CHAPTER 6

Recent Initiatives in Antitrust Enforcement

DURING THIS ADMINISTRATION the Federal antitrust enforcement agencies have been aggressive in enforcing the Nation's antitrust laws. The Antitrust Division of the Department of Justice has imposed record fines—over $200 million in fiscal 1997—and the Justice Department and the Federal Trade Commission (FTC) have both pursued many important cases and investigations, involving such firms as Microsoft, Archer Daniels Midland, Toys "R" Us, and Staples and Office Depot, as well as traders on the NASDAQ over-the-counter stock market. This more aggressive stance does not, however, return Federal antitrust philosophy to an earlier era in which big was viewed as inherently bad. Recent cases and investigations suggest that the Justice Department and the FTC have taken a balanced approach to antitrust enforcement, bringing an action only when thorough investigation and analysis reveal a substantial threat to competition. In doing so, these agencies are guided by their mission to protect the competitive process, recognizing that free markets are likely to provide the best outcomes for society.

This chapter reviews how these agencies have analyzed market competition in a number of recent cases. In so doing it attempts to explain some apparent paradoxes in antitrust enforcement—why, for example, in 1997 the FTC stopped Staples and Office Depot from merging, even though the vast majority of office products are sold by neither company, but allowed a merger between the two leading U.S. manufacturers of large commercial aircraft in an already highly concentrated industry. The chapter begins with a broad overview of the origins and principles of antitrust efforts in the United States and then proceeds to survey several recent developments. The most striking of these has been the growth in corporate merger filings to record levels. The chapter explores the efforts of the antitrust enforcement agencies to allow those mergers that reduce costs, without allowing firms to gain the power to raise prices. Next the chapter discusses the potential impact of electronic commerce on competition. Although electronic commerce will in many cases make competition work more smoothly, it may also make it easier to establish price-fixing agreements. The chapter also surveys the efforts of

antitrust enforcers to ensure the continued growth and competitiveness of high-technology industries. Finally, the chapter discusses international antitrust enforcement, an aspect of antitrust policy that has become increasingly important as global trade has expanded.

ORIGINS AND PRINCIPLES OF ANTITRUST

As the American economy shifted from agriculture toward industry during the 19th century, large corporations and trusts began to emerge, eventually dominating or threatening to dominate a number of industries. Public opposition to these monopolies mounted, and in 1889 alone, 12 States passed antitrust or antimonopoly statutes. The Congress followed swiftly. In 1890 it passed the Sherman Act by an overwhelming margin: 52 to 1 in the Senate and 242 to 0 in the House of Representatives. The broad contours of American antitrust law were completed in 1914 with the passage of the Federal Trade Commission Act and the Clayton Act.

The Sherman Act contains broad bans—with both criminal and civil penalties—on monopolization, price-fixing agreements, and other unreasonable restraints on trade. The Clayton Act contains more specific prohibitions of mergers and of certain forms of price discrimination, exclusive dealing agreements, and tie-in sales (sales conditioned on the purchase of another product) when the effect may be to substantially lessen competition or to tend to create a monopoly. The Justice Department and the FTC have overlapping but distinct authorities: the Justice Department may bring actions under the Sherman Act and the FTC under the Federal Trade Commission Act, but either may bring actions under the Clayton Act. In addition, the major regulatory agencies, such as the Federal Communications Commission, the Federal Energy Regulatory Commission, and the Surface Transportation Board, all review mergers under their own statutory authority.

The antitrust laws' primary objection to monopolies, cartels, and other restrictive practices and restraints of trade is that they injure consumers by increasing prices. Another concern, which has been a particular focus of economists, is that these high prices inappropriately curtail consumption of the monopolized good. Inefficiencies arise when sellers charge monopoly prices, because consumers lose more from the price increase than sellers gain.

Another objection to monopoly was expressed by Judge Learned Hand, who argued that "Unchallenged economic power deadens initiative, discourages thrift and depresses energy," and that "immunity from competition is a narcotic, and rivalry is a stimulant, to industrial progress." In a similar vein, the British economist John Hicks wrote that "the best of all monopoly profits is a quiet life." This complacency on the part of monopolists can impede economic progress.

