

*World Resources
Institute*

Relating Environmental Performance to Shareholder Value

*An Approach
Based on Fundamentals*

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September, 1999

The Context: Capital Markets and Corporate Behavior

- Capital Markets exert enormous influence over company decisions.
- Especially today when:
 - shareholder value is the hallmark of corporate success;
 - compensation is often tied to share value; and
 - investors are quick to leave firms that lag behind

But, Capital Markets are Largely Silent on Environmental Issues

- For all their influence on company behavior, markets are essentially neutral on environmental issues
- Mainly because there is no systematic way of assessing the financial implications of the environmental issues that companies face

UNEP Survey Finding

- “The most significant obstacle cited to advancing integration of environmental issues into credit and investment analysis was *the translation of environmental impacts into financial implications*”
- *UNEP Financial Institutions Initiative Survey, 1999*

Why is this important?

- If one could translate environmental issues into financial terms and introduce this into conventional company valuation:
 - Markets would systematically reward environmental leaders and punish laggards
 - Companies would face a permanent incentive for environmental improvement

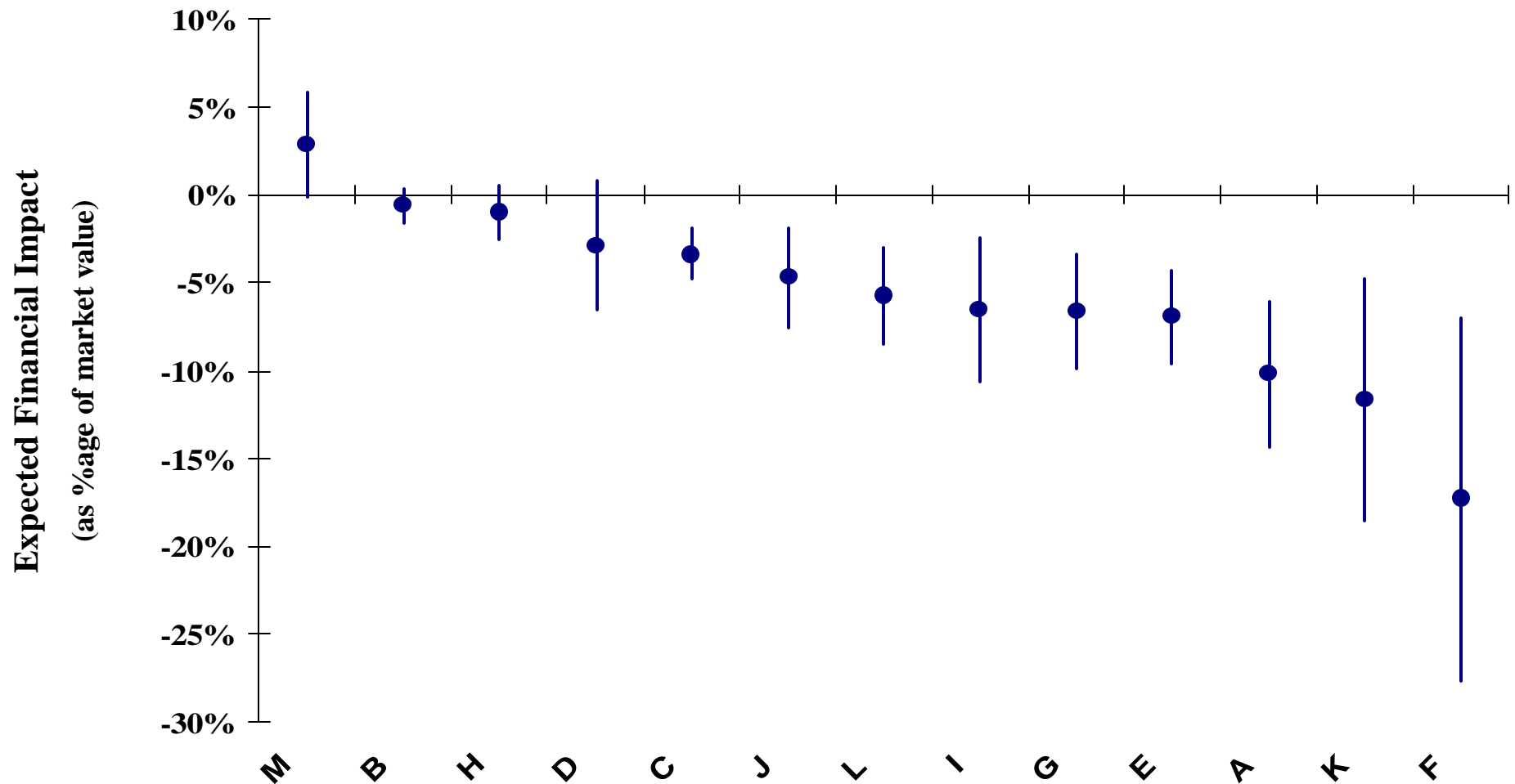
Translating Environmental Issues into Financial Implications

- WRI has developed a new methodology to address this challenge
- It is forward-looking and assesses company exposure to environmental issues by exploring different possible scenarios
- Company exposure to future issues can be expressed in terms of financial risk and reward

Key Features of the Analysis

- The methodology is forward-looking and uses scenarios to envisage different futures
- The methodology can readily be integrated into conventional valuation techniques
- It is driven by industry perceptions about which issues are important

Overall Exposure of Major Pulp and Paper companies to pending environmental issues



The Four Steps in the Analysis

PHASE 1

Identify salient impending environmental issues

PHASE 2

Develop scenarios around each

PHASE 3

Assess individual company exposures

PHASE 4

Analyze financial implications of each scenario

Salient Future Issues for the Pulp and Paper Industry

- Cluster Rule options
- 303d Rivers and TMDL provisions
- Sediment Remediation
- NOx regulations
- Endangered Species Act
- Timberland regulations

Example: NO_x Regulations

- Mills in 22 Eastern states to reduce summertime NO_x emissions by up to 75%
- Mills have until 2003 to comply
- EPA's proposed permit trading system would lower compliance costs
- Proposed rule has been successfully challenged in a Federal Appeals Court

