**The Effect of Venture Capital Backing on Companies’ Subsequent Lobbying Efforts**

**Abstract**

We explore non-market strategies of venture capital backed companies. Based on the resource dependence perspective, we examine how venture capital backing influences companies’ lobbying investments. We find that on average, venture capital backing negatively affects companies’ lobbying investments. However, we also find that R&D investments moderates this relationship and companies increase their lobbying investments as they invest more on R&D. Our results provide insights for the research on venture capital backing and non-market strategies.

Keywords: venture capital, corporate lobbying, resource dependency, ownership structure.

**Introduction**

Venture capital (VC) industry is an important source of innovation (Kortum & Lerner, 2000). In recent years, there has been a significant increase in the use of venture capital (VC) to promote innovative ideas and products in high technology and high growth sectors of the economy such as information technology, life sciences, and clean energy technologies (Da Rin, Hellmann, & Puri, 2013). The underlying premise is that venture capitalists launch a dedicated fund to entrepreneurial ventures in sectors that face substantial risk, uncertainty and market potential and in return expect high financial returns from such investments (Alvarez-Garrido & Dushnitsky, 2016). VC funding is therefore an attractive option for entrepreneurial ventures that possess innovative ideas but need both financial and other resources to commercialize them.

 A stream of research has addressed the innovation outcomes of the VC industry such as patenting (Ahuja & Katila, 2001; Dutta & Folta, 2016; Kortum & Lerner, 2000), publication (Alvarez-Garrido & Dushnitsky, 2016), and the exit outcomes of their portfolio companies (Dutta & Folta, 2016). Although prior research has identified market outcomes of VC investments, we know little about their non-market strategies. The purpose of this paper is to advance our understanding of VC influence from a non-market perspective.

We argue that it is important to consider VC in the context of policy uncertainty. Given the fact that VC firms have a tendency to invest in sectors that are highly uncertain and underdeveloped, it is plausible to assume that venture capitalists would have the motivation to invest in political strategies to shape the future prospects of their investments. According to Oliver and Holzinger (2008), companies that engage in political strategies achieve greater financial performance and competitive advantage. Drawing from the resource dependency theory (Pfeffer & Salancik, 1978), we explore how VC-backed companies manage their public policy environment by engaging in non-market strategies, lobbying in particular and how these efforts compare to those of non-VC backed counterparts.

Our study contributes to the VC and non-market strategy literatures in several ways. First, we offer a non-market strategy perspective on an important yet neglected outcome in VC research. Prior research mainly focuses on market outcomes of VC-backed companies (Alvarez-Garrido & Dushnitsky, 2016; Da Rin, Hellmann, & Puri, 2013; Dutta & Folta, 2016). However, VC-backed companies may benefit from non-market strategies to reduce uncertainties in their environments. Given the fact that VC-backed companies tend to disrupt the norms in their industries and even create new industries, lobbying can help them to have a voice in determining how the industry policies are shaped.

Second, our study advances the corporate political strategy research by exploring VC-backing as an alternative ownership structure. A growing body of research has indicated several ownership structures such as institutional ownership, insider ownership, family ownership etc. as an antecedent of corporate political strategy (Hadani, 2007, 2012; Lux, Crook, & Woehr, 2011; Ozer & Alakent, 2013). However, to the best of our knowledge, there is no study that examined the effect of VC backing on political strategies. By examining VC-backing as a potential ownership structure, our study provides new insights into the corporate political strategy research.

Third, our study contributes to the growing literature that explores the integration of market and non-market strategies. Prior work in this stream has focused mainly on the integration of company performance and corporate political strategy and social responsibility (Hadani & Schuler, 2013; Mellahi, Frynas, Sun, & Siegel, 2016; Rajwani & Liedong, 2015). By exploring VC investment as a market strategy and lobbying as a non-market strategy, our study adds value to our understanding of how companies manage their internal and external environment in a more integrated way.

