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IMPACT OF REGULATORS PRESSURE ON AUDITING TIMEFRAME AND RISK: EVIDENCE FROM THE US ENERGY INDUSTRY

Abstract

This study examines the impact of regulatory pressure in the U.S. energy industry on auditing timeframe and risk based on a sample of 150 audit fee disclosures from proxy statements, as well as 150 audit reports filed in 2012/2013 with Securities and Exchange Commission. It was found that in economic terms, the impact of moving from a non-regulated to a regulated industry on audit fees is a decrease of those fees by 15%. While the study results indicate that audit fees significantly decrease (increase) when the client firm operates in the regulated energy industry (non-regulated industry), no impact of regulations on audit timeframe is reported.

Key words

regulatory pressure, energy industry, audit risk, audit lag

Introduction

Regulatory pressure is one of the biggest challenges facing companies across industries, and the main challenge facing energy companies [1]. While the number of research papers focusing on determinants of audit risk is impressive [2-5], the impact of regulations on auditing timeframe and risk is the subject of much smaller research interest. One of the papers that touches upon this issue was done by [6], which demonstrates that economic sectors in Spain that are subject to regulatory pressure enjoy a shorter audit delay. However, this research is limited to the Spanish market and disregards audit risk considerations. Other sources report that audit fees, which are the benchmark of audit risk, are lower for firms in the regulated industries [7]. Still, the reasons for this finding are yet to be explained.

To address the research question, this paper examines a sample of 150 audit fee disclosures from proxy statements as well as 150 audit reports filed in 2012/2013 with the Securities and Exchange Commission. The research tests and analyzes hypotheses of relatively smaller audit risk as well as report lag in the regulated energy sector in the United States as compared to companies in the non-regulated industries. The research is based on econometric analysis of audit and financial data of U.S. companies available at Compustat, LexisNexis and the SEC EDGAR database. The incremental contribution of the research results from focusing on regulatory pressure as the current biggest challenge facing energy companies and its impact in audit risk. The paper analyzes the auditing timeframe, one of the core audit planning issues, which has not been examined in the U.S. after the introduction of SEC regulations concerning the timeliness of financial reporting in the early 2000s. To the author's knowledge, the study is the first to provide archival evidence using audit fees to support arguments for the response of auditors to regulatory pressure of energy industry in the U.S. The research results suggest that the traditional audit risk model may not be effectively capturing pricing behavior of auditors as far as regulatory pressure is concerned.

The research topic is relevant for several interested parties, including firms assessing audit risk before accepting the engagement that will be assisted by the results of the research in the audit-planning phase as far as risk, cost and time assessment is concerned. Another group of entities that could benefit from the research is the energy industry that could use the research results in negotiations of audit timeframe and fees with CPA firms. Finally, the research may be useful for financial market regulators, who could possibly change their expectations concerning the timeliness and cost of auditing services in the energy industry as compared to other industries.

The following section reviews prior research and formulates the hypotheses. After that, the next section outlines the research design and sample selection. The fourth section analyzes the results, while the final section presents conclusions, identifies research limitations, and suggests future research opportunities.

Literature review and research hypotheses

Audit risk

Auditors tend to adjust the audit risk model and decrease the audit fees in response to decreasing risk that client financial statements contain material misstatements [8]. The decreasing costs of auditing procedures are usually associated with minimized business risk relating to litigation, possible sanctions imposed by regulatory bodies, as well as impaired reputation and failure to collect fees. Decreasing audit costs have been well explained by linear regression models, especially for certain regulated and non-regulated industries [9].

Some of audit risk theories explain the phenomenon of decreased audit fees in one industry as compared to other industries on the grounds of passive adaptation of auditors to the inherently less risky industries [10]. On the other hand, other sources stress that the process of decreasing audit risk in regulated industries is reinforced by the decreasing detection risk. In contrary to non-regulated industries, to decrease the detection risk auditors do not have to increase the number of sampled transactions for detailed testing [11]. This may be explained by the fact that the auditees are subject to supervision of specific oversight bodies, such as the Federal Energy Regulatory Commission, who are in charge of financial control of the companies under their supervision. This control is supplementary to SEC oversight.

