***	-0.228***	-0.599***	-0.392**	-0.484***	-0.044**	-0.032	-0.042*
	(0.060)	(0.059)	(0.059)	(0.184)	(0.181)	(0.182)	(0.022)	(0.021)	(0.022)
Govt' Spending	-7.520***	-5.488***	-3.186***	-13.228***	-7.788***	-4.409***	-1.034**	-1.413***	-0.848*
	(1.430)	(1.387)	(1.223)	(4.159)	(4.077)	(3.615)	(0.498)	(0.488)	(0.433)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.692	0.692	0.692	--	--	--	0.096	0.096	0.096
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	24,331	24,331	24,331	24,331	24,331	24,331	24,331	24,331	24,331

Table 5. Number of lobbied bills over business cycles

The unit of observation is at firm-year level. The dependent variable is the logged number of lobbied congressional bills. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	Number of lobbied bills					
	(1)	(2)	(3)	(4)	(5)	(6)
Recession	0.481***			1.627***		
	(0.021)			(0.070)		
Unemployment		0.166***			0.439***	
		(0.008)			(0.026)	
GDP growth			-0.338***			-1.002***
			(0.013)			(0.042)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.606	0.603	0.589	--	--	--
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit
Observations	15,956	15,956	15,956	15,956	15,956	15,956

Table 6. Using alternative business cycle proxies

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include the cyclical component of business cycle proxy (unemployment rate or GDP), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	Log (Lobby expense+1)				Lobby dummy	
	(1)	(2)	(3)	(4)	(5)	(6)
Unemployment	0.778***		1.443***		0.181***	
	(0.114)		(0.350)		(0.039)	
GDP		-0.094***		-0.178***		-0.020***
		(0.011)		(0.034)		(0.004)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.690	0.690	--	--	0.105	0.105
Method	OLS	OLS	Tobit	Tobit	Probit	Probit
Observations	24,787	24,787	24,787	24,787	24,787	24,787

Table 7. Local or national phenomenon

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include national and state-level business cycle measures (unemployment rate or GDP), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	Log (Lobby expense+1)				Lobby dummy	
	(1)	(2)	(3)	(4)	(5)	(6)
Unemployment	0.129**		0.211**		0.029***	
	(0.064)		(0.098)		(0.009)	
State unemployment	0.054		0.221		0.025	
	(0.066)		(0.201)		(0.023)	
GDP growth		-0.362***		-0.735***		-0.085***
		(0.058)		(0.170)		(0.018)
State GDP		0.609		-3.239		-0.706
		(1.622)		(4.650)		(0.497)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.653	0.654	--	--	0.114	0.115
Method	OLS	OLS	Tobit	Tobit	Probit	Probit
Observations	33,140	33,140	33,140	33,140	33,140	33,140

Table 8. The role of financial constraints

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. Firms are classified as investment grade (equal or above investment grade, BBB-) or speculative grade (Below BBB-) firms on the basis of S&P long-term debt ratings. Firms that do not have rating record are classified as unrated firms. Panel A shows the results based on credit rating, while Panel B shows the results based on firm size. BC refers to business cycle measures. U and Rec respectively refer to unemployment rate and recession. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

Panel A1: Investment grade

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.215**			0.425*			0.051		
	(0.099)			(0.243)			(0.044)		
Unemployment		0.100**			0.172*			0.032*	
		(0.038)			(0.100)			(0.019)	
GDP growth			-0.165***			-0.361**			-0.073***
			(0.061)			(0.153)			(0.028)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.744	0.744	0.744	--	--	--	0.076	0.076	0.077
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	6,741	6,741	6,741	6,741	6,741	6,741	6,741	6,741	6,741

Panel A2: Non-Investment grade

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.333***			1.051***			0.063***		
	(0.063)			(0.239)			(0.021)		
Unemployment		0.181***			0.520***			0.055***	
		(0.026)			(0.094)			(0.009)	
GDP growth			-0.266***			-0.796***			-0.090***
			(0.040)			(0.148)			(0.013)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.608	0.608	0.608	--	--	--	0.060	0.062	0.062
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	20,614	20,614	20,614	20,614	20,614	20,614	20,614	20,614	20,614

