

**TESTING THE REGULATORY
THREAT HYPOTHESIS**
**Media Coverage of the Energy Crisis
and Petroleum Pricing in the Late 1970s**

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We argue that during the 1979 oil crisis major domestic oil companies held down price increases of politically sensitive oil products relative to their foreign counterparts to reduce the probability of adverse government action. To test this "regulatory threat" hypothesis, we compare the reaction of unregulated fuel oil prices to political pressure. We measure political pressure with the level of U.S. television coverage of energy issues. We find that media coverage influenced U.S. home heating oil prices charged by domestic oil companies, but not foreign oil companies. In contrast, for the less politically sensitive residual fuel oil, media coverage did not influence prices of either domestic or foreign oil companies.

Most research on media influence has dealt with the impact of television or other media coverage on public opinion, for example, in defining what are the most important questions facing the country (Iyengar et al., 1982; Behr and Iyengar, 1985; Zucker, 1978) or in shaping attitudes toward presidential candidates (Patterson, 1980). In this article we examine the influence of

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media coverage of an industry on the economic behavior of major corporations within that industry. Specifically, we examine how media coverage influenced prices charged by oil companies facing the threat of government regulation during the energy crisis of the late 1970s.

We begin with a simple model.

Assumption 1: The government is more likely to respond to a problem the more intense is public opinion about that problem (see Easton, 1953).

Assumption 2: Public officials use the amount of media coverage as a signal of the intensity of public opinion about an issue.

Media coverage can therefore mobilize political elites to respond to the issue. For example, Gormley (1986) has argued that increased salience of an issue, as signaled by media attention to it, focuses the attention of political elites on the issue, which in turn triggers action by activist networks and politicians eager to earn credit for solving a problem. Goodman and Wrightson (1987), Wilson (1980), Marcus (1984), and Fisher et al. (1981) all argue that the media play a role in the regulatory process by altering public opinion and exerting pressure on regulatory agencies.

Thus the more media coverage of a problem, the more likely is government action. We apply this simple model to the energy crisis with the aid of the following assumptions.

Assumption 3: Firms, such as oil companies, fear the possibility of increased government regulation that would reduce their profits.

In the Carter era, price ceilings were the most likely regulation of the oil industry. There also was the possibility of oil distribution quotas or a more severe windfall profits tax (Erfle et al., 1981). These regulations would reduce oil company profits. Fears of such regulation had basis in historical fact and contemporary public sentiment. Historically, governmental response to dramatic price increases had been price and allocation regulations. During

the Nixon administration price controls, the petroleum industry was singled out for special attention.¹

Despite the deregulation of other industries during the 1970s, contemporary public sentiment toward the energy industry was for continued controls. Sanders (1987) argues that large integrated petroleum companies were viewed much the same as the railroads of the late nineteenth century. As a result,

the petroleum industry in the 1970s was, like the railroads earlier, subjected to price controls and central state allocation, and (also like the railroads) its actions sparked a broad antitrust movement. The oil industry was also subjected to an unprecedented "windfall profits" tax, as well as loss of favored tax treatment in the depletion allowance [p. 132].

Energy regulation emphasized equity, rather than efficiency, during this time (Harrison, 1981; Kalt, 1981). Unlike the trucking and airline industries, complete deregulation of the oil industry was not a real possibility. In fact, decontrol of crude oil prices, which began on June 1, 1979, did not deregulate the industry, because the Crude Oil Windfall Profits Tax Act of 1980 substantially reversed the effects of crude oil price decontrol (Kalt, 1981: 19).

Assumption 4: Price increases of an industry's products increase public demand for regulation of the industry and also increase media coverage of the industry (Erflé and McMillan, 1989).

Assumption 5: Firms can reduce the threat of government regulation with temporary self-imposed price restraints (Erflé et al., 1981; Olmstead and Rhode, 1985; Glazer and McMillan, 1988; Kahneman et al., 1986).

We posit a rational preemptive response to anticipated regulatory actions. To avoid the worst outcome (complete price regulation), firms may be willing to sustain temporary short-run losses. However, in sharp contrast to situations involving actual regulations, the incidence of regulatory threat is not uniform; it may fall more heavily on some firms and on some product types.

Assumption 6: Large visible firms are more sensitive to the threat of regulation than smaller, less visible firms.

