Lobbying, political connectedness and financial performance in the air transportation industry

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ABSTRACT

While there is a deeper understanding of the outcomes to firm-level political activities in general, there are very few papers that address this relationship in transportation studies. In this paper, I empirically test firm-level rent-seeking through corporate political activity (CPA) in the air transportation industry. I find, in a sample of 46 firms over 15 years, that lobbying intensity and political connections are positively related to subsequent profitability in both fixed-effects and random-effects estimations. I also test the interaction of these two main effects and find mixed support for the moderating effect of political connections on lobbying intensity. This paper contributes to the theoretical literature on political rent-seeking and the topical literature on political action in air transportation.

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1. Introduction

The literature on corporate political activity (CPA) has been integral in understanding how private firms interact and compete in the non-market (Baron, 1995). It has been argued that non-market activities are employed to extract private benefit from governmental authorities (i.e. rents). Even though research in transportation studies should be prime grounds for testing such rent extraction techniques, there has been a relative dearth in transport-specific studies that model firm-level political action with either determinants or outcomes. Several studies have addressed the political process in transportation markets, including Brach and Wachs (2005), who studied earmarking trends at the Department of Transportation; Antonson (2014), who qualitatively studied public participation in the rulemaking process in the transportation industry in Sweden; and deWit (2014), who studied protectionism between European commercial air carriers and their home governments during the perceived threat of its market territory by Gulf carriers. However, none of these studies have modeled the effects of firm-level political activity with performance variables. One paper that has addressed the results derived from public policy participation is Wessling et al. (2014), which studied how collective lobbying efforts materialized as a reaction to California's emission standards after 2000.

While these papers have all lead to more understanding of

political activity in the transportation market, they still leave a wide gap in the literature. This is true for two reasons. First, there are simply too few papers that have addressed the specific causes and outcomes to CPA in transportation-based industries. Secondly, the papers that have been published are quite disparate in their goals and, therefore, have studied the phenomenon in quite idiosyncratic ways. In this paper, I intend to add to the existing literature on CPA and transportation by modeling the outcomes to firm-level CPA in a sample of air transportation firms over a 15 year period. By doing so, I contribute to both the literature on political action, which has called for more empirical testing of such relationships (Lux et al., 2011), and the literature on air transportation, which has just begun to study such relationships.

The rest of the paper is structured as follows. Section 2 includes a literature review as well as theory and hypothesis development. Section 3 is the theory section and includes hypotheses development. Section 4 explores the methods employed as well as the estimation technique and variable descriptions. Section 5 is the results section and Section 6 is a discussion, including limitations and future research.

2. Literature review

2.1. Literature gap and contribution

To date, there has been little empirical research on the antecedent conditions and outcomes to firm-level CPA in the transportation industry, generally, and the air transportation market,

specifically. On the other hand, there has been a robust literature concerning regulation in such industries and markets. While these can be viewed as different literature, there is a link as firm-level political action is often a response to legislative lawmaking and/ or regulatory rulemaking (McKay, 2011). For example, some air transportation papers have qualitatively studied the regulation of airports, including airports in Europe (Charlton, 2009; Littlechild, 2012a; Simonelli and Caroli, 2013; Ballart and Guell, 2015), Australia (Littlechild, 2012b; Arblaster, 2014), and South America (Bettini and Oliveira, 2008). In addition to a geographic focus, other papers have been more topical; for example, Domingues et al. (2014) studied air cargo security, while Carlsson and Hammar (2002) looked at tradable emission permits in the regulation of allowable CO_2 levels. It is, therefore, surprising that with a robust literature on regulation in transportation, there is a much less robust literature on corporate reaction to such regulation.

In the transportation regulation literature, the unit of analysis has been at the regulation level. At the firm level, however, there needs more emphasis on both the types of firms that may attempt to challenge such regulatory actions, as well as the performance benefits that flow to politically active firms. One exception mentioned above is Wesseling et al. (2014), which used a longitudinal case study to model automobile manufacturers' responses to California emissions standards. While this is tangentially related to the current paper's focus, it is both methodologically different (longitudinal case study vs. econometric study) and different in its unit of analysis (industry-level vs. firm-level).[1] Therefore, the gap that is addressed here is in econometrically modeling the benefits to firm-level performance associated with corporate political activities in the transportation sector, and more specifically, the air transportation market.

2.2. Corporate political activity

The corporate political activity (CPA) literature can be decomposed into several different sub-literature, namely (i) Types of CPA, (ii) Antecedents to CPA, and (iii) Outcomes to CPA.