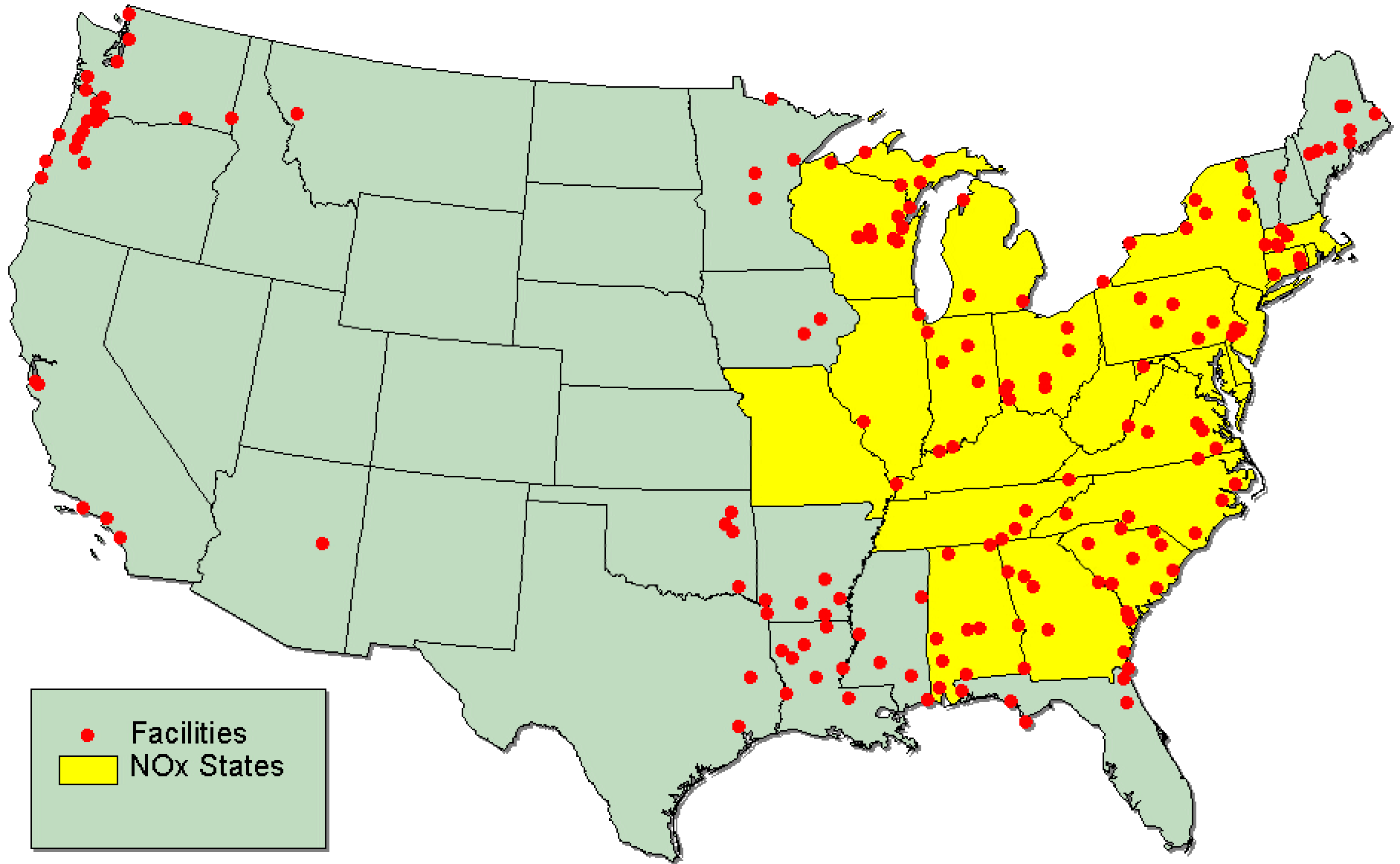
Scenarios for the Development of NO_x Regulations

■ Scenario A

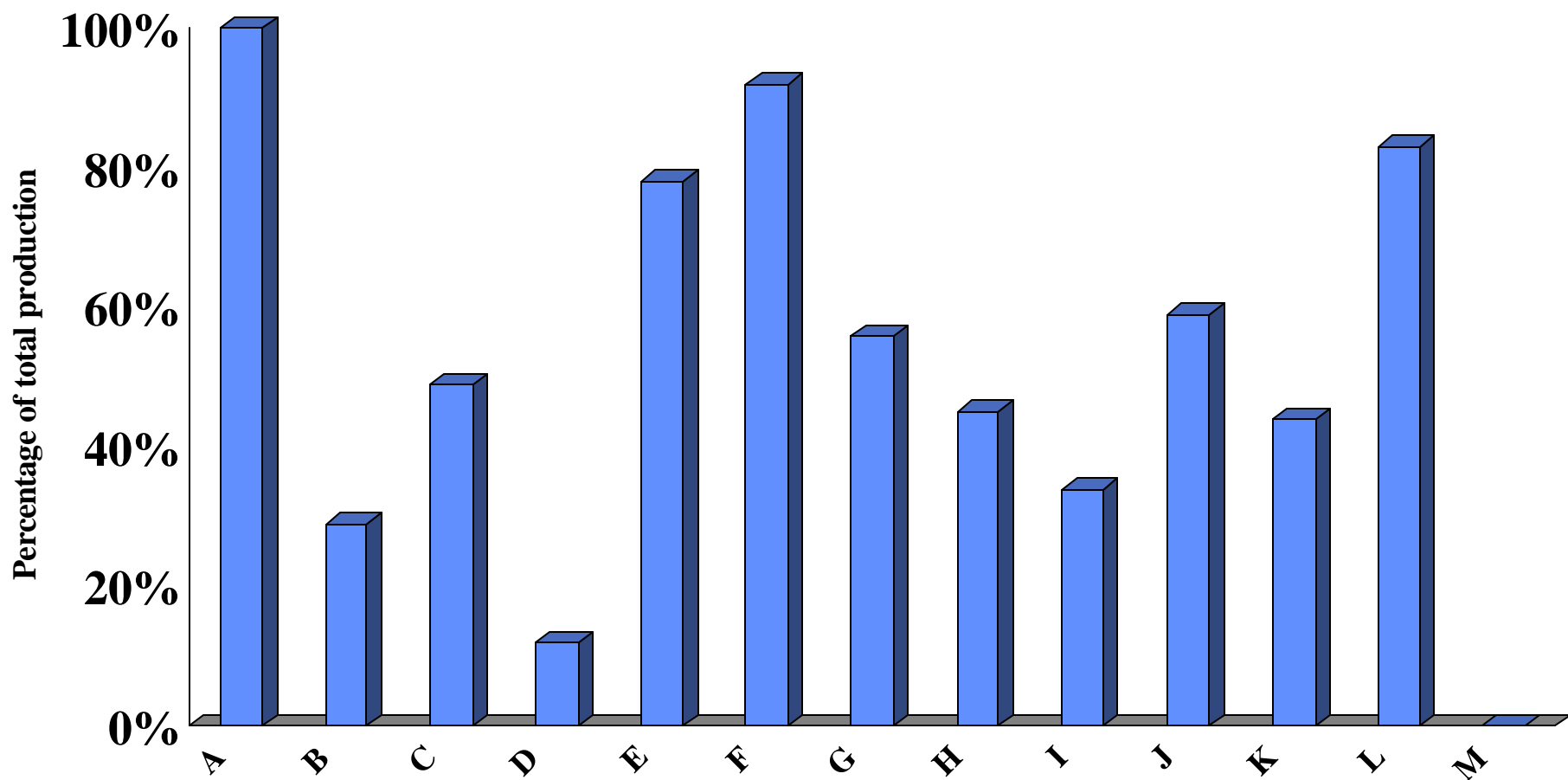
States fail to create a workable cap-and-trade system. Individual mill compliance costs approximate \$4,000 per ton.