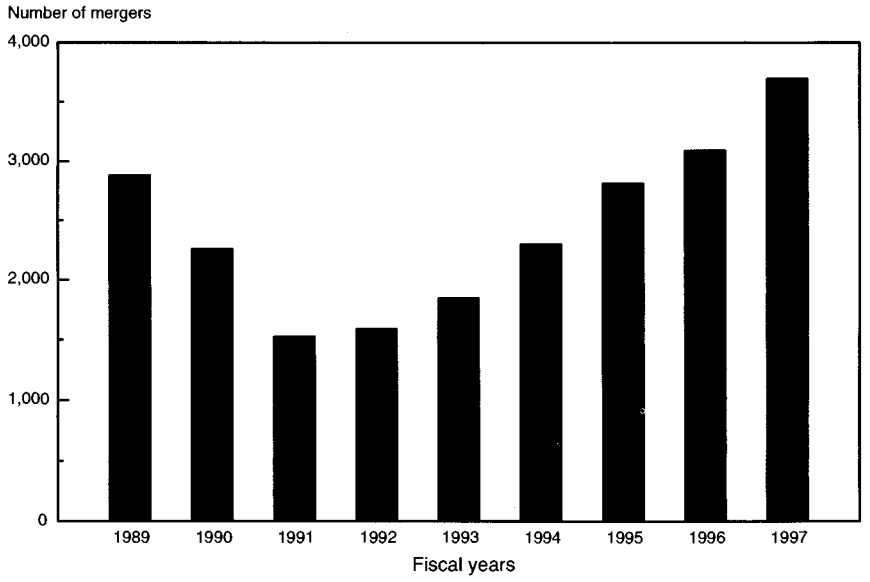
The concern that firms with market power—the power to raise prices above their production costs—can limit innovation has become an important part of antitrust enforcement during this Administration.

The choice between competition and monopoly is easy. Unfortunately, however, that is not usually the choice that antitrust enforcers face. The industries in which antitrust issues tend to arise can seldom be appropriately classified as either perfectly competitive or monopolized. Usually they lie somewhere in between. Firms typically have some market power, but they also have competitors. Mergers and restrictive practices may create or enhance market power, but they may also promote efficiencies and hence can benefit consumers. Identifying corporate conduct whose primary effect is to lessen competition is the task of antitrust enforcers—a task that often presents a formidable analytical challenge.

MERGERS

Another challenge for the antitrust enforcement agencies during this Administration has been the dramatic increase in merger activity. As Chart 6-1 shows, after a lull in the early 1990s the merger market has come roaring back to life. Both the 1996 and 1997 fiscal years set new records for the number of merger filings.

Chart 6-1 **Mergers Filed with the Antitrust Agencies**
Large mergers must be filed with the U.S. antitrust enforcement agencies. Fiscal 1997 was the second consecutive year of record filings.



Sources: Department of Justice (Antitrust Division) and Federal Trade Comission.

Box 6-1.—Consolidation in the Defense Industry

The recent merger wave in the U.S. defense industry highlights the difficult tradeoffs involved in antitrust policy and the balanced approach that the antitrust enforcement agencies have taken during this Administration. The end of the Cold War and the ensuing 65-percent real reduction in the Pentagon's procurement budget created intense pressure toward consolidation. A large share of the defense business is now concentrated in the hands of a few large firms—notably Lockheed Martin, Northrop Grumman, Boeing, Raytheon, and General Dynamics—that have acquired numerous other major defense contractors as they exited the industry.

The challenge for the antitrust authorities has been to balance the perceived need for consolidation to reduce overhead costs against the potential for a reduction in competition. On the one hand, if the mergers allow defense contractors to eliminate duplicative overhead costs the Pentagon will be able to purchase weapons systems more cheaply. On the other hand, if the number of effective bidders falls, prices may rise, forcing either higher defense budgets or reduced defense purchases.