Thus we expect highly visible oil companies to respond differently to threats of regulatory intervention than less visible oil companies operating in the same geographic and product market. The most visible oil companies are the large integrated firms that extract, refine, and market petroleum products. These firms, such as Exxon and Mobil, are known as majors in the trade. Less visible oil companies are those that market regionally or do not have retail marketing operations. Some of these firms, such as Asiatic, are quite large in an absolute sense but are not visible to the general public. Therefore, we examine firms with different degrees of public visibility: highly visible domestic majors with large marketing operations at the retail level; and less visible foreign-affiliated firms without retail outlets.

Erfle et al. (1981) argue that differential firm visibility partly explains the inverse relationship between firm size and prices of home heating fuel during 1979. In principle, such differences could be due to access to low-cost oil reserves. However, the Entitlements Program equalized access to low-cost crude oil (Kalt, 1981). Large and small oil companies should then have responded similarly to higher international oil prices since they all faced the same marginal costs.

Assumption 7: Consumer goods are more sensitive to the threat of regulation than are intermediate or producer goods.

The oil industry consists of a variety of refined petroleum products. Some (such as gasoline, home heating oil, and diesel fuel) are consumer goods while others (such as jet fuel and residual fuel) are intermediate or producer goods. Changes in the price of home heating oil should be directly visible to the public; changes in the price of residual fuel oil should not be *immediately* visible and would be harder for the public to trace to oil companies.

We examine one product from each category: #2 fuel oil (.2% sulfur), also known as middle distillate, diesel fuel, and home heating oil; and #6 fuel (.3% sulfur), also known as residual fuel. Number 2 fuel oil made up approximately 18% of refined product consumption and was the most important decontrolled product in 1979 since gasoline (40% of refined product consumption) was still subject to price controls at that time. Number 6 fuel made up approximately 16% of refined product consumption and was a primary input by electric utilities for power generation; this fuel was also unregulated in the period under study.

It is true that increases in the price of #6 fuel oil contributed significantly to rate hikes approved by state public utility commissions, and that regulatory commissions responded to dramatic fuel price increases by instituting automatic fuel adjustment clauses (Joskow, 1974). Nonetheless, these rate hikes are relatively infrequent and likely to come well after the fuel price hikes. They are therefore less likely to be seen as directly related to oil company prices than are #2 fuel oil price hikes. Also, rate hikes are likely to be blamed on the public utilities, not on the oil companies. After all, with higher electricity rates, consumers see higher electricity bills—one would not expect the majority of consumers to dissect those bills into fuel and nonfuel components.

Thus we propose the following regulatory threat hypotheses.

Hypothesis 1: U.S. media coverage of the oil crisis should affect the pricing policies of a highly visible domestic oil company (to reduce the regulatory threat), but should not affect the pricing policies of a less visible foreign oil company.

Hypothesis 2: U.S. media coverage of the oil crisis should affect the price of the consumer good (#2 fuel oil), but should not affect the price of the industrial good (#6 fuel oil).

The matrix of Table 1 depicts these two hypotheses. We expect that the media coverage of the energy crisis will have its greatest effect in the upper-left-hand cell and will have no visible effect in the bottom-right-hand cell. For the off-diagonal cells we would expect media effect to be less than upper-left, but greater than

TABLE 1
Data to Test the Regulatory Threat Hypotheses

		<u>threat of regulation</u>	
		high	low
<u>public and media visibility of pricing</u>	high	domestic oil company # 2 fuel oil	foreign oil company # 2 fuel oil
	low	domestic oil company # 6 fuel oil	foreign oil company # 6 fuel oil

lower-right, cells. To test our hypotheses we can compare media effects across the cells in each row, across the cells in each column, and between the cells on the upper and lower diagonal.

DATA

Weekly, company-specific, wholesale prices were obtained from the *Oil Buyers' Guide (OBG)* for the period 1977-1980. The *OBG* provides data on refined petroleum products by geographic market and product type. Contract and spot prices are for delivery to specific domestic locations.² From these data we have chosen one geographic market (New York),³ six companies, and two product types (#2 fuel oil and #6 fuel oil).

