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THE COSTS OF CONFLICT RESOLUTION AND FINANCIAL DISTRESS: EVIDENCE FROM THE TEXACO-PENNZOIL LITIGATION

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Since 1984, Texaco and Pennzoil have been engaged in a legal battle over Texaco's usurpation of Pennzoil in the takeover of the Getty Oil Company. The stakes are huge: the jury award that has been upheld through several appeals calls for Texaco to pay Pennzoil more than $10 billion. The Texaco-Pennzoil case presents a unique natural experiment for studying debt burdens and bargaining costs. Essentially continuous market assessments of the prospects of both parties in a high stakes bargaining game are rarely as observable as they are in the case of publicly traded companies like Texaco and Pennzoil. Further, unlike in the Texaco case, financial distress is usually brought on by events impinging directly on a firm's operations, thus making the costs of distress difficult to measure.

This paper uses data on the abnormal returns earned by the shareholders of Texaco and Pennzoil to examine whether resources were "lost" in the course of the litigation. We find that the leakage involved in the forced transfer is enormous: each dollar of value lost by Texaco's shareholders has been matched by only about 30 cents gain to the owners of Pennzoil. Our estimates suggest that the Texaco-Pennzoil conflict has reduced the combined equity value of the two companies by about $2 billion. Further losses have been suffered by Texaco's bondholders, though these may be offset by the tax collections that would result if Texaco made a large payment to Pennzoil.

After documenting the large joint losses that Texaco and Pennzoil have suffered, we seek to identify their causes. Clearly one explanation is the fees that both companies will pay to the many lawyers, investment bankers, and advisors that have been retained. Even making generous allowance for these costs, however, we are unable to account for a large fraction of the loss in

combined value. It appears that there have been additional costs to Texaco's shareholders from disruptions in Texaco's operations, difficulties in obtaining credit, incentive problems created by fears that Texaco would cease operations, and distraction of top management.

We conclude the paper by discussing a number of implications of the results for economic analysis. First, the huge joint losses suffered by the continued disagreement illustrate that efficient bargains will not always be struck even in situations where neither side possesses much relevant private information. Second, the losses evidence the adverse effects that financial distress can have on productivity. This may have implications for bankruptcy cost explanations of firms' debt-equity choices, macroeconomic theories that stress credit disruptions as an important element in busines cycle fluctuations, and arguments that debt relief for major debtor nations would make all parties to the LDC debt crisis better off.

The paper is organized as follows. Section I briefly recounts the history of the Texaco-Pennzoil dispute and describes the event study methodology employed in our analysis. Section II demonstrates the large losses in combined value during the litigation. Section III considers the effects of the dispute on Texaco's bondholders and the government's tax claim. Section IV examines potential causes of the loss in joint value. Section V concludes by discussing some implications of our findings.

I. The Texaco-Pennzoil Conflict

The Texaco-Pennzoil dispute arose from the bids both companies made to

acquire Getty Oil.[1] On January 2, 1984, Pennzoil reached what it felt was a binding agreement with the directors of Getty Oil to acquire 3/7 of Getty. Within a week of the Pennzoil-Getty proposed sale, however, Texaco purchased all of the Getty stock at a higher price per share. As a condition of the sale, Texaco indemnified Getty Oil and its largest shareholders against any possible lawsuit from Pennzoil. Thus, when Pennzoil sued for breach of contract and inducement to breach of contract, Texaco became liable for any damages caused by Getty.

The case was ultimately brought before Texas State Court and was tried in mid-1985. A decision was reached on November 19, 1985 [event 1] in favor of Pennzoil, with the judgment for $7.53 billion in actual damages, $3.0 billion in punitive damages, and $1.5 billion in accrued interest. The jury's decision was widely decried in the press. Commentators uniformly attacked the size of the judgment, noting that it was based on the replacement cost of the oil that Pennzoil would have obtained by purchasing Getty, not on the damages that Pennzoil suffered by failing to acquire Getty at the price that had been agreed on. There was a widespread expectation that the judge would either overturn the judgment or reduce the damages substantially. Notwithstanding these predictions, on December 10, 1985 [event 2], the Texas judge denied Texaco's request to overrule the jury, and affirmed the jury's award.