2.2.1. Types of CPA

While CPA entails a broad range of activities, lobbying and political connectedness have constituted an important segment of the CPA literature in recent years. Lobbying can be defined as an influence and/or pressure activity whereby firms attempt to shape public policy toward their favor (Lessig, 2012). More specifically, lobbying activities can be focused on influencing elected legislators (McKay, 2011), non-elected regulators (Wesseling et al., 2014), Presidents or Prime Ministers (McGrath, 2013) and even judges (Caldeira et al., 2000). The majority of current lobbying research addresses the area of bureaucratic lobbying as it is more prevalent (Boehmke et al., 2013) than is its legislative counterpart. Put simply, the majority of lobbying-focused research has attempted to study the influence of non-elected regulators (Balla, 1998; Nixon et al., 2002; Duso, 2005; Yackee and Yackee, 2006) during periods of rule-making since this is where private benefits to lobbying yield the highest probability of rent extraction (Brown, 2016a).

Another major area of CPA research has been political connectedness. This literature stream focuses on firm-level connections to present or past governmental figures. Several types of links have been proposed, including (i) investor−government links (Faccio et al., 2006; Brockman et al., 2013), (ii) management-government links (Hillman et al., 1999; Faccio et al., 2006; Brockman et al., 2013), and (iii) board of director-government links (Hillman, 2005). Such links add value to firms by increasing the likelihood of garnering important information (Hillman et al., 1999) from governmental entities or because of rent extraction through bypassing government hurdles (Brockman et al., 2013).

2.2.2. Antecedents to CPA

There is also a literature on the determinants to firm-level CPA. At the industry level, scholars have modeled the relationship between industry structure and political activity (Grier et al., 1991), the level of industry regulation and the firm-level propensity to be politically engaged (Martin, 1995; Hart, 2001), the level of competition from foreign firms (Schuler, 1996; Lee and Baik, 2010; deWit, 2014), the level of competition from other pressure groups (Antonson, 2014) and the degree of unionization in the firm's primary markets (Schuler et al., 2002). At the firm level, a number of determinants have been studied including top management team influence (Ozer, 2010), institutional ownership and managerial entrenchment (Hadani, 2012; Mathur et al., 2013),[2] and firm size (Lux et al., 2011; Lux, 2015). The generalized findings are that there is a positive relationship between industry structure, industry regulation, industry unionization, and firm size with corporate political activities and a negative relationship between institutional ownership and corporate political activities.

2.2.3. Outcomes to CPA

A less studied relationship is the firm-level outcome to political activity. Several scholars have called for more empirical testing of this relationship (Hillman, 2005; Oliver and Holzinger, 2008; Lux et al., 2011), especially in differing contexts. To date, there is evidence of CPA's link to market returns (Hillman, 2005), accounting returns (Hillman, 2005; Richter et al., 2009; Brown, 2016b), utility pricing returns (Schuler et al., 2002), earmarks (Brach and Wachs, 2005), acquisition success (Brockman et al., 2013), and bailout success (Faccio et al., 2006; Blau et al., 2013). While some empirical studies have found no relationship between CPA and measurable returns (Hadani and Schuler, 2013), the vast majority have found that CPA is significantly and positively related to the above named outcomes.

3. Hypotheses development

3.1. CPA as rent-seeking

Organizational rent-seeking is a common theme in CPA-performance relationship to date (Faccio et al., 2006; Oliver and Holzinger, 2008; Hadani and Schuler, 2013). According to this argument, firms allocate resources toward activities that allow them to expropriate value from their external environment. These activities can be executed in the market or in the non-market (Baron, 1995), the latter including the public policy arena, where firms attempt to mold laws toward their advantage for private gain. At the federal level in the U.S. political marketplace, this entails activities directed toward either the legislative realm or the administrative realm (McKay, 2011).

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[1] Another paper—Wesseling et al., 2015—call for future research on lobbying in this sector.

[2] This line of research has evidenced several interesting findings, including that firms with entrenched management (i.e. less shareholder rights) have a higher propensity to lobby, which could be indicative of managers attempting to extract personal gain at the expense of shareholders. However, this relationship reverses in subsamples of firms that lobby (as opposed to all firms), which could be indicative of management−shareholder alignment (Mathur et al., 2013). Hadani (2012) argues that institutional shareholders act as a natural counter-pressure to entrenched management and finds that firms with institutional blockholders are less prone to lobbying.

At the legislative level, firms may interject their interests into bills that have yet to be passed. This interjection can be realized in a number of ways, namely as attempts to (i) quash a bill that would be harmful to the firm's interest, (ii) change a bill to add or delete items that align with the firm's interest, (iii) support a bill that would aid in the firm's position or (iv) assist in initiating a bill that has yet to be proposed (Kaiser, 2013). As opposed to the legislative level, the administrative level includes the rulemaking process within regulatory bodies. Regulatory rules are codified laws that are derived from legislatively passed laws, but that are concerned with the implementation of the law (Yackee and Yackee, 2006). During the rulemaking process, firms may be active in attempting to mold the path of the rule as it goes from an initial draft to a final, codified regulation (Brown, 2016a). While not exactly equivalent to the legislative process, mechanisms to intervene in the rulemaking process are similar to those mentioned above with respect to Congressional bills. In order to capture rents during the public policy process, at either level, firms employ two different tactics—pressure and information gathering.