■ Scenario B

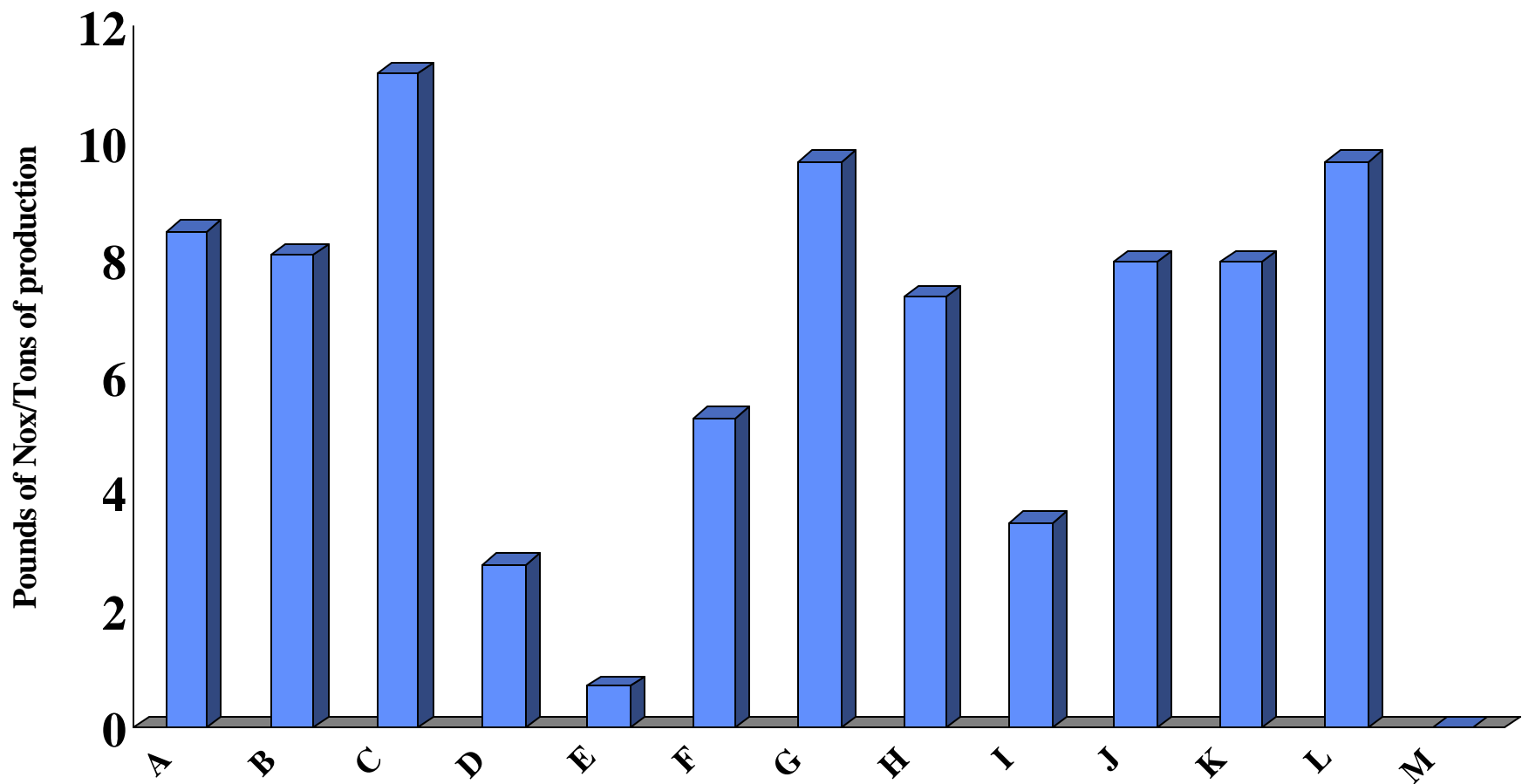
A region-wide cap-and-trade program lowers mill compliance costs to approximately \$2,300 per ton.



