cation, and market conditions.

Uncovering and eradicating discrimination in credit markets are an important goal for federal and state bank regulators. Unfortunately, determining what constitutes discriminatory behavior is often more difficult than it appears. Although APR may seem a reasonable way to compare prices across different loans, it does not consider the voluntary choices that borrowers make about the terms of their loans. As a result, relying on APR can lead to inaccurate conclusions about the presence of discrimination.

Regulators and others involved in fair-lending enforcement should abandon use of APR and other similar effective–interest rate comparison tools. Instead, fair-lending compliance should be measured by statistical comparisons of the relative frequency and magnitude of overages across groups. By this means, regulators can get a clearer, more accurate picture of the true options that were available to different borrowers. ■

Do Environmental Regulations Increase Economic Efficiency?

By Jane S. Shaw and Richard L. Stroup

A PHYSICIST, A CHEMIST, AND AN ECONOMIST are stranded on an island with nothing to eat. A can of soup washes ashore. The physicist says, "Let's smash the can open with a rock." The chemist says, "Let's build a fire and heat the can." The economist says, "Let's assume that we have a can opener."

As this familiar joke (attributed to Paul Samuelson) attests, economists rely on assumptions. In doing so, they sometimes ignore reality. Economists have recently been ignoring an important reality: business executives are beginning to embrace economywide regulation as being good for the bottom line.

Economists know that regulation is seldom good for the economy unless the benefits outweigh the costs. Thus, they spend a lot of time weighing the costs and benefits of proposed rules.

REGULATION AS A SPUR TO INNOVATION?

A DIFFERENT IDEA IS GAINING GROUND IN BUSINESS BOARDrooms, however. Saving the environment is a "business opportunity," says Tachi Kiuchi of Mitsubishi Electric. According to the Aspen Institute (in a report developed with help from businesses—from Anheuser-Busch to Weyerhaeuser), "By learning to 'value the environment,' companies and financial institutions are uncovering another competitive edge."

Yes, regulation can be a good business opportunity for some, even with the higher costs it imposes. For example, producers who are the first companies to discover better ways to reduce pollution can profit by keeping costs down. In addition, they may profit by selling new technologies to other producers. (As we will note later, some companies also profit by obtaining monopoly power through regulation.)

So far, so good. But some business strategists make another leap: they argue that regulation leads to *cost-reducing* innovation, directly increasing profits. Lower costs and lower pollution can result. Under these conditions, who would argue against tighter regulation?

Although there are variants, the idea that regulation spurs innovation that raises profits stems largely from the work of Michael Porter and Claas van der Linde. They have presented their views in such places as the *Harvard Business Journal*, *Scientific American*, and the *Journal of Economic Perspectives*. Indeed, an exchange with economists in the latter journal seems to be the one serious debate over the issue—and it is not clear that the economists won. Since their competing essays appeared in 1995, economists have moved on, assuming they were victors. Or, so it would appear. Meanwhile business strategists have held conferences, written books, and persuaded journalists (in case they needed persuasion) that more environmental regulation is nearly always a good thing.

In the 1995 article, Porter and van der Linde argued that "properly designed environmental standards can trigger innovation that may partially or more than fully offset the costs of complying with them." They offered several examples of such offsets.

- Ciba-Geigy responded to environmental standards by making process changes that saved $740,000 per year.

- 3M saved $120,000 in capital investment and $15,000 annually by replacing solvents with water-based solutions.

- The Robbins Company saved nearly $300,000 in capital

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costs and more than $115,000 per year by moving to a closed-loop system in its jewelry-plating business.

These examples are undoubtedly true. The companies mentioned are making money from pollution control or material reduction. It should not surprise us. The profit motive has long led to increasingly efficient use of material resources. Every 1 percent reduction in the aluminum needed to make a beverage can saves beverage can manufacturers $20 million a year. Similarly, air pollution declined for decades long before the passage of the Clean Air Act because engineers strove to improve the efficiency of burning fuel. The profit motive has been a steady contributor to cleaner industry.

Porter and van der Linde's claim, however, is that environmental regulation is necessary, for the most part, to spur the innovation that will add to profits. They argue that because of poor information and management incentives in many companies today, there are "$10 bills" lying around that have not been picked up—innovations just waiting to be made. And regulation is the way to make executives start looking for them.