In a number of cases where anticompetitive effects have been a concern, instead of trying to block the merger and forgoing the potential cost savings, the antitrust agencies have tried to adopt narrowly focused remedies. For example, they have invalidated exclusivity arrangements, insisted on the divestiture of key assets, and required the creation of provisional information

In evaluating these mergers and deciding which ones to challenge, the enforcement agencies must strike a fine balance. A merger may yield significant cost savings, but it may also threaten to increase industry concentration (that is, reduce the number of firms in the industry) and stifle competition, allowing the remaining firms to increase prices and reduce output. The impact on concentration and competition is particularly difficult to evaluate in the many industries now experiencing rapid structural and technological change, such as the defense industry, considered in Box 6-1. The enforcement agencies must consider who will be the merged firm's competitors in the future, not just today.

A merger does not have to create a monopoly in order to result in higher prices and lower output. By increasing concentration, a merger may increase the likelihood of successful collusion, either overt or tacit, among the remaining firms. Greater concentration may make it easier for each firm to communicate its intentions to the others, and

Box 6-1.—*continued*

"firewalls" between merging companies. An example of the first remedy is provided by the 1995 merger of Lockheed Corp. with Martin Marietta Corp. This merger raised antitrust concerns because the companies had entered into exclusive teaming agreements with Hughes and Northrop Grumman Corp., respectively. In the wake of a merger, these agreements would raise the prospect that there might be only one bidder on space-based infrared early warning satellite systems, since Hughes and Northrop Grumman were the leading providers of electro-optical sensors for these satellites. To promote competition in this market, the FTC's consent order forbade Lockheed Martin from enforcing the exclusivity provisions.

Likewise, Raytheon Co.'s $5.1 billion acquisition of Hughes Aircraft Co. might have substantially lessened competition in both infrared sensors and electro-optical systems had the Justice Department not forced Raytheon to make a large divestiture. Raytheon agreed to sell off the infrared sensor business it had acquired from Texas Instruments Inc., as well as electro-optical systems businesses that it would otherwise have acquired with the purchase of Hughes. Raytheon also agreed to a firm price on an Air Force missile to compensate for the lost competition from Hughes. Finally, Raytheon agreed to maintain an information firewall to preserve the independence of Raytheon and Hughes as competitors for a new Army antitank missile.

the interests of the firms may be less likely to diverge. The smaller number of firms may also reduce the benefits and increase the cost of cheating on the collusive agreement. For example, mergers make price cutting less profitable because the merger eliminates one firm from which customers might be attracted away by the price cut. It may also become easier for colluding firms to detect and punish those firms that deviate from the agreement.

Mergers may result in price increases even when firms do not collude in any sense. For example, a firm with market power by virtue of control over a large portion of industry capacity will enhance that power, and may therefore raise prices, if it acquires still more capacity by merging with a competitor. Another important example of such a "unilateral competitive effect" arises when formerly standardized products become differentiated, giving rise to market power as consumers develop brand preferences. Such power is limited by the availability of competing brands; hence a merger between firms sell-

ing competing brands relaxes the constraint that competition places on prices. The merged firm recognizes that some of the sales lost through a price increase on one brand will be recaptured by the other brand, and therefore be retained by the firm. This encourages the merged firm to raise the price of both brands. When the brands are particularly close substitutes, the firm may want to raise both prices substantially.

Enforcement agencies must balance these concerns about market power against the efficiencies in production that mergers can make possible. There are several ways in which mergers can reduce the average cost of production in an industry. A merger may allow one firm to take advantage of another's superior technology. Where production processes are composed of multiple distinct activities, a merger can allow each of the merging firms to specialize in those activities that it does best. Mergers may also increase efficiency in industries subject to economies of scale, that is, those in which average production cost declines as output increases. In these industries a merger may reduce costs by eliminating duplicative fixed costs or allowing longer production runs.

Consumers benefit from the merger as well if merging firms pass these savings along in the form of lower prices. The challenge for antitrust enforcement, then, is to prevent those mergers that would harm consumers by enhancing market power, but to allow those that create substantial benefits. To evaluate the market power and the efficiency effects of mergers, the FTC and the Justice Department use the framework that they jointly established in the 1992 Horizontal Merger Guidelines, which were partially revised in 1997. According to the guidelines, the steps to be taken in a merger review for a merger among competitors are as follows:

- define the relevant market and calculate its concentration before and after the merger
- assess whether the merger raises concerns about adverse competitive effects
- determine whether entry by other firms into the market would counteract those effects, and
- consider any expected efficiency gains.