Under Texas law, Texaco had to post a bond in the full amount of the judgment to appeal the case. Texaco objected to the requirement and appealed the issue to a Federal Court in New York. On December 18, 1985 [event 3],

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[1] The description of the dispute here is necessarily brief. Entertaining narrative histories of the Getty case may be found in Petzinger (1987) and Coll (1987). We have also drawn heavily on the ongoing reporting of the Wall Street Journal and New York Times.

Texaco received a Temporary Restraining Order prohibiting Pennzoil from attaching liens to Texaco's assets until the bond matter could be decided. A hearing on the requirement was held in early January 1986, and on January 10, 1986 [event 4], the Federal judge ruled that Texaco only had to post a $1 billion bond to appeal the case. A Federal Court of Appeals upheld this ruling on February 20, 1986 [event 5].

After the Appeals Court ruling, both sides appealed the decisions favorable to the other side. Texaco obtained a hearing on the original case in the Texas Court of Appeals, and on February 12, 1987 [event 6], that court upheld all but $2 billion of the judgment for Pennzoil. Pennzoil, meanwhile, appealed the bond reduction to the United States Supreme Court. On April 6, 1987 [event 7], the Supreme Court vacated the Federal court ruling. Faced with liens being placed on its assets, on April 12, 1987 [event 8], Texaco filed for bankruptcy.

Though Texaco was in bankruptcy, periodic rumors about a settlement did surface. On May 10, 1987 [event 9], when Texaco announced new loans of $2 billion, it was widely speculated that the two companies had reached a settlement. Texaco, however, insisted that the loans were solely to finance ongoing negotiations. Ultimately, nothing came of the rumors.

II. The Effects of the Conflict on Shareholder Wealth

Methodology

In order to measure the impact of the conflict on the two companies, we examine the abnormal changes in equity values induced by news bearing on the outcome of the litigation. We use the market model to measure abnormal

returns:[2]

$$R_{it} = \alpha_i + \beta_i * R_{mt} + \varepsilon_{it} \quad (1)$$

where R_{it} and R_{mt} are the return on stock i and the market at time t. The abnormal return on stock i at time t is measured as the residual, ε_{it}. The abnormal return is multiplied by the value of the outstanding equity of each company to estimate the changes in wealth caused by news about the litigation.[3]

Market Response

As a first check on whether the dispute had substantial effects on the valuation of the two stocks, we examined the correlations between the stocks' abnormal returns. If litigation news was frequent and had large effects, the two returns should show a lower correlation than would otherwise be expected. This appears to be the case. For 8 oil companies not involved in the litigation,[4] the average pairwise correlation of abnormal returns since January 1985 is 0.384, with a standard deviation of 0.092. None of these 28 correlations is less than 0.245. For Texaco and Pennzoil, the correlation is -0.019.[5] Thus,

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[2] For a more complete discussion of the event study methodology employed here, see Fama, Fisher, Jensen and Roll (1969) and Schwert (1981).

[3] We use return data from January 1985 to May 1987. The data were adjusted for dividend payments and stock splits. The market return was proxied as the return on the Standard and Poors Composite Stock Index.

[4] These companies were Ashland Oil, Arco, Chevron, Exxon, Mobil, Occidental, Shell, and Unocal.

[5] One possible explanation for the negative correlation is that periods of non-trading result in non-contemporaneous reactions to the same news. If this were true, the one period lead or lag returns should be positively correlated. Leading and lagging Texaco's return by one period, however, yields correlations

the litigation news appears to account for a substantial fraction of the return variance of both companies.[6]

The most natural measure of the total costs involved in the dispute is the change in value of the two companies induced by important events. Table 1 shows the effects of each of the events descibed in Section I on the market value of both companies. We calculate the changes for both a single and multi-day period immediately after the litigation announcement.[7]

Table 1 provides strong evidence that the market associated large costs with forced transfers from Texaco to Pennzoil. While Texaco's and Pennzoil's share prices almost always moved in opposite directions, Texaco's change in value usually dwarfed that of Pennzoil. In the four court decisions against Texaco [events 1, 2, 6 and 7], Texaco's one day loss was on average 68 percent greater than Pennzoil's gain. In no case did Pennzoil gain even half as much as Texaco lost.