Share of Production Capacity within the 22 NO_x States, by Company

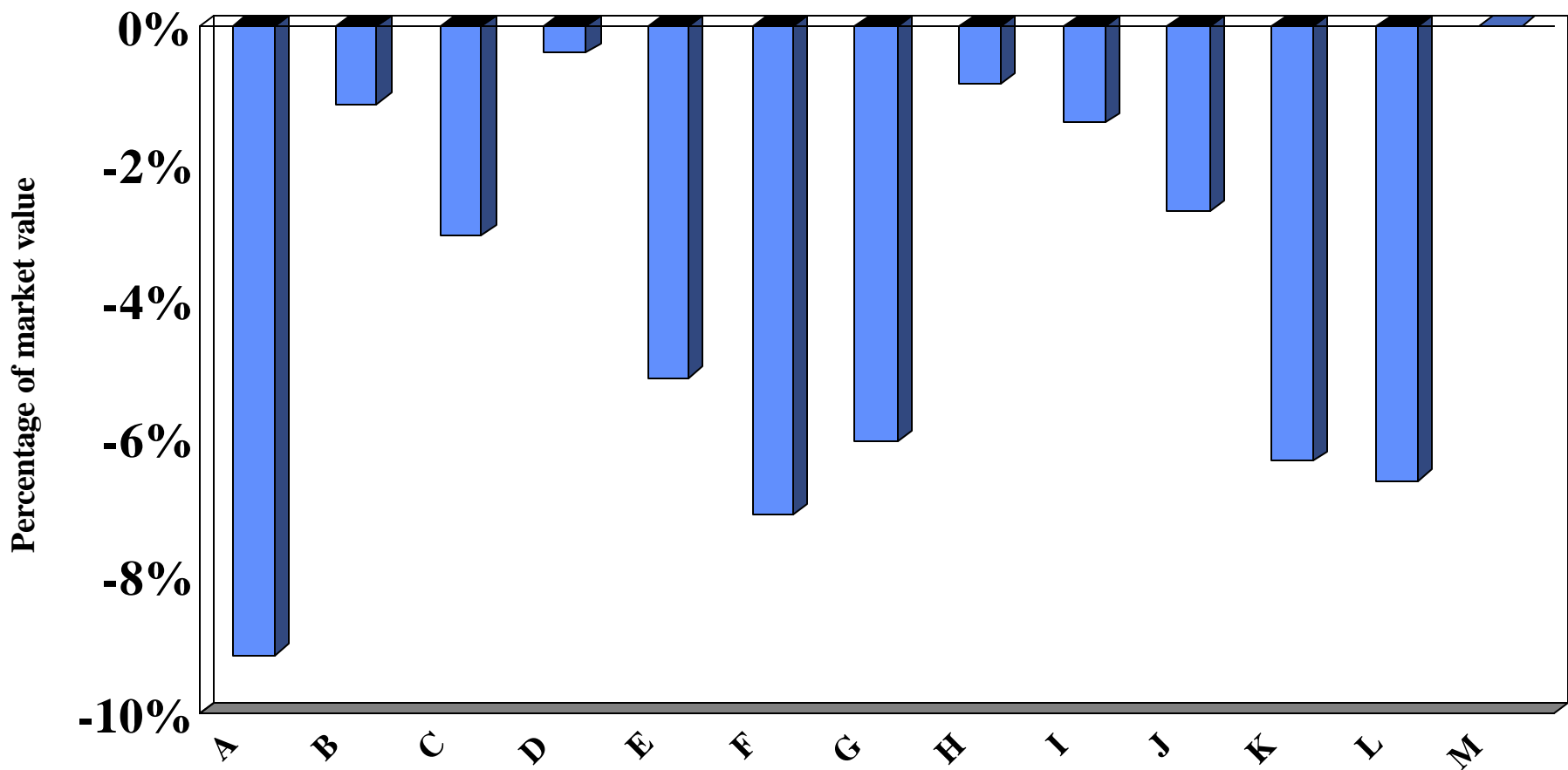


NOx Emissions per Ton of Output from Mills within the 22-state Region



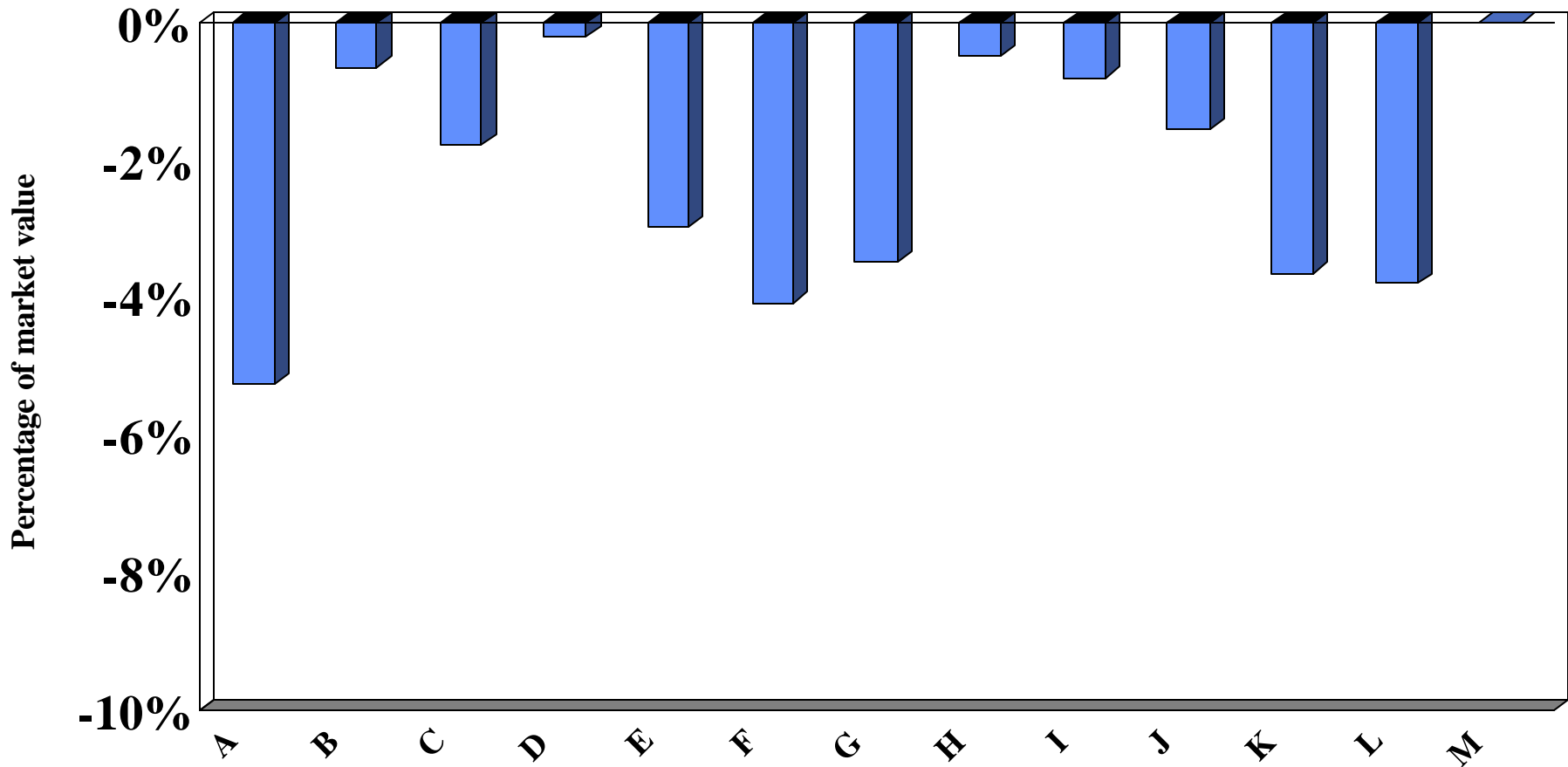
Scenario A — NOx Regulations

Financial Impact (gross costs)