**Theory and Hypotheses**

One aspect of non-market strategy is corporate political strategy. Companies engage in corporate political strategy to gain access to policy makers and influence their policy environments (Hillman, Zardkoohi, & Bierman, 1999). In fact, federal lobbying expenditures has reached $2 billion per year in U.S. (Groseclose, Milyo & Primo 2000). Prior studies suggest that corporate political strategy provides companies with benefits such as government contracts (Hadani, Munshi, & Clark, 2017; Hart, 2001), tax relief (Richter, Samphantharak, & Timmons, 2009), and government bailout (Faccio, Masulis, & McConnell, 2006). Of the many means of corporate political participation, lobbying is a primary and effective strategy (Lux et al., 2011; Chen, Parsley and Yang, 2015). The purpose of lobbying is to establish communication channels with legislators, monitor legislation, and influence the decisions of legislators in a favorable way (Keim & Zeithaml, 1986; Rudy & Cavich, 2017). Lobbing is the primary method by which special interest groups influence public policy. Lobbying may enable companies to establish relationships with policy makers and provide specific information about their policy preferences to policy makers (Rajwani & Liedong, 2015). Despite being this powerful and influential, little is known regarding the returns of lobbying on company financial performance and whether investors view these efforts as value enhancing or not (Chen, Parsley and Yang, 2015; de Figueiredo & Silverman, 2006).

 Studies that explored the relationship between lobbying and company performance revealed mixed results (Rudy & Cavich, 2017). Some studies found positive company outcomes of lobbying (Richter et al., 2009; Shaffner, Quasney & Grimm, 2000; Chen, Parsley and Yang, 2015). For example, de Figueiredo and Silverman (2006) found that universities that engaged in lobbying saw greater academic earmarks when the university was located in the legislator’s state. Other studies are more cautious about the positive results (Hadani & Schuler, 2013). These studies imply that returns to lobbying are highly uncertain (Hadani, Bonardi, & Dahan, 2016). Lobbying is a long-term investment; therefore, companies may not accrue immediate returns from their lobbying efforts (Getz, 2002). In addition, the actual impact of lobbying on company outcomes is usually indirect, which could be derived through possible legislative changes (Baron, 1997; Ridge, Ingram & Hill, 2017). Thus, companies can benefit from lobbying in the long-term by monitoring changes in their environment and reducing environmental uncertainties (Getz, 2002).

These mixed findings suggest that there is a need for more fine-grained approaches to the relationship between political strategies and company outcomes. The motivation and company specific factors that affect corporate political activity choice will also have a great impact on whether companies will achieve desired outcomes. Since lobbying is viewed as a mechanism that reduces future uncertainty, we believe that VC industry gives us a unique opportunity to test this claim since VC backed companies are facing uncertainty by the nature of the industry and their reaction to lobbying can shed light on how lobbying is perceived under these conditions.

**Ownership Structure and CPS**

Prior research on corporate political strategy has addressed a number of ownership structures that explain why companies pursue political action. This stream of research has built on the premise that companies with varying ownership structures will have different preferences for corporate political strategy. Hadani (2007) focuses on founding family ownership and finds that founders of family companies tend to engage in corporate political strategy. In a different study, Hadani (2012) examines the different aspects of institutional ownership and finds that institutional owners affect their companies’ pursuit of corporate political strategy. Ozer and Alakent (2013) study the impact of institutional ownership and insider ownership on corporate political strategy and indicate that the ownership structure affects companies’ propensity to be politically active. By studying politicians’ stock ownership in a company, Ridge, Hill, and Ingram (2016) provide evidence that politicians’ stock ownership impacts the intensity of companies’ lobbying activities. Min and You (2015) examine the impact of corporate political spending on shareholder activism and find that public pension funds as shareholders submit more shareholder proposals regarding corporate political spending. Albuquerque and his colleagues (2015) study how companies adjust their political activism in response to the Supreme Court ruling on Citizens United v. FEC and find that institutional investors prefer their companies not to increase their political expenditures after this new ruling which lifts prior bans on companies to use their treasury to advocate in favor or against a political candidate on a federal election.