While the results are less significant for the decisions favoring Texaco [events 3, 4 and 5], they nonetheless support the view that the debt burden is large. Exclusive of the Federal Court bond reduction,[8] Texaco seems to benefit

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of -0.116 and 0.035. We thus reject this explanation of the correlation.

[6] This test actually understates the significance of the dispute because some events, such as the bankruptcy filing by Texaco and the settlement talks the two companies periodically held caused the prices of the two stocks to move together.

[7] Appendix Table A-1 repeats the analysis using the return on the standard and Poors Composite Oil Index as a proxy for the market return. The results are similar to those in Table 1.

[8] The New York Times commented that the returns on this day were partly a reaction to the court ruling and partly a reaction to a fall in oil prices. As Table A-1 shows, Texaco lost much less value in relation to the Oil Index in

Table 1

Litigation Announcements and Changes in Value

No.	Event	Day After Announcement: Change in Value ($ million) Texaco	Day After Announcement: Change in Value ($ million) Pennzoil	Day After Announcement: Loss Ratio**	Five Days After Announcement: Change in Value ($ million) Texaco	Five Days After Announcement: Change in Value ($ million) Pennzoil	Five Days After Announcement: Loss Ratio**
1	Nov. 19, 1985: Texas jury rules for Pennzoil	-$646.0 (154.8)	$300.4 (46.3)	53.5%	-$1,114.9 (316.6)	$488.9 (118.8)	56.1%
2	Dec. 10, 1985: Texas state judge affirms jury award	-$573.5 (121.3)	$16.5 (62.1)	97.1%	-$782.4 (256.8)	-$148.5 (138.2)	---
3	Dec. 18, 1985: Texaco obtains Temporary Restraining Order	$443.4 (109.0)	-$127.4 (60.5)	71.3%	$693.8 (259.5)	$82.8 (132.0)	---
4	Jan. 10, 1986: Bond requirement reduced	-$122.0 (124.2)	-$90.8 (66.7)	---	-$396.2 (268.8)	-$94.3 (146.7)	---
5	Feb. 20, 1986: Federal Court upholds bond reduction	$15.1 (117.5)	$21.3 (53.2)	---	$177.7 (263.0)	-$19.5 (119.9)	89.0%
6	Feb. 12, 1987: Court of Appeals upholds judgment	-$802.6 (170.5)	$379.6 (69.1)	52.7%	-$1,054.0 (348.0)	$191.3 (168.3)	81.9%
7	Apr. 6, 1987: Supreme Court vacates bond rulings	-$994.4 (166.7)	$269.4 (80.0)	72.9%	-$1,278.8 (338.1)	$517.5 (188.8)	59.5%
	TOTAL	-$2,680.0 (369.7)	$769.0 (167.8)	71.3%	-$3,754.8 (781.3)	$1,018.2 (388.0)	72.9%
8	Apr. 12, 1987: Texaco files for bankruptcy	-$717.5 (141.2)	-$560.1 (90.5)	---	-$308.4 (302.6)	-$645.9 (175.2)	---
9	May 10, 1987: Settlement rumors	$633.8 (157.2)	$110.5 (82.1)	---	$335.4 (360.5)	-$44.5 (183.5)	---

Standard errors are in parentheses.

** Percentage of change in Texaco's value not accounted for by change in Pennzoil's value

greatly; the return to Pennzoil is less clear.

The combined loss to shareholders in the two companies is stiking. Using single day returns, Texaco's value fell a total of nearly $2.7 billion; Pennzoil's rose only $770 million. Over all the events, Pennzoil gained only 29 percent of what Texaco lost. This loss represents over 12 percent of the combined value of the two companies.