Scenario B — NOx Regulations

Financial Impact (gross costs)

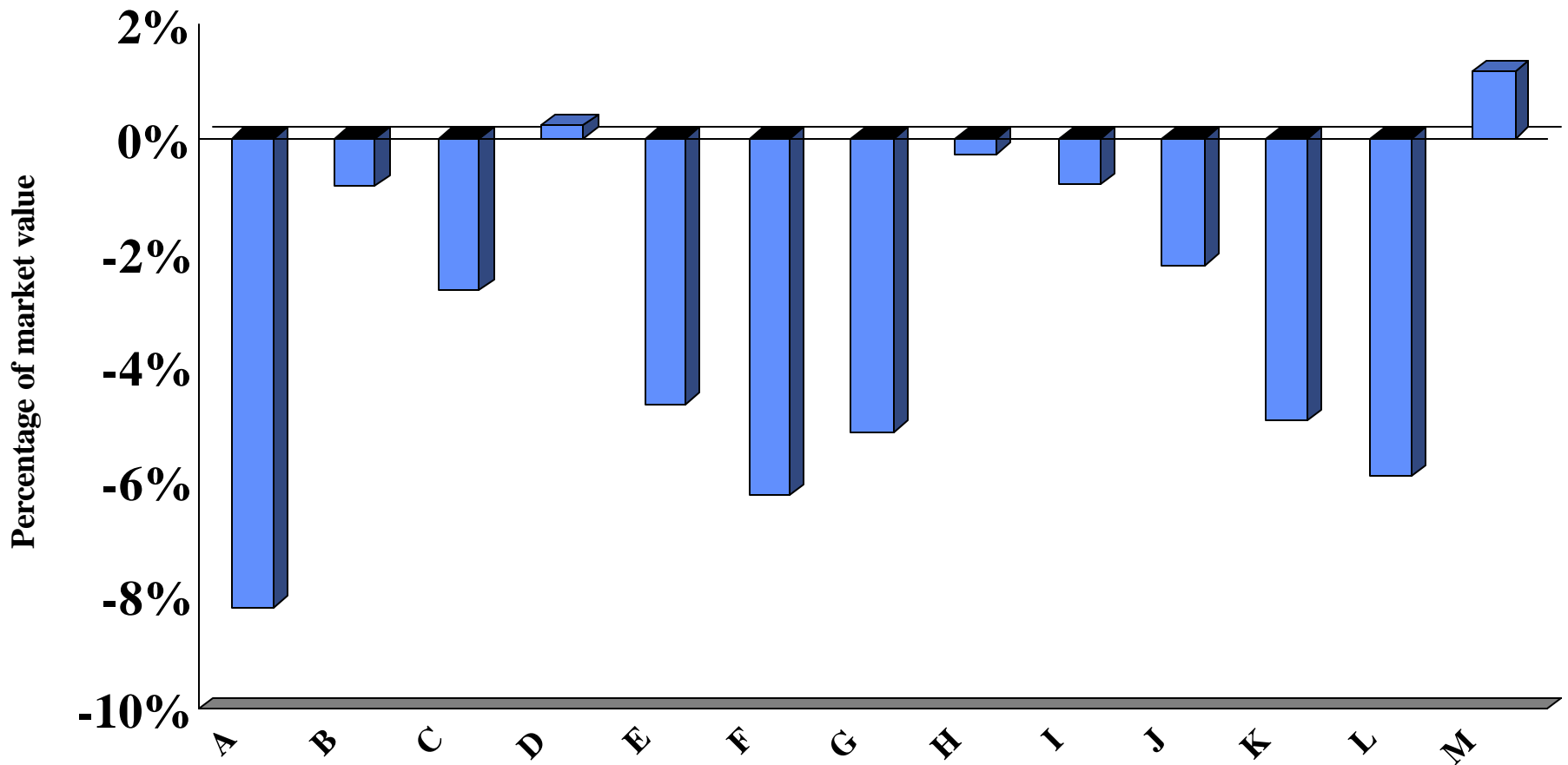


Sub-scenarios for price elasticity of demand

- Degree to which companies can pass on higher operating costs depends on demand elasticities
- In turn, sensitive to world demand for paper and available product from Asia and Latin America
- High Elasticity case permits less pass-through of costs than Low Elasticity Case