This chapter discusses each step in turn below.

MARKET DEFINITION

The first step is to determine the relevant market and whether the merger will increase concentration significantly in that market. The Merger Guidelines state that the relevant market is generally the smallest group of products and geographical area such that a hypothetical monopolist in that market would raise the price significantly,

taking into account the reduction in demand caused by consumers curtailing their purchases. Having defined the relevant market, the agencies determine the market shares of all firms identified as market participants, and use these market shares to calculate an index of market concentration. Mergers that would increase concentration significantly tend to attract more scrutiny from the enforcement agencies, because these mergers are more apt to lead to large price hikes. Typically, therefore, the narrower the relevant market, the more likely it is that a merger will be investigated.

In 1997 the FTC challenged the merger of Staples Inc. and Office Depot Inc. because it believed that the relevant product market was "the sale of consumable office supplies through office superstores," and these firms were the two largest in that market. Staples countered that the relevant market was all sales of office products, including sales by discount stores, drugstores, and wholesale clubs. The combined firm would have accounted for less than 6 percent of this broader market, which suggested that the firm could not have raised prices significantly after the merger if this market definition were indeed correct. The FTC maintained, however, that even though most individual items could themselves be bought from many retailers, the size, selection, and inventory offered by office superstores distinguish them from other office supply retailers. The FTC's statistical analysis showed that, when the presence of other potential competitors was controlled for, Staples' prices were over 5 percent higher in cities where it did not face competition from other office supply superstores. The FTC took this as evidence that nonsuperstore sellers of office supplies do not constrain superstores' prices effectively. This pricing evidence led the court to accept the FTC's market definition and conclude that the merger would significantly increase concentration in the office superstore market and so be anticompetitive.

The key issue in defining the relevant market in a recent merger between two gypsum drywall producers was not the type of seller, but rather the sellers' geographic location. In 1995 Georgia-Pacific Corp., which had 10 drywall plants nationwide, including one each in New York and Delaware, proposed to acquire nine drywall plants from a Canadian-based competitor, Domtar Inc. Two of the nine plants were located in New Hampshire and New Jersey. The Justice Department determined that if the relevant geographic market was national, the acquisition would likely not have raised competitive concerns. However, the merger would have increased concentration significantly in the Northeastern States, so that if the relevant market were localized to that region, the merger likely would have led to price increases there.

To determine the relevant geographic market, the Justice Department examined whether a small but significant local price increase by Northeastern producers would be profitable, taking into account the extent to which customers could switch to producers out-

side the region. The agency considered such factors as current shipping patterns, constraints on production capacity outside the region, and transportation costs. Gypsum drywall is heavy, bulky, expensive to ship, and likely to break during transport if handled excessively. The Justice Department found that drywall plants in the Northeastern States accounted for the majority of sales to consumers in those states; sales from plants outside the region were comparatively small. Furthermore, drywall plants outside the Northeast had relatively little excess capacity. From this evidence, the Justice Department determined that customers in the Northeast could not have switched to out-of-region producers in sufficient quantities to make a local price increase unprofitable. The agency therefore decided that the relevant geographic market was regional, and Georgia-Pacific, to satisfy the Justice Department's concerns, agreed that it would divest its New York and Delaware plants.

COMPETITIVE EFFECTS

Defining the market and assessing its concentration are only the beginning of the merger review process. The next step is to determine whether the merger would have adverse competitive effects. The 1992 Merger Guidelines recognize that mergers may lessen competition through either collusion or unilateral effects. Indeed, unilateral effects received new prominence in the 1992 Merger Guidelines and have been the dominant concern in several recent mergers.

