

Porter Debate Stuck In 1970s

I was sorry to have missed ELI's workshop on the Porter Hypothesis [The Forum, July/August], but am happy to provide this response, invited by the editor, in hopes of bringing a different perspective.

The hypothesis is essentially that regulation, properly designed, can cause the regulated firm to undertake innovations that not only reduce pollution — which is a hallmark of production inefficiency — but also save on materials, water, and energy costs. This can occur because the firm, at any point in time, is suboptimal. If the firm is first to move by complying in a clever way, other firms will later have to rush to comply — and do so in a less thoughtful and more expensive way. Thus, there are “learning curve” advantages to being early.

Porter argues that in the international context, first-mover firms benefit by being subjected to a national regulatory system slightly ahead of that found in other countries. In fact, Porter argues that “U.S. regulations should be in sync with regulations in other countries and, ideally ahead of them.” What is missing from Porter's analysis are details about the process of innovation, how change actually occurs in industrial firms, what kinds of firms are likely to come up with what kinds of technical responses, and how very stringent regulation can confer competitive advantage beyond what he calls “innovation offsets.” While Porter stresses the importance of going beyond the “static model” of compliance responses, he is in fact talking about modest or incremental innovation in pollution control, and to a lesser extent significant pollution prevention.

This is essentially the “weak form” of the hypothesis. Both the “weak form” and a “strong form” were first suggested by our group at MIT in the early 1970s. In the strong form, the replacement of dominant technologies by new entrants, rather than incremental change by existing technology providers, is the source of the most important innovations.

What some critics in the July/August Forum debate dismiss as anecdotal information is in fact rich in ex-

amples of more and less stringent regulation with predictably more or less innovative responses. A consistent behavioral theory emerged after nearly twenty years of work at MIT. This theory requires an understanding of both the importance of getting the various components of the regulatory signal right, and the different innovative potential of existing firms and new entrants for product and process innovation.

In 1979, the MIT researchers argued that “ancillary benefits” (what Porter called “innovation offsets” more than a decade later) could yield costs savings to the regulated firm. We argued that “a study of the innovation process in five foreign countries found that innovations for ordinary business purposes (not necessarily for compliance) were much more likely to be commercially successful when environmental, health, and safety regulations were present as an element in the planning process than when they were absent.” We further argued that “regulation, by adding new dimensions to older problems, increases the problem space of the engineer.” Regulation could confer ancillary benefits, but more significantly could rechannel creativity, bring new skills, and cause beneficial reorganization in the firm. Later in 1983, as a result of intensive study in the chemical producing and using industries, MIT argued that stringent regulation could stimulate entirely new products and processes into the market by new entrants with the displacement of dominant technologies rather than the transformation of technologies by existing firms.

Those that argue today that the data do not support the general premise that regulation stimulates innovation as a statistical matter are missing the point. It could be agreed that in general, regulation does not stimulate innovation in most firms. The point is that it can stimulate innovation in some firms, those which turn out to become the technological leaders and gain considerable advantages over the others. The evidence here is necessarily anecdotal. Much regulation is “captured” or heavily influenced by the dominant firms, which persuade government to set standards that they themselves can

already comply with. Why, then, should it be a surprise that not much innovation occurs in the majority of firms subject to regulation and that no “statistical correlation” can be found between regulation and widespread innovation in those firms?

In regulatory systems where health or safety concerns are sufficiently serious to counteract industry pressure, there is plenty of technology innovation forcing. Often this regulation involves dramatic reductions to workplace exposure, consumer product bans, or the significant reduction of industrial emissions or effluents or the banning of industrial products. The point is that regulation can be designed to stimulate radical innovation if there is both sufficient social concern and political will. This is especially true where regulatory goals are clear and demanding, but the means of complying are flexible.

In 1985, we stated, “Based on experience gained, from the history of industrial responses to regulation [since 1970], designers may now be able to fashion regulatory strategies for eliciting the best possible technological response to achieve health, safety, and environmental goals. . . Such a strategy builds on the [hypo]thesis that health, safety, and environmental goals can be co-optimized with economic gains [win-win] through technological innovation.” The policies implementing such a strategy were put forth in 1994.

What many of the Forum participants show is that the debate in the United States is stuck in the 1970s. In contrast, in Europe researchers are seriously discussing fundamental technology-forcing interventions, recognizing the importance of understanding the dynamics of technological change and the distinctions between policies that foster evolutionary incremental change and those that stimulate significant technological and organizational innovation needed for sustainable development in environment and energy.

Nicholas A. Ashford

*Professor of Technology and Policy
Director, Technology and Law Program
Massachusetts Institute of
Technology
Cambridge, Massachusetts*