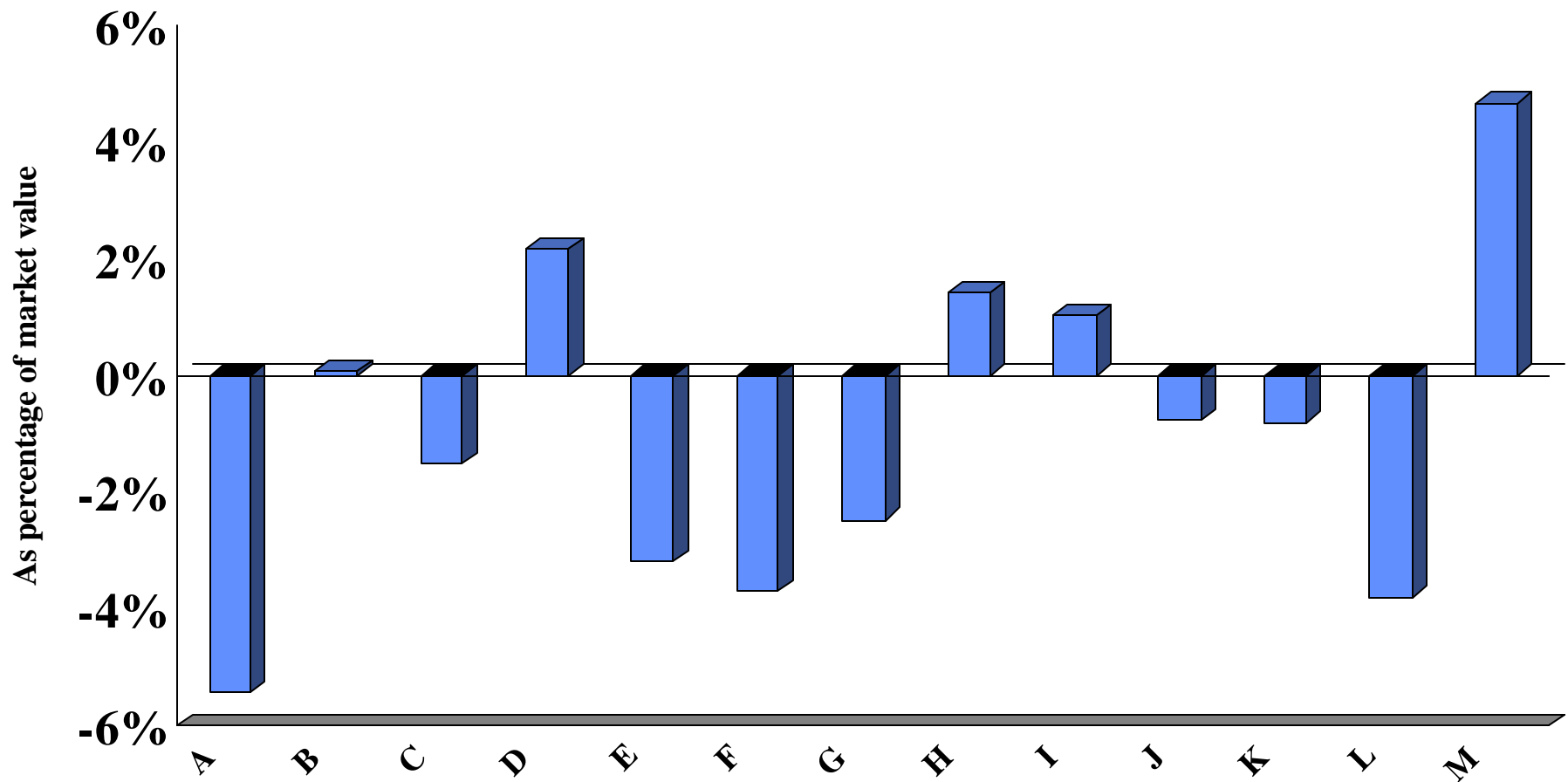
Scenario A — NOx Regulations

Financial Impact (high demand elasticity case)



Scenario A — NOx Regulations

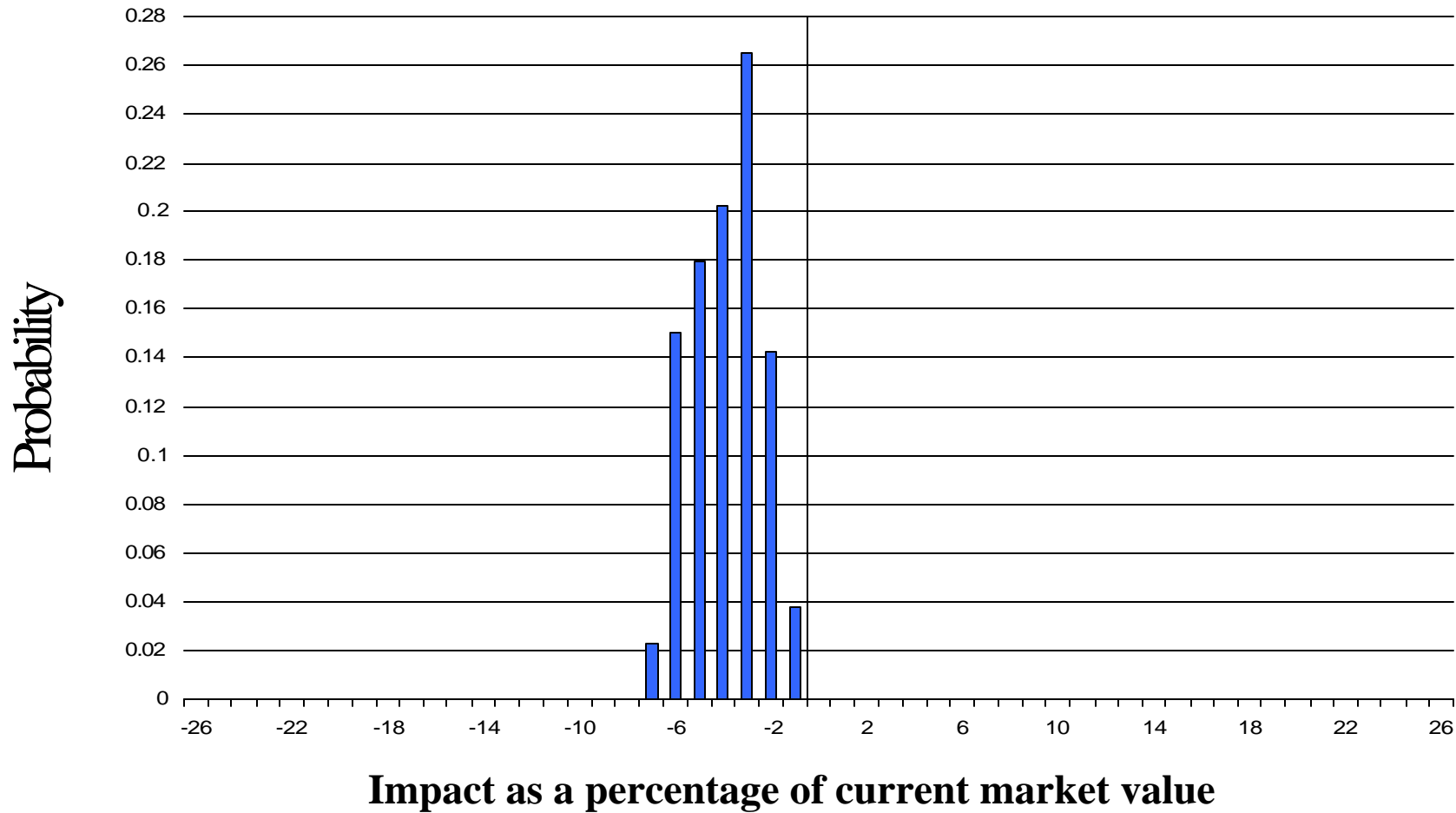
Financial Impact (low demand elasticity case)