The most widely discussed pressure mechanism is lobbying. Lobbying is a process by which a firm attempts to mold public policy through intervention in the political process. This can be done either internally or externally. Internal lobbying denotes the firm's employees acting on behalf of the firm in the process while external lobbying entails the hiring of an outside firm that has expertise in the political process or connections with key governmental decision-makers. More specifically, lobbying activities may include meeting with the firm's primary regulator on issues that are relevant to it capturing rents. Several papers have found evidence of such a relationship in other contexts. Richter et al. (2009) found that lobbying was associated with lower corporate tax rates in a broad sample of publicly traded companies. Lee and Baik (2010) found that disbursements given to domestic firms by the U.S. government in anti-dumping petitions was positively related to the firm's lobbying efforts. Likewise, Bonardi et al. (2006) found, in a sample of U.S. electric utilities, that a firm's lobbying efforts were positively related to subsequent allowed rate of returns by the utilities' public commissions (PUCs). Brown (2016b) found that lobbying was associated with higher return on invested capital (ROIC) and return on assets (ROA) in a sample of Fortune 500 firms. Therefore, I posit[3]:

Hypothesis 1. *Lobbying Intensity is positively related to firm-level financial performance.*

In addition to influence tactics, firms may attempt to gain idiosyncratic advantages by capturing key information from sources that have knowledge of the governmental processes that compose lawmaking. The CPA literature has begun to measure the benefits derived from politically connected firms in differing situations. For example, in an event study looking at firms that have executives who go on to be elected or appointed to government positions, Hillman, Zardkoohi and Bierman (1999) find that the announcement of such an event led to higher firm values than for firms that did not have such an event. Similarly, Hillman (2005) studied the opposite situation, namely when a firm appointed a former government official to its board of directors (BOD). She found that market valuations were positively related to having such linkages and, furthermore, that the magnitude of such valuations were higher in highly regulated industries. Faccio et al. (2006) studied political connections and corporate bailouts and found that firms that were connected politically were more prone to being the recipient of a World Bank or International Monetary Fund

bailout. Finally, Blau et al. (2013) studied a similar situation (i.e. bailouts) but in the context of a natural experiment, the financial crisis of 2008. They found that politically connected firms received bailout funds from the U.S. Troubled Asset Relief Program (TARP) quicker than non-connected firms and received more funds from the program. This evidence leads to the following:

Hypothesis 2. *Political connectedness is positively associated with firm-level financial performance.*

One relationship that has barely been tested in the literature to date is the interaction effect of lobbying intensity and political connectedness. One exception is Blau et al. (2013), which tested a dummy lobbying variable with political connections. This interaction is important because as firms develop capabilities to mold public policy, resource picking (Makadok, 2001) becomes increasingly important. In this case, having a well-established political function in the firm through hiring of former government officials should enhance the benefits from lobbying efforts. Why would this be the case? The primary reason is that the better-abled the firm is to target lobbying efforts, and therefore efficiently allocate resources to public policy, the greater performance would be expected as a return on such activities. Firms that hire more experts on governmental processes should better enhance the resource allocation decisions in order for the firm to have a competitive advantage over rivals. In this case, the relationship could be expressed as:

Hypothesis 3. *Political connectedness positively moderates the relationship between lobbying efforts and firm-level financial performance.*
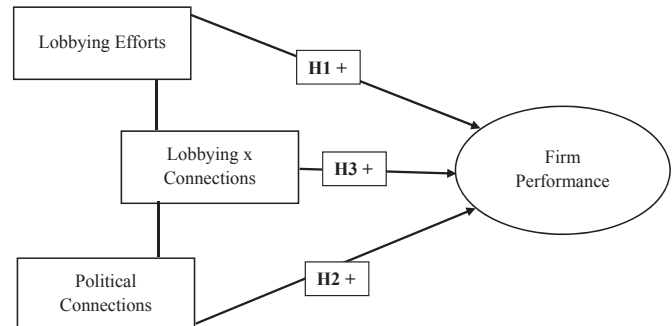

Fig. 1. Hypothesized relationships.

4. Methods

4.1. Data and sample

Data for this paper was retrieved from several different sources. First, industry classifications were found on the U.S. Department of Labor's database of Standard Industrial Codes (www.osha.gov). This paper addresses air transportation, which is covered under SIC Code.