Exxon, the largest domestic major, is our primary highly visible oil company (four other domestic majors—Mobil, Gulf, Texaco, and Citgo—are also analyzed), and Asiatic is our indicator of a less visible foreign oil company.⁴ Unfortunately, Asiatic is the only foreign-affiliated company for which systematic data are available in *OBG*. We do not regard this as a significant

limitation of our study. Asiatic is one of the most important players in the New York wholesale market as witnessed by the wealth of data available for Asiatic in *OBG*. Indeed, the broadest range of price information is available for our two primary firms, Asiatic and Exxon.

We use the fraction of network television evening news devoted to oil-related stories as our measure of media influence. Vanderbilt University's *Television News Index and Abstracts (TNIA)* provides summaries of all three networks' nightly news programs. These summaries include starting and ending time of each news item as well as summaries of the news item itself. From this source we determined the total network news time available per week and the total time devoted to oil news stories. Domestic energy news (ENEWS) is the percentage of total weekly news time devoted to stories about the energy crisis, domestic oil companies, and other domestic energy stories relating to the oil industry. To conform with our price data, we use a Monday through Sunday week.

DATA ANALYSIS

OIL PRICES

Figure 1 shows spot, Exxon (highly visible), and Asiatic (less visible) prices for #2 (consumer) and #6 (industrial) fuel oil from 1977 to 1980. These two products clearly have different pricing patterns. The most obvious difference is that spot prices reacted differently in the two markets. Both markets share a common raw material, crude oil, whose price skyrocketed in early 1979. Recall that spot prices are prices for immediate delivery from marginal sources of supply. They therefore reflect, in the most direct fashion, the week-to-week vagaries of the oil market. The different behavior of #2 and #6 spot prices may reflect panic buying by consumers and substitution of energy sources by industrial users.

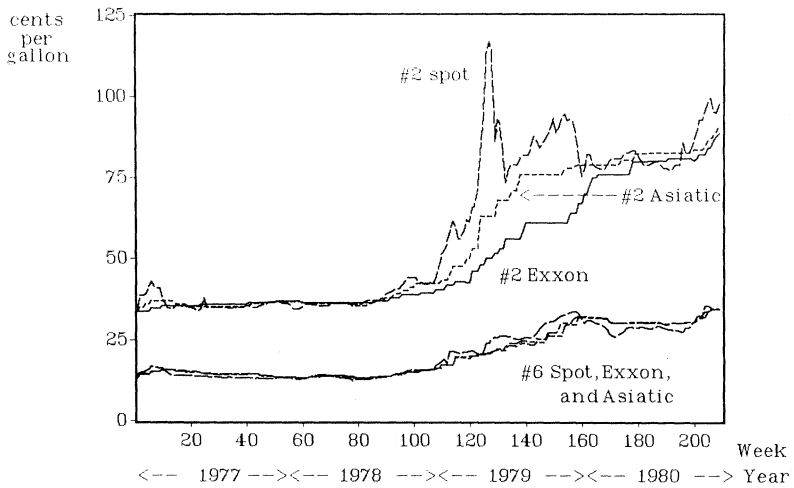


Figure 1: #2 and #6 Fuel Oil Prices, 1977-1980, Asiatic, Exxon, and Spot

When an international crisis rocks the world oil market, as in 1973 and 1979, supply shrinks and prices increase. Supply problems are exacerbated if panic buying ensues. To the extent that consumers attempt to hoard oil products in such situations, product demand increases and supply shortages get worse. We propose that panic buying is more likely to occur in consumer than producer product markets. Number 6 fuel oil is purchased by electric utility fuel purchasers who are professional buyers. Number 2 fuel is also purchased by professional buyers at wholesale but they are purchasing to satisfy consumer demand for the product. To the extent that consumers alter their purchase behavior in the face of the crisis, for example, by filling their home heating oil or automobile gas (or diesel) tanks more often, demand is increased. (By contrast, electricity consumers cannot stockpile electricity.) This stockpiling exacerbates the tight market situation and hence increases the price of the marginal source of supply, the spot price.

Industrial users of #6 residual fuel typically have more short-run alternatives than do consumers of #2 fuel. Most electric

utilities can produce electricity with a number of fuels, including coal, nuclear, residual fuel oil, and natural gas. Therefore, some degree of switching between fuels is possible for most electric utilities. The same is not true of most residential consumers of home heating oil. They cannot switch their home heating operation to natural gas without a great deal of expense. The same difficulty applies to most diesel fuel consumers. Therefore, because of differences in panic buying behavior and the availability of alternative fuels, supply shortages affect #2 spot prices more than #6 spot prices.