Although there have been many studies that focus on institutional, family and stockownership on political strategies, venture capital funding as a form of ownership remains relatively unexplored. This oversight is quite surprising given that today’s most successful and high-profile technology companies such as Apple Inc., Google, Intel, Tesla and Uber were founded via VC backing (Gomez-Mejia, Balkin & Welboume, 1990). Venture capital financing is different from bank finance because it provides funding for unproven technologies that are highly risky and to companies that do not have adequate internal cash flow. Established companies that manufacture wind turbines or solar panels can finance their projects and firms through bank financing however many start-ups in the energy production, transportation and energy storage that have undeveloped technologies seek VC funding (Ghosh & Nanda 2010).

Under these circumstances, government relations can play an important role. Since VC investments take place in predominantly risky and unproven industries (Amit, Brander & Zott, 1998; Gompers, 1995; Ueda, 2004), government incentives and favorable public policy can significantly reduce risks and increase returns in those industries. For example, according to Ghosh and Nanda (2010), due to “valley of death” that exists in the clean energy sector start-up funding, government needs to get involved. Government needs to jumpstart the M&A market for clean energy start-ups and provide incentives in the upstream funding of clean energy start-ups by venture capital firms. Government can also make exit easier for start-ups. First, government can establish stable, long-term, and predictable policy measures that stimulates demand for clean energy.

Second, government can stimulate the M&A activity in the clean energy sector. Third, government can establish public-private partnership funds that can help with the first commercial testing or as mechanisms that effectively compete with incumbents (Ghosh & Nanda 2010). According to Ridge, Ingram and Hill (2017) political connectedness helps companies gain access to government information such as the progress of potentially market changing public policy that can alter industry dynamics (Jensen, Forsythe, & Salant, 2005). Therefore, companies can gain significantly from lobbying in these sectors.

Since venture capital investments and special relationship between VC firms and their companies play an important role in shaping organizational structures and strategies, we are interested in exploring how public companies that received venture capital would shape their political strategies.

According to the resource dependency theory, companies rely on external actors to the extent that these actors provide critical resources (Pfeffer & Salancik, 1978). Companies that are backed by VC firms heavily depend on their VCs for critical resources such as continued financial backing, management expertise, technical expertise and credible certification for start-ups via their ties with potential investors and suppliers (Megginson & Weiss, 1991). VC firms do not only provide a significant portion of their portfolio companies’ seed funding, they also claim a seat on their boards (Davis & Cobb, 2010) in order to voice their opinions during key strategic decisions, provide hands on coaching and consulting to their portfolio companies. From the VC firm perspective, they aim to exit from an investment in 10 years and they favor projects that establishes a financial viability within 3-5 years (Ghosh & Nanda 2010). Thus, VC firms invest in a wide portfolio of companies that they can exit in a short period of time with a high return on their investment.

Another important factor increasing the VC firm’s leverage is the scarcity of alternative funding for entrepreneurial ventures, particularly during the earlier establishment stages. This approach requires very close supervision and imposing short term financial goals with their portfolio companies. On the other hand, entrepreneurs receive funding in stages instead of a lump sum amount at the beginning of the venture which encourages them to please the VC firm and ensure future funding. This mutual benefit seeking and time constraints to achieve financial performance goals create resource dependencies between VC firms and their portfolio companies.