45—Transportation by Air. Four 4 digit SIC codes were then targeted in this industry, namely Air Transportation, Scheduled (SIC 4512), Courier Services (SIC 4513), Air Transportation, Nonscheduled (SIC 4522), and Airports, Flying Fields and Airport Terminal Services (SIC 4581). Secondly, a search was executed in the COMPUSTAT Database for all publicly traded firms in these four digit SIC codes. Once all publicly traded firms were located, their financial data were then extracted from COMPUSTAT. Finally, political action data was retrieved from the Center for Responsive Politics, a non-

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[3] See Fig. 1 for a depiction of the hypothetical relationships.

Table 1
Sample firms.

Firm	4 digit SIC
Air Canada	4512
Air France - KLM	4512
Alaska Air Group Inc	4512
Allegiant Travel Co	4512
American Airlines Inc	4512
Avianca Holdings SA	4512
Baltia Air lines Inc	4512
China Eastern Airlines Corp	4512
Chorus Aviation Inc	4512
Controladora Vuela Compania	4512
Copa Holdings SA	4512
Delta Air Lines Inc	4512
Deutsche Lufthansa AG	4512
Energie Holdings Inc	4512
Exchange Income Corp	4512
Gol Linhas Aereas Inteligent	4512
Great Lakes Aviation Ltd	4512
Hawaiian Holdings Inc	4512
Intl Consol Airlines Group	4512
Jetblue Airways Corp	4512
Latam Airlines Group SA	4512
Republic Airways Holdings INC	4512
Ryanair Holdings PLC	4512
Skywest Inc	4512
Southwest Airlines	4512
Spirit Airlines INC	4512
United Continental Holdings INC	4512
Virgin America Inc	4512
Westjet Airlines Ltd	4512
Air T Inc	4513
Air Transport Services Group	4513
Cargojet Inc	4513
Federal Express Corp	4513
FedEx Corp	4513
Air Methods Corp	4522
Atlas Air Worldwide Holding Inc	4522
Bristow Group Inc	4522
CHC Group Ltd	4522
Discovery Air Inc	4522
Era Group Inc	4522
HNZ Group Inc	4522
PHI Inc	4522
Grupo Aeroportuario Del Cent	4581
Grupo Aeroportuario Sureste	4581
Macquarie Infrastructure CP	4581
Saker Aviation Services Inc	4581

partisan and non-profit data center that aggregates political activity variables in the United States. Data from the Center for Responsive Politics has been used in a number of empirical papers including Hadani (2012), Ozer (2010), Ozer and Alakent (2013), Blau et al. (2013), Brown (2016b) amongst others.

All told, a total of 46 firms were included in the sample. The dataset is an unbalanced panel, as it encompasses up to 16 years of data for each firm. Table 1 includes all of the firms in the sample by 4 digit SIC code. The time period for the study is 1998−2013 and, as a result, the total sample size (Firm x Year) is 577.

4.2. Estimation

Both fixed-effects and random-effects models were estimated using the statistical software package STATA. Fixed-effects models allows for interpreting changes within firms over time, while random-effects models allows for interpreting both the within-firm effect as well as the between-firm effect. Fixed-effects regressions are most appropriate for panel data sets that have many years of observations per firm, which this paper does. Additionally, some scholars have argued that fixed effects estimations with lagged

variables resolves the reverse causality problem inherent in many business related statistical tests. On the other hand, random effects estimations are valid when variation between companies has an effect on the dependent variable (Beck and Katz, 2007). Since this study is concerned with interorganizational differences in political activity, and I hypothesize that this difference should be material to marginal subsequent financial performance, omitting random effect results would be problematic. Instead of attempting to choose between both techniques, both effects are reported, fixed effects in Table 3 and random effects in Table 4. The resulting estimation equations are as follows.

4.2.1. Fixed effects equation

$$Y_{it} = \alpha_i + \beta' X_{i(t-1)} + W' Z_{i(t-1)} + U_{it} \tag{1.1}$$

Where Y_{it} is the dependent variable represented in this study by earnings before interest and taxes (EBIT), $\beta' X$ are vectors of parameter estimates and explanatory variables and $W' Z$ are vectors of parameter estimates and control variables. In the fixed effects model, α_i is the entity-specific intercept and U_{it} is the error term.

4.2.2. Random effects equation

$$Y_{it} = \alpha + \beta' X_{i(t-1)} + W' Z_{i(t-1)} + U_{it} + \varepsilon_{it} \tag{1.2}$$

Where Y_{it} is the dependent variable represented in this study by earnings before interest and taxes (EBIT), $\beta' X$ are vectors of parameter estimates and explanatory variables and $W' Z$ are vectors of parameter estimates and control variables. U_{it} is defined as the between-entity error and ε_{it} is defined as the error term, which incorporates all other factors such omitted variables.

4.3. Variables

4.3.1. Dependent

Since this paper is interested in the relationship between political actions and performance, the dependent variable should measure firm-level profitability. Therefore, I include earnings before interest and taxes (EBIT) for firm i in year t.