Exactly as predicted, there is essentially no difference between Asiatic's and Exxon's #6 fuel oil prices before, during, or after the energy crisis. Their #6 prices grew at approximately the same rate, and both responded to the rise in #6 spot prices. In contrast, Asiatic's price for #2 fuel oil rose much more quickly than did Exxon's during the energy crisis in early 1979. That is, the data presented in Figure 1 are fully consistent with Exxon voluntarily exhibiting price restraints in the highly visible product market to ward off government regulation. Furthermore, #2 fuel oil prices were virtually the same for Exxon, Asiatic, and spot before (1977 and 1978) and after (by mid-1980) the crisis. We therefore see that the differential pricing pattern occurs during a crisis period, and does not occur during times of market stability.

MEDIA IMPACT

Figure 2 presents weekly observations for ENEWS, the percentage of network nightly news time devoted to oil (energy) news. The ENEWS time series has jagged spikes. The 1979 energy crisis received significant sustained coverage from May through August, which corresponds to weeks 120 through 140.

The regulatory threat hypotheses imply that high levels of domestic energy news coverage threaten oil companies in a systematic fashion. Oil companies alter their product prices differently depending on product type and company type. Because #2 fuel oil is unregulated but highly visible, domestic

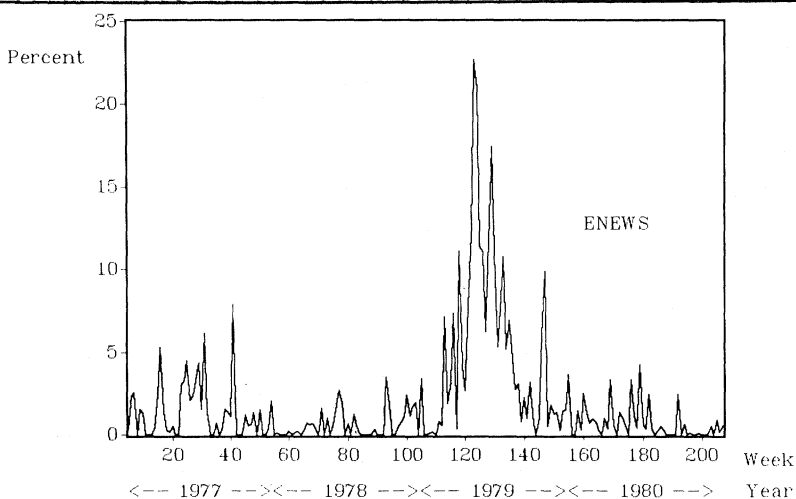


Figure 2: Domestic Energy News Percentage of Weekly News Time

majors should hold down price increases in this product during times when political attention focuses on the industry. However, #6 fuel oil prices should not show this pattern because this fuel is not immediately visible to the public. In short, the regulatory threat hypothesis suggests that domestic news stories influence in a predictable manner #2 fuel oil prices charged by domestic companies.

The petroleum market of the late 1970s experienced periods of both relative stability and dramatic upheaval. As shown in Figure 2, oil markets were in and out of the news. Further, the government faced both stability and crisis during this time. In terms of our model, this market and time period provide the variation necessary to test the regulatory threat hypotheses.

ECONOMETRIC ANALYSIS OF THE REGULATORY THREAT HYPOTHESES

The first regulatory threat hypothesis is that high- and low-visibility firms react differently to the threat of regulation. To test

this hypothesis it suffices to examine price setting on a relative basis. Therefore, we examine how the ratio of product prices charged by two firms changes over time. We estimate changes in the *ratio* of company-specific oil prices using an error correction model of price adjustment. We discuss in detail the rationale for our econometric analysis since this involves technical issues with which many readers of this article may not be familiar.