One recent example where the analysis of unilateral effects suggested significant harm to competition is the acquisition of Continental Baking Co. by Interstate Bakeries Corp. Continental's Wonder Bread brand competed against various Interstate brands in several regions. Although these two firms were by no means the only producers of white bread in these regions, the Justice Department concluded that white bread is a highly differentiated product, with various brands commanding significant customer loyalty, and that after the merger Interstate would likely have raised prices on its brands even if other bakers kept their prices constant. Interstate would no longer be discouraged from raising prices on its own brands by the risk of customers switching to Wonder Bread, since after the merger Interstate would own Wonder Bread. Likewise, whereas Continental was discouraged from raising the price of Wonder Bread by the prospect of customers switching to Interstate's brands, after Interstate bought Wonder Bread this would no longer be a worry. Simulations based on estimated demand elasticities helped convince the Justice Department that significant price increases would likely follow the merger, even in the absence of coordination among the remaining firms. To avoid these price increases, the Justice Department entered into a consent decree requiring the merged firm to divest a brand of bread in each of five geographic regions.

Sometimes the antitrust authorities can limit a merged firm's power to raise prices without requiring a divestiture, as illustrated in the merger of Time Warner Inc. with Turner Broadcasting System Inc. In 1995 Time Warner proposed to acquire Turner in a deal valued at over $7 billion. Both companies were important providers of programming to local cable system operators. Time Warner owned Home Box Office (HBO), the leading cable movie channel, and Turner owned Cable News Network (CNN). Both these channels are "marquee" channels that cable operators have a strong desire to carry in order to attract and retain subscribers. The FTC was concerned that if Time Warner controlled both these marquee channels it would increase the prices it charged to cable operators. To limit the anticompetitive effects of the merger, the FTC's consent order prohibited Time Warner from "bundling" HBO with Turner channels, and CNN with Time Warner channels. The bundling restriction required that the Time Warner and Turner channels be offered separately at prices that do not depend on whether the other is purchased.

It may not be immediately apparent why restrictions on bundling can sometimes be an appropriate remedy; after all, once the merged firm controls the price of both channels it could simply implement an across-the-board price increase. However, a hypothetical example demonstrates that when a merged firm sells goods that are substitutes for each other, prohibiting bundling can limit price increases. Consider a cable operator in a city with 50,000 potential subscribers, and assume that the cable operator earns a dollar in profits from each subscriber. Suppose that 20,000 of the potential subscribers like movies: they will subscribe only if the cable system offers a movie channel. Another 20,000 like news and will subscribe only if a news channel is offered. The remaining 10,000 like both movies and news and will subscribe if either is offered. In this city the cable operator would be willing to pay up to $30,000 for either movies or news, since in each case 30,000 people will subscribe. However, as soon as the cable operator buys a movie channel and gets all the subscribers who like movies, it will be willing to pay only $20,000 for a news channel, since the only additional subscribers it will attract are the 20,000 people who like news but not movies. Similarly, a cable operator that already offers news would be willing to pay only $20,000 for movies. Since some people subscribe if either a movie channel or a news channel is offered, the two channels are substitutes from the point of view of the cable operator. If movies and news can be sold as a bundle, they can be sold for $50,000, because a total of 50,000 people will subscribe. On the other hand, if bundling is forbidden and each channel must be for sale individually, the merged firm will not be able to charge that much.

Suppose, for instance, that the merged firm tried to sell each channel for $25,000. The cable station would respond by buying only one of the channels; since the channels are substitutes, once the cable sta-

tion purchases one channel, its willingness to pay for the other channel diminishes to $20,000. If the channels are sold separately, the most the merged firm could sell them for is $40,000 ($20,000 each). For this reason, restrictions on bundling such as those in the FTC's consent order can sometimes limit the exploitation of market power, even when the firm can charge whatever it likes for its products individually.

ENTRY

The analysis of a merger does not end with defining the market and determining whether the increase in concentration would allow the merged firm to raise prices. Entry can in principle constrain the merged firm's ability to raise prices: a merger that leads to increased prices may also create opportunities for new firms to enter the market, charge a lower price to gain market share, and still earn profits. Loss of sales to new entrants could cause the anticompetitive price increase to be unprofitable. As a result, entry or the threat of entry can in some cases prevent any appreciable price increase after a merger.