4.3.2. Explanatory variables

As hypothesized, the political action variables contain items that measure both lobbying intensity and political connectedness.

4.3.2.1. Lobbying expenditures. Lobbying expenditures are measured as the total dollar figures spent hiring contract lobbyists in year t by firm i. This variable is lagged by one year relative to the dependent variable.

4.3.2.2. Political connectedness. To measure political connectedness, I sum the number of individuals hired and retained by each firm that have high-level prior U.S. federal government experience. The Center for Responsive Politics compiles a database of such individuals, their former government role and their subsequent corporate role. This measure is, therefore, the aggregate number of politically connected hires and retentions in a given year at firm i in year t.

4.3.3. Control variables

Several control variables are important in order to be able to capture the marginal effects of political actions to the dependent

variables in this study. The controls included in this study are at four different levels, namely the national level, the industry level, the firm level and the time level. At the national level, I control for the U.S. *gross domestic product* (GDP) considering that GDP is considered a baseline growth measure for private firms. At the industry level, I control for the 4 digit *SIC code*, as there may be differences in profitability based on the individual markets within the Air Transportation industry. At the firm level, I control for a number of items that have had a consistent relationship with firm profitability. These include firm *size*, a firm's *fixed assets*, firm *age*, firm *liquidity*, and *country of origin*. Firm size is measured by the total revenues, fixed assets is measured by total balance sheet assets, firm age is the number of years the firm has been in business since founding, firm liquidity is measured by the current ratio, which is calculated by dividing the firm's current assets by its current liabilities, and country of origin is a dummy variable that takes the value of 1 if the firm is based in the U.S. and 0 otherwise. Finally, I include a dummy variable for each *year* in the sample to control for time fixed effects.

5. Results

5.1. Fixed effects

Table 2 displays the summary statistics, Table 3 displays the pairwise correlations between variables and Table 4 displays the results from a fixed effects estimation using the *xtreg* function in STATA. Model 1 is the controls only model, followed by four additional models that add in the explanatory variables and interactions. Note that all models that include explanatory variables have a higher R-squared value than does the baseline model, which means that more marginal variance is explained by adding in the political action variables. Also note that in fixed effects regressions, variables that do not have sufficient variance over time for a specific firm are omitted from the model. In this case, the firms' SIC code had such an issue and has, therefore, been omitted by STATA.

For the fixed effects models, the within-subjects R-squared values are included. Hypothesis 1 predicted a positive association between lobbying intensity and financial performance. Model 2 lends support to Hypothesis 1 as the coefficient on lobbying intensity is positive and highly significant (B = 19.501, p = 0.009). Since the lobbying intensity variable is the natural log of lobbying expenditures, this finding can be interpreted in the following way. As lobbying intensity increases by 1%, EBIT will increase by $195,000. Model 4 also lends support to Hypothesis 1. In model 4, both main effects are included in the regression model and the lobbying coefficient is once again positive and significant (B = 16.135, p = 0.03). Hypothesis 2 predicted a positive relationship between political connectedness, measured by the number of high profile former government officials, and financial performance. Model 3 and 4 both lend support to this hypothesis as the political connectedness variable is positive and significant in both

models (Model 3 B = 282.362, p = 0.000; Model 4 B = 282.267, p = 0.000). Hypothesis 3 is tested using the interaction of lobbying intensity and political connections. In the fixed effects model, there was no support for Hypothesis 3 as the interaction term was insignificant (B = 9.946, p = 0.198).

5.2. Random effects

Table 5 displays the results for the models tested using a random effects estimation in STATA. In all random effects models, the overall R-squared value is given considering that the interpretation of random effects coefficients is the change in the dependent variable when the independent variable changes across time and firms by one unit. All models above the baseline had r-squared values higher than the baseline (Model 1) with the exception of Model 3, which was slightly lower than the baseline.

Hypothesis 1 predicted a positive relationship between lobbying intensity and financial performance. In both Model 2 and Model 4 of Table 4, the coefficient on lobbying intensity is positive and significant (Model 2 B = 20.983, p = 0.000; Model 4 B = 19.783, p = 0.001), thereby lending credence to Hypothesis 1. More specifically, as lobbying intensity increases by 1% across over time and across firms, EBIT increases by $209,830. Models 3 and 4 test Hypothesis 2 and the relationship between political connectedness and financial performance. In Model 3, political connectedness is significant and positive (B = 147.238, p = 0.006). Model 4 also has political connectedness as positive and significant (B = 115.948, p = 0.024), giving strong support to Hypothesis 2. The one difference in results comes when analyzing Hypothesis 3, which is the interaction of the main effects aforementioned. In the fixed effect model that estimated this term, the coefficient was positive but not significant. In the random effects model, however, the coefficient is both positive and significant (B = 26.239, p = 0.000). Therefore, there is mixed support for Hypothesis 3.