A Model of Relative Pricing

Let us first consider the determinants of #2 fuel oil prices charged by oil companies. Glazer and McMillan (1988) argue that a monopolist adjusts its price to reflect the threat of regulation. A higher price increases short-run profits but also increases the probability of regulation. Regulation would reduce future profits, so the monopolist chooses a price that balances gains of short-run profits against the expected long-run losses if regulated.⁵ In a multifirm industry the probability of regulation depends on the actions of all firms in the industry. Hence one firm's price depends on the prices charged by other firms. However, it is possible to simplify the analysis greatly by examining how firms set prices relative to each other. By examining the price ratio of two firms rather than the price of each firm individually, we reduce the number of descriptive variables to those that vary from period to period.

To explain this argument more fully, consider the prices of two companies, Exxon and Asiatic. In the empirical tests that follow, let P_{it} be the logarithm of company i 's price during week t . Then $dP_{it} = P_{it} - P_{i, t-1}$ is the percentage change in this price during week t . We define the percentage change in the spot price, dP_{st} , similarly. Let the logarithm of the ratio of Asiatic's price to Exxon's price be

$$AE_t = P_{at} - P_{et}. \quad (1)$$

To analyze how regulatory threats affect prices charged by firms, we can examine how the price ratio AE_t varies over time. We do

not need to know how each firm sets its price in an absolute sense, but rather how firms price relative to each other.

Under stable market conditions, there is some equilibrium value of AE, say AE^* . This price ratio is characterized by a stable function of a few explanatory variables, including possible quality differences in the product and differences in the value of having an Exxon versus an Asiatic supply contract.

The actual price ratio AE is not always AE^* . However, if the equilibrium is stable, the pricing process should be self-correcting. The price ratio rises (falls) in period t if the price ratio was below (above) its equilibrium level in the previous period. We therefore use the error correction mechanism

$$dAE_t = a_1 (AE_{t-1} - AE^*), \quad (2)$$

where $dAE_t = AE_t - AE_{t-1}$ and $a_1 < 0$, as the foundation for our empirical work.⁶

The price ratio diverges from AE^* due to short-term disequilibrium effects, including changing price elasticities,⁷ production costs, and political attention. We do not need to determine own-price or cross-price elasticities of demand because we are examining relative pricing across firms. It is unlikely that firm-specific own-price and cross-price elasticities change on a week-to-week basis.

By contrast, factor costs do vary from week to week. A change in the factor cost common to two firms affects the ratio of the firms' prices according to their relative elasticities of demand. The firm with the lower short-run elasticity of demand is able to increase its price more. In this context, the wholesale spot price for a refined petroleum product measures each firm's marginal cost of production for that product. A firm that wants to sell petroleum products with its brand name can either produce the product or buy the unbranded product in the spot market and resell it under the firm's brand name. Competition among producers assures that the marginal production cost and the spot price are the same. Therefore, the spot price represents the marginal cost to each firm. Because short-run elasticities are

constant and the spot market equates marginal costs across firms, changes in the spot price also measure relative short-run elasticities of demand.

Regulatory threats may affect the price ratio of two firms that differ in their degree of public visibility; the more visible firm should not increase its product price as much as the less visible firm when a regulatory threat arises. For reasons discussed earlier, we expect Exxon to be relatively more visible than Asiatic. Since we measure the degree of regulatory threat by the level of media coverage, an increase in ENEWS should cause the price ratio AE to increase.

In summary, the change in the company-specific price ratio depends on its level in the previous period, the change in spot prices, and the level of oil industry news. The adjustment process to be estimated is

$$dAE_t = a_1 (AE_{t-1} - AE^*) + a_2 dP_{st} + a_3 ENEWS_t + e_t. \quad (3)$$

We expect a_1 to be negative, a_3 to be positive, and a_2 to depend on the relative price elasticities of Asiatic and Exxon. Since we do not know AE^* , we estimate $a_0 = -a_1 AE^*$ instead.

Before presenting the estimates, two comments are in order about the nature of this price-setting process. First, oil companies respond gradually to changes in spot prices with corresponding changes in their contract prices. Transactions costs from frequent price changes and bureaucratic inertia combine to slow a firm's response to exogenous events, so contract prices adjust more smoothly than spot prices. An error correction mechanism such as equation 3 could be developed to model this process. The dependent variable would be the change in the Exxon-to-spot price ratio. Our concern is not with this process but rather with how Exxon and Asiatic price relative to each other.