One difficulty with entry analysis is that it can be highly speculative. It is easy to be overly optimistic and assume that entrants will materialize and eradicate the anticompetitive effects of a merger. Accordingly, the antitrust enforcement agencies have taken seriously the Merger Guidelines' caution that entry must be timely, likely, and sufficient to counter the merger's adverse competitive effects.

One merger where entry seemed unlikely to offset the effects of increased concentration was the proposed 1995 acquisition of Intuit Inc. by Microsoft Corp. Each of the two software firms produced a popular personal finance program: Microsoft's Money and Intuit's Quicken together accounted for more than 90 percent of the personal finance software market. Here the question faced by the Justice Department was whether other firms were likely to enter this market in sufficient force to constrain Microsoft's market power once it owned both programs. Two important features of software markets limited the likelihood of entry: the importance of reputation and the "lock-in effect." Purchasers of personal finance software generally prefer a product that is widely accepted as reliable and successful and that has a reputation for performance and customer support. It can take many years and a significant investment for an entrant to develop such a reputation. Even Microsoft had considerable difficulty overcoming the initial success of Intuit. After 4 years of effort, the market share of Microsoft's Money remained far less than that of Quicken, and Microsoft had yet to achieve a positive return on its investment. The fact that consumers have to put considerable time and effort into learning to use a given program gives rise to the lock-in effect. Users of existing software may be reluctant to incur the switching costs of

learning another program. Future purchasers may likewise hesitate to invest time and effort in learning to use an entrant's new and untested product because of the risk that the product may not succeed in the marketplace, requiring the customer to eventually switch to the established product.

To make the deal acceptable to the antitrust authorities, Microsoft planned to transfer part of its assets in Money to another software developer. Even so, the Justice Department felt that the importance of reputation and the lock-in effect, among other factors, meant that entry could not be relied upon to offset the high concentration that a merger of Microsoft and Intuit would have caused. The merger was challenged, and Microsoft decided not to pursue it.

EFFICIENCIES

The final major step in the merger review process is to consider the efficiencies promised by the merger. Economists have long recognized the potential benefits of such efficiencies, and in recent years the antitrust agencies have been increasingly willing to consider these benefits when reviewing mergers. Most recently, in April 1997 the Justice Department and the FTC issued revisions to the section of the Merger Guidelines devoted to efficiencies. These revisions reflect the balanced approach of current antitrust enforcement. Under the revised guidelines, the agencies consider the creation of efficiencies, but only verifiable, merger-specific efficiencies. Many studies have suggested that mergers may not produce the synergies and cost savings claimed by managers. Since the agencies understand that it is easier for firms to claim efficiencies than to realize them, they subject efficiency claims to careful scrutiny. If the agencies determine that the claimed efficiencies are likely to be realized and are of sufficient magnitude that the merger is not likely to be anticompetitive, they will not challenge the merger.

The proposed merger between Staples and Office Depot illustrates the increased consideration and scrutiny of efficiencies in antitrust enforcement. The two firms claimed that by merging they would be able to take advantage of large cost reductions and efficiencies in purchasing, distribution, operations, and marketing, and that these savings would be passed on to customers in the form of lower prices. Consistent with the revised Merger Guidelines, the court deciding the case considered whether these efficiencies would offset the presumed anticompetitive effects of the merger. The court refused to accept cost savings that were not merger-specific and dismissed those that could not be verified. Also at issue was the degree to which Staples and Office Depot would pass any cost savings through to consumers. The companies projected that for every dollar of cost savings their prices would go down by about 67 cents. However, the FTC presented evidence that historically Staples had passed through only 15 to 17 percent of its achieved cost savings. Accordingly, the court found that

the merger's efficiencies would not offset its anticompetitive effects. It granted the FTC's request for an injunction, leading Staples and Office Depot to terminate their merger agreement.

ELECTRONIC COMMERCE

The potential impact of electronic commerce on competition is dramatic, as described in a recent White House report titled *A Framework for Global Electronic Commerce.* Electronic commerce is already common in several industries. Travelers, for example, buy airline tickets from travel agents who use computer reservation systems. Over-the-counter stocks are traded on a computerized system. And consumers can buy everything from books to automobiles over the Internet.

