Internet Appendix

for

"Uncertainty, Capital Investment, and Risk Management"

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This Internet Appendix contains the following details which are not reported in the paper due to space constraints: (1) a detailed description of the procedure to construct the price uncertainty measure; (2) results of additional robustness tests that we conduct to rule out possible alternative explanations for our main findings; (3) Sample hedging disclosures to show how we collected information relating to hedging activities; and (4) a listing of the names of companies that feature in our sample.

1 Construction of *Price Uncertainty*

In this section, we provide a detailed description of the methodology used to create *Price Uncertainty*, which serves as forward-looking measure of oil price volatility at the one year horizon. We measure oil price volatility using model-free risk-neutral volatility (Bakshi et al. (2003)) estimated from options on crude oil futures. The computation of the model-free risk-neutral volatility requires information on out-of-the-money European put and call options. However, the options traded on crude oil futures are American style. Following Trolle and Schwartz (2009), we assume that the underlying futures contract follow a geometric Brownian motion, which allows for accurate computation of the American option prices in closed form using the quadratic approximation proposed by Barone–Adesi and Whaley (1987). For each option in our sample, we compute the log-normal implied volatility using the approximation in Baron-Adesi and Whaley (1987), which in turn is used to compute the European option prices using the Black (1976) model. We exclude all options with less than 1% volatility, or higher than 200% volatility. We also exclude options with prices less than 1 cent, and contracts violating standard no-arbitrage restrictions.

To construct *Price Uncertainty*, we first compute the model-free risk-neutral volatility using the method proposed by Bakshi et al. (2003) for each available maturity in our sample. In theory, this requires information on the out-of-the-money put and call option prices for moneyness ranging from 0 to 1 and 1 to infinity, respectively. We perform interpolation of the implied volatilities across moneyness to compute the prices of options with non-traded moneyness. For moneyness levels above or below the available moneyness in the market, we use the implied volatility of the highest or lowest available moneyness. We perform interpolation and extrapolation of implied volatilities for maturities for which we have at least two out-of-the-money put and call options. We interpolate the model-free risk-neutral volatility (defined as the square root of risk-neutral variance) at 365-day maturity to obtain *Price Uncertainty.*

We extrapolate the risk-neutral measures only if the nearest available maturity in the data is above 70% of the maturity of interest. Therefore, we are unable to compute the 365-day maturity volatility in the early part of our sample because we do not have large number of options with sufficiently long maturity to compute the extrapolated 365-day maturity measures. Due to this and other data restrictions, we are able to construct a daily series of *Price Uncertainty* only from

November 1994 onward. Despite this restriction, we use the 365-day maturity measure as our main measure of oil price uncertainty because we are interested in a long-term measure of uncertainty. Our results are qualitatively similar if we instead use *6-month Price Uncertainty* to serve as a measure of oil volatility 180 days (i.e., six months) forward.

2 Additional Tests

2.1 Robustness Tests: Effect of *Price Uncertainty* on *CAPEX*

In this section, we conduct additional robustness tests to reinforce the robustness of the negative effect of price uncertainty on capital expenditure (see Table 3 in the paper), and to rule out alternative explanations. The results of these robustness tests are presented in Table IA-1.

Effect of Futures Price and Other Macroeconomic Variables

In Panel A, we present additional tests to show that the negative effect of price uncertainty on capital expenditure is robust to controlling for the futures price of crude oil and time-varying macroeconomic variables. Recall that in the paper, we controlled for the effect of time-varying frictions using the two macro factors, *Macro 1st PC* and *Macro 2nd PC*, derived from principal component analysis. In column (1) of Panel A, we show that the result is similar if we include all the macroeconomic variables individually (*S&P500 Return*, *Oil Return*, *VIX*, *Term Spread* and *Credit Spread*) instead of the macro principal components.

In columns (2) and (3) of Panel A, we estimate a purged residuals regression (see Clerides et al. (1998)) as follows. In the first stage, we obtain residuals of *CAPEX* that are purged of the effects of firm-specific investment opportunities and time-varying macroeconomic variables (column (2)). We then regress the Purged Residual on *Price Uncertainty* in the second stage, and find that the coefficient on *Price Uncertainty* is still negative and significant.

In Panel B of Table IA-1, we estimate a first-differences specification as an alternative to the OLS specification with firm fixed effects. Specifically, we regress the change in *CAPEX* from the previous quarter (i.e., $\Delta CAPEX$) against the change in *Price Uncertainty* and changes in all firm-level controls (column (1)) as well as changes in *Futures Price* and all macroeconomic variables (column (2)). Correlation among macroeconomic variables is not a concern in the first-differences specification because it relies on "shocks" to the macroeconomic variables instead of their levels. Moreover, the first-differences specification corrects for any possible look-ahead bias in the fixed-effects estimation, and allows us to directly focus on the effect of changes in price uncertainty. As can be seen, the coefficient on Δ*Price Uncertainty* is negative and significant even after we include the first-differences in all the macro variables, which indicates that firms lower their rate of capital expenditure when faced with an increase in price uncertainty.

A strong robustness test is to create a "covariate-adjusted" time series for capital expenditure, and examine its relationship with price uncertainty and other macro factors. We report the results of such a test in Panel C of Table IA-1. In column (1), we estimate a panel OLS regression on our firm-quarter panel where we regress *CAPEX* and against time-varying firm-level controls and quarter fixed effects. We then extract the quarter fixed effects from this regression, and regress this covariate-adjusted *CAPEX* against price uncertainty in column (2), and also control for the effect of futures price of crude oil (column (3)) and the macro factors (column (4)). Note that each of the 72 observations in columns (2) through (4) corresponds to a calendar quarter. Consistent with the result in the paper, we find that the covariate-adjusted *CAPEX* has a negative relation with price uncertainty, which is robust to controlling for the futures price of crude oil and the macro factors.

Uncertainty vs. Demand or Supply Shocks

One of the main empirical challenges in investigating the investment-uncertainty relationship is to delineate the effect of uncertainty from that of demand or supply shocks. Although we control for the effect of demand and supply conditions using the price of 1-year crude oil futures (*Futures Price*), one possible concern could be that if increases in *Price Uncertainty* coincide with decreases in *Futures Price*, then the negative coefficient on *Price Uncertainty* may partly reflect the effect of a negative demand shock or a positive supply shock. We believe that this concern is not valid in our setting, because *Price Uncertainty* is positively correlated with both *Price Change* and *Futures Price* (see Panel A of Table 2 in the paper).

