

Does Antitrust Compromise Technological Efficiency? A Conversation With F.M. Scherer

EEJ: Could we direct this conversation to search out some of the links between antitrust enforcement and productive efficiency in our economy? Specifically do antitrust decrees affect the level of economic efficiency, especially technological efficiency?

Scherer: Your question forces us to recognize that economic efficiency is multifaceted. For examining links to antitrust, it is useful to begin by identifying three different “efficiencies,” specifically allocative efficiency, productive efficiency (or more popularly, X-efficiency) and long run technological efficiency. Monopoly power causes allocative inefficiency by restricting output. Would-be consumers are deprived of output they value highly, leading to a “deadweight loss.” For those who stress the desirability of allocative efficiency, deadweight loss is what antitrust is all about. This perspective shades into the X-efficiency, or “waste of scarce resources” argument that interprets monopoly price increases as conferring redistributive rents on producers, who then incur costs and dissipate the rents in their efforts to become, or remain monopolists. Finally, there is the Schumpeterian view that what matters for economic welfare in the long run is not how finely tuned the resource allocation process is at any moment in time, but how successful we are in creating new production functions and shifting the functions for existing products upward.

EEJ: Can you give us some notion about the magnitude of deadweight losses?

Scherer: Harberger argued that the deadweight loss attributable to monopoly was only on the order of one-tenth of one percent of GNP, or two dollars per capita at 1953 income and price levels. By any such reckoning, in my view, allocative efficiency emerges as a less challenging issue than long-run technological efficiency, or even X-efficiency. The X-efficiency that comes from the need for incumbents to spend additional resources defending their rents is of course relevant, but this question goes only a step beyond conventional efficiency analysis. The limitations of this traditional “static” mode of analysis are now being recognized. Until recently, we have been much too stubborn about acknowledging that Schumpeter (1912, 1942) was right.

EEJ: Does not Schumpeter’s conjecture that the rate of technological progress is apt to be more rapid under monopolistic conditions than under “competitive” market structures reduce, perhaps significantly, the relevance of antitrust vigilance in relation to “efficiency” objectives?

Scherer: Critics of vigilant antitrust enforcement assert that it might induce X-efficiency losses by fragmenting market structures so as to sacrifice scale economies. Antitrust advocates dispute this claim and argue that the pressures of tough competition force lower-cost performance, all else being equal. In my view, both arguments are correct to some

extent. Whether on balance antitrust enforcement (apart from anti-cartel rules) has had much of an effect on costs either way, however, is doubtful. In my assessment of the evidence, the link between antitrust and the attainment of efficient cost levels is unclear. This is so whether one considers antimonopoly enforcement (Sherman Act section 2) or merger enforcement (Clayton Act section 7). But again, in my view, it is long-run dynamics, which, as Schumpeter urged, must eventually affect standards of living more potently than differences in the efficiency of static resource allocation and utilization.

EEJ: Schumpeter's conjectures on that score, at least as I remember them, were really quite vague. Could they perhaps be translated into more concrete and modern forms?

Scherer: Fortunately yes. I would identify three main Schumpeterian postulates concerning the links between monopoly and competition and the pace of technological change: (1) that only large business enterprises are able to achieve the scale of effort, or bear the risks required, to achieve important technological advances; (2) that monopoly profits are an ideal source of funds to support industrial research, development, and innovation; and (3) that a monopoly position pre-innovation ensures sufficient post-innovation rewards to make R&D investments worthwhile.

EEJ: It would seem that the relationship between R&D and firm size, both with respect to their magnitude and costs, is an empirical rather than a conjectural matter. Perhaps you can provide a sample of research along these lines?

Scherer: Considerable progress has been made in assembling and analyzing evidence on industrial research and innovation processes. For the issues we are talking about, one of the most relevant findings is that large companies are no more progressive than medium-sized firms in supporting R&D, making patented inventions, and originating significant technological innovations. The relationship between size and innovative input or output is, on average, roughly proportional. However, relatively small firms and "outsiders" do appear to originate a disproportionate fraction of the most radical innovations. A parallel finding is that there appears to be an "inverted U" shaped relationship between measures of R&D activity and seller concentration. R&D/sales ratios rise with concentration at modest concentration levels, especially in industries whose knowledge base advances only slowly. The relationship peaks at four-firm concentration ratios in the fifty to sixty percent range. Thereafter, a declining pattern may set in. However, these statistical relationships weaken or break down altogether when inter-industry differences in technological opportunity and the appropriability of innovation benefits are carefully controlled. The weight of evidence suggests that supply and demand conditions are much more important than market structure as determinants of technological vigor.

EEJ: Is there empirical support for Schumpeter's "monopoly profits plowed back into innovation" hypothesis?

Scherer: There is only weak evidence that increases in company profitability lead to increases in R&D activity. Before we can be sure about this Schumpeterian conjecture, however, we need to do a better job getting the lag structures right. Perhaps it is also worth mentioning that horizontal mergers show less of an R&D-inhibiting effect than conglomerate mergers, although the differences are small and statistically insignificant.

EEJ: Do these findings have any implications for antitrust policy?

Scherer: Indeed they do! But first I think we must recognize that they compel abandonment of the romantic but naive Schumpeterian belief that giant firms organized into highly concentrated oligopolies are essential to maintain a vigorous pace of technological progress. There may be isolated instances in which the Schumpeterian view is correct, but they should be treated as such. More commonly, loosely structured oligopolies are likely to be at least as progressive as industries dominated by one or a few firms, and relatively small technology-oriented enterprises often prove to be more dynamic innovators than the corporate giants. Above all, it is important to keep entry open so that challengers with new ideas can force the pace of innovation.

EEJ: Your generalizations are comforting. But must one not still be concerned whether antitrust has made progress-retarding mistakes in specific cases, and, if so, whether those errors might have had wider adverse incentive effects?

Scherer: That is precisely why it is essential to examine specific cases brought against firms that have been in positions of technological leadership. There have been several such cases, among them IBM, AT&T, DuPont and Xerox.

EEJ: I thought IBM a leader in marketing its innovations.

Scherer: Despite the image it projects, IBM has frequently been slow to take the first steps in bringing important new technologies to market. For example, it was not the first to market general-purpose digital computers, time-sharing, full solid-state circuitry, supercomputers, minicomputers, personal microcomputers, microcomputer-oriented word processing, or microcomputer networking systems. Rather, when left behind, IBM has repeatedly pursued variants of a "fast second" strategy, conducting "crash" research and development programs to catch up and introducing the resulting products with aggressive marketing campaigns. When this happens, there is a risk that pace-forcing challenges will be deterred and progress will slow. I have long feared that IBM's "fast second" behavior would impose a drag on technological progress. Fortunately, at least thus far, probably because the underlying knowledge base is so rich, the stream of would-be IBM challengers has not dried up. They keep coming and coming. If my fears continue to be unfounded, then the courts probably made the "right" decisions in the numerous plug-compatible peripherals and computer leasing cases of the 1970s. Yet my nagging doubts remain.

EEJ: Was the AT&T case also relevant in this connection?

Scherer: The AT&T case, which was settled by consent in 1982, raised numerous issues far removed from the concerns we've been examining. However, the Federal Trade Commission's titanium dioxide case could have set incentive-impairing precedents. In brief, DuPont pioneered a new, lower-cost process for making titanium dioxide. It achieved a considerable cost advantage over its rivals, and exploited its advantage by setting prices that left rivals with profit margins too thin to justify investments in the replacement of obsolescent plants. Had the Commission found against DuPont, the message, if correctly read, would not have been, "Don't innovate." Rather, it would have been, "If you achieve a cost advantage through innovation (or in any other way), don't use it to drive for market dominance. Instead, hold a price umbrella over rivals and take your profits in the short run, not in the long." That would have set a bad precedent, and I applaud the Federal Trade Commission for rejecting it. We Americans need to

discourage umbrella pricing policies and encourage limit-pricing strategies that build long-run strength. If we do not move in that direction, the industrial future will be Asia's.