Regulatory pressure in the energy industry

The Federal Energy Regulatory Commission (FERC), an independent Federal government agency responsible for regulating the interstate transmission of electricity, natural gas, and oil, passes most regulations within the U.S. energy industry. The FERC also controls the wholesale sale of electricity and gas in interstate commerce. The entities subject to FERC rate regulations are public utilities, natural gas pipeline companies, and oil pipeline carriers. FERC determines the rates, terms, and conditions of providing utility service, the Uniform System of Accounts, as well as financial reporting requirements. Most of the rate-regulated entities maintain accounting records and financial statements prepared under U.S. Generally Accepted Accounting Principles (GAAP) with certain departures necessary for cost-of service regulation [12]. In particular, energy industry corporations may defer recognition of costs as a regulatory asset if it is likely that FERC will allow an increase in future rates to recover a specific cost. Such costs generally had been already incurred by them, but not yet recovered. To guarantee that energy industry companies have a rightful basis for recording amounts as regulatory assets and liabilities, FERC conducts regular financial audits [12]. Therefore, financial audits for the purposes of SEC filings seem to be intrinsically characterized by a smaller audit risk for auditor firms that know that their work is being or was done in parallel with a federal agency.

This leads to the first hypothesis of the paper:

H₁: Companies in the regulated energy industry enjoy relatively smaller audit risk as compared to companies in the non-regulated industries.

Audit lag and market efficiency

The existing literature on audit lag, defined as the number of days that elapse from the financial year-end up to the day of signing the audit report delay, is fairly broad. One of the studies was done by [13] who underlined the relevance of the notion from the economics point of view. They pointed out that an audit lag may be regarded as a meaningful indicator of market efficiency.

However, as far as the U.S. market is concerned, most of the research focusing on audit lag was conducted in the 1980s and 1990s [14-17]. While such considerations have continued in other countries, such as Spain [6], Malaysia [18], or Greece [19], U.S. researchers have expressed less interest in this issue in the recent years. One of the major reasons was most probably the approval of SEC Final Rule in September 2002 that changed the deadlines for filing 10-K forms for accelerated filers to 75 days. Further amendments of regulations concerning the timeliness of financial reporting have made the planning of financial reporting timeframe even less flexible.

As mentioned in the introduction section, [6] found that economic sectors in Spain that are subject to regulatory pressure enjoy a shorter audit delay. They conclude that auditees belonging to regulated sectors provide their yearly financial information in a timely way, and always before the companies belonging to other sectors that are not under institutional pressures. It has not been yet proved whether such a pattern is observable in the larger markets, such as the U.S.

This leads to the second hypothesis of the paper:

H₂: Companies in the regulated energy industry in the U.S. are characterized by a relatively smaller audit report lag as compared to companies in the non-regulated industries.

Research method

Sample Selection

The first step of the sample selection was to establish a stratified database of U.S. companies from the energy and other sectors. Some regulated sectors, such as Financials and Utilities, were eliminated from the sample since prior research reports that the determinants of audit fees for those industries are unique [20]. After deleting observations with missing variables on Compustat, 2,410 companies were identified. The next step was to develop two random samples of 75 records each and examine the most recent proxies filed with the SEC for which there was a corresponding fiscal year-end 10-K available filed by April 1, 2014.

Model specification

The research on the determinants of audit fees is well grounded with regression models with adjusted R^2 s between the 70 and 80 percent range [21]. For testing H_1 , the assumed model follows the approach of [3], but concentrates on regulatory pressures and impact of different regulation levels on audit risk:

$$Lnauditfees = a + b_1Reg + b_2Size + b_3BIG4 + b_4NI + b_5D/A + b_6Rec_loss + b_7Rec_loss + b_8Qual + e \quad (1)$$

The definitions of variables are given in the next section.

