

Moving Forward with Retrospective Cost Analyses

Presentation to EPA's Science Advisory Board –
Environmental Economics Advisory Committee

July 12, 2012

Recap of Prior Discussion

- April discussion focused on evaluation of the retrospective cost study methodology and case study approach
- EPA presented preliminary results for 5 initial case studies that examine compliance costs retrospectively
 - Integrated NESHAP and Effluent Guidelines for Pulp and Paper (1998)
 - NESHAP: Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills (2001)
 - Methyl Bromide Critical Use Nomination for Preplant Soil Use for Strawberries Grown for Fruit in Open Fields on Plastic Tarps (2004-2008)
 - National Primary Drinking Water Regulation for Arsenic (2001)
 - Locomotive Emission Standards (1998)
- The case studies examine key drivers of compliance costs to see if informed *judgments* (weighing the evidence) can be made about whether ex post costs are higher or lower than the estimates of ex ante costs.
 - Interest is not solely on the direction of ex post costs in comparison to ex ante estimates
 - Interest also lies in the identification of the key drivers of costs – the reasons why costs diverge (e.g. technological change, flexible compliance options).
- A careful assessment of ex post costs could help identify systematic differences between ex post and ex ante compliance cost estimation and, ultimately, allow for improvements in the way in which ex ante analyses are done.

Review of Charge Qs: Using and Generalizing Results

First, and foremost, EPA feels that the studies can help inform design of better cost estimation methodologies for future efforts.

But, there is also interest in using the aggregate results to inform the overall debate (aggregate results from existing retrospective studies are often cited).

- How can we meaningfully make generalizations concerning ex ante cost estimates based on ex post comparisons? How can ex post cost comparisons be used to inform how the Agency estimates costs ex ante for future rules?
 - Promulgation of every regulation is a unique event.
 - Different considerations of timing, technology, industry structure, and a host of other factors affect ex ante costs and determine the accuracy of those ex ante estimates relative to ex post experience.

Review of Charge Qs: Using and Generalizing Results

- Is it possible to make general statements as to the accuracy of *ex ante* cost estimates? If so, what is the best way to evaluate their accuracy?
 - Previous studies in the literature have focused on the relative proportions of over- and underestimates of costs or the average ratio of *ex ante* to *ex post* cost estimates.
 - In section 3, we suggest reasons why these indicators may not reveal a bias in *ex ante* cost estimates,
 - We have suggested a regression-based procedure for making such a determination.
- Is it appropriate to concentrate on the bias of *ex ante* cost estimates, or might other statistical measures be more revealing?

Selection of rules

- The initial set of rules (Phase I) summarized in the Interim Report were selected so as to cover a range of media.
- The next set of rules we want to assess (Phase II) were randomly selected using stratified random sampling.
- For both Phase I and Phase II rules, we have encountered (and continue to encounter) data challenges that make it difficult to draw conclusions about realized compliance costs.
- Challenges include:
 - lack of participation by industry
 - inability to identify independent industry compliance experts
 - most knowledgeable industry compliance experts assisted with ex-ante analyses
 - heterogeneous industry/regulated population
 - data costs
 - data limitations

Review of Charge Qs: Selecting Rules for Retrospective Cost Study

- Is there a way to credibly identify rules that would lead to informative ex-post cost studies from which we can draw conclusions?
 - What should our priorities be with regard to how we select the sample of rules for evaluation?
 - Should we compromise the random selection of rules in favor of selecting rules with more readily available data? If so, on what types of rules should we focus?
 - What types of rules could we defensibly leave out?
 - What kind of selection biases would we introduce under different sampling methods?
 - If we exclude rules where the industry is particularly heterogeneous or data are difficult to identify, can we still draw conclusions that would be generally applicable?
- How do we balance pragmatism vs. the purity of our sampling method, given our experiences ?
- Should our choice of methodology inform the way we select the sample of rules or vice versa?

Proposed Screening Process

1. Select rules using stratified random sampling
2. Summarize ex ante analyses, identify candidate components of compliance costs for detailed ex post analysis, and assess the likelihood of obtaining the appropriate data to produce an ex post compliance cost estimate
3. Explore availability, quality, and associated costs of data for main candidate cost categories
4. Apply the following decision rule:
 - If expected costs of data/expert consultation exceed a certain threshold (determined by resource availability), include description of rule and analytical challenges but drop detailed ex post analysis of compliance costs
 - If expected costs of data/expert consultation fall between a certain midlevel range, proceed only if resulting data are expected to yield ex post compliance cost information for the majority of the regulated entities
 - If expected costs are low, proceed with ex post analysis, extracting information on as many of the regulated entities as possible.
(Values chosen are for illustrative purposes.)

Importance of Timely Review

- Retrospective Cost Study is undergoing a fair amount of scrutiny as it is part of EPA's Reg look back plan
 - formed in response to Executive Order (EO) 13563
- Five Phase II case studies have commenced but are at a virtual stand still awaiting input from SAB-EEAC and consultation with EPA senior management.