Table 1 also shows that the two stock prices moved together in reaction to the bankruptcy filing of Texaco and the subsequent settlement rumors; values fell when Texaco filed for bankruptcy and soared when the companies were thought to be near settlement.[9] Press reports and conversations with analysts suggest that Texaco's bankruptcy filing moved share values because it affected market perceptions of the likelihood of a settlement, not because it revealed previously private information about Texaco's financial condition. The implication is that dispute itself is costly, and that settlement confers a net gain to be distributed between the companies.

In order to measure the effects on share prices of aspects of the litigation not revealed by discrete events, Table 2 presents monthly abnormal returns over the one-and-a-half year period since the original jury decision.[10]

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this week.

[9] This reaction is also found on other days with settlement news. In a series of negotiations in late 1985 and early 1986, news that a settlement was more likely resulted in an average increase in total value of almost $140 million. The gains were split almost evenly between companies. News that the dispute would be more prolonged decreased both values by similar amounts.

[10] Each month's total is the sum within the month of the weekly excess return (computed relative to the Composite Oil Index) times the company's market value at the end of the previous week.

Table 2

Cumulative Monthly Excess Returns

Month	Excess Return* Texaco	Pennzoil	Loss Ratio**
November 1985	-$1,533.4	$644.1	58.0%
December 1985	-$107.8	-$14.0	---
January 1986	$29.1	$173.4	---
February 1986	$317.5	-$492.9	---
March 1986	-$183.2	$39.8	78.3%
April 1986	$534.0	-$459.1	14.0%
May 1986	$169.9	$48.0	---
June 1986	-$226.7	$61.6	72.8%
July 1986	-$28.1	$12.2	56.6%
August 1986	$69.9	-$227.6	---
Sepember 1986	$229.7	$237.3	---
October 1986	$455.5	$491.9	---
November 1986	-$649.8	-$134.5	---
December 1986	$468.1	-$281.6	39.8%
January 1987	-$201.1	-$75.0	---
February 1987	-$618.9	$342.1	44.7%
March 1987	-$121.4	-$108.2	---
April 1987	-$840.6	-$208.0	---
TOTAL	-$2,237.3	$49.5	97.8%

* Millions of Dollars

** Percentage of change in Texaco's value not accounted for by change in Pennzoil's value

While the total abnormal return to Pennzoil is not very large ($50 million), the loss to Texaco is enormous ($2.2 billion). Most of the losses are in months where important litigation events occurred: in November and December 1985 and February and April 1987, Texaco lost over $3.0 billion, while Pennzoil gained only $764 million. This information suggests that the market response to the discrete events discussed in Section I provides a reasonably accurate estimate of the total effects of the litigation on the two companies.

III. The Effects on Other Claimants

There are two principal claimants, in addition to Pennzoil, that stand to be affected by the litigation: the holders of Texaco debt; and the Federal government, through its tax claim on the two companies.[11] We examine the effects of the litigation on these claimants in turn.

Texaco's Bondholders

For holders of Texaco's debt, litigation and bankruptcy pose two problems. First, under the terms of the reorganization, their claims may be reduced or eliminated completely. Second, in the event of liquidation, bondholders could suffer (or gain) from redemption of the outstanding debt at par value, not market value.

Bondholders were, throughout the litigation period, by far the largest

[11] The effect on Pennzoil's bondholders is not included in the analysis since the value of these claims was never in doubt. In fact, the price of Pennzoil debt moved very little over the period and showed no exceptional movements in response to any of the litigation announcements.

claimants.[12] We therefore focus on the induced change in value of Texaco's bonds. To determine these changes, we used the following procedure. For each issue listed on the event day,[13] we computed the abnormal return relative to a long term oil company bond.[14] Using book value weights, we then computed an average debt return. In addition, we computed the average price-to-face value ratio on the day before the event. We then found the change in debt value as the book value of long term debt as of the end of the previous quarter times the average price-to-face value ratio (to find the market value of debt) times the average abnormal return on the debt.