For testing H_2 , the assumed model follows the approach of Bonsón-Ponte, Escobar-Rodríguez and Borrero-Domínguez (2008), but apply to U.S. market:

$$Lag = a + b_1Reg + b_2Size + b_3BIG4 + b_4NI + b_5D/A + b_6Rec_loss + b_7Rec_loss + b_8Qual + e \quad (2)$$

The definitions of variables are given in the next section.

Dependent variables

The two dependent variables used in regression analyzes were *Lnauditfees*, which are logged audit fees disclosed by the companies in their 10-K or DEF 14A filings, and *Lag*, which are the number of days that elapse from the financial year end up to the day of signing the audit report. Following [22], the audit fees were logged to avoid heteroscedasticity.

Test variable

The test variable used in both regression models is *Reg*, an indicator variable equal to 1 for companies that belong to regulated sector, 0 otherwise. This variable tests the companies subject to regulations that require them to provide their industrial oversight body (FERC in case of U.S. energy industry) with additional financial information as compared with the non-regulated public companies that report only to SEC.

Control variables

Following [6], both regression models use six independent control variables:

- *Rec_loss* – indicator variable equal to 1 if the sample firm has experienced at least two annual net losses in the past three years,
- *Size* – logged market value of the companies,
- *BIG4* – indicator variable equal to 1 for Big 4 audit firms, 0 otherwise,
- *D/A* – total debt to total assets ratio,
- *NI* – net income of the company for the last financial year,
- *Qual* – indicator variable equal to 0 if the auditor's opinion is unqualified, 1 otherwise.

Results

Descriptive statistics

Table 1 provides descriptive statistics for the dependent and independent variables in the model. The mean of audit fees is \$2.1 million for the entire sample, \$2.6 million for the energy industry, and \$1.6 for other industries. The overall financial position of regulated industry sample firms is better than the financial standing of non-regulated companies in a few perspectives. First, only 27 percent of them have suffered a recurring annual net loss in the past three years, while this percentage rises to 43 percent for non-regulated firms. Second, the logged market capitalization of energy industry companies in the sample is on average 36 percent higher than the logged market value of firms from the other industries. Third, their net income for the last financial year is over ten

times higher than the net income of non-energy companies in the sample. Fourth, their total debt to total assets ratio is on average 15 times lower than the debt leverage of non-energy sample firms.

Sample energy industry companies enjoy not only lower audit fees, but also shorter audit lags. Their audit reports on average are issued 61 days after the end of fiscal year, compared with 70 days for non-energy industry. Audit firms other than Big 4 run only 28 percent of audits of energy corporations, which is 4 percentage points lower than in the other industries. 88 percent of sample energy companies received an unqualified audit opinion, while as far as non-regulated companies are concerned, this percentage drops to 73 percent.