In our study, we explore the political strategies of public companies that have received VC funding during their early stages. Although our study takes place after the IPO and there are established companies in our sample, we believe that having received VC funding during early stages will have long lasting effects on the structure of these companies. We base our assumptions on the organizational imprinting theory. The imprinting theory first articulated by Stinchcombe (1965) argues that firms are heavily influenced by the specific technological, economic, political and cultural resources available during early stages of establishment (Johnson, 2007). Particular organizational structures and practices that are adopted during early years influence the overarching character of new organizations. Imprinting occurs when an organization is most susceptible to environmental influences, such as the early founding years (Johnson, 2007; Marquis & Tilcsik, 2013). This time is very critical in forming long-lasting organizational routines and structures. Stinchcombe’s 1965 essay argues that initial organizational structures are deeply influenced by external factors and these patterns persist for a long time. This theory argues that observed organizational diversity is not a result of past adaptation to environmental changes but of the contextual variation in terms of economic, political, technological and social environment within which organizations are founded. The reason why these organizations maintain their founding structures for a long time can be due to efficiency or organizational inertia (Hannan & Freeman, 1984). According to Johnson (2007) key stakeholders such as venture capitalists, philanthropists, legislators, and corporate lawyers may play a significant role in determining which elements from an organization’s environment will be incorporated in the initial stages of imprinting.

We believe that companies that receive VC funding will form an organizational culture that prioritizes meeting short term targets which contradicts long term nature of political strategies. VCs use a staged funding structure. During every stage, companies must meet certain performance targets. The continuity of funding is contingent on meeting targets that heavily depend on technology development, production efficiency, and return on investment. This creates a high-pressure and short-term oriented culture at VC-backed companies. While companies funded through internal financing, commercial banks or other financial resources might afford to have a long-term outlook, short-term and performance-oriented thinking imprinted during the early founding stages might not allow investing in political strategies that are long-term and high risk in nature. VC backed companies that depend on VC firms for funding are highly motivated to act in such a way that lead to high returns in short periods.

*H1. VC-backed companies invest less in lobbying expenditures.*

Although VC backing might have a negative impact on lobbying, we expect that a company’s R&D intensity can moderate this relationship. Previous literature examined the effect of R&D intensity and lobbying (Hillman, 2005; Alexander et al., 2009) and the joint effect of lobbying and R&D intensity (Lockhart & Unlu, 2018) on company performance. Most of these studies argue that lobbying alone doesn’t lead to positive performance returns and moderating factors such as R&D play a significant role (Ridge, Ingram & Hill, 2017, Chen, Parsley and Yang, 2015; Cao et., 2018). We expect that VC backed companies that spend more on R&D would lobby more for two reasons. First, R&D investment is a long term strategy with uncertain outcomes (Flammer & Bansal, 2017). Companies can spend millions of dollars on a new technology that may not pass legal hurdles. Political strategies can help companies control their legal environment and prevent laws that might prohibit them from reaping benefits from their R&D investments. Lobbying can also protect companies from competition by preventing new entry into the market (Borghesi & Chang, 2015). Second, R&D often leads to disruptive innovations that break industry norms and create new industry segments. According to Cao et. al. (2018) industries early in the development stage benefit greatly from lobbying.

Companies in the high-tech industry can be characterized as start-ups, high growth and high volatility. Such companies need capital but due to their high risk have limited access to debt financing (Carpenter & Peterson, 2002). Political influence can increase a company’s access to debt and equity finance and also help them shape laws, regulations related to new industry segments. Lockhart and Unlu (2018) find that companies that engage in lobbying efforts that are targeted towards R&D subsidies subsequently invested more in R&D. On the other hand, this investment lead to higher cost of borrowing from creditors since they view R&D investment as highly risky. Although equity owners have incentive to support R&D investments, creditors bear the downside risk and do not capture the upside returns. In order to protect themselves, creditors impose stricter terms on borrowing. VC firms on the other hand hold a large equity in their portfolio companies and can reap positive returns from these risky R&D investments. This incentivizes VC firms to support lobbying investments in R&D intensive companies. Because of these two reasons, we believe R&D strategy and political strategies are complimentary.

*H2. R&D intensity positively moderates this relationship; VC-backed companies that have high R&D intensity lobby more*.