Nonetheless, to further delineate the effect of price uncertainty from that of demand or supply shocks, we divide our sample period into four subgroups corresponding to the four quartiles of *Futures Price*, and estimate regression (1) separately on each of these subgroups. The results of this estimation are summarized in Panel D of Table IA-1, where quartile 1 (quartile 4) corresponds to the lowest (highest) levels of *Futures Price* (the sample size varies across columns because we have an unbalanced panel of firms). We use the full set of control variables but only report the coefficient on *Price Uncertainty* to conserve space.

We find that the negative relationship between capital expenditure and price uncertainty exists regardless of whether the oil futures price is low (quartile 1) or high (quartile 4). In fact, the negative coefficient on *Price Uncertainty* seems to be strongest during times when *Futures Price* is in its highest quartile, possibly because this is also the period during which capital investments in the U.S. O&G sector had become more irreversible in nature due to greater reliance on unconventional oil sources (e.g., shale oil and offshore oil).

Other Alternative Explanations

Another concern is that if *CAPEX* is highly persistent at the firm level, then it could lead to serial correlation in error terms, which violates the OLS requirement that error terms be serially and cross-sectionally uncorrelated. Moreover, it gives rise to the concern that past *CAPEX*, either at the firm- or industry-level, affects both current *CAPEX* and *Price Uncertainty.* Although we believe the latter concern to be implausible in the context of the US upstream O&G sector, we do additional tests to directly address these concerns. These tests are reported in Panel E of Table IA-1.

In column (1), we estimate a fixed-effects model with an AR(1) disturbance to directly account for possible serial correlation in error terms. Specifically, we estimate regression (1) with firm fixed effects, and explicitly model the error term $e_{j,t}$ as $e_{j,t} = \rho * e_{j,t-1} + z_{j,t}$. As can be seen, the coefficient on *Price Uncertainty* in column (1) is negative and similar in magnitude to the coefficient estimate in Table 3. Moreover, the estimated serial correlation coefficient ρ is not economically large in magnitude.

In column (2), we estimate the panel GMM estimator of Arellano and Bond (1991), that enables us to explicitly control for past lagged values of both the firms' *CAPEX* as well as overall industry *CAPEX*. We employ two lags of *CAPEX* and *Industry CAPEX* (defined as median value of *CAPEX* across all firms in the same time period). As can be seen from column (2), the coefficient on *Price Uncertainty* continues to be negative and significant.

Another major concern in any empirical study of firm-level investment is the potential for measurement errors in Q. Although our focus is not directly on the investment-Q relationship, we estimate the Erickson-Whited linear errors-in-variables panel regression in column (3) to ensure that our result is robust to correcting for any measurement error in Q (see Erickson and Whited (2000), Erickson and Whited (2002), and Erickson et al. (2014)).

Overall, the results in Table IA-1 reinforce the robustness of the negative effect of price uncertainty on capital investment.

2.2 Simultaneous Effect of Price Uncertainty on Hedging and Capital Investment

In our main empirical tests, we treated capital expenditure and hedging intensity as two separate and unrelated outcome variables. However, in practice, firms make capital investment decisions in conjunction with risk management or hedging decisions, because irreversible investments expose firms to the risk of ex-post financial distress costs. Thus, an empirical investigation of the effects of price uncertainty on capital investment must also take into account the simultaneous impact on hedging.

In this section, we use a system of simultaneous equations approach to examine the joint effect of price uncertainty on *CAPEX* and *Hedging Intensity*. Such an approach would allow us to control the *CAPEX* regression equation for the firm's *Hedging Intensity*, provided we have an instrument for *Hedging Intensity* that meets the exclusion restrictions. We appeal to Graham and Smith (1999) and use the serial correlation of taxable income (ρ*(TI)*) as a tax-based instrument for hedging. For each firm in our sample, we estimate ρ*(TI)* each year using the firm's entire history to that point. The argument is that, given the convexity of tax schedules, a firm's expected tax benefit from hedging is likely to be higher if its taxable income exhibits more negative serial correlation so that the firm is more likely to shift between profits and losses (see page 2256 of Graham and Smith (1999) for more details).[1] By this logic, we expect a negative relationship between between ρ*(TI)*

[1] More generally, Graham and Smith (1999) define *Tax Convexity* to denote the tax benefits of hedging (specifically, the tax savings from a 5% reduction in volatility of taxable income) and relate it to firm-specific characteristics such as volatility and serial correlation of taxable income, net operating loss (NOL) carry-forwards, and investment tax credits. We choose to be agnostic about the actual shape of the *Tax Convexity* function in the upstream O&G sector, because the coefficient estimates provided in Graham and Smith (1999) to compute *Tax Convexity* are based on regressions on a pooled sample of firm-year observations across all industries. Moreover, we are less confident that volatility of taxable income satisfies the exclusion restriction with respect to *CAPEX*. Also, none of our sample firms report any investment tax credit on their balance sheets. Therefore, we use only ρ*(TI)* as an instrument for hedging intensity, although our qualitative results are similar if we use all the explanatory variables in their paper as

and *Hedging Intensity*. At the same time, there is no reason to believe that ρ*(TI)* affects the firm's current capital expenditure. Hence, we feel confident that ρ*(TI)* satisfies the exclusion restriction.

We present the results of the system of simultaneous equations model (estimated using 2SLS) in Table IA-2. Panel A presents the results when the estimation is done on the entire sample. As can be seen from the *Hedging Intensity* equation in column (1), the coefficient on ρ*(TI)* is negative, which is consistent with the findings in Graham and Smith (1999). More importantly, we continue to find a strong negative relationship between *CAPEX* and *Price Uncertainty* in column (2), even after accounting for the firms' *Hedging Intensity*. Moreover, the positive relationship between *CAPEX* and *Hedging Intensity* in column (2) is consistent with the result in Campello et al. (2011) that hedging allows firms to invest more, possibly by alleviating their financial constraints.

In Panel B, we estimate the system of simultaneous equations model separately for small firms ($Large = 0$) in columns (1) and (2), and large firms ($Large = 1$) in columns (3) and (4). The empirical specification and control variables are the same as in columns (1) and (2) of Panel A, but we suppress the coefficients on the control variables. As can be seen, the effects of price uncertainty on hedging and capital expenditure vary significantly by firm size. Large firms respond to high price uncertainty by increasing their hedging intensity, but do not lower their capital expenditures (columns (3) and (4)). Moreover, after accounting for the endogeneity of hedging, we fail to detect a significant relationship between *Hedging Intensity* and *CAPEX*. By contrast, small firms do not increase their hedging intensity when price uncertainty is high, but instead lower their capital expenditure (columns (1) and (2)). Moreover, hedging allows these firms to undertake higher capital expenditure (positive coefficient on *Hedging Intensity* in column (2)).