Table 1 Descriptive Statistics

		<u>Minimum</u>	<u>Maximum</u>	<u>Mean</u>	<u>Std. Deviation</u>
Sample total (N=150)	<i>Lnauditfees</i>	3.97	7.53	5.95	.60
	<i>Auditfees</i>	9,300.00	33,600,000.00	2,123,892.49	4,124,390.56
	<i>Market_cap</i>	.25	394,474.26	8,988.82	39,274.76
	<i>Lag</i>	31	107	65.46	15.07
	<i>Rec_loss</i>	0	1	.35	.48
	<i>Reg</i>	0	1	.50	.50
	<i>Size</i>	-.60	5.60	2.88	1.07
	<i>BIG4</i>	0	1	.70	.46
	<i>D/A</i>	.00	16,400.00	208.16	1,430.86
	<i>NI</i>	-1,027.30	44,880.00	673.81	4,286.32
	<i>Qual</i>	0	1	.19	.40
Energy industry (N=75)	<i>Lnauditfees</i>	5.03	7.53	6.06	.54
	<i>Auditfees</i>	106,700.00	33,600,000.00	2,664,699.89	5,299,459.35
	<i>Market_cap</i>	80.56	394,474.26	15,122.19	53,877.53
	<i>Lag</i>	31	87	60.87	10.93
	<i>Rec_loss</i>	0	1	.27	.445
	<i>Reg</i>	1	1	1.00	.000
	<i>Size</i>	1.91	5.60	3.31	.82
	<i>BIG4</i>	0	1	.72	.45
	<i>D/A</i>	.000	62.02	25.00	17.49
	<i>NI</i>	-707.06	44,880.00	1,233.26	5,994.59
	<i>Qual</i>	0	1	.12	.33
Other industries (N=75)	<i>Lnauditfees</i>	3.97	7.08	5.84	.65
	<i>Auditfees</i>	9,300.00	12,000,000.00	1,583,085.08	2,360,921.11
	<i>Market_cap</i>	.25	96,040.30	2,855.46	11,261.33
	<i>Lag</i>	35	107	70.05	17.17
	<i>Rec_loss</i>	0	1	.43	.50
	<i>Reg</i>	0	0	.00	.000
	<i>Size</i>	-.60	4.98	2.44	1.12
	<i>BIG4</i>	0	1	.68	.47
	<i>D/A</i>	.000	16,400.00	391.32	2,013.47
	<i>NI</i>	-1,027.30	5464.80	114.36	651.04
	<i>Qual</i>	0	1	.27	.44

Source: own calculations

Variable Definitions:

Lnauditfees – logged audit fees disclosed by the companies in their 10-K or DEF 14A filings

Auditfees – audit fees disclosed by the companies in their 10-K or DEF 14A filings

Market_cap – market value of the companies

Lag – number of days that elapse from the financial year end up to the day of signing the audit report

Rec_loss – indicator variable equal to 1 if the sample firm has experienced at least two annual net losses in the past three years

Reg – indicator variable equal to 1 for companies that belong to regulated sector, 0 otherwise

Size – logged market value of the companies

BIG4 – indicator variable equal to 1 for Big 4 audit firms, 0 otherwise

D/A – total debt to total assets ratio

NI – net income of the company for the last financial year

Qual – indicator variable equal to 0 if the auditor's opinion is unqualified, 1 otherwise

Table 2 provides comparison of bivariate Pearson's and Spearman's correlation coefficients. The relationship between logged market value of the companies and audit lag is the only strong correlation identified by both Pearson's product-moment correlation coefficient (-.81) and Spearman's rank correlation coefficient (-.79). This is largely explainable by SEC Rule 33-8644 of December 27, 2005, which shortened the deadline for 10-K submissions for large accelerated filers to 60 days.

Two other strong correlations were recognized; however, they were supported by only one correlation coefficient. The first case was the correlation of logged market value of the companies and logged audit fees, which was supported only by non-parametric Spearman's coefficient (.76). The relationship is consistent with prior expectations based on statistics theory, since both variables are logged and were expected to have a monotonic, but non-linear relationship. However, following [23], while comparing values of Pearson's and Spearman's correlation coefficients on the same data set, it is important not to overestimate the relevance of Spearman's rank correlation coefficient as a significant measure of the strength of the associations between two variables.

The second case was the strong correlation of net income and logged audit fees, which was supported only by parametric Pearson's coefficient (.86). The direction of the relation is in line with audit risk theory. However, contrary to the previous situation, the relation is not fully consistent with prior expectations based on statistics theory, since the net income of sample companies was not logged in contrary to audit fees. The changes in those variables were expected to be accompanied by systematic changes in the others due to monotonic, but non-linear relationship.