**Methods**

**Sample**

Our sample consists of VC-backed IPO companies between 1999 and 2014. We used several databases to collect the data. We collected IPO data from the Securities Data Company (SDC) database. Following prior literature, we eliminate offerings: (i) identified as unit offerings, (ii) not involving common stock, (iii) of very small issues with offer sizes below US $5 million dollars in order to eliminate penny stocks from our sample (Bradley, Cooney, Dolvin & Jordan, 2005), and (v) for which SDC did not provide the information required for our criteria. We derived companies’ financial accounting information from the COMPUSTAT database. Next, we gathered data for VC-backed companies from the SDC Platinum VentureXPERT database. We finally matched this data with lobbying data gathered from the Center for Responsive Politics database (opensecrets.org). In addition to colleting lobbying data for all available VC-backed companies, we randomly collected non-VC-backed company data for companies in similar industries to the VC-backed counterparts to create a control sample. Our final sample size has 110 firms and 668 company-year observations.

**Measurement**

**Dependent variable:** We usedlobbying expenditures as our dependent variable. The Lobbying Disclosure Act of 1995 requires companies to disclose their lobbying activities and the Center for Responsive Politics provides companies’ annual lobbying activity. The dependent variable is measured as a company’s lobbying expenditures in a year.

**Independent variable:** VC-backing is a binary variable and it is equal to1 if a company receivedVC funding and 0 otherwise. R&D intensity is measured as a company’s R&D expenditures divided by its sales.

**Controls Variables**

We include several control variables that might affect VC-backing and lobbying. Company size is measured as the log of total assets. Company performance is measured as return on equity defined as income before extraordinary items (adjusted for common stock equivalents) divided by total common equity. Debt is measured as total long-term debt divided by total assets. We calculate inventory turnover as the total inventory over net sales. We also include asset tangibility (fixed asset intensity) measured as the net plant, property, and equipment (PPE) divided by total assets and asset intangibility measured as the intangible assets divided by total assets. Lastly, we include industry and year dummy variables.

**Results**

Table 1 shows descriptive statistics. According to the descriptive statistics of our control variables, VC backed companies in our sample have significantly less assets, inventory turnover, total debt, intangible and fixed assets. These results are mostly consistent with what we would expect from VC backed companies. As we turn to the two independent variables of interest in our paper, we see that VC backed companies have spent less on lobbying and more on R&D in general. The result on R&D is expected since VC backed companies tend to be high growth companies that are more innovative and the lobbying expenditures result is consistent with our Hypotheses 1. This result suggests that on average, VC backed companies are less likely to invest in lobbying activities, likely due to the myopic nature of the investment horizon.

[INSERT TABLE 1 HERE]

However, this result might need further analysis, especially when we look at the industry breakdown of these two variables in Table 2. If we look at the distribution of lobbying expenditures across the different industries in our sample, we can get a sense of the fact that the expenditures tend to be higher in industries that are more invested in R&D expenditures. Industries such as Chemicals and Allied Products, Engineering and Management Services, Transportation Equipment and Instruments and related products seems to have high lobbying and R&D expenditures. These are also industries where VC investments are heavily invested. This suggests that the relationship between VC backing and lobbying efforts may not be a linear relationship.

[INSERT TABLE 2 HERE]

Table 3 shows the correlation matrix and includes only significant coefficients. There are strong correlations between some variables. For example, the amount of lobbying expenditures and VC backing is negatively correlated. Lobbying is also highly correlated with company size and tangible asset intensity. In order to test Hypothesis 1 in a multivariate setting and address the possible interaction of VC backing and R&D expenditures, (Hypothesis 2) we run regression models in Table 4.

[INSERT TABLE 3 HERE]

Table 4 reports the results of OLS regressions. Model 1 and Model 2 include main effects and interaction effects respectively. Hypothesis 1 predicts a negative relationship between VC-backing and company’s lobbying expenditures. Similar to our univariate results in Table 1, our multivariate analysis also supports a negative and significant relationship between VC-backing and a company’s lobbying expenditures. In Model 2, we interact R&D expenditures and VC backing and analyze the effect of this interaction on lobbying expenditures. According to our results, the interaction effects of R&D intensity is negative and significant, suggesting that VC-backed companies with high R&D intensity invest more in lobbying. These results provide support for Hypothesis 2, suggesting that as companies’ long term interests are aligned with lobbying efforts, companies tend to invest more in lobbying.