Overall, the results in Table IA-2 reinforce a key finding in the paper that price uncertainty affects small and large firms differently.

2.3 Simultaneous Effect of Price Uncertainty on Hedging and Net Debt Issuance

In this section, we use a system of simultaneous equations approach to examine the joint effect of price uncertainty on Δ*Net Debt* and *Hedging Intensity*, after controlling for firms' investment demand using *Industry CAPEX*. The empirical approach is very similar to that in Table IA-2,

instruments.

in the sense that we use a system of simultaneous equations model (estimated using 2SLS) with $\rho(TI)$ as a tax-based instrument for *Hedging Intensity*. The results of our estimation are presented in Table IA-3. In Panel A, we estimate the model on the entire sample, whereas in panel B we estimate the model separately for small and large firms.

Consistent with the earlier results, we find that the firms' response to price uncertainty varies significantly by size. The results in Panel B indicate that small firms do not increase their hedging intensity when price uncertainty is high, but instead lower their net debt issuance even after controlling for investment demand. On the other hand, large firms not only increase their hedging intensity when price uncertainty is high, but also seem to increase their net debt issuance.

2.4 Clustering of Standard Errors

In the paper, we clustered standard errors by quarter to account for dependence in residuals across firms within the same quarter. To account for the concern that residuals may also be autocorrelated across quarters within firms, we replicate our key regressions after clustering standard errors by both firm and quarter using the procedure specified in Petersen (2009). The results of these regressions are presented in Table IA-4.

In Panel A, we examine the effect of *Price Uncertainty* on *CAPEX* (columns (1) and (2)), *Hedging Intensity* (columns (3) and (4)), and Δ*Net Debt* (columns (5) and (6)) for all the firms in our sample. In Panel B, we examine how these effects vary between small firms ($Large = 0$) and large firms ($Large = 1$). We include all firm-level controls in both panels, but suppress these coefficients to conserve space. As can be seen, the results are qualitatively similar to the corresponding results in the paper.

3 Data on Hedging Activities

As mentioned in the paper, we hand-collect information on hedging activities of our sample firms from their 10-Q filings with the SEC. We are able to collect this information for the post-1995 period, and for 126 firms in our sample. In this section, we provide a few sample disclosures of hedging activities to describe how we construct the *Hedging Intensity* measure. We find that the extent of disclosures varies across firms, with larger firms being more likely to offer more detailed disclosures than smaller firms. For example, in Figure 1A, we provide a snapshot of the hedging disclosure made by S.M.Energy Company for the quarter ended June 2007. As can be seen, this company provides detailed disclosures in a tabular format, and provides information both on the volumes hedged as well as the percentage of oil production that was hedged. For this company, we code *Hedging Intensity* as 65% for the quarter ended June 2007. By contrast, Figure 1B provides a sample disclosure made by Prima Energy Corporation for the first quarter of 1998, where hedging activities are described in Section 4 of the "Notes to Unaudited Consolidated Financial Statements." As can be seen, the company simply notes that it "hedged approximately 0% and 71% of its oil production in the first quarters of 1998 and 1997, respectively." Thus, for this company, we code *Hedging Intensity* as 0 for the first quarter of 1998.

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Table IA-1. Robustness Tests for Effect of Futures Price and Other Macroeconomic Variables

In this table, we present the results of additional robustness tests to verify that the negative relation between *CAPEX* and *Price Uncertainty* is robust to controlling for *Futures Price* and other macroeconomic variables (*S&P500 Return*, *Oil Return*, *VIX*, *Term Spread* and *Credit Spread*). We estimate variants of the following regression:

$$\text{CAPEX}_{j,t} = \alpha + \beta * \text{Price Uncertainty} + \boldsymbol{\gamma} X_{j,t-1} + \boldsymbol{\lambda} X_{m,t} + \varepsilon_{j,t}$$

We estimate this regression on a panel that has one observation for each firm-fiscal quarter pair, and spans the period 4Q1994 to 1Q2013. All variables are defined in the Appendix of the paper. Standard errors (reported in parentheses) are robust to heteroskedasticity, and are clustered by quarter. We use ***, **, and * to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

In column (1) of Panel A, we estimate an OLS regression with *CAPEX* as the dependent variable and include *Futures Price* and all the macroeconomic variables as controls. In columns (2) and (3) of Panel A, we estimate a purged residuals regression (see Clerides et al. (1998)) as follows: in the first stage, we obtain residuals of *CAPEX* that are purged of the effects of firm-specific investment opportunities and time-varying macroeconomic variables (column (2)). We then regress the Purged Residual on *Price Uncertainty* in the second stage (column (3)).

In Panel B, we estimate a first-differences specification in which we regress the change in *CAPEX* from the previous quarter (i.e., $\Delta CAPEX$) against the change in *Price Uncertainty* and changes in all firm-level controls (column (1)) as well as changes in *Futures Price* and all macroeconomic variables (column (2)).

In Panel C, we first estimate a panel OLS regression on our firm-quarter panel where we regress *CAPEX* against time-varying firm-level controls and quarter fixed effects (column (1)). We then extract the quarter fixed effects from column (1), and regress this covariate-adjusted *CAPEX* against price uncertainty in column (2), and also control for the effect of futures price of crude oil (column (3)) and the macro factors (column (4)).

In Panel D, we estimate the regression separately on four subsamples corresponding to the four quartiles by *Futures Price*, where Quartile 1 corresponds to the lowest prices and Quartile 4 corresponds to the highest price. In Panel E, we estimate the following alternative regression specifications. In column (1), we estimate a fixed-effects model with an AR(1) disturbance, where we model the error term $\varepsilon_{j,t}$ as $\varepsilon_{j,t} = \rho * \varepsilon_{j,t-1} + z_{j,t}$ to directly account for any possible serial correlation. In column (2), we estimate the panel GMM estimator of Arellano and Bond (1991), where we employ two lags of *CAPEX* and *Industry CAPEX* as additional control variables. In column (3), we estimate the Erickson-Whited linear errors-in-variables panel regression to correct for possible measurement error in Q. We suppress coefficients on control variables in panels C and D to conserve space.