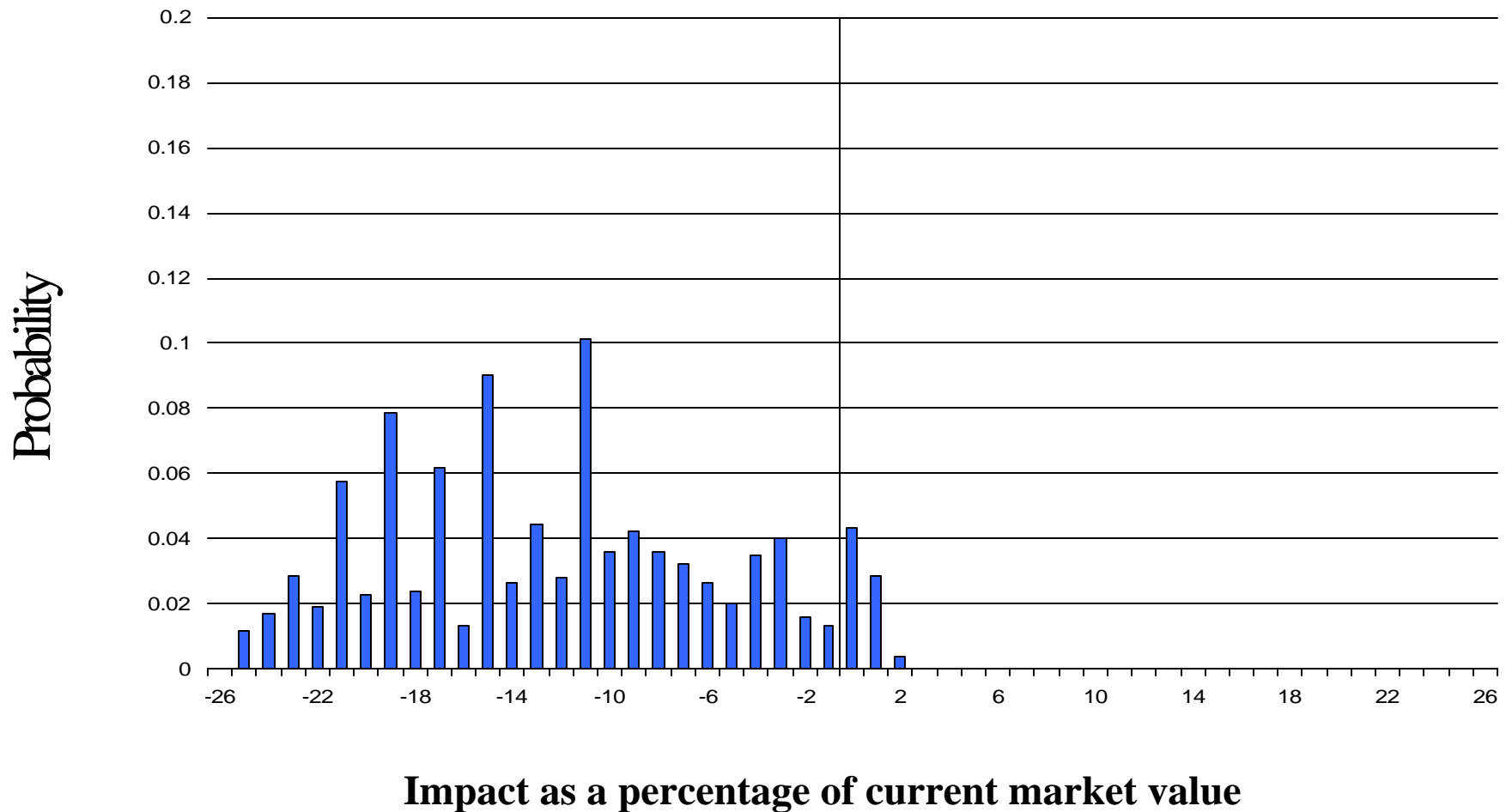
Salient Future Issues for the Pulp and Paper Industry

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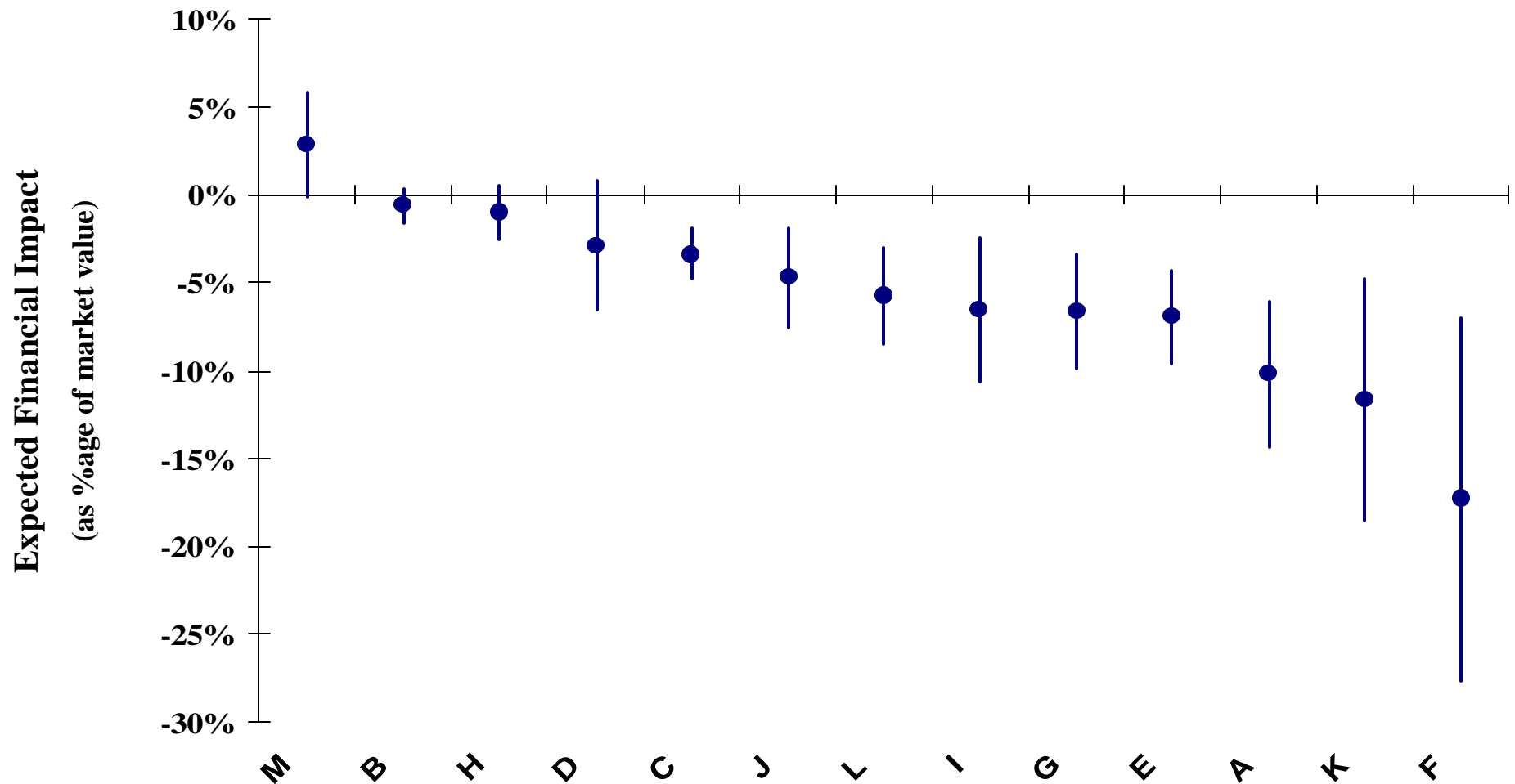
Probability Distribution of Financial Impacts from Exposure to Key Environmental Issues - Company C



