

# VALUATION ANALYSIS OF ENVIRONMENTAL DISCLOSURES

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# Introduction

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- Motivation
  - » Remediation Costs
  - » AAA SEC Liaison Committee
    - Sack *et al.* (1995)
  - » Public Interest Groups
    - Krupp (1996)
  - » Sustainable Development

# Introduction

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- Contribution
  - » Examine more recent period than previous studies
    - Barth and McNichols (1994)
  - » Consider current authoritative guidance SOP 96-1
    - AICPA (1996)
  - » Examine incremental value of firm disclosures

# Research Questions

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- Do investors value firm-specific environmental performance information provided by an external source?
- Do investors value firm-provided environmental disclosures?

# Methodology

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- Stakeholder theory
  - Milgrom and Roberts (1992)
  - Gaa (1996)
- Valuation model
  - (Olson 1995)

# Valuation Model

$$MVE_i = \alpha + \beta_1 TA_i + \beta_2 TL_i + \beta_3 INC_i + \beta_4 IND_i + \sum_{j=1}^8 \delta_j PERF_{ij} + \sum_{k=1}^{11} \delta_k ED_{ik} + \varepsilon_i,$$

where

MVE : Market value of equity for firm i,

TA : Total Assets,

TL : Total Liabilities,

INC: Income before extraordinary items,

IND : Indicator variable where "1" denotes industries

with poor environmental performances,

PERF: Environmental Performance variables

j refers to the jth performance measure

ED : Environmental Disclosure variables,

k refers to the kth ED.

# Data Sources

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- 228 S&P 500 firms
- 1994 Financial Data-Compustat CD
- 1991-1993 environmental performance data summarized by IRRC
  - Cohen (1995), Campbell et al (1996), Mitchell (1996)
- Environmental disclosures in 1994 Annual Reports

# Variables of Interest

<u>Variable</u>	<u>Source</u>	<u>I/C</u>	<u>Hyp. Sign</u>	<u>Description of Performance Measure</u>
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## Environmental Performance Measures

Perf1	IRRC	C	-	Number of Superfund sites Company is a PRP
Perf2	IRRC	I	-	Industry comparison - Superfund sites
Perf3	IRRC	C	-	Number of RCRA corrective actions required
Perf4	IRRC	I	-	Industry comparison - RCRA corrective actions required
Perf5	IRRC	C	-	Total pounds of toxic chemicals released
Perf6	IRRC	I	-	Industry comparison - toxic chemicals released
Perf7	IRRC	C	-	Total value of penalties
Perf8	IRRC	I	-	Industry comparison - penalty costs

## Environmental Disclosures

ED1	10-K	I	-	Statement that effect on financial position is substantial
ED2	10-K	I	-	Description of legal proceedings
ED3	10-K	I		Statement that firm accrues remediation estimates
ED4	10-K	I	+	Statement that firm is in compliance with regulations
ED5	10-K	I		Range or qualitative statement about current year environmental costs
ED6	10-K	I	-	Range or qualitative statement about future environmental costs
ED7	10-K	I	-	Range or qualitative statement about total remediation costs
ED8	10-K	C		Current year environmental remediation and operating expenses
ED9	10-K	C	-	Projected future remediation costs
ED10	10-K	C	+	Current year environmental capital expenditures
ED11	10-K	C	-	Projected environmental capital expenditures for 1995
ED12	10-K	C	-	Amount of environmental accrual



# Selected Descriptive Statistics

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- 87% identified as PRP (Superfund sites)
- 23 2-digit SIC codes represented
- Primarily manufacturing
- Average of 11.6 Superfund sites, 21M pounds of TRI releases, \$821,000 in penalties per firm

# Results

<u>Variable</u>	<u>Base Model</u>	<u>Perform. Meas.</u>	<u>Mand. Disc.</u>
Constant	18.94**	18.23**	20.04**
Total Assets	.68**	.61**	.64**
Adjusted Total Liabilities	-.67**	-.59**	-.61**
Income	3.51**	3.50**	3.39**
Industry	-2.19	-4.89**	-3.85*
perf1-Superfund Sites		11.27	12.13#
perf2-Superfund Index		-1.37	
perf3-RCRA Actions		-40.89	
perf4-RCRA Index		4.05#	3.43*
perf5-Pounds TRI Releases		-3.22#	-5.97**
perf6-TRI Index		8.40**	7.84*
perf7-Cost of Penalties		-37.86	
perf8-Compliance Index		1.89	
ED2 - Legal Proceedings			-3.47*
ED3 - Accrual Statement			-1.38
ED4 - Reg. Compliance			.81
ED5 - Qualitative Current			-.76
ED6 - Qualitative Future			-5.29**
ED7 - Qualitative Total			-.64
ED8 -Current Remediation			4.53*
ED9 - Future Remediation			.11
ED10 -Current Capital			3.46
ED11 - Future Capital			4.60*
ED12 - Amount Accrued			-1.40
Adjusted R Square	.441	.485	.546
R Square	.451	.504	.570
Change R Square	.451	.053	.066
F Change	45.78	5.82	8.30
Significance of F Change	.000	.000	.000
# - Signif. = .10, * - Signif. = .05, ** - Signif. = .01 (1 -tailed)			

# Results

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- Environmental Performance
  - » Information regarding “past sins” impounded in stock price
  - » Investors are concerned about financial impact of future environmental risks (-)
  - » Investors do not appear to value superior environmental performance

# Results

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- Environmental Disclosures
  - » Description of legal proceedings (-)
  - » Qualitative information about future environmental activities (-)
  - » Current remediation (+)
  - » Future capital expenditures (+)

# Conclusions

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- SEC and FASB concern about relevance of environmental disclosures is valid
- Additional guidance on disclosure of future environmental expenditures
- Investors perceive that capital expenditures have revenue generating/cost reduction potential