Table 3 shows the changes in debt value on each of the important events. The return to bondholders mirrored that to stockholders. Adverse announcements in the litigation proceedings [events 1, 2, 6 and 7] reduced the value of the debt; favorable announcements increased debt value. The aggregate effect of the seven events is a fall of $660 million in the value of Texaco's debt. This figure obtains despite the fact that debt selling below face value fell by much less than higher yield debt. When Texaco filed for bankruptcy, for example, its average debt value fell by almost 12 percent, while some of its low yield debt fell by only 2 percent.

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[12] At the time of bankruptcy, Texaco had $8.4 billion in bonds outstanding, of which $6.8 billion was long term.

[13] The specific issues we used, by maturity date and coupon rate, were: 1997 at 5 3/4%; 2001 at 7 3/4%; 2005 at 8 7/8%; 2006 at 8 1/2%; 1994 at 13 5/8%; 2000 at 11 1/4%; 1991 at 13s%; 1999 at 13 1/4%; 2000 at 10 3/4%; 1989 at 11s%; and 1988 at 9s%. The first four issues were by Texaco Inc. The remaining bonds were offered through subsidiaries but were guaranteed by the parent company.

[14] We used a 6 percent coupon rate, 1997 expiration Exxon bond.

Table 3

Change in Value of Texaco Debt

Number	Date	Average Excess Return	Total Change in Market Value*
1	November 19, 1985	-0.7%	-$65.2
2	December 10, 1986	-4.6%	-$428.7
3	December 18, 1985	1.0%	$89.7
4	January 10, 1986	1.8%	$115.8
5	February 20, 1986	-0.1%	-$6.4
6	February 12, 1987	-2.4%	-$164.9
7	April 6, 1987	-3.0%	-$200.2
	TOTAL	-12.2%	-$659.9

* Millions of Dollars

The Government's Tax Claim

Under Federal law, damage payments are both taxable on receipt and deductible on payment. Thus, one might expect that the resolution of the case would not affect government revenue collections. Three considerations suggest that a settlement between Texaco and Pennzoil could affect the government's tax collections, however.

First, it seems unlikely that Texaco could utilize all of the tax losses generated by a payment to Pennzoil. In the past 5 years, Texaco has received tax refunds 4 times; earnings and previous taxes are thus clearly inadequate to immediately offset the losses. Further, as of the end of 1986, Texaco already had $663 million in foreign tax credit carryforwards and an unspecified amount in domestic loss carryforwards.

Second, the distinction in the tax law between ordinary income and capital gains could have lowered the tax liability of Pennzoil for any receipt in 1986 or 1987. By purchasing assets from Texaco at a below-market price, Pennzoil could have avoided all but capital gains taxes on the step-up in basis of the assets. Since a settlement of this type was considered the most likely source of payment, the implied tax liability may have been the capital gains rate.[15]

Third, Federal law stipulates that in cases of "involuntary conversion" of property into similar property or cash used to purchase similar property within

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[15] There was also some discussion about ways of structuring transfers to make them entirely tax free. Generally, these involved taking assets from both companies and putting them in a third company, which was jointly owned by the two groups of shareholders. Under certain circumstances, this company might not pay any taxes. Such transfers, however, were noted to be difficult to structure, and there was no guarantee that they would, in fact, be tax free. Indeed, much more journalistic attention was paid to schemes to "transform" receipts from ordinary income to capital gains. We thus focus on this more narrow tax consequence of any payment.

two years, the recipient of the resulting capital gain is not liable for tax on the gain.[16] It is possible that Texaco's payments to Pennzoil would qualify as an involuntary conversion of Getty assets that Texaco had stolen from Pennzoil, and so would be tax free. Pennzoil has stated that it intends to file such a claim. There is, however, substantial skepticism among knowledgable observers about whether an involuntary conversion claim would be accepted by the IRS.

The ultimate tax consequences of any payment are thus highly uncertain, both for the liability upon receipt and for the deduction upon payment. A consideration of debt and taxes together, however, makes it clear that the claims of these creditors cannot explain the large loss in value. Even if the market anticipated that Texaco could not use any of the deductions resulting from a payment to Pennzoil, that Pennzoil would have to pay a 28 percent capital gains tax on receipt, and that the payment from Texaco to Pennzoil will equal Texaco's loss in value, not Pennzoil's gain in value, the taxes paid to the government on account of the litigation would come to only $760 million. This is about equal to the loss to Texaco's bondholders. We thus conclude that the combined loss of $1.9 billion in the equity value of the two companies may even be an underestimate of the dissipation in value caused by the Texaco-Pennzoil conflict.

IV. Where Did the Value Go?

One possible explanation for the large losses is the direct expenses that

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[16] An involuntary conversion is defined as: "(1) destruction of property in whole or in part; or (2) theft; or (3) actual seizure; or (4) requisition or condemnation or threat or imminence of requisition or condemnation."

both companies will pay to bankruptcy lawyers, trustees, and other litigation participants. Given the importance of the judgment, lawyers on both sides are plentiful, and legal fees are bound to be rather large.

It is difficult to believe that total fees for the case will be as large as $1.9 billion, however. On August 27, 1987, Texaco announced that its legal fees since the original jury decision had been $55 million. Texaco must also pay an estimated $3.5 million each month for the bankruptcy expenses of the company and of the creditor committees. The present value of total payments over a five year period is thus about $250 million.

It is unclear how much Pennzoil will pay in total legal fees for the case. Pennzoil's lead attorney, Joe Jamail, handled most cases on a contingency fee basis. When asked about his usual fees, he was known to joke that the only math he knew was how to "divide by thirds" (Petzinger, p. 20). Jamail, however, insisted he had no set fee for the case, and claimed that he took the case to help his friends at Pennzoil.[17] Assuming, though, that both Texaco and Pennzoil have the same costs, these costs can still only explain 30 percent of the loss in value.

A second explanation for the reduction in combined value is the secondary costs of the debt burden imposed on Texaco. By creating uncertainty about Texaco's long term viability, making it difficult for Texaco to obtain credit,

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[17] Hugh Liedtke, chairman of Pennzoil, was quoted as remarking "[Jamail] will be paid. We just don't know how much yet." [Los Angeles Times, December 13, 1985, IV, 2:2] The Wall Street Journal seemed more definite about the payment. "Some well-placed Wall Street sources say they understood Mr. Jamail stands to collect 20% of the jury's award, which, if upheld, would result in a mind-boggling $2.4 billion for him," it reported. [November 21, 1985, I, 2:3] The New York Times was less convinced about Jamail's fees. Jamail would not receive "anything like that magnitude [1/3 of any payment] in this case," it reported. [November 21, 1985, IV, 4:2]

and distracting Texaco's management, the litigation may have reduced Texaco's value by more than the expected value of the transfers it would have to make to Pennzoil. Effects of this kind have been stressed in discussions of credit constraints (Greenwald and Stiglitz, 1987) and of the secondary burdens associated with LDC debt obligations (Sachs and Huizinga, 1987).

The most important evidence for the adverse effects of financial crisis is an affidavit Texaco submitted with its bankruptcy filing describing the effect of the week-old Supreme Court decision on its operations. The affidavit asserted that some suppliers had demanded cash payments prior to performance or insisted on secured forms of repayment. Others halted crude shipments temporarily or cancelled them entirely. A number of banks had also refused to enter into, or placed restrictions on Texaco's use of exchange rate futures contracts. The affidavit concluded that "The increasing deterioration of Texaco's credit and financial condition have made it more and more difficult, with each passing day, for Texaco to continue to finance and operate its business... As normal supply sources become inaccessible and other financing is unavailable, Texaco's operations will begin to grind to a halt. In fact, Texaco is already having to consider the prospect of shutting down one of its largest domestic refineries because of its growing inability to acquire crude and feedstock."

This sentiment has been echoed by journalistic accounts of Texaco's actions. The New York Times, for example, noted that: "Texaco has been under extreme financial pressure to resolve the case because of nervousness among its lenders, suppliers and business partners about its future." [December 21, 1985, I, 37:5] Some analysts even attributed the stock market reaction to these costs. "One analyst says he believes the market is assuming that Texaco will

have to pay roughly $5 billion in cash to Pennzoil. But the market has discounted Texaco's stock even further because, he says, the company already has been damaged by the litigation. 'They've been unable to refinance debt, they've missed opportunities in the oil patch, and the diversion of management has to cost something.'" [Wall Street Journal, April 8, 1987, I, 3:5]

Unfortunately, no direct evidence exists on whether these operational problems were really of major importance. Indeed, the day after the affidavit was filed, some of the suppliers mentioned specifically disputed Texaco's assertions. The principle evidence of their importance is the observation that any reasonable measure of conventional litigation costs is far below the loss in combined value of the two companies.

A third explanation for the large loss is that Pennzoil would misuse any payment it received from Texaco. Such explanations are consistent with the findings of Jensen (1986) that free cash flow may be invested at below the market return, thus lowering the value of the company. Such a theory has been suggested by some observers. Shortly after the bankruptcy filing, the Wall Street Journal, for example, reported that Texaco's stock price was capitalizing a $5 billion loss, while Pennzoil's was only capitalizing a $4.5 billion gain.[18] Part of this difference, it suggested, might be because of misuse of a cash settlement.

We find it difficult to believe that this explanation can account for much of the loss, however. Throughout the litigation, the most commonly discussed settlement was a transfer of oil and gas properties. There would thus be no cash for Pennzoil to misuse. Further, folk wisdom in the oil industry held that

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[18] These were computed by determining the fundamental value of the equity and comparing that with the current market value.

Texaco was much more likely to dissipate free cash flow on wasteful projects than was Pennzoil.

A final explanation for the loss in combined value is that the market inefficiently valued the claims of the two companies. Consistent with this view, there is evidence that news provided by the companies resulted in asymmetric returns to the two companies. On October 8, 1987, for example, Pennzoil rose by $170.2 million (standard error of $63.2 million) and Texaco fell by $42.0 million (standard error of $140.5 million) because "the company impressed industry analysts in New York with a presentation explaining its position in its protracted legal dispute with Texaco" [New York Times, October 9, 1987, IV, 3:1].

V. Conclusions and Implications

Our results suggest that the Texaco-Pennzoil conflict has been enormously costly. The bulk of what is at stake appears to have been dissipated by the costs of carrying on the dispute. Texaco and Pennzoil could eliminate the costs associated with the continuation of their dispute by merging or negotiating a settlement. Indeed, the evidence shows that almost any resolution of the dispute would raise the combined value of the two companies. It is natural to wonder why a bargain is not struck. Economic theories of bargaining under complete information such as Rubenstein's (1982) celebrated work usually imply that if both parties are fully informed, bargains should be struck immediately and bargaining costs should not be incurred. Such an outcome did not take place in the Texaco-Pennzoil conflict.

The most commonly advanced explanation for failure to come to immediate

agreement is that asymmetric information will cause the parties will hold out as a way of signalling their private information. This argument seems like a weak reed in the Texaco-Pennzoil case. The principle uncertainties revolved around likely legal judgments that both parties had equivalent capacities to predict. We have seen no indication that the parties had important but private information about their own financial condition. Journalistic accounts typically explain why no bargain has been struck by pointing to the mutual antipathy between the executives of the two companies. Two billion dollars, however, seems like a lot to pay to engage in pique. In the end, one senses that something other than asymmetric information lies behind the inability of Texaco and Pennzoil to settle the case, or alternatively that if the amount of asymmetric information in this case is enough to explain why almost $2 billion is sacrificed in bargaining costs, that asymmetric information must be present in almost every bargaining situation.[19]

The Texaco-Pennzoil experience casts severe doubt on the proposition that even in quite favorable circumstances two parties will work out mutually efficient bargains. Certainly, our estimates suggest that litigation can often be an extraordinarily inefficient process eating up much of what is fought over. We suspect that if market valuations of the participants in other large disputes, such as the asbestos claimants and companies could be found, they

[19] One possible resolution of the failure of bargaining is the agency problem associated with shareholder lawsuits. Since Texaco's managers are potentially personally liable for breach of fiduciary duty, they may not have an interest in agreeing to a damage assessment. If this were the case, however, it would seem possible for Texaco to obtain lawyers' attestations that the proposed settlement was in the best interests of the shareholders. Further, there would be an additional incentive to reach a settlement while in bankruptcy, since any bankruptcy agreement would have to be approved by a bankruptcy judge as well as by creditor and debtor committees. Bankruptcy was widely regarded as at least a temporary end to serious negotiations, however.

would show similar losses in joint value.[20]

The costs of Texaco's financial distress also shed light on several aspects of corporate financing and macroeconomic policy. American firms rely heavily on equity despite the substantial incentive to debt finance provided by the deductability of interest but not dividends. This is often attributed to bankruptcy costs, or more generally to the costs of financial distress (Gordon and Malkiel, 1981). Yet empirical evidence demonstrating that these costs are substantial has been lacking (Warner, 1977). The Texaco-Pennzoil case provides at least some evidence that being saddled with excessive debt burdens can impose large costs on a firm. Texaco's evident difficulty in undertaking new ventures also confirms theories emphasizing the importance of keeping debt low to maintain flexibility.

Greenwald and Stiglitz (1987) have argued that monetary contractions have substantial supply-side effects. By raising the debt burdens of firms, they interfere with firms' ability to obtain working capital and so make them less profitable. This is quite distinct from any adverse effects that contractionary monetary policies and high interest rates may have on the demand for investment goods. The idea that contractionary monetary policies have adverse productivity effects can explain why real wages often fall rather than rise during recessions, and why firms postpone production by liquidating inventories rather

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[20] We know of only one other case involving major transfers between publicly traded companies. On March 10, 1986, LAC Minerals, Ltd., a Canadian gold mining company, was ordered to turn over a gold mine valued at $1 - $2 billion to International Corona and Teck Corporation, two other Canadian gold mining companies. On the day after the court decision, relative to the Toronto Stock Exchange 300 Index, LAC fell by $501 million in market value, and International Corona and Teck rose by $224 million in market value. The loss ratio was thus 33 percent. We hope to investigate this case more fully in the future.

than building up stocks during recessions. The Texaco-Pennzoil evidence supports the contention that financial distress can interfere with firms' ability to produce efficiently.

Finally, our results support to at least some extent arguments that the secondary costs of the Latin American debt burden are inhibiting the growth of these countries. The Texaco-Pennzoil case demonstrates that debt burdens can be greatly magnified by the disruptions they create. If this is true with developing country debt, it is possible that appropriately designed debt relief policies could help both the banks and the debtor nations.

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Table A-1

Value Relative to
Standard and Poors Composite Oil Price Index

No.	Date	Change in Market Value* Texaco	Pennzoil	Loss Ratio**
1	Nov. 19, 1985	-$806.1 (275.9)	$425.5 (82.4)	47.2%
2	Dec. 10, 1985	-$364.4 (227.5)	$156.5 (114.7)	57.1%
3	Dec. 18, 1985	$88.5 (202.5)	-$307.3 (118.7)	---
4	Jan. 10, 1986	-$53.7 (217.7)	-$197.8 (132.4)	---
5	Feb. 20, 1986	-$60.6 (213.5)	-$43.8 (100.2)	---
6	Feb. 12, 1987	-$1,267.4 (315.9)	$270.2 (132.0)	78.9%
7	Apr. 6, 1987	-$1,061.9 (304.9)	$299.3 (147.5)	71.8%
	TOTAL	-$3,525.6 (674.3)	$602.6 (317.5)	81.3%

Standard errors are in parentheses.

* Millions of dollars

** Percentage of change in Texaco's value not accounted for by change in Pennzoil's value