The potential for electronic commerce to make the economy function better is clear. Computer networks can inform buyers about products available in other States or, just as easily, in foreign countries. Cheap information about wide-ranging markets means that buyers can buy products that they would not otherwise have known about, and can pay lower prices as well. A seller who is the only supplier in a given area may have little power to raise prices if buyers can easily compare prices around the country or around the world. Music stores in Philadelphia will find it pointless to conspire to sell compact discs at high prices if buyers can easily locate competing dealers around the country. Putting cheap information in the hands of consumers thus seems likely to make markets more competitive. One might well wonder if electronic commerce could lessen the need for antitrust enforcement in many markets.

However, two cases that the Justice Department recently filed and settled—one against a group of U.S. airlines, and the other against so-called market makers who execute over-the-counter stock trades—highlight a straightforward problem with electronic commerce. Computers do increase the information available in the marketplace, but not just to consumers; they also make more information available to producers and other sellers. Sellers may be able to use this wealth of information to form or maintain cartels.

For a cartel to raise prices successfully, the members must somehow come to an agreement about what prices to charge and must figure out a way to maintain that agreement. The airline and stock trading cases illustrate how computer networks can sometimes help a cartel solve both these problems. They suggest that, rather than lessening the need for antitrust authorities, the growth of electronic commerce may in some cases increase it.

In 1994 the Justice Department reached a final settlement in a price-fixing case involving eight major airlines and the Airline Tariff Publishing Company (ATP). According to the Justice Department, the

airlines had used ATP's computerized fare dissemination services to negotiate increases in fares and to trade fare changes in certain markets for changes in other markets.

The alleged collusive arrangement worked as follows. Each airline submitted its fare changes or planned future changes to ATP. In turn, ATP reported the changes to all the other airlines. The resulting data base was enormous, as each airline offered numerous fares, under various terms and conditions, on each of thousands of city pairs. Moreover, these fares changed frequently. In such a complex system it would seem difficult for the airlines to negotiate or maintain any price-fixing agreement, much less a covert one. With so many interrelated fares and fare changes, one might ask how one airline would distinguish, for example, whether another's price change was an attempt to cheat on a collusive agreement, an attempt to punish a third airline for deviating from an agreement in another market, or simply a normal response to increased costs. The Justice Department alleged that such confusion was avoided by linking fare changes with alphanumeric footnote designators and by the judicious use of first ticket dates. Since the ATP data were computerized, this mass of information could be analyzed by sophisticated computer programs each day. Aided by these computer analyses, airlines could engage in intricate but camouflaged negotiations and could monitor cheating on agreements. The settlement that the Justice Department entered into with the airlines barred them from using footnote designators, first ticket dates, and other devices to communicate with each other.

According to one study, price leadership in the airline industry cost air travelers $365 million per year during the 1980s. Others have estimated that the cost of such behavior in the airline industry, had it been left unchecked, could have reached several billion dollars per year. These figures suggest that the Justice Department's attempts to eliminate anticompetitive practices in the airline industry could yield large dividends for consumers.

The stock trading case, which resulted in a 1996 consent decree, involved transactions in over-the-counter stocks over the automated quotation system operated by the National Association of Securities Dealers (the NASDAQ system). This case also revealed how computerized information networks can sometimes make it easier for firms to maintain agreements to sell at high prices. When an investor places a buy or sell order for shares of a company traded on NASDAQ, special traders called "market makers" typically execute the trade. These intermediaries make their profits from the bid-ask spread, the difference between the price at which they buy a stock and the price at which they sell it.

In the NASDAQ case the Justice Department alleged that NASDAQ market makers had agreed to a strategy, or convention, for quoting stocks that essentially limited their incentives to narrow spreads. Also working to support the agreement was the fact that the

NASDAQ computer network provided sellers with ready (essentially instantaneous) information about the strategies other sellers were using to quote prices. Market makers that were observed to deviate from the convention were harassed by other market makers and threatened with economic harm.