Probability Distribution of Financial Impacts from Exposure to Key Environmental Issues - CompanyK



The same issues create very different financial exposures for different companies



Are Analysts already aware of Environmental Value?

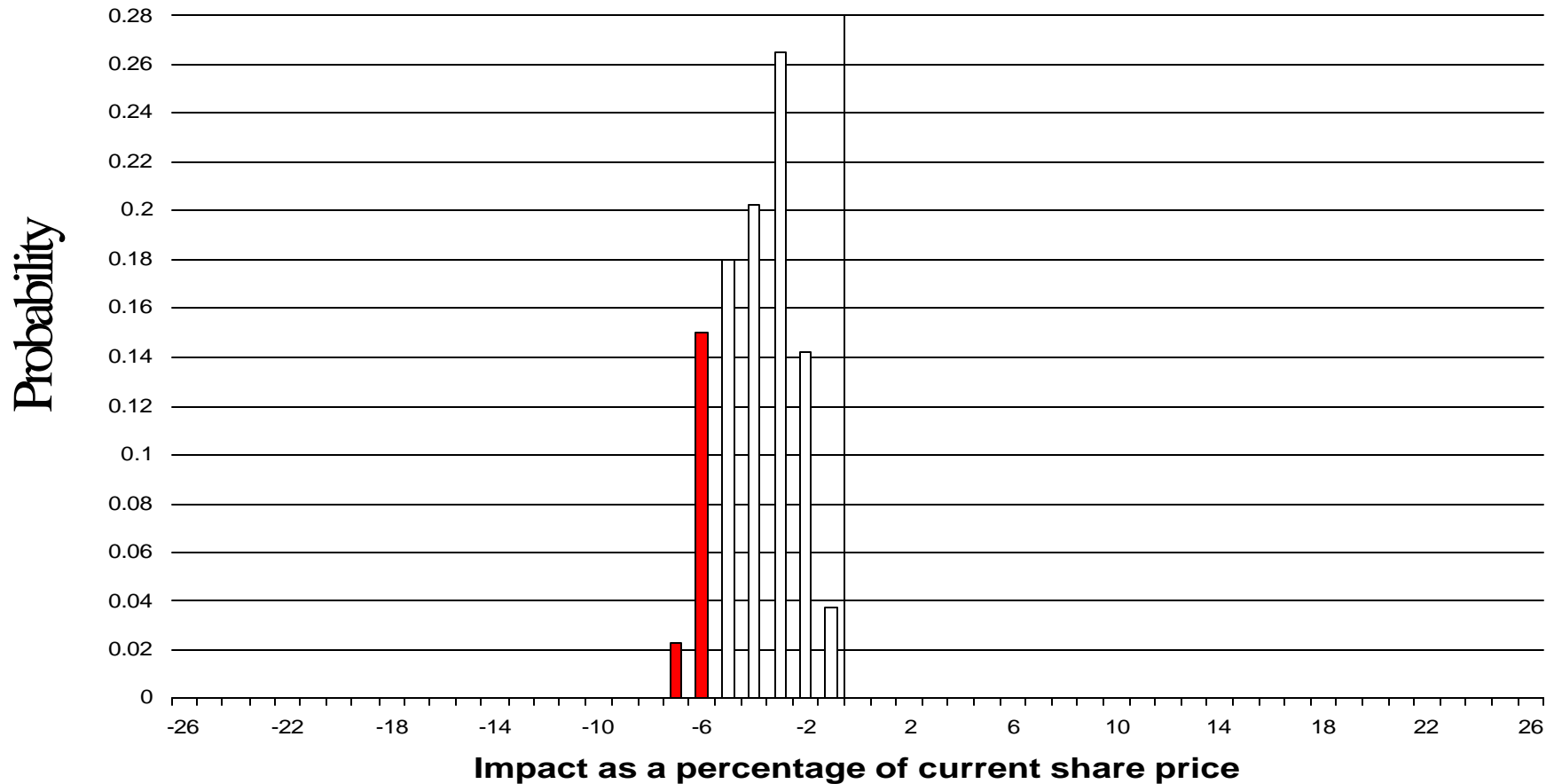
- Annual reports and 10Ks do not convey the financial impact of forthcoming environmental issues
- Feedback from securities analysts suggests that this type of valuation exercise is not presently undertaken

Policy Implications

- Attempt to influence policy change on:
 - SEC disclosure rules - from this evidence, environmental issues are *financially material* and thus in the interest of all investors
 - Information provision from EPA - data on companies is difficult to retrieve and could be improved

Insuring Against Losses Greater than 5 percent of market value - Company C

Insurance Value (annual premium) = \$20 million



Insuring Against Losses Greater than 5 percent of market value - Company K

Insurance Value (annual premium) = \$234 million