NOW FOR A DOSE OF REALITY

MOST ENVIRONMENTAL ECONOMISTS DISMISS THE NOTION that innovation depends on regulation. You could almost hear Karen Palmer, Wallace E. Oates, and Paul R. Portney sputtering with indignation as they responded in the *Journal of Economic Perspectives.* They called the Porter-van der Linde article "somewhat astonishing" because it defended environmental regulation without recognizing the necessity of weighing costs and benefits. "The traditional approach," they explained, "consists of comparing the beneficial effects of regulation with the costs that must be borne to secure these benefits." They disparaged the Porter-van der Linde claim that there are "lots of $10 bills lying around waiting to be picked up." They graphed an abstract model showing that environmental regulation cannot, as a general rule, lead to higher profits. They explained that examples cited by Porter and van der Linde were special cases under narrow circumstances.

In addition, they reported that they had communicated with officials of firms, including some mentioned by Porter and van der Linde. Each official "said quite emphatically that, on the whole, environmental regulation amounted to a significant *net* cost to his company." The economists cited a Bureau of Economic Analysis study showing that industry spent $102 billion in 1992 on pollution control, of which $17 billion (less than 2 percent) was offset by innovation. And they pointed out that whatever the successes, concentration on environmental innovation meant "other opportunities forgone" for these companies.

We agree with these economists. The theory that regulations will wake up sleepy executives, forcing them to become more efficient, is illogical in a competitive economy. The claim, however, resembles a predecessor idea, the "shock effect." Taught in labor economics texts, the theory of the shock effect held that unions, by raising wages, would shock management into efficiency gains. The higher wages would stimulate productivity so that higher wage costs would not be passed on to buyers. As Neil Chamberlain put it in his 1958 text, *Labor,* "It is amazing the way firms find they can cut costs when they are driven to it by the spur of rising wages!" With this spur, he said, it is "possible to pay the added wage costs, retain the old scale of prices, and make as much profit as before" (p. 289).

But, of course, it is not true in general. Studies in the United States and the United Kingdom indicate that unionized firms have higher wages but lower profits and lower employment. Unionized firms and sectors have grown less rapidly than have nonunionized ones, further discrediting the shock-effect theory.

Business executives never accepted the shock theory of union wages in a big way, and the theory died a natural death. It is easy for economists to assume that this new variant, the Porter–van der Linde message, has been discredited and is on its way to a similar demise. After all, how many stodgy firms are there in need of artificial stimulus to competitive behavior? In a global economy, with increased foreign trade, wider markets in nearly every industry, and thriving merger-and-acquisition activity, surviving firms are lean, mean, and innovative without regulation.

MOVING BEYOND SHOCK THEORY

BUT TOO OFTEN IN THE POLICY ARENA "LOGIC IS FOR LOSERS." Logic—theory, that is—is not enough. We believe that economists need to be more thorough and more carefully empirical on this question. They should be more persistent in combating the idea that stricter environmental regulation will normally pay for itself by shocking firms into innovating with better technologies, thus benefiting everyone. It is far more dangerous than the original shock-effect idea.

Large companies have always been tempted to seek tougher regulations as a means of raising the costs of their smaller competitors more than their own. But today, they can wrap themselves in the cloak of respectability by promoting regulation as a way of forcing beneficial change. One result can be to draw the most entrepreneurial companies into the process of negotiating for regulations that give their companies special advantages.

Bruce Yandle reported in *Regulation* (Vol. 22, no. 3) that some oil and natural gas companies have already figured out how to benefit from the proposed Kyoto Treaty negotiations—at other companies' expense. He also noted that logging regulations to protect the northern spotted owl, which drastically reduced timber logging in public forests, raised timber prices, helping companies like Weyerhaeuser that log primarily on their own land. (This fact helps explain why Weyerhaeuser's chairman enthusiastically supported the regulations.) Regulation can be a competitive tool regardless of its environmental merits.

Our message to economists is to wake up and take these developments seriously. That's not a can opener in your hand; it is a regulatory straightjacket. ■