

## THE FORUM

### Regulation Has Little To Do With Innovation

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**D**o environmental regulations spur companies to innovate? In some cases, they do. In many other cases, they don't. And in still other cases, they actually hold back innovation. The fact of the matter is that firms differ dramatically in their capabilities, resources, and strategies. Just as they respond differently to signals coming from the marketplace, firms also react differently to regulation.

The overly simplistic notion that environmental regulations somehow magically cause large numbers of firms to innovate in ways that reduce environmental risk and improve business performance is a fantasy that fails to capture the ways that regulations really work and how firms respond to them in the real world.

How could such a simplistic notion have such wide sway? One reason is it that until recently it was not subject to any real scientific scrutiny. The Porter Hypothesis was based on case studies—or more appropriately a handful of “success stories.” Most of the rebuttals, such as they are, have also been based on a limited sample of case studies. The debate has thus boiled down to little more than anecdote, posturing, and opinion.

In the past several years, several systematic studies have emerged to examine this issue. One of these studies, done by myself and a team of researchers at Carnegie Mellon, surveyed a large sample of corporations across the United States. It included detailed field research consisting of paired comparisons of similar factories experiencing similar regulation in similar industries. Our basic finding was that firms respond very differently to regulation. Some firms seek simply to comply; some firms innovate to avoid regulation; other firms innovate to improve business performance; and

still other firms do nothing and hope to avoid getting caught.

There are the innovative, competitive, well managed firms, according to our research, who invest in R&D, adopt new technology, take on modern management practices, treat their workers well, and also strive to reduce environmental risk. Then there are the laggards who invest far less, if at all, in R&D, tend to have old, outmoded technology, avoid upgrading their workplaces, and do not care very much about environmental impacts. Environmental violations by this group of firms are often a symptom of deeper problems in how they go about doing their business.

One big difference between the two groups is size. The innovative firms have the resources and the capabilities to do the right thing; the laggards are more likely to be small. Another important point is that many environmental improvements come from doing numerous small things; for example, by enabling shop-floor workers to make small incremental improvements in the production process.

It is the market, not regulation, that is driving firms to innovate in ways that improve business performance and reduce environmental risk, as our research shows. Innovative firms are motivated to improve their bottom line. That is why they are making substantial investments in R&D, adopting state-of-the-art process technology, and taking on high-performance management systems. The most advanced firms are becoming leaner and greener by adopting integrated systems that eliminate waste throughout the value chain by striving for zero defects, zero inventory, and zero emissions; environmental improvement is less the result of regulation and more an outgrowth of innovative firms' doing what is necessary to bolster their competitiveness.

This nation needs a new system of environmental regulation which is in sync with the new realities of competition. The current regulatory system is composed of three parts: standards, penalties, and remedies. Standards can promote innovation, as firms innovate to meet or exceed

them. This is the piece of the system that proponents of the Porter Hypothesis emphasize.

But, the two other components of the system mainly act to retard innovation. Many firms seek to avoid runs-ins with regulatory bodies and drop innovative solutions in favor of “best available control technology.” Others simply choose to pay the fines when they are caught. In this way, the current regulatory system actually sets in place a system of perverse incentives which at times actually holds back the pace of innovation.

An improved system of environmental regulation would set tough, transparent, and consistent standards and enable firms to flexibly meet those standards by implementing truly innovative approaches. It would see environmental violations as symptoms of deeper management and technological problems and establish structures and incentives to encourage lagging firms, mainly small and medium-size companies, to invest in new technology and improved production systems. There also needs to be better funding for systematic research, measurement, and analysis of what works and what does not, to get away from the problem of policy making by anecdote, prevalent in so much of the debate over the Porter Hypothesis.

It is true that many firms are innovative, and it is also true that many firms are developing innovative responses to environmental regulation. The nub of the issue is that these firms are not innovating in response to regulation, but in spite of it. A new framework for environmental policy would change this calculus by providing real incentives for firms to innovate in ways that improve business performance and reduce environmental risk, and real penalties for those who choose not to.

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