Traditional economic theory predicts that the price-fixing agreement alleged by the Justice Department and the Securities and Exchange Commission (SEC) could not have been maintained on NASDAQ, because entry barriers were low and any of over 100 firms could enter the market for any security. If a price-fixing agreement kept the bid-ask spread high, some market maker would have been tempted to offer the security at a price below the best asking price, or to buy it at a price above the best bid, in an effort to increase market share. But the rules and common practices that governed the way in which NASDAQ securities were traded could have combined to deter market makers from undermining the agreement in this way, with the computer network used for trades playing a key role.

NASDAQ market makers may decline to trade a security at the price quoted by other market makers. But if a market maker does execute a trade, the NASD's best-execution rule requires it to make the trade at the best price quoted on the NASDAQ network. A key feature of trading on NASDAQ is the widespread practice of preferencing. A preferencing arrangement between a broker and a market maker commits the market maker to execute trades submitted by the broker. In combination with the NASD's best-execution rule, this practice could have sharply limited the benefits that any market maker could have anticipated from cheating on any anticompetitive agreement, and so significantly enhanced the ability of a cartel to maintain collusion. A market maker that attempted to cheat on an agreement would not expect to significantly increase its market share, because other firms would, in effect, match its prices instantaneously and retain their preferenced order flow. Thus, a practice that initially seemed to offer a great deal to investors—a guarantee of the best price available, regardless of which market maker executes the order—in fact may have tended to support an anticompetitive agreement.

In 1996 the Justice Department entered into an agreement with NASDAQ market makers. The market makers agreed not to fix prices in the future and to commit resources to an ongoing monitoring effort to ensure that they adhere to the antitrust laws.

The lesson of the airline and NASDAQ cases is that computer networks can sometimes make it easier for sellers to form and maintain price-fixing agreements, by providing sellers with information about the prices that other sellers charge. Agreements negotiated by posting prices on computer networks may prove difficult for the antitrust authorities to ferret out. In the airline case there was sufficient ancillary information—in particular the use of annotations linking one fare proposal to another—to convince the Justice Department that a nego-

tiation was taking place. In contrast, when one firm tries to take advantage of the fact that prices can be quickly and easily changed on computer systems and raises price for a few instants (at a small cost) in the hope that others will follow, most antitrust experts believe that there is no violation of antitrust laws, even if other firms do follow. Simple price leadership is not banned by the Sherman Act, in part because there is no adequate way to frame a remedy. Firms in collusion and firms in competition may both move prices in concert. Antitrust authorities can only try to prevent sellers from negotiating and offering each other mutual assurances in order to form price-fixing agreements.

It has always been difficult to tell whether firms are being forced by competition to charge the same prices, or whether they have agreed to fix prices. The task could become steadily more troublesome as the electronic age progresses. Antitrust authorities in the electronic age need to maintain vigilance in seeking out and enjoining illegal agreements. Electronic commerce may make antitrust enforcement more challenging—and more important.

HIGH-TECHNOLOGY INDUSTRIES, INNOVATION, AND INTELLECTUAL PROPERTY

Many of the fastest growing and fastest changing U.S. industries are to be found in such high-technology fields as aerospace, computer hardware and software, and telecommunications. These industries present several additional challenges for antitrust enforcers. One is that antitrust enforcers must promote both competition and innovation in these fields through a balanced treatment of intellectual property. Another is to account for the tendency for network externalities, common in many high-technology fields, to create a strong potential for market dominance. A third challenge is to anticipate future developments in these fast-paced industries and conduct antitrust policy accordingly.

INNOVATION AND INTELLECTUAL PROPERTY

The key assets in high-technology industries are often not factories or machines but intangibles such as scientific ideas or the algorithms contained in computer programs. These assets, unlike physical assets, can be used by any number of people at once. Without intellectual property protection, firms and individuals would have insufficient incentive to produce these assets, because they are costly to produce but cheap to copy or imitate. In recognition of this problem, the U.S. Constitution empowers the Congress to "promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries." Patent and copyright laws do just that.

An important initiative of this Administration has been its use of antitrust enforcement to further encourage innovation and to clarify the role of intellectual property in antitrust law. The Administration recognizes that the licensing of intellectual property for use by persons other than its creator can benefit society both directly, by allowing the more widespread use of intellectual properties, and indirectly, by increasing the return to such assets and thereby encouraging innovation. Such licenses, however, sometimