

others will shrink. To devise a useful industrial policy, a government must do more than decide which are the industries of the future or which ones promise largest rents. It must answer the much more difficult question: which sectors should be growing or shrinking more rapidly than they would if left to the market? To justify a government programme that shifts resources, it would be necessary to show that, for some reason, the shift is taking place too slowly. Picking winners requires planners to possess better knowledge than that derived through the marketplace. Such government intervention must be justified by an in-depth empirical examination of the relevant industry. In principle, trade and industrial policy should be targeted specifically on the activity in which the market failure occurs.

- **Externalities**

The second type of market failure takes place when externalities are present. Beneficial externalities exist to R&D, high technology and other industries. In advanced countries, firms devote a great deal of resources to R&D. While firms can appropriate some of the benefits of their own investment in knowledge, they usually cannot appropriate them fully. Some of the benefits accrue to other firms that can imitate the ideas and techniques of the leaders. Firms can "reverse engineer" their rivals' designs. Because patent laws provide only weak protection for innovators, it can be argued that high technology firms do not receive as strong an incentive to innovate as they should. Consequently, markets will allocate fewer resources than optimal to these industries. Does this provide an argument for government to step in with an industrial policy? Consider three important questions.

First, what is the ability of government policy to target the right thing? Clearly, there is no reason to subsidize the employment of capital or nontechnical workers in high technology industries. Policy should seek to encourage the generation of knowledge that firms cannot appropriate. However, a *general* subsidy for a set of industries in which this kind of knowledge generation is believed to go on is, at best, a blunt instrument.

Second, how important is the technological spillover in a given industry? Will a dollar of R&D in the semiconductor industry convey ten cents worth of external benefits, or ten dollars? Is the optimal subsidy 10, 20, or 100 percent? The answer is a difficult empirical problem. It is in the nature of externalities, benefits that do not carry a market price, that they are hard to measure. Perhaps, instead, government should subsidize research and development wherever it occurs. Moreover, how do we know when a firm is engaged in creating knowledge and when not?

Third, proponents of industrial policy tend to concentrate only on R&D in manufacturing as a source of uncompensated spillover effects. But don't doctors earn less than the happiness they provide simply by being accessible when you fall sick? Banks provide valuable