Second, the assumed price-setting process implies that firms respond quickly to news coverage. The model could also include additional lagged effects (and we look for these effects in the next section). Immediate responses are sensible and plausible, however. Oil companies routinely evaluate and revise contract prices each

week. If a firm evaluates its prices weekly, it very reasonably might include current media coverage in the decision process. This is especially true during crisis periods, when senior management's attention is on short-run tactics (such as pricing) and away from long-run strategy (such as exploration).

Test of Hypotheses

Our two regulatory threat hypotheses are that (1) domestic majors moderate price increases relative to foreign majors when pressured by intensive media coverage of the oil industry, and (2) this price moderating behavior occurs in visible product markets but not in invisible product markets. To test these hypotheses, we estimated equation 3 for both #2 and #6 fuels. Table 2 presents the results in three parts: the first presents full sample results for the #2 fuel oil market, the second presents crisis and noncrisis subsample results, the third presents #6 fuel results.

The evidence is consistent with both regulatory threat hypotheses. In line with hypothesis 1, domestic energy news coverage lowered the price charged by the domestic majors relative to the foreign major. For each of the five companies the coefficient of ENEWS is statistically significant and correctly signed for #2 fuel oil (equations 1-5). In each equation, this is the most significant variable. However, this pattern does not extend to the less politically visible #6 fuel oil where ENEWS is insignificant (equation 8).⁸ Further, spot price changes increased the ratio of Asiatic's price relative to each domestic major (see the dP_{st} column in Table 2). This implies that Asiatic passed on cost increases more quickly than did the domestic majors.

Other general patterns emerge from the data in Table 2. First, no constant is significantly different from zero, which indicates that, once other factors are controlled, the foreign major charges the same price as the domestic major. Second, the speed of price adjustment is related to firm size. The five domestic majors are ordered by decreasing size of sales within the first part of Table 2. The coefficient of the adjustment variable (AX_{t-1}) increases (in absolute value) from equation 1 through equation 5. Therefore,

TABLE 2
Determinants of Fuel Oil Price Ratios, 1977-1980

Eq. #	dAX _t	constant	AX _{t-1}	DP _{st}	ENEWS _t	Sample	R ²	DW
1.	Exxon #2	-.0007 (.45)	-.064 (4.0)	.101 (3.2)	.0021 (5.0)	1977-80	.186	2.28
2.	Mobil #2	-.0015 (.95)	-.091 (4.6)	.071 (2.1)	.0025 (5.4)	1977-80	.177	2.52
3.	Texaco #2	-.0018 (1.37)	-.096 (4.9)	.126 (4.4)	.0022 (5.9)	1977-80	.274	2.43
4.	Gulf #2	-.0022 (1.45)	-.113 (4.9)	.087 (2.6)	.0025 (5.6)	1977-80	.202	2.05
5.	Citgo #2	-.0004 (.25)	-.188 (6.0)	.064 (1.92)	.0028 (6.0)	1977-80	.223	2.48
6.	Exxon #2	.0167 (1.31)	-.141 (2.4)	.086 (1.39)	.0022 (2.8)	1979	.231	2.15
7.	Exxon #2	.0014 (1.23)	-.132 (5.7)	.024 (.63)	-.0001 (.19)	1977, 78,80	.179	2.27
8.	Exxon #6	.0015 (1.13)	-.432 (7.5)	.088 (1.96)	.0005 (1.36)	1977-80	.215	2.17

NOTE: Dependent variable is the percentage change in the ratio of the price of Asiatic (P_a) to the indicated company based on equation 3 in the text. $AX_t = P_{at} - P_{xt}$ where P_{xt} is the logarithm of company X's price; and dP_{st} is the percentage change in spot price. In the first seven equations, all prices are for #2 fuel oil; in the final equation, all prices are for #6 fuel oil. See text for definitions of other variables; t-statistics in parentheses. Sample period: Weekly data, February 1977 through December 1980.

the speed of price adjustment is inversely related to firm size.⁹ Third, the speed of adjustment is markedly different between #2 and #6 fuel. Between 6.4% and 18.8% of the price difference is eliminated in one week for #2 fuel as compared with 43.2% for #6 fuel (see the AX_{t-1} column of Table 2). Indeed, Exxon adjusts its price to Asiatic more than 6 times faster in #6 fuel than in #2 fuel.

Searches for the best-fit specification were also performed on the Asiatic-to-Exxon price ratio for the 1977-1980 sample period. We searched for all lags of dAE and dP_s that explain current dAE ; then we searched for significant lagged values of $ENEWS$. The best-fit estimate is

$$\begin{aligned}
 dAE_t = & - .0017 - .054 * AE_{t-1} - .187 * dAE_{t-1} - .224 * dAE_{t-2} \\
 & (1.15) \quad (3.6) \quad (3.0) \quad (3.6) \\
 & - .143 * dAE_{t-4} + .120 * dP_{st} + .099 * dP_{s,t-4} + .0020 * ENEWS_t \quad (4) \\
 & (2.3) \quad (4.0) \quad (3.3) \quad (4.9)
 \end{aligned}$$

$$\begin{aligned}
 \bar{R}^2 & = .289, DW = 2.03 \\
 & (t\text{-statistics in parentheses})
 \end{aligned}$$

Significant lags for dAE were 1, 2, and 4, and for dP_s were 0 and 4. The influence of domestic oil news remains strong and robust; ENEWS was still significant and approximately the same size as in the simple specification. The search process identified no significant lagged values of energy news.

Equations 6 and 7 in Table 2 provide evidence on behavior in crisis and noncrisis periods. Equation 3 was estimated for the Asiatic-to-Exxon price ratio on two subsamples: the crisis period (1979) and noncrisis period (1977, 1978, and 1980). If 1979 is excluded, neither ENEWS nor spot price changes are significant predictors of relative pricing behavior (see equation 7). An F-test rejects the hypothesis of structural stability in the two periods.

CONCLUSIONS

The evidence presented here is fully consistent with the regulatory threat hypotheses. Prices of refined petroleum products rose dramatically in 1979. Television reported the price increases in ways that sometimes were unfavorable to the oil industry. Oil companies felt threatened, highly visible firms (domestic majors) more so than less visible firms (the foreign major). Domestic majors consequently increased prices of #2 fuel oil, a politically sensitive commodity, more slowly than the foreign major. In contrast, domestic majors increased prices of #6 fuel oil, a less

politically sensitive commodity, at the same rate as the foreign major.

We cannot claim that our findings are definitive. There is the problem of simultaneity of effect: Just as media coverage may affect oil prices, so, too, may oil prices affect media coverage. However, a "journalism hypothesis" would imply that media coverage should depend on the change in average oil prices. In contrast, the regulatory threat hypothesis implies that company-specific oil prices, relative to each other and the industry average, depend on media coverage.¹⁰

The evidence is at least superficially consistent with an alternative hypothesis that oil firms feared a consumer backlash rather than government regulation. Thus the domestic majors may have held down #2 fuel oil prices to avoid long-term damage to their reputation with consumers. Certainly there was considerable advertising by oil firms to justify their higher prices and to publicize their exploration activities. We agree that consumer backlash was possible. But we feel that the backlash was more likely to manifest in the political process than in an unorganized consumer boycott. It is far easier for congressmen and women (as political entrepreneurs) to respond to consumer demands for regulation than for consumers (as individuals) to deny themselves an important commodity with few substitutes. The political system provided consumers with the necessary leverage to make their opinions count. That is, consumer anger with the oil industry was necessary for the threat of government regulation to be credible. But consumer anger would be impotent unless manifested through the political process. Without the credible threat of regulation, the "good-guy" advertisements would still have been there, but petroleum prices would have been higher too.

Neither can the results be attributed to Asiatic having access to a different product mix from other companies. It is true that a company, such as Asiatic, that markets mostly imports would have higher prices (or lower profits) when the price of imports was significantly higher than the price of domestic products. But this argument does not apply in this case for two reasons. First,

imports of refined products were not a significant part of the domestic market (except for #6 fuel where we did not find differential pricing behavior). Second, the Entitlements Program made the cost of imported crude equal to the cost of domestic crude. Therefore, the domestic/import mix of crude oil did not affect production costs of the firm.

Finally, we emphasize that our distinction between foreign and domestic firms was due to their differing visibility and its relation to threatened regulation. The distinction was not due to inherent differences in decision-making structures. In another context, such as the automobile industry, foreign firms may be more visible and threatened than domestic firms. Japanese automobile manufacturers may have implemented voluntary import quotas in the 1980s to prevent explicit regulation. Of course, there could be differences between American and European or Japanese firms in their decision-making processes, but that issue is beyond the scope of this article.