Table 2. Bivariate Pearson's (upper triangle) and Spearman's (lower triangle) Correlation Coefficients

		Pearson's product-moment correlation coefficients								
		<i>Rec_loss</i>	<i>Reg</i>	<i>Size</i>	<i>BIG4</i>	<i>D/A</i>	<i>NI</i>	<i>Qual</i>	<i>Lag</i>	<i>Lnauditfees</i>
Spearman's rank correlation coefficients	<i>Rec_loss</i>	1.00	-.17*	-.48**	-.26**	.18*	-.12	.21**	.51**	-.18*
	<i>Reg</i>	-.17*	1.00	.40**	.04	-.13	.13	-.19*	-.31**	.13
	<i>Size</i>	-.47**	.38**	1.00	.56**	-.34**	.35**	-.29**	-.81**	.55**
	<i>BIG4</i>	-.26**	.04	.53**	1.00	-.20*	.10	-.16	-.49**	.21**
	<i>D/A</i>	.17*	-.02	.03	.02	1.00	-.02	.26**	.26**	-.07
	<i>NI</i>	-.65**	.09	.62**	.33**	-.07	1.00	-.07	-.12	.86**
	<i>Qual</i>	.21**	-.19*	-.20	-.16	.15	-.09	1.00	.35**	-.08
	<i>Lag</i>	.46**	-.27**	-.79**	-.45**	.02	-.47**	.23**	1.00	-.30**
	<i>Lnauditfees</i>	-.32**	.13	.76**	.52**	.06	.41**	-.19	-.64	1.00

*, ** Significant at 5 percent and 1 percent levels, respectively.

Source: own calculations

Variable Definitions:

Lnauditfees – logged audit fees disclosed by the companies in their 10-K or DEF 14A filings

Lag – number of days that elapse from the close of the accounting period up to the day when the auditor company signs the audit report

Fees – audit fees disclosed by the companies in their 10-K or DEF 14A filings

Rec_loss – indicator variable equal to 1 if the sample firm has experienced at least two annual net losses in the past three years

Reg – indicator variable equal to 1 for companies that belong to regulated sector, 0 otherwise

Size – logged market value of the companies

BIG4 – indicator variable equal to 1 for BIG4 audit firms, 0 otherwise

D/A – total debt to total assets ratio

NI – net income of the company for the last financial year

Qual – indicator variable equal to 0 if the auditor's opinion is unqualified, 1 otherwise

Empirical Results

Multivariate regressions results are given in Table 3. The first regression model confirms the hypothesis concerning the impact of the regulatory framework on audit fees as benchmarks for audit risk. The second regression model suggests that there are no statistical grounds for accepting the hypothesis concerning the impact of regulations on audit lag.

Impact of regulatory pressure on audit risk

The high level of adjusted R^2 (71.8 percent) suggests a good model fit. The coefficient estimates on the test variable, (indicator variable equal to 1 for companies that belong to regulated sector, 0 otherwise) and majority of the control variables are statistically significant, providing support for the first hypothesis of this paper. The results show that audit fees are significantly lower (higher) when the client firm operates in the regulated energy industry (non-regulated industry) (p -value = .001). In economic terms, the impact of moving from a non-regulated to a regulated industry on audit fees is a decrease of those fees by 15%¹. Consistent with prior research, the coefficient estimates on *NI*, *BIG4* and *Size* are positive and significant. Interestingly, the model does not support three of the proposed risk measures: *D/A*, *Rec_loss*, and *Qual*.

Impact of regulatory pressure on audit lag

The high level of adjusted R^2 (70.2 percent) suggests a good model fit. The coefficient estimates on the test variable, an indicator variable equal to 1 for companies that belong to regulated sector, 0 otherwise, is not statistically significant, which brings no evidence to confirm the second hypothesis of this paper. In economic terms, there is no statistical evidence that moving from a non-regulated to a regulated industry shortens the audit lag. Consistent with prior research, the coefficient estimates on *NI*, *BIG4* and *Size* are positive and significant. Interestingly, the model does support four of the proposed risk measures: *Size*, *D/A*, *Rec_loss*, and *Qual*. It is important to note that the three last variables were found insignificant in the first regression. As expected, the coefficient estimates on those control variables suggest that they contribute to prolonging the audit procedures.