Panel A: Regular OLS and Purged-Residuals Model

	CAPEX (1)	CAPEX (2)	Residual (3)
Price Uncertainty	-0.103**		-0.031**
	(0.040)		(0.014)
Price Change	-0.017*	-0.024**	
	(0.009)	(0.009)	
Size	-0.000	0.000	
	(0.002)	(0.002)	
Leverage	-0.007	-0.009	
	(0.009)	(0.009)	
Q	0.015***	0.015***	
	(0.003)	(0.003)	
Rated	0.003	0.003	
	(0.005)	(0.005)	
Dividends	-0.006	-0.007	
	(0.006)	(0.006)	
Cash	0.099**	0.095**	
	(0.038)	(0.037)	
Cash Flow	0.066**	0.060**	
	(0.030)	(0.030)	
Sales	0.008	0.015	
	(0.023)	(0.023)	
Futures Price/1000	0.000**	0.000	
	(0.000)	(0.000)	
VIX	0.023	0.009	
	(0.034)	(0.030)	
S&P500 Return	-0.027	-0.018	
	(0.018)	(0.018)	
Credit Spread	-0.005	-0.012**	
	(0.005)	(0.005)	
Term Spread	-0.004***	-0.006***	
	(0.001)	(0.001)	
Constant	0.079***	0.066***	0.009**
	(0.012)	(0.011)	(0.004)
Observations	5749	5953	5749
R^2	0.085	0.084	0.001

Panel B: First-differences Regression

	Dependent Variable = $\Delta CAPEX$	
	(1)	(2)
ΔPrice Uncertainty	-0.123**	-0.144**
	(0.049)	(0.059)
ΔReturn	-0.025***	-0.031***
	(0.008)	(0.010)
ΔSize	-0.145***	-0.148***
	(0.019)	(0.019)
ΔLeverage	-0.117***	-0.113***
	(0.022)	(0.022)
ΔQ	0.005	0.004
	(0.003)	(0.003)
ΔCash	0.376***	0.379***
	(0.042)	(0.042)
ΔCash Flow	0.051*	0.051*
	(0.027)	(0.027)
ΔSales	0.088*	0.089*
	(0.050)	(0.050)
ΔFutures Price		0.001***
		(0.000)
ΔVIX		-0.017
		(0.036)
ΔSP500 Return		-0.007
		(0.015)
ΔCredit Spread		0.017**
		(0.007)
ΔTerm Spread		-0.001
		(0.002)
Constant	-0.004	-0.004
	(0.003)	(0.003)
Observations	5553	5506
R^2	0.125	0.126

Panel C: Quarter Fixed Effects in CAPEX and Price Uncertainty

	CAPEX	Quarter FE		
	(1)	(2)	(3)	(4)
Price Uncertainty		-0.099***	-0.136***	-0.091**
		(0.023)	(0.028)	(0.037)
Futures Price/1000			0.146**	0.119*
			(0.068)	(0.063)
Macro 1st P.C.				-0.006***
				(0.002)
Macro 2nd P.C.				0.003
				(0.005)
Size	0.064			
	(0.910)			
Leverage	-0.005			
	(0.006)			
Q	0.014***			
	(0.001)			
Rated	0.002			
	(0.003)			
Dividends	-0.007***			
	(0.002)			
Cash	0.097***			
	(0.018)			
Cash Flow	0.054**			
	(0.024)			
Sales	0.008			
	(0.017)			
Constant	0.055***	0.028***	0.032***	0.020**
	(0.006)	(0.007)	(0.007)	(0.010)
Observations	6056	72	72	72
Fiscal Quarter Dummies	Yes			
R^2	0.108	0.204	0.255	0.386

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Panel D: CAPEX-Uncertainty Relationship for Different Oil Price Levels

	Dependent Variable = CAPEX			
Futures Price Level	Quartile 1	Quartile 2	Quartile 3	Quartile 4
	(1)	(2)	(3)	(4)
Price Uncertainty	-0.277***	-0.166***	-0.215**	-0.324***
	(0.102)	(0.055)	(0.097)	(0.055)
χ^2 (diff. from Quartile 2)	0.99	–	0.19	4.19
$p-$value (diff. from Quartile 2)	0.3196	–	0.6597	0.0406
All controls	Yes	Yes	Yes	Yes
Fiscal Quarter Dummies	Yes	Yes	Yes	Yes
Observations	1461	1355	1723	1212
R^2	0.064	0.085	0.137	0.118

Panel E: Alternative Regression Specifications

	Dependent Variable = *CAPEX*		
	(1)	(2)	(3)
Price Uncertainty	-0.133***	-0.138***	-0.181**
	(0.028)	(0.007)	(0.077)
Futures Price	0.248***	0.711***	-0.540
	(0.083)	(0.035)	(0.540)
Q	0.017***	0.016***	0.149*
	(0.002)	(0.000)	(0.084)
L1.CAPEX		-0.165***	
		(0.002)	
L2.CAPEX		-0.106***	
		(0.001)	
L1.Industry CAPEX		0.618***	
		(0.023)	
L2.Industry CAPEX		0.164***	
		(0.018)	
Constant	0.084***	0.301***	-0.242
	(0.009)	(0.007)	(0.207)
Observations	5582	5142	5751
Specification	Fixed effects with AR(1) disturbance	Arellano-Bond Panel GMM	Erickson-Whited Errors-in-variables
Autocorrelation ρ	0.196		

Table IA-2. Price Uncertainty, Hedging and Investment: Simultaneous Equations

This table reports the results of a system of simultaneous equations model (estimated using 2SLS) to examine the simultaneous impact of *Price Uncertainty* on *Hedging Intensity* and *CAPEX*. We estimate the following system of equations:

$$\begin{aligned} \text{Hedging Intensity}_{j,t} &= \alpha_1 + \beta_1 * \text{Price Uncertainty} + \rho * Z_{j,t-1} + \boldsymbol{\gamma_1} X_{j,t-1} + \boldsymbol{\lambda_1} X_{m,t} + \varepsilon_{j,t}. \\ \text{CAPEX}_{j,t} &= \alpha_2 + \beta_2 * \text{Price Uncertainty} + \psi * \text{Hedging Intensity}_{j,t} + \boldsymbol{\gamma_2} X_{j,t-1} + \boldsymbol{\lambda_2} X_{m,t} + \epsilon_{j,t}. \end{aligned}$$