Panel B1: Larger firms

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.371***			0.872***			0.066***		
	(0.063)			(0.182)			(0.021)		
Unemployment		0.167***			0.355***			0.047***	
		(0.025)			(0.072)			(0.009)	
GDP growth			-0.316***			-0.707***			-0.094***
			(0.039)			(0.110)			(0.013)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.674	0.674	0.674	--	--	--	0.085	0.085	0.086
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	24,855	24,855	24,855	24,855	24,855	24,855	24,855	24,855	24,855

Panel B2: Smaller firms

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.398***			2.147***			0.139***		
	(0.105)			(0.566)			(0.036)		
Unemployment		0.218***			0.961***			0.074***	
		(0.047)			(0.239)			(0.015)	
GDP growth			-0.359***			-1.578***			-0.140***
			(0.067)			(0.354)			(0.023)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.420	0.419	0.420	--	--	--	0.011	0.012	0.013
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	8,285	8,285	8,285	8,285	8,285	8,285	8,285	8,285	8,285

Panel C1: Low HP measure (unconstrained)

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.194*			0.819***			0.044		
	(0.109)			(0.292)			(0.029)		
Unemployment		0.145***			0.357***			0.040***	
		(0.035)			(0.114)			(0.011)	
GDP growth			-0.271***			-0.740***			-0.078***
			(0.055)			(0.177)			(0.017)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.638	0.638	0.420	--	--	--	0.051	0.051	0.052
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	13,535	13,535	13,535	13,535	13,535	13,535	13,535	13,535	13,535

Panel C2: High HP measure (constrained)

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	0.286**			2.202***			0.171***		
	(0.139)			(0.732)			(0.048)		
Unemployment		0.246***			1.230***			0.107***	
		(0.066)			(0.328)			(0.022)	
GDP growth			-0.341***			-1.795***			-0.179***
			(0.092)			(0.471)			(0.031)
Other controls & Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.471	0.472	0.472	--	--	--	0.031	0.033	0.034
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	4,511	4,511	4,511	4,511	4,511	4,511	4,511	4,511	4,511

Table 9. Executive compensation

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, the change of total compensation, the ratio of equity-related to total compensation, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. BC refers to business cycle measures. U and Rec respectively refer to unemployment rate and recession. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

Panel A: The change of total compensation

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rec	U	GDP	Rec	U	GDP	Rec	U	GDP
BC	0.303***	0.155***	-0.275***	1.377***	0.453***	-0.882***	0.159***	0.069***	-0.136***
	(0.078)	(0.031)	(0.059)	(0.227)	(0.077)	(0.147)	(0.032)	(0.011)	(0.021)
BC* CompChange	-0.272**	-0.093**	0.211**	-0.575*	-0.215*	0.428*	-0.060*	-0.010	3.174
	(0.140)	(0.045)	(0.086)	(0.342)	(0.123)	(0.232)	(0.036)	(0.018)	(3.314)
CompChange	0.020	0.059	-0.079	0.201	0.012	-0.255	0.010	-0.009	-0.026
	(0.067)	(0.056)	(0.082)	(0.191)	(0.159)	(0.218)	(0.027)	(0.022)	(0.031)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.675	0.675	0.675	--	--	--	0.101	0.102	0.102
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	15,169	15,169	15,169	15,169	15,169	15,169	15,169	15,169	15,169

Panel B: The ratio of equity-related compensation

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Rec	U	GDP	Rec	U	GDP	Rec	U	GDP
BC	0.281**	0.089*	-0.141	0.900**	0.274**	-0.656***	0.124**	0.056***	-0.119***
	(0.144)	(0.053)	(0.098)	(0.357)	(0.137)	(0.253)	(0.05)	(0.020)	(0.036)
BC* EquityComp	0.074	0.081**	-0.162**	0.334*	0.157**	-0.167	0.006*	0.008	-0.004
	(0.101)	(0.040)	(0.073)	(0.201)	(0.075)	(0.192)	(0.003)	(0.015)	(0.027)
EquityComp	0.046	0.097**	0.212***	-0.423***	-0.280***	-0.178	-0.054***	-0.046***	-0.045*
	(0.047)	(0.044)	(0.075)	(0.119)	(0.108)	(0.192)	(0.017)	(0.015)	(0.027)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.706	0.706	0.706	--	--	--	0.103	0.104	0.104
Method	OLS	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	11,311	11,311	11,311	11,311	11,311	11,311	11,311	11,311	11,311

Table 10. Entry to lobbying and business cycles

The unit of observation is at firm-year level. The dependent variable is the dummy variable indicating the year non-lobbying begin lobbying. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	First entry dummy		
	(1)	(2)	(3)
Recession	0.158***		
	(0.034)		
Unemployment		0.074***	
		(0.013)	
GDP growth			-0.061**
			(0.026)
Sales	-0.049***	-0.050***	-0.047***
	(0.012)	(0.012)	(0.012)
Cash flow	0.040	0.038	0.042
	(0.032)	(0.031)	(0.031)
Size	0.028**	0.030**	0.025*
	(0.014)	(0.014)	(0.014)
Tobin's Q	0.008*	0.008*	0.008*
	(0.005)	(0.005)	(0.005)
Capex	0.687***	0.748***	0.758***
	(0.247)	(0.247)	(0.247)
Leverage	-0.042	-0.044	-0.047
	(0.042)	(0.042)	(0.042)
Entry cost	-0.168***	-0.164***	-0.179***
	(0.029)	(0.029)	(0.032)
Constant	-0.837***	-0.831***	-0.688***
	(0.125)	(0.123)	(0.148)
Firm FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Trend	Yes	Yes	Yes
(McFadden) R^2	0.102	0.110	0.084
Observations	20,601	20,601	20,601

Table 11. Financial firms lobbying over business cycle

The unit of observation is at firm-year level. The dependent variable is reported in the first row. Independent variables include business cycle proxy (recession, change of unemployment rate, or GDP growth), Sales, Tobin's Q, Cash flow, Size, Leverage, CAPX/Assets ratio, and industry dummies. Please see the Appendix A for detailed descriptions of each variable. The baseline specification is used and we control for firm fixed effects. Standard errors are clustered by year and firm to control for potential cross-sectional and serial correlation in the error term. The clustered standard errors are in parentheses. Data is from 1999 to 2019.

	Log (Lobby expense+1)			Log (Lobby expense+1)			Lobby dummy		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Recession	-0.159			-0.084			-0.071		
	(0.170)			(0.485)			(0.060)		
Unemployment		0.019			0.151			0.005	
		(0.068)			(0.189)			(0.024)	
GDP growth			-0.255**			-0.731**			-0.086**
			(0.108)			(0.299)			(0.037)
Sales	0.235	0.227	0.211	2.672***	2.661***	2.652***	0.258***	0.256***	0.255***
	(0.180)	(0.180)	(0.179)	(0.206)	(0.206)	(0.206)	(0.025)	(0.025)	(0.025)
Cash flow	-1.437***	-1.507***	-1.347***	1.508	1.543	1.669	0.073	0.079	0.095
	(0.380)	(0.378)	(0.376)	(1.098)	(1.099)	(1.103)	(0.125)	(0.125)	(0.126)
Size	1.394***	1.414***	1.406***	0.219	0.233	0.232	0.030	0.032	0.033
	(0.187)	(0.188)	(0.187)	(0.186)	(0.186)	(0.186)	(0.023)	(0.023)	(0.023)
Tobin's Q	-0.052	-0.048	-0.037	0.473***	0.481***	0.492***	0.036***	0.037***	0.039***
	(0.052)	(0.052)	(0.052)	(0.113)	(0.113)	(0.113)	(0.013)	(0.013)	(0.013)
Capex	-6.737**	-6.749**	-6.345**	-0.785	-0.736	-0.078	-0.591	-0.604	-0.519
	(2.735)	(2.735)	(2.755)	(7.983)	(7.980)	(7.975)	(0.906)	(0.906)	(0.906)
Leverage	0.452	0.440	0.405	-0.978	-0.976	-0.962	-0.212**	-0.211**	-0.212**
	(0.437)	(0.437)	(0.437)	(0.776)	(0.775)	(0.775)	(0.093)	(0.093)	(0.093)
Constant	-6.857***	-7.012***	-6.600***	-19.095***	-19.159***	-18.447***	-1.908***	-1.926***	-1.847***
	(1.027)	(1.031)	(1.037)	(1.059)	(1.054)	(1.082)	(0.118)	(0.117)	(0.122)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Trend	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(McFadden) R^2	0.635	0.636	0.636	--	--	--	0.163	0.162	0.163
No. Firms	312	OLS	OLS	Tobit	Tobit	Tobit	Probit	Probit	Probit
Observations	3,208	3,208	3,208	3,208	3,208	3,208	3,208	3,208	3,208