Our work has implications for research in several different areas.

With respect to the study of firm and organizational behavior, on the one hand, it supports a “smoothing” process of “moderated” and “equilibrating” bureaucratic response to external shocks, and, on the other hand, it provides evidence that large domestic firms are capable of responding to the threat of government regulation.

With respect to policy, it indicates that a threat of government intervention may inhibit price increases from being passed on to the consumer in much the same way as direct government price regulation might have done. However, once the crisis had passed and media coverage ended, domestic oil companies' prices rose to equal those of foreign oil companies.

With respect to the study of media, we have shown how the media may exert influence not just on government officials, but, indirectly, on corporate actors as well.

Our analysis also complements Gormley's (1987: 160) distinction between *coercive* and *catalytic* controls. Gormley argues that attempts at governmental control through coercive means are

often counterproductive; catalytic controls in contrast rely on the "power to persuade, not the power to intimidate." Our analysis suggests how neither coercive power nor the power to persuade need be overt, but may simply be anticipated in the form of threats. This recognition of "anticipated" coercion is what leads to what we have called the regulatory threat hypothesis.

NOTES

1. See Kalt (1981, chap. 1) for an overview of these regulations. Kalt states that this differential impact began with the institution of less stringent Phase II regulations in November of 1971:

Significant for the precedents it set, Phase II did not provide gasoline, heating oil, residual fuel, and crude oil prices the same flexibility given to most of the rest of the economy. The prices of these goods were effectively frozen at Phase I levels [p. 10].

Kalt further argues that the underlying theme of postembargo legislation has been to use price controls to transfer wealth away from crude oil producers. He argues that the bulk of oil industry legislation is best viewed as redistributive in nature.

2. Spot prices are prices for immediate delivery from marginal sources of supply. Contract prices are the prices charged to buyers who are under long-term contracts to purchase the product. Long-term contracts in these markets specify supply arrangements between buyers and sellers. They typically stipulate that the price for any given delivery of fuel is the price posted by the company for contract sales on the delivery date for that region. In other words, these long-term contracts provide supply guarantees, not price guarantees. For further discussion of this topic, see Erfle et al. (1981: 45).

3. We chose New York for three reasons: It is the most important domestic oil market; *OBG* provides information on the widest variety of firms and product types there; and it is the national news media center. All prices are for delivery in New York, so transportation costs are not relevant.

4. Asiatic is an affiliate of Royal Dutch Shell; in 1979 Asiatic changed its name to Scallop. We will refer to this firm as Asiatic, since it is the name originally used by the *Oil Buyers' Guide*.

5. More precisely, the monopolist chooses a price such that the marginal increase in short-run profits equals the marginal expected loss in future profits from the higher probability of regulation.

6. The error correction mechanism has proven a useful method to deal with serial correlation in economic time series. See Salmon (1982) and Hendry (1986) for an overview of its properties.

7. The own-price elasticity is the percentage change in a firm's demand given a percentage change in the price that it charges. The cross-price elasticity is percentage

change in a firm's demand given a percentage change in another firm's product price. These elasticities affect the optimal price, according to economic theory.

8. Data limitations restrict our #6 fuel oil analysis to the Asiatic-Exxon pair. We do not view this as a severe limitation due to the stark difference that is apparent between the Asiatic-to-Exxon #2 and #6 equations (compare equations 1 and 8 in Table 2).

9. This is consistent with Erfle et al.'s (1981) finding that #2 fuel oil prices in 1979 were inversely related to firm size. It is also consistent with Olson's (1965) suggestion that in small group settings the largest members will bear the largest burden of collective action.

10. We also estimated equation 3 with simultaneous equation techniques to provide an alternative approach to the simultaneity problem. Such techniques are relatively standard in economics, but not yet frequently used in political science, sociology, or communications. In that model (analysis omitted) we find that, while spot and contract oil price changes increase energy news coverage, the causal arrows lead from media coverage to the *ratio* of foreign to domestic oil prices for #2 oil and not vice versa. Erfle and McMillan (1989) find that energy news coverage depends on #2 spot and Asiatic's #2 contract prices, but not on Exxon's #2 contract or any #6 prices.

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