In the above system of equations, we use the firm's serial correlation in taxable income (*ρ(TI)*) as an instrument ($Z_{j,t-1}$) for *Hedging Intensity*. All variables are defined in the Appendix of the paper. We estimate this system on a panel that has one observation for each firm-fiscal quarter pair, spans the period 1Q1995 to 1Q2013, and includes the 126 firms for which we are able to obtain information on hedging intensity from their SEC filings.
In Panel A, we estimate the system of equations on the entire sample. In Panel B, we estimate the system of equations separately for small firms (i.e., firms with *Large*= 0) in columns (1) and (2), and large firms (i.e., firms with *Large*= 1) in columns (3) and (4). We employ the full set of control variables in both panels but suppress these coefficients to conserve space. Standard errors (reported in parentheses) are robust to heteroskedasticity. We use ***, **, and * to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: System of Simultaneous Equations

	Hedging Intensity	CAPEX
	(1)	(2)
Price Uncertainty	0.451***	-0.171***
	(0.079)	(0.041)
ρ(TI)	-0.048***	
	(0.012)	
Hedging Intensity		0.162**
		(0.075)
Specification	System of Equations (2SLS)	
Observations	3186	3186
$F-$Stat	82.073	22.105
All controls	Yes	Yes

Panel B: Simultaneous Equations by Firm Size

	Large=0		**Large=1**	
	Hedging Intensity	CAPEX	Hedging Intensity	CAPEX
	(1)	(2)	(3)	(4)
Price Uncertainty	0.080	-0.192***	1.061***	0.023
	(0.094)	(0.042)	(0.165)	(0.049)
ρ(TI)	-0.033**		-0.104***	
	(0.014)		(0.023)	
Hedging Intensity		0.311*		-0.040
		(0.169)		(0.039)
Specification	System of equations (2SLS)		System of equations (2SLS)	
Observations	2340	2340	846	846
$F-$Stat	60.615	11.099	23.515	16.921
All controls	Yes	Yes	Yes	Yes

Table IA-3. Price Uncertainty, Hedging and Net Debt Issuance: Simultaneous Equations

This table reports the results of a system of simultaneous equations model (estimated using 2SLS) to examine the simultaneous impact of *Price Uncertainty* on *Hedging Intensity* and Δ*Net Debt*. We estimate the following system of equations:

$$\begin{aligned} \text{Hedging Intensity}_{j,t} &= \alpha_1 + \beta_1 * \text{Price Uncertainty} + \rho * Z_{j,t-1} + \boldsymbol{\gamma_1} X_{j,t-1} + \boldsymbol{\lambda_1} X_{m,t} + \varepsilon_{j,t}. \\ \Delta\text{Net Debt}_{j,t} &= \alpha_2 + \beta_2 * \text{Price Uncertainty} + \psi * \text{Hedging Intensity}_{j,t} + \boldsymbol{\gamma_2} X_{j,t-1} + \boldsymbol{\lambda_2} X_{m,t} + \epsilon_{j,t}. \end{aligned}$$

In the above system of equations, we use the firm's serial correlation in taxable income (*ρ(TI)*) as an instrument ($Z_{j,t-1}$) for *Hedging Intensity*. All variables are defined in the Appendix of the paper. We estimate this system on a panel that has one observation for each firm-fiscal quarter pair, spans the period 1Q1995 to 1Q2013, and includes the 126 firms for which we are able to obtain information on hedging intensity from their SEC filings.

In Panel A, we estimate the system of equations on the entire sample. In Panel B, we estimate the system of equations separately for small firms (i.e., firms with *Large*= 0) in columns (1) and (2), and large firms (i.e., firms with *Large*= 1) in columns (3) and (4). We employ the full set of control variables in both panels but suppress these coefficients to conserve space. Standard errors (reported in parentheses) are robust to heteroskedasticity. We use ***, **, and * to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: System of Simultaneous Equations

	Hedging Intensity	ΔNet Debt
	(1)	(2)
Price Uncertainty	0.487***	-0.063*
	(0.082)	(0.033)
Industry CAPEX	1.009***	0.497***
	(0.349)	(0.119)
ρ(TI)	-0.080***	
	(0.012)	
Hedging Intensity		-0.017
		(0.047)
Specification	System of Equations (2SLS)	
Observations	3190	3190
$F-$Stat	73.227	6.471
All controls	Yes	Yes

Panel B: Simultaneous Equations by Firm Size

	Large=0		Large=1	
	Hedging Intensity	ΔNet Debt	Hedging Intensity	ΔNet Debt
	(1)	(2)	(3)	(4)
Price Uncertainty	0.040	-0.121***	1.317***	0.219**
	(0.100)	(0.034)	(0.170)	(0.092)
Industry CAPEX	0.436	0.427***	2.002***	0.766***
	(0.409)	(0.142)	(0.688)	(0.239)
ρ(TI)	-0.063***		-0.119***	
	(0.014)		(0.023)	
Hedging Intensity		0.051		-0.145**
		(0.073)		(0.061)
Specification	System of equations (2SLS)		System of equations (2SLS)	
Observations	2340	2340	850	850
$F-$Stat	53.607	6.203	21.450	1.874
All controls	Yes	Yes	Yes	Yes

Table IA-4. Clustering Standard Errors by Both Firm and Quarter

In this table, we replicate our key regressions after clustering standard errors by both firm and quarter using the procedure specified in Petersen (2009). In Panel A, we examine the effect of *Price Uncertainty* on *CAPEX*, *Hedging Intensity* and Δ*Net Debt* for all firms in our sample. In Panel B, we examine how these effects vary between small firms ($Large = 0$) and large firms ($Large = 1$). We include all firm-level controls in both panels, but suppress these coefficients to conserve space. We use ***, **, and * to denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Effects on CAPEX, Hedging and Net Debt Issuance (All Firms)

	CAPEX	CAPEX	Hedging Intensity	Hedging Intensity	ΔNet debt	ΔNet debt
	(1)	(2)	(3)	(4)	(5)	(6)
Price Uncertainty	-0.103***	-0.093**	0.391*	0.021	-0.096***	-0.133**
	(0.031)	(0.047)	(0.213)	(0.208)	(0.028)	(0.053)
Futures Price/1000		0.137		0.807		-0.036
		(0.109)		(0.506)		(0.108)
Macro 1st P.C.		-0.004**		0.007		0.004
		(0.002)		(0.007)		(0.002)
Macro 2nd P.C.		0.003		-0.023		0.018***
		(0.005)		(0.018)		(0.005)
Observations	5799	5799	3259	3259	5842	5842
R^2	0.079	0.221	0.211	0.584	0.012	0.057
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	No	Yes	No	Yes	No	Yes

Panel B: Variation of Effects by Firm Size

	CAPEX		Hedging Intensity		ΔNet Debt	
	$Large = 0$	$Large = 1$	$Large = 0$	$Large = 1$	$Large = 0$	$Large = 1$
	(1)	(2)	(3)	(4)	(5)	(6)
Price Uncertainty	-0.126**	0.001	0.256	0.580*	-0.190***	0.015
	(0.054)	(0.051)	(0.262)	(0.303)	(0.050)	(0.057)
Futures Price/1000	-0.004	0.234**	0.011	4.116***	-0.229***	-0.043
	(0.088)	(0.108)	(0.579)	(1.095)	(0.075)	(0.149)
Macro 1st P.C.	-0.006***	-0.002	-0.004	0.015	0.004	0.001
	(0.002)	(0.002)	(0.008)	(0.012)	(0.003)	(0.002)
Macro 2nd P.C.	0.002	0.002	-0.056**	-0.024	0.021***	-0.000
	(0.006)	(0.006)	(0.023)	(0.043)	(0.005)	(0.006)
Industry CAPEX					0.635***	0.510**
					(0.144)	(0.199)
Observations	4308	1491	2408	851	4349	1493
R^2	0.089	0.107	0.215	0.277	0.020	0.013
All Controls	Yes	Yes	Yes	Yes	Yes	Yes

Figure 1A. Sample Exhibit of Hedging Disclosure (SM Energy Company)

Information Regarding the Effects of Oil and Gas Hedging Activity:

	For the Three Months Ended June 30,		For the Six Months Ended June 30,	
Oil Hedging	**2007**	**2006**	**2007**	**2006**
Percentage of oil production hedged	65%	72%	65%	68%
Oil volumes hedged (MBbl)	1,110	1,026	2,217	2,025
Decrease in oil revenue	$ (1.9 million)	$ (5.8 million)	$ (1.9 million)	$ (9.6 million)
Average realized oil price per Bbl before hedging	$ 61.11	$ 63.68	$ 56.85	$ 60.22
Average realized oil price per Bbl after hedging	$ 59.97	$ 59.62	$ 56.28	$ 56.96
Natural Gas Hedging				
Percentage of gas production hedged	46%	38%	46%	39%
Natural gas MMBtu hedged	7.8 million	5.7 million	15.3 million	11.2 million
Increase in gas revenue	$ 9.2 million	$ 10.7 million	$ 27.9 million	$ 19.6 million
Average realized gas price per Mcf before hedging	$ 7.09	$ 6.20	$ 6.96	$ 6.86
Average realized gas price per Mcf after hedging	$ 7.68	$ 6.96	$ 7.86	$ 7.59

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Figure 1B. Sample Exhibit of Hedging Disclosure (Prima Energy)

PRIMA ENERGY CORPORATION
NOTES TO UNAUDITED CONSOLIDATED FINANCIAL STATEMENTS

1. GENERAL

The financial information contained herein is unaudited but includes all adjustments (consisting of only normal recurring accruals) which, in the opinion of management, are necessary to present fairly the information set forth. The consolidated financial statements should be read in conjunction with the Notes to Consolidated Financial Statements which are included in the Annual Report on Form 10-K of Prima Energy Corporation for the year ended December 31, 1997.

The results for interim periods are not necessarily indicative of results to be expected for the fiscal year of the Company ending December 31, 1998. The Company believes that the three month report filed on Form 10-Q is representative of its financial position, its results of operations and its cash flows for the periods ended March 31, 1998 and 1997.

2. BASIS OF PRESENTATION

The accompanying consolidated financial statements include the accounts of Prima Energy Corporation ("Prima") and its subsidiaries, herein collectively referred to as the "Company." All significant intercompany transactions have been eliminated. Certain amounts in prior years have been reclassified to conform with the classifications at March 31, 1998.

3. LINE OF CREDIT

Prima maintains an $8,000,000 unsecured line of credit with a commercial bank. The line of credit, which matures on May 1, 1999, bears interest at the bank's prime rate (8.50% at March 31, 1998), with interest payable monthly. At December 31, 1997 and March 31, 1998, there were no amounts outstanding under the line of credit.

4. HEDGING ACTIVITIES

The Company's marketing and trading activities consist of marketing the Company's own production, marketing the production of others from wells operated by the Company, and natural gas trading activities that consist of the purchase and resale of natural gas. Crude oil and natural gas futures, options and swaps are used from time to time in order to hedge the price of a portion of the Company's production, as well as to hedge the margins on natural gas purchased for resale. This is done to mitigate the risk of fluctuating oil and natural gas prices which can adversely affect operating results. These transactions have been entered into with major financial institutions, thereby minimizing credit risk. The Company hedged approximately 0% and 71% of its oil production in the first quarters of 1998 and 1997, respectively, and hedged approximately 53% and 54% of its natural gas production in these same periods. Hedging gains and losses were $(126,000) and $463,000 for the quarters ended March 31, 1998 and 1997, respectively, and were included in oil and gas revenues at the time the hedged volumes were sold. At March 31, 1998, the Company had sold natural gas futures contracts as follows:

Remaining Term	Price	Volume (MMBtu)	Unrealized Loss
April 1998 to October 1998	$ 1.600	350,000	$ (101,500)
April 1998 to October 1998	1.535	350,000	(124,250)
April 1998 to February 1999	1.855	2,200,000	(352,000)

At March 31, 1998, the Company had no open futures transactions that did not correspond to anticipated physical transactions.