[INSERT TABLE 4 HERE]

**Discussion**

In this study, we examine the relationship between VC-backing and companies’ lobbying strategies. We find that VC-backed companies invest in lobbying less. Since VC-backed companies are more likely to invest in projects with high returns in short periods, they may not expect returns from lobbying which is more long-term oriented and risky and they less likely invest in lobbying strategies. However, we also find that R&D intensity impacts this relationship in such a way that VC-backed companies with high R&D intensity invest in lobbying strategies more. Lobbying strategies can help these copmanies control their legal environment and even prevent laws that might prohibit them from reaping benefits from their R&D investments. VC-backed companies with high R&D investments will be more sensitive to uncertainties in their environments, therefore, they are more likely to invest in lobbying strategies with the expectation that their connections through lobbying will help them secure their environment.

 This study makes several contributions to several research streams. First, it contributes to the literature on VC by providing insights into the outcomes of VC-backing. While market outcomes of VC-backing receive a great deal of attention (Alvarez-Garrido & Dushnitsky, 2016; Da Rin, Hellmann, & Puri, 2013; Dutta & Folta, 2016), non-market outcomes are neglected in VC research. We suggest that VC-backed companies may benefit from non-market strategies, lobbying in particular, to reduce uncertainties in their environments. Lobbying can help them have a voice in determining how the industry policies are shaped.

 Second, our study advances the corporate political strategy research by demonstrating VC-backing as an alternative ownership structure. Our findings add to the literature on corporate political strategy by indicating VC-backing as an antecedent of corporate political strategy. A growing body of research has indicated several ownership structures such as institutional ownership, insider ownership, family ownership etc. influence why companies invest in corporate political strategy (Hadani, 2007, 2012; Lux, Crook, & Woehr, 2011; Ozer & Alakent, 2013). Our study suggests how VC-backing affects companies’ decisions to engage in political strategy.

 Our study also has implications for the growing literature that explores the integration of market and non-market strategies. While prior studies in this stream have focused mainly on the integration of company performance and corporate political strategy (Hadani & Schuler, 2013; Mellahi, Frynas, Sun, & Siegel, 2016; Rajwani & Liedong, 2015), we expand that focus to VC-backing as a market strategy and

lobbying as a non-market strategy. Our study indicates that VC-backed firms manage their internal and external environment in a more integrated way by investing in lobbying.

 We also note that this study is not without limitations. A common limitation in political strategy literature is the availability of data. Although VC backing has the strongest influence during early stages of founding, which usually corresponds to the pre-IPO stage, our data consists of companies that went through IPO and became public. Future research can examine VC backed companies’ political strategy before they become public. In this study, our political strategy approach was limited to lobbying. Although lobbying is the most common type of political participation, only 10% of American corporations lobby. Other types of political contributions are much smaller in comparison (Chen, Parsley and Yang, 2015). We focused on lobbying because testing other forms of political strategy such as PAC and soft money contributions among VC backed companies would drop our sample size dramatically. According to Cao et al. 2018, lobbying overshadows PAC contributions in terms of expenditures and number of companies engaged however PAC contributions can indirectly benefit a company. Future research can include other forms of political contributions for a more comprehensive understanding of how VC backing affects political strategies.

Another limitation we had was our sample mostly consisted of large companies. As can be seen from the correlation table (Table 3), there is a strong correlation between lobbying and company size. This is a common limitation in the lobbying literature since companies that spend more money on lobbying tend to be large companies (Drop & Hansen, 2006). We believe that future studies can examine small companies and their political contributions.