Table 3. Impact of regulations on audit fees and lag – regression results

	Dependent Variable: Lnauditfees			Dependent Variable: Lag		
	Standardized Coefficients	t	Significance	Standardized Coefficients	t	Significance
<i>Constant</i>	4.632	42.823	.000***	95.112	34.285	.000***
<i>Reg</i>	-.167	-3.397	.001***	.026	.519	.604
<i>Size</i>	.811	11.586	.000***	-.787	-10.940	.000***
<i>BIG4</i>	.090	1.672	.097*	-.034	-.614	.540
<i>NI</i>	.080	1.692	.093*	-.061	3.724	.212
<i>D/A</i>	-.068	-1.431	.155	.181	-1.255	.000***
<i>Rec_loss</i>	.059	1.187	.237	.130	2.527	.013**
<i>Qual</i>	-.046	-.987	.325	.118	2.472	.015**
N		150			150	
Adjusted R^2		71.8%			70.2%	

*, **, *** Significant at 10 percent, 5 percent and 1 percent levels, respectively.

Source: own calculations

Variable Definitions:

Lnauditfees – logged audit fees disclosed by the companies in their 10-K or DEF 14A filings

Lag – number of days that elapse from the close of the accounting period up to the day when the auditor company signs the audit report

Fees – audit fees disclosed by the companies in their 10-K or DEF 14A filings

¹ $\log(-.167) = .85$

Rec_loss – indicator variable equal to 1 if the sample firm has experienced at least two annual net losses in the past three years

Reg – indicator variable equal to 1 for companies that belong to regulated sector, 0 otherwise

Size – logged market value of the companies

BIG4 – indicator variable equal to 1 for BIG4 audit firms, 0 otherwise

D/A – total debt to total assets ratio

NI – net income of the company for the last financial year

Qual – indicator variable equal to 0 if the auditor's opinion is unqualified, 1 otherwise

Conclusions

The purpose of this study was to examine the impact of regulatory pressure on auditing timeframe and risk based on empirical evidence from the U.S. energy industry. The paper contributes to the audit risk literature by extending the scope of factors that determine the risk assessment and pricing behavior of auditors. Using logged audit fees as a proxy for audit risk, the paper demonstrates that audit fees significantly decrease (increase) when the client firm operates in the regulated energy industry (non-regulated industry). In economic terms, the impact of moving from a non-regulated to a regulated industry on audit fees is a decrease of those fees by 15%. Even though this result is not directly explained by the GAAS-based audit risk model, it is consistent with non-American literature on auditing risk.

As far as the audit timeframe is concerned, the research results give no evidence that companies in the regulated energy industry in the U.S. are characterized by a relatively smaller audit report lag as compared to companies in the non-regulated industries. Although such statistical patterns are observable in the European and Asian markets, the limited flexibility of American SEC regulations on the timeliness of financial reporting appear to explain this finding.

Research limitations and future research

The major limitation of the study is the relatively small sample size, which could be increased in future research. Furthermore, actual regulatory pressure cannot be observed. To some extent, the results described in this paper may be obscured by other specific characteristics of the energy industry, such as limited litigation risk. Even though no findings in the prior research could support this hypothesis, it cannot be rejected without further substantive tests.

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IMPACT OF REGULATORY PRESSURE ON AUDITING TIMEFRAMES AND RISK: DATA FROM THE AMERICAN ENERGY INDUSTRY

Abstract

This article constitutes an analysis of the impact of regulatory pressure in the US energy sector on the timeframes and the risk of financial audit based on an examination of a sample of 150 companies in the scope of audit fee levels and auditors' reports for 2012/2013 filed to the Securities and Exchange Commission. It was found that the transition from the unregulated to the regulated sector results in a reduction of audit fees by 15% in the economic dimension. While the results outlined clearly show that auditing fees are significantly lower in the regulated sector than in the unregulated sectors, the impact of sectoral regulations on extending or shortening audit timeframes has not been confirmed.

Key words

regulatory pressure, energy sector, audit risk, audit timeframes, audit duration