5. TERMINATION OF NATURAL GAS SUPPLY CONTRACT

In December 1997, Prima agreed to terminate its long-term, fixed-price with annual escalation contract to supply natural gas to Colorado Power Partnership ("CPP"), effective October 31, 1998, for $3,850,000, and other consideration. The payment and closing was completed in January 1998. Initial sales to CPP began in the fall of 1990 and the contract was to expire in the year 2005. From January 1, 1998 through October 31, 1998, Prima has agreed to supply 100% of CPP's gas requirements. Prima received $2.72 per MMBtu from January 1, 1998 through March 31, 1998, and will receive a spot related index price from April 1, 1998 through October 31, 1998. After that time, CPP and Prima have agreed to negotiate in good faith a new supply

List of Company Names

Company Name	No. of Quarters	Time Span in Panel
3DX Technologies Inc	11	4Q96 - 2Q99
3TEC Energy Corp	32	2Q95 - 1Q03
Abraxas Petroleum Corp.	68	2Q95 - 1Q13
Adobe Resources Corp	8	2Q90 - 1Q92
Alamco Inc	9	2Q95 - 2Q97
Alexander Energy Corp	9	2Q94 - 2Q96
Alta Energy Corp	9	4Q91 - 4Q93
Amerac Energy Corp	10	2Q95 - 3Q97
American Exploration Co	9	2Q95 - 2Q97
American National Petroleum	8	2Q91 - 1Q93
American Resources Offshore	26	2Q95 - 3Q01
American Rivers Oil Co	11	3Q95 - 1Q98
Anadarko Petroleum Corp	70	2Q95 - 1Q13
Apache Corp	72	2Q95 - 1Q13
Appalachian Oil & Gas Co Inc	10	4Q92 - 1Q95
Arena Resources Inc	34	4Q01 - 1Q10
Aspen Exploration Corp	48	3Q96 - 2Q08
Aviva Petroleum Inc	32	2Q95 - 1Q03
Bargo Energy Co	22	2Q95 - 1Q01
Barnwell Industries Inc	69	1Q96 - 1Q13
Barrett Resources Corp	25	2Q95 - 2Q01
Basin Exploration Inc	22	2Q95 - 3Q00
Belco Oil & Gas Corp	22	1Q96 - 2Q01
Berry Petroleum Co	72	2Q95 - 1Q13
Bounty Group Inc	9	2Q93 - 2Q95
Brigham Exploration Co	59	1Q97 - 3Q11
Brock Exploration Corp	9	3Q93 - 3Q95
Burlington Resources Inc	43	2Q95 - 4Q05
Cabot Oil & Gas Corp	72	2Q95 - 1Q13
Cairn Energy USA Inc	9	2Q95 - 2Q97
Callon Petroleum Co/DE	72	2Q95 - 1Q13
Carbon Energy Corp	30	3Q95 - 2Q03
Carrizo Oil & Gas Inc	65	1Q97 - 1Q13
Castle Energy Corp	33	1Q96 - 4Q05
Cheniere Energy Inc.	51	4Q99 - 1Q13
Chesapeake Energy Corp	66	4Q95 - 1Q13
Cibola Energy Corp	8	2Q93 - 3Q95
Cimarex Energy Co.	43	3Q02 - 1Q13
Clayton Williams Energy Inc	72	2Q95 - 1Q13
Coda Energy Inc	10	2Q93 - 3Q95
Columbus Energy Corp	22	2Q95 - 3Q00
Comstock Resources Inc.	72	2Q95 - 1Q13
Contango Oil & Gas Co	49	1Q00 - 1Q13
Convest Energy Corp/TX	9	2Q95 - 2Q97
Credo Petroleum Corp	66	2Q96 - 3Q12
Crimson Exploration Inc	72	2Q95 - 1Q13
Cubic Energy Inc	54	4Q99 - 1Q13
DLB Oil & Gas Inc	10	2Q95 - 3Q97
Deeptech International Inc	10	4Q95 - 1Q98
Denbury Resources Inc.	72	2Q95 - 1Q13
Devon Energy Corp	72	2Q95 - 1Q13
Devx Energy Inc	14	1Q97 - 3Q01
Diamond Shamrock Offshore Partners LP	8	2Q92 - 1Q94
Dol Resources Inc	16	2Q95 - 3Q99
Double Eagle Petroleum Co	64	3Q96 - 1Q13
EEX Corp.	30	2Q95 - 3Q02
EOG Resources Inc.	72	2Q95 - 1Q13
EPL Oil & Gas Inc	51	3Q00 - 1Q13
EXCO Resources Inc	65	2Q95 - 1Q13
Earthstone Energy Inc	70	3Q95 - 4Q12
Encore Acquisition Co.	36	1Q01 - 4Q09
Energy Search Inc	18	4Q96 - 1Q01
Enex Resources Corp	26	2Q95 - 3Q01
Equity Oil Co	36	2Q95 - 1Q04
Esenjay Exploration Inc	27	2Q95 - 4Q01
Evergreen Resources Inc.	35	3Q95 - 2Q04
FX Energy Inc	72	2Q95 - 1Q13
Falcon Oil & Gas Inc	10	3Q92 - 4Q94
Fieldpoint Petroleum Corp	60	2Q98 - 1Q13
Forcenergy Inc	22	2Q95 - 3Q00
Forest Oil Corp.	72	2Q95 - 1Q13
Galvest Inc	10	2Q90 - 3Q92
Garnet Resources Corp	13	2Q95 - 2Q98
Geo Petroleum Inc	16	4Q96 - 3Q02
GeoResources Inc	47	2Q95 - 4Q06
Global Natural Resources Inc	9	2Q94 - 2Q96
Gold King Consolidated Inc	10	2Q92 - 3Q94
Goodrich Petroleum Corp.	72	2Q95 - 1Q13
Gothic Energy Corp	22	2Q95 - 3Q00
Grasso Corp	9	2Q92 - 2Q94
Great Northern Gas Co	24	2Q95 - 1Q01
Gulfport Energy Corp	68	2Q95 - 1Q13
HS Resources Inc	25	2Q95 - 2Q01
Hadson Energy Resources Corp	10	2Q91 - 3Q93
Hallwood Consolidated Resources Corp	16	2Q95 - 1Q99
Hallwood Energy Corp	24	2Q95 - 1Q01
Hallwood Energy Corp-Old	10	2Q94 - 3Q96
Hampton Resources Corp	8	4Q92 - 3Q94
Harcor Energy Co	12	2Q95 - 1Q98
Harvest Natural Resources Inc.	45	2Q95 - 2Q06
Home Stake Oil & Gas Co	17	3Q96 - 3Q00
Houston Exploration Company (The)	43	3Q96 - 1Q07
Howell Corp	30	2Q95 - 3Q02
Hugoton Energy Corp	11	2Q95 - 4Q97
Inland Resources Inc/WA	32	2Q95 - 1Q03
Isramco Inc	70	2Q95 - 1Q13
KCS Energy Inc.	44	2Q95 - 1Q06
Keldon Oil Co	10	2Q92 - 3Q94
Kelley Oil & Gas Partners LP	10	2Q92 - 3Q94
Kerr-McGee Corp	45	2Q95 - 2Q06
Key Production Co Inc.	29	2Q95 - 2Q02
Latex Resources Inc	9	1Q95 - 1Q97
Louis Dreyfus Natural Gas Corp	25	2Q95 - 2Q01
Louisiana Land & Exploration	9	2Q95 - 2Q97
Lynx Exploration Co	8	1Q91 - 4Q92
Lyric Energy Inc	8	2Q90 - 1Q92
MSR Exploration Ltd	11	2Q95 - 4Q98
Magellan Petroleum Corp	70	4Q95 - 1Q13
Magnum Hunter Resources Inc.	40	2Q95 - 1Q05
Mallon Resources Corp	30	2Q95 - 3Q02
Mariner Energy Inc	31	2Q00 - 3Q10
MarkWest Energy Partners LP	43	1Q02 - 1Q13

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Company Name	No. of Quarters	Time Span in Panel
MarkWest Hydrocarbon Inc.	45	3Q96 - 3Q07
Maxus Energy Corp	8	2Q93 - 1Q95
Maynard Oil Co	28	2Q95 - 1Q02
McFarland Energy Inc	8	2Q95 - 1Q97
Meridian Resource Corp (The)	60	2Q95 - 1Q10
Mesa Inc	9	2Q95 - 2Q97
Mexco Energy Corp	70	3Q95 - 4Q12
Miller Exploration Co	24	4Q97 - 3Q03
Mission Resources Corp	36	4Q95 - 1Q05
Mitchell Energy & Development Corp	24	3Q95 - 3Q01
Newfield Exploration Co	72	2Q95 - 1Q13
Noble Energy Inc	72	2Q95 - 1Q13
North Coast Energy Inc	32	3Q95 - 3Q03
Nuevo Energy Co	36	2Q95 - 1Q04
Ocean Energy Inc-Old	15	2Q95 - 4Q98
Omnipower Inc	8	2Q93 - 3Q95
Oryx Energy Co	14	2Q95 - 3Q98
Oxford Consolidated	10	3Q91 - 4Q93
PYR Energy Corp	24	2Q01 - 1Q07
Panhandle Oil & Gas Inc	69	1Q96 - 1Q13
Par Petroleum Corp	68	4Q95 - 1Q13
Parallel Petroleum Corp	58	2Q95 - 3Q09
Partners Oil Co	8	2Q92 - 1Q94
Patina Oil & Gas Corp	36	2Q96 - 1Q05
Penn Virginia Corp	72	2Q95 - 1Q13
Pennzenergy Co	15	2Q95 - 2Q99
PetroCorp Inc	34	2Q95 - 3Q03
Petroglyph Energy Inc	13	3Q97 - 3Q00
Petroquest Energy Inc	72	2Q95 - 1Q13
Pioneer Natural Resources Co	72	2Q95 - 1Q13
Plains Exploration & Production Co	45	1Q02 - 1Q13
Plains Petroleum Co	8	2Q93 - 1Q95
Plains Resources Inc.	36	2Q95 - 1Q04
Pogo Producing Co	50	2Q95 - 3Q07
Pontotoc Production Inc	11	3Q98 - 1Q01
PostRock Energy Corp	58	2Q90 - 1Q13
Presidio Oil Co	10	2Q94 - 3Q96
Prima Energy Corp	36	2Q95 - 1Q04
PrimeEnergy Corp	72	2Q95 - 1Q13
Prize Energy Corp	23	2Q95 - 3Q01
Pure Resources Inc	10	1Q00 - 2Q02
Pyramid Oil Co	72	2Q95 - 1Q13
Questa Oil & Gas Co	16	2Q95 - 3Q99
Quicksilver Resources Inc	59	3Q98 - 1Q13
Range Resources Corp.	72	2Q95 - 1Q13
Red Eagle Resources Corp	10	2Q92 - 3Q94
Remington Oil & Gas Corp	44	2Q95 - 1Q06
SM Energy Co	72	2Q95 - 1Q13
Saba Petroleum Co	14	2Q95 - 3Q98
Samson Energy Co LP	10	2Q92 - 3Q94
Santa Fe Energy Partners LP	10	2Q91 - 3Q93
Santa Fe Snyder Corp	21	2Q95 - 2Q00
Seaboard Oil Co	8	3Q94 - 2Q96
Search Exploration Inc	8	2Q93 - 1Q95
Sheridan Energy Inc	8	3Q97 - 2Q99
Snyder Oil Corp	16	2Q95 - 1Q99
Southern Mineral Corp	24	2Q95 - 1Q01

Company Name	No. of Quarters	Time Span in Panel
Spinnaker Exploration Co	25	3Q99 - 3Q05
Stone Energy Corp	72	2Q95 - 1Q13
Summit Petroleum Corp	11	1Q94 - 3Q96
Sun Energy Partners LP	16	2Q95 - 1Q99
Sunrise Energy Services Inc	8	2Q92 - 1Q94
Swift Energy Co	72	2Q95 - 1Q13
TGX Corp	8	2Q95 - 1Q97
Tengasco Inc.	60	2Q98 - 1Q13
Texoil Inc	22	2Q95 - 3Q00
Tide West Oil Co	8	2Q94 - 1Q96
Tipperary Corp	37	1Q96 - 2Q05
Titan Exploration Inc	14	4Q96 - 1Q00
Tom Brown Inc.	36	2Q95 - 1Q04
Transtexas Gas Corp	32	1Q95 - 2Q03
Unimar Co LP	17	2Q95 - 2Q99
Union Pacific Resources Group	17	1Q96 - 1Q00
Union Texas Petroleum Holdings Inc	12	2Q95 - 1Q98
United Meridian Corp	11	2Q95 - 4Q97
United States Exploration Inc.	32	3Q95 - 3Q03
Unocal Corp	41	2Q95 - 2Q05
Vaalco Energy Inc	65	3Q95 - 1Q13
Vantage Point Energy Inc	8	3Q90 - 2Q92
Vastar Resources Inc	21	2Q95 - 2Q00
Vintage Petroleum Inc.	42	2Q95 - 3Q05
Westport Resources Corp	15	3Q00 - 1Q04
Wiser Oil Co (The)	36	2Q95 - 1Q04
Woodbine Petroleum Inc	8	2Q90 - 1Q92
XTO Energy Inc.	64	2Q94 - 1Q10