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**Table 1**

**Descriptive Statistics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | VC Backing | Mean | Q1 | Q2 | Q3 | N |
| Lobbying | No | 1,381,570 | 100,000 | 176,250 | 768,120 | 284 |
|  | Yes | 328,109 | 80,000 | 130,000 | 255,000 | 384 |
|  | p value | 0.00\*\*\* |  | 0.00\*\*\* |  |  |
| R&D/Sales | No | 48.30 | 0.75 | 4.88 | 12.19 | 284 |
|  | Yes | 183.82 | 3.94 | 10.64 | 25.60 | 384 |
|  | p value | 0.04\*\* |  | 0.00\*\*\* |  |  |
| Log (Assets) | No | 7.36 | 5.99 | 7.65 | 8.75 | 284 |
|  | Yes | 6.37 | 5.16 | 6.07 | 7.47 | 384 |
|  | p value | 0.00\*\*\* |  | 0.00\*\*\* |  |  |
| Inventory/Sales | No | 9.38 | 0 | 8.20 | 13.84 | 284 |
|  | Yes | 8.55 | 0 | 1.30 | 10.36 | 384 |
|  | p value | 0.5 |  | 0.00\*\*\* |  |  |
| Total Debt/Assets | No | 22.29 | 2.94 | 18.38 | 34.08 | 284 |
|  | Yes | 17.26 | 0 | 4.86 | 22.00 | 384 |
|  | p value | 0.04\*\* |  | 0.00\*\*\* |  |  |
| Intangibles/Assets | No | 24.14 | 3.00 | 17.43 | 43.75 | 284 |
|  | Yes | 18.16 | 1.73 | 9.80 | 28.84 | 384 |
|  | p value | 0.00\*\*\* |  | 0.00\*\*\* |  |  |
| Return on Equity | No | -4.05 | -1.78 | 9.86 | 21.26 | 284 |
|  | Yes | 1.43 | -16.36 | 5.90 | 13.99 | 384 |
|  | p value | 0.71 |  | 0.00\*\*\* |  |  |
| PPE/Assets | No | 38.29 | 16.75 | 31.29 | 53.78 | 284 |
|  | Yes | 26.94 | 11.21 | 18.02 | 33.12 | 384 |
|  | p value | 0.00\*\*\* |  | 0.00\*\*\* |  |  |

**Table 2**

**Industry Distribution for Lobbying and R&D/Sales**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | **Lobbying** | **R&D/Sales** |
| **2-digit SIC code** | **Industry** | **Number of obs.** | **mean** | **median** | **mean** | **median** |
|  |  |  |  |  |  |  |
| 73 | Business Services | 161 | 638,782 | 190,000 | 9.9 | 9.0 |
| 28 | Chemical & Allied Products | 145 | 375,157 | 180,000 | 507.1 | 33.5 |
| 38 | Instruments & Related Products | 77 | 321,673 | 120,000 | 25.9 | 13.2 |
| 48 | Communications | 43 | 246,837 | 150,000 | 10.4 | 5.3 |
| 37 | Transportation Equipment | 41 | 393,689 | 270,000 | 11.4 | 7.4 |
| 36 | Electronic & Other Electric Equipment | 28 | 176,107 | 85,000 | 19.7 | 20.7 |
| 87 | Engineering & Management Services | 26 | 1,516,202 | 225,000 | 196.1 | 11.1 |
| 35 | Industrial Machinery & Equipment | 25 | 113,000 | 120,000 | 12.2 | 12.4 |
| 20 | Food & Kindred Products | 24 | 1,402,083 | 872,500 | 0.2 | 0.1 |
| 70 | Hotels & Other Lodging Places | 16 | 13,000,000 | 12,900,000 | 0.0 | 0.0 |
| 80 | Health Services | 12 | 115,833 | 120,000 | 2.3 | 0.0 |
| 30 | Rubber & Miscellaneous Plastics Products | 10 | 87,500 | 80,000 | 1.1 | 1.2 |
| 39 | Miscellaneous Manufacturing Industries | 9 | 140,000 | 160,000 | 7.6 | 7.1 |
| 59 | Miscellaneous Retail | 9 | 114,444 | 120,000 | 9.8 | 3.9 |
| 55 | Automative Dealers & Service Stations | 7 | 380,000 | 150,000 | 0.0 | 0.0 |
| 63 | Insurance Carriers | 6 | 555,000 | 410,000 | 0.0 | 0.0 |
| 12 | Coal Mining | 5 | 896,000 | 240,000 | 0.1 | 0.1 |
| 78 | Motion Pictures | 5 | 587,000 | 500,000 | 2.6 | 2.5 |
| 64 | Insurance Agents, Brokers, & Service | 5 | 294,000 | 150,000 | 9.1 | 10.4 |
| 16 | Heavy Construction, Except Building | 5 | 282,000 | 120,000 | 8.0 | 8.1 |
| 34 |  Fabricated Metal Products | 4 | 47,500 | 40,000 | 0.8 | 0.7 |
| 82 | Educational Services | 2 | 80,000 | 80,000 | 2.3 | 2.3 |
| 58 |  Eating & Drinking Places | 1 | 30,000 | 30,000 | 0.0 | 0.0 |
| 50 | Wholesale Trade – Durable Goods | 1 | 20,000 | 20,000 | 0.0 | 0.0 |
| 27 | Printing & Publishing | 1 | 10,000 | 10,000 | 5.6 | 5.6 |