Fig. 2 shows a contour plot of the interaction of the lobbying intensity and political connectedness variable, with the color coding acting as the dependent variable (EBIT). The plot is included because interpretation of a continuous−continuous interaction is difficult at best. Using the contour plot, however, the interaction at different levels of main effects can be surmised. For example, in Fig. 2, the highest performers were those that did exert lobbying efforts while also using political connections (Red in the web version). Firms that did not acquire politically-connected employees were absent from the highest level of performance, no matter how much lobbying effort was exerted. Also interesting to note is the lowest performing group, in this case those firms that had negative profitability (Green). The majority of these firms are ones that did have some political connections, yet did little to no lobbying. There is another area where these firms show up, namely the opposite condition, which is where the firm had high lobbying intensity, yet had no political connectedness. However, it should be noted that these firms (i.e. those with negative EBIT) represent a

Table 2
Summary statistics.

	Variable	N	Mean	S.D.	Min	Max
1	EBIT	577	262.65	690.36	−2698	3802
2	GDP	577	4.140	2.18	−0.92	6.52
3	Fixed Assets	577	7964	10 925	0	52 252
4	Firm Size	577	6798	10 083	0	45 567.000
5	Firm Liquidity	577	1.81	3.520	0	62.560
6	Firm Age	577	29.650	26.220	1	95.000
7	Lobbying Intensity	577	2.918	5.366	0	17.058
8	Political Connections	577	0.21	0.61	0	4

Table 3
Pairwise correlations.

	Variable	1	2	3	4	5	6	7	8
1	EBIT	1							
2	GDP	0.123**	1						
3	Fixed Assets	0.382***	−0.034	1					
4	Firm Size	0.525***	−0.032	0.939***	1				
5	Firm Liquidity	−0.054	−0.043	−0.169***	−0.158***	1			
6	Firm Age	0.114**	−0.019	0.315***	0.294***	−0.121**	1		
7	Lobbying Intensity	0.363***	−0.042	0.363***	0.405***	−0.074*	0.181***	1	
8	Political Connections	0.244***	0.016	0.390***	0.423***	−0.085**	0.137***	0.234***	1

*** < 0.01 **<0.05 * < 0.10.

Table 4
Fixed effects estimation results[a].

H	Expected sign	Variable	Fixed effects, DV = EBIT				
			(1)	(2)	(3)	(4)	(5)
1	(+)	Lobbying Intensity		19.501***		16.135***	13.965*
2	(+)	Political Connectedness			282.362***	268.267***	178.229*
3	(+)	Lobbying x Connections					9.946
		GDP	94.265***	106.042***	116.829***	31.601***	133.703***
		Financial Liquidity	1.329	0.818	0.833	0.435	0.504
		Size	0.118***	0.116***	0.126***	0.124***	0.122***
		Fixed Assets	−0.041***	−0.043***	−0.049***	−0.049***	−0.050***
		Age	6.140	13.918	22.214	27.851	34.215*
		Time Dummies	Yes	Yes	Yes	Yes	Yes
		Constant	−592.60	−852.854	−1108.74*	−1298.301**	−1465.479*
		F Value	14.33***	14.11***	15.20***	14.81***	14.23***
		R-Squared (Within Subjects)	0.3477	0.3562	0.3735	0.3793	0.3813
			N = 577	N = 577	N = 577	N = 577	N = 577

***<0.01 **<0.05 *<0.10.
[a] Two control variables–SIC and U.S.–were omitted from the fixed effects models due to the lack of within-firm variability in these variables.

small proportion of the sample and, therefore, extrapolating these findings to a generalization should be avoided.

5.3. Robustness checks

5.3.1. Reverse causality

Reverse causality, or simultaneous causality, can be a serious issue in management studies, since many corporate level decisions are endogenously determined (Bascle, 2008). It is, therefore, possible that, instead of corporate political activity affecting firm

profitability, firm profitability allows for more subsequent political activity. This directional relationship does not hold in the empirical literature as a number of studies have found insignificant coefficients on profitability measures as independent variables when the dependent variable was some type of corporate political activity (Hillman, 2005; Hadani, 2012; Brown, 2016b). However, as a robustness check I ran both fixed effects and random effects models with the predictor as EBIT in time *t-1* and political activity variables at time *t*. Since political activity data from the Center for Responsive Politics begins in 1998, running these reverse models caused a

Table 5
Random effects estimation results.

| H	Expected sign	Variable	Random effects, DV = EBIT				
			(1)	(2)	(3)	(4)	(5)
1	(+)	Lobbying Intensity		20.983***		19.783***	11.056*
2	(+)	Political Connectedness			147.238**	115.948***	−80.738
3	(+)	Lobbying x Connections					26.239***
		GDP	46.198	49.696	53.425	54.271	81.109***
		SIC					
		4513	115.809	109.182	80.880	85.038	68.410
		4522	71.230	35.028	90.178	51.514	19.785
		4581	113.165	114.938	121.247	120.233	92.976
		U.S.	8.123	−44.482	−36.435	76.858	54.0062
		Financial Liquidity	2.864	2.720	3.016	2.898	2.582
		Size	0.093***	0.088***	0.094***	0.088***	0.082***
		Fixed Assets	−0.048***	−0.049***	−0.051***	−0.051***	−0.047***
		Age	−0.851	−0.577	−0.818	−0.552	0.359
		Time Dummies	Yes	Yes	Yes	Yes	Yes
		Constant	−68.515	−56.766	93.935	−72.015	−171.625
		Wald Chi-Sq	300.73***	332.35***	309.53***	335.26***	378.67***
		R-Squared	0.4333	0.4633	0.4276	0.4590	0.4968
			N = 577	N = 577	N = 577	N = 577	N = 577

*** <0.01 **<0.05 * <0.10.
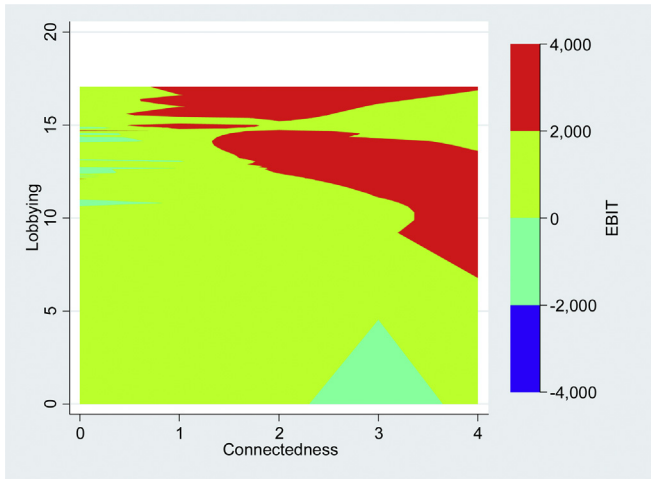
Fig. 2. Contour plot of lobbying-connectedness interaction.

reduction in the number of firm-year observations, from 577 in the specification described in the main models of the paper to 521 in the reversed model. Following the results from Hillman (2005), Hadani (2012) and Brown (2016b), none of the coefficients on EBIT were significant, lending evidence that profitability does not induce more CPA.

5.3.2. Robust standard errors

The models reported in Tables 4 and 5 include non-robust standard errors, which may be problematic in the face of hetero-scedasticity. As an additional robustness check, all models in Tables 3 and 4 were also estimated using Huber–White robust errors. Using robust errors will not change the magnitude of the coefficients in the models, but may affect the p-value reported. P-values for robust standard errors are, on average, higher and this may lead to differing interpretations versus standard non-robust errors (King and Roberts, 2015). In the current paper, the co-efficients of interest (i.e. explanatory variables) were unaffected when looking at the dichotomy between significance and non-significance, meaning that no variables that were significant in Tables 4 and 5 became insignificant in the models using Huber–White standard errors. However, most p-values associated with the coefficients of interest were higher than those in the original models. As a result, some variables moved into different categories of significance. For example, the p-value on the lobbying intensity variable in Model 2 was 0.009 yet was 0.037 when specifying robust standard errors. Table 6 displays the comparison of significance levels on the explanatory variable coefficients between the original models in Tables 3 and 4 and the models with robust standard errors.

5.3.3. Feasible generalized least squares (FGLS)

Another method to combat common issues of serial correlation and heteroscedasticity in panel data sets is Feasible Generalized

Least Squares (FGLS). FGLS allows for the relaxation of common assumptions regarding these two problems when the nature of the data has elements of being both cross-sectional and time-series (Frain, 2010). FGLS does not allow for the specification of fixed or random effects and, therefore, I estimated five models using this method in STATA with the *xtgls* command. As opposed to Huber–White robust errors, p-values in FGLS models will often either mimic random effects estimations or decrease relative to random effects estimations. Results from FGLS models run in STATA are very similar to those in Tables 4 and 5 Slight differences in one control variable, however, should be noted. The SIC 4513 (Courier Services) coefficient, which was insignificant in the fixed and random effects models, were marginally significant in the FGLS models (B range 153–177, p-value range 0.057–0.092).

5.3.4. Selection bias

In order to correct for potential selection bias, a Heckman Two-Step procedure was estimated (Heckman, 1979). The Heckman model is warranted when samples are non-random and there is a chance that omitted variables from a broader sample of firms will bias results. In the two-step procedure, the first equation is a se-lection equation where the control variables are regressed on the selection variable, in this case both lobbying intensity and political connections. In this first estimation, the dependent variable is bi-nary (1 Firm had political activity, 0 otherwise) and the result is a correction factor, known as the Inverse Mills Ratio (Bascle, 2008). The Mills coefficient is then added to the original equation as an additional right hand variable to adjust for the selection bias. However, if the Inverse Mills Ratio coefficient is insignificant (p > 0.05) then there is no selection bias and the original results are unbiased due to selection. In both Heckman equations, the Inverse Mills Ratio was insignificant (Lamda = 3239.69, p = 0.452 for Lobbying Intensity and Lamda = 852.678, p = 0.182 for Political Connectedness) and, therefore, selection bias is not present in the included sample.

6. Discussion

6.1. Implications for theory and literature

This paper has implications for both current theory and topical literature. First, the paper contributes to theories of rent-seeking through political activities, which has had ever-increasing popu-larity in recent years (Lux et al., 2011). The results herein point to the ability of firms to garner rents through their actions in the non-market, and specifically in the public policy arena. While there has been previous evidence pointing to this relationship (Hillman, 2005; Richter et al., 2009; Bonardi et al., 2006), there are competing views of CPA and subsequent performance. Most notable of these is that CPA is an "arms race" amongst firms and incremental spending on political activity does not lead to marginal rents, but instead leads to a zero sum game (Ansolabehere et al., 2003). This view, which addresses the Tullock Paradox (Tullock, 1972), while interesting has had little to no support in the

Table 6
Robust and non-robust standard errors comparison.

H	Expected sign	Variable	Model comparison			
			FE	RE	FE Robust	RE robust
1	(+)	Lobbying Intensity	19.501***	20.983***	19.501***	20.983***
2	(+)	Political Connectedness	282.362***	147.238**	282.362***	147.238*
3	(+)	Lobbying x Connections	9.946	26.239***	9.946	26.239**

***<0.01 **<0.05 *<0.10.

empirical CPA literature. While the findings in the current work do not constitute proof to dispute Ansolabehere et al. (2003)'s contentions, it does constitute additional evidence to the contrary.

In addition to this theoretical contribution, and as stated in the beginning of the paper, this paper also contributes to the topical literature on transportation and, more specifically, air transportation, as there have been few papers that address CPA in these domains. Furthermore, there has been almost no empirical work testing the CPA-performance relationship in transportation (Wesseling et al., 2015). Political activity, and the results derived from it, is important in this industry since rent-seeking firms may attempt to increase market share or profitability through access to public policy makers and in lieu of market-based, competitive measures.

6.2. Managerial and policy implications

The practical implications from the empirical results in this work are worth exploring further. Additionally, and depending on whose view one takes, the implications may be at odds with each other. For example, from a managerial perspective, the results from the current study may catalyze firms to reallocate resources from market actions (i.e. product or service improvements) to non-market actions (i.e. public policy intervention) since the payoff to such action seems fortuitous. However, a more subtle view of such implications offers a challenge to corporate decision-makers. This is true because the findings do not just point to spending more resources blindly; instead, management would be best served by growing its internal capabilities with respect to public policy. Political connectedness may appear, at the surface, to be an easy networking transaction to undertake. Contrary to this assumption, however, firms that optimize their political connections develop a deep commitment to establishing organizational divisions that locate the correct connections for their specific goals. This, in turn, allows more profitable lobbying since political connections have the knowledge and wherewithal to target political spending (as opposed to blind spending).

From a policy standpoint, however, the opposite implications may seem apparent. For example, if public officials are losing talented employees to private firms, they are both at a loss for attaining their organizational goals and at risk of potential regulatory capture by those same private firms. It is important that governmental offices see these risks and attempt to countervail them in an effort to keep the legal process, both with respect to legislative and administrative efforts, untainted.

6.3. Limitations and future research

As with all scholarship, this paper is not without its limitations. First, since the data is historical, causality is difficult to surmise. While I have tested equations that model lagged profitability on subsequent political activity, which is the reverse of the hypothesized direction, and found no evidence of such a relationship, there are always questions as to the causal relationships in empirical work absent experimentation. Secondly, and because the industry is concentrated, the number of firms that could be included in the study is relatively small (N = 46). While the power of the estimations is enhanced because it is a panel data set (N = 577), having more firms in the sample would be optimal.

Future researchers have a wide array of techniques, however, to enhance the stream of literature that the current paper fits into. One way to do so would be to qualitatively study the relationship between firm-level CPA and performance. For example, a multiple case study project in the transportation industry would serve to add richness to the general CPA literature or the specific transport-

specific CPA literature. Such a project could be both empirical as well as grounded in theory since the phenomenon has been so lightly studied in this domain. Secondly, the antecedents to firm-level CPA have not been studied in the transportation literature thus far. Knowing which firms exert efforts in public policy is important for researchers to be able to gauge the variance between this industry and others and would add to the current literature on determinants of CPA at the firm level.

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