EEJ: You had a particular interest in the Xerox case, didn't you?

Scherer: Yes indeed. I served as Bureau of Economics Director at the time of the F.T.C. case against Xerox, and I worried a considerable amount about the issues raised by that case. Xerox's development of the photocopier stands as one of the twentieth century's greatest technological innovations. By 1975, the spectacularly successful 914 copier, first introduced in 1959, had enjoyed a sixteen-year patent monopoly—close to the statutory term chosen by Congress. How long need the effective life of a patent monopoly be before efforts to end it do not impair incentives? I was convinced that seventeen years was enough. The agreed-upon settlement made Xerox's hundreds of improvement patents available to all comers at modest royalties.

EEJ: With benefit of hindsight, does it now seem that the ruling in the Xerox case had adverse impact on Xerox's R&D activities?

Scherer: A knowledgeable company official later told me that the compulsory licensing decree had no such effect. Breaking the patent logjam and opening up the technology to new minds almost certainly increased the pace of product innovation, making new, more versatile, more reliable, and less expensive machines available to consumers. I am more certain now than I was in 1975 that the FTC settlement was the right thing.

EEJ: Nevertheless, an important question remains. Might not antitrust abrogation of patent rights have the more general effect of undermining would-be innovators' confidence in the strength of patent grants and hence serve to weaken their incentives?

Scherer: Certainly, there were numerous warnings that adverse incentive effects could follow. Yet in the decade after the 1956 AT&T and IBM patent licensing decrees, constant-dollar company-financed industrial R&D expenditures increased at an average rate of 6.5% per year. Another relevant piece of evidence comes from interviews that my colleagues and I undertook in 1958 with executives at twenty-two patent-holding corporations. We obtained mail questionnaires from sixty-nine more. To our surprise, we found that actual or feared compulsory licensing had very little impact on large United States corporations' investments in new technology, although companies saddled with decrees did move significantly toward more reliance on secrecy and less patenting. A follow-up study in 1977 using newly disclosed data found no support for the hypothesis that companies operating under significant compulsory patent licensing decrees spent less on research and development per dollar of sales than peer corporations not similarly affected.

In other words, a massive antitrust attack on the use of patents to monopolize markets or enhance profits appears to have had negligible adverse consequences for the vigor of innovative activity in the United States. It seems unlikely to me, therefore, that the much more narrowly targeted actions against giant companies like Xerox and DuPont would have generated widespread disincentive effects. In my many years of looking, I have been unable to find evidence that the broader array of United States antitrust policies has retarded innovation to any significant or extensive degree.

EEJ: All in all then, it would seem that we know a few important things about the links between antitrust and efficiency, but also a lot that we don't know. Can we tie up the loose ends?

Scherer: Most discussion of antitrust and efficiency appears to have violated the New Testament injunction against beholding the mote and ignoring the beam. X-efficiency is much more important quantitatively than allocative efficiency, and dynamic efficiency is almost surely even more important. We know that the links between antitrust, competition, and both X-efficiency and dynamic efficiency are highly complex. Maintaining relatively fragmented market structures probably imposes modest foregone scale-economy costs, but vigorous competition keeps enterprises at fighting weight. Our quantitative insights are too limited to let us know whether a lean, tough welterweight is not to be preferred over a flabby heavyweight. The dynamic efficiency nexus is even more complex. Still, it is fairly certain that giant monopolistic enterprises are not superior engines of technological progress. By striving to maintain a diversity of competitors and keeping entry barriers from being raised unnecessarily, antitrust is at least pointing in the right direction. And although there may be devils hidden in the darkness, there is little evidence showing systematic adverse effects from antitrust on the vigor of technological innovation and the rate of productivity growth.