**Table 3**

**Correlation Table**

The matrix below presents the pairwise correlation coefficients for the pairs that have 10% or more statistically significant correlation.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 1 | Lobbying | 1.00 |  |  |  |  |  |  |  |  |
| 2 | VC backed dummy | -0.20 | 1.00 |  |  |  |  |  |  |  |
| 3 | R&D/Sales |  | 0.02 | 1.00 |  |  |  |  |  |  |
| 4 | Log(Assets) | 0.23 | 0.03 | -0.02 | 1.00 |  |  |  |  |  |
| 5 | Inventory/sales |  | -0.01 | 0.1 | -0.02 | 1.00 |  |  |  |  |
| 6 | Total debt/assets |  |  | 0.01 | -0.06 |  | 1.00 |  |  |  |
| 7 | Intangibles/assets |  | 0.11 | -0.01 | 0.11 | -0.03 | -0.01 | 1.00 |  |  |
| 8 | Return on equity |  |  |  |  |  |  |  | 1.00 |  |
| 9 | PPE/assets | 0.15 | -0.01 |  | -0.02 |  | 0.07 | -0.03 |  | 1.00 |

**Table 4**

**Regression Results for Lobbying**

|  |  |
| --- | --- |
|  | Dependent variable: Lobbying |
| VC backed | -954.501.6\*\*\*(0.00) | -264,062.2\*\*\*(0.00) |  |
| R&D/Sales  | -305.9(0.28) | 93.8\*\*\*(0.00) |  |
| VC Backed\*R&D/Sales | 264.3(0.39) | 339.5\*\*\*(0.00) |  |
| Log (Assets) |  | 261,966.5\*\*\*(0.00) |  |
| Inventory/Sales |  | -5,501.8\*\*\*(0.00) |  |
| Total debt/Assets |  | -9,972.9\*\*\*(0.00) |  |
| Intangibles/Assets |  | -731.6(0.767) |  |
| Return on equity |  | -55.5(0.582) |  |
| PPE/Assets |  | 4,071.2\*(0.07) |  |
| Constant | 1,336,412\*\*\*(0.00) | 6,802,674\*\*\*(0.00) |  |
| Industry fixed effects | No | Yes |  |
| Calendar year fixed effects | No | Yes |  |
|  |  |  |  |
| N | 668 | 668 |  |
| Adjusted R2 | 4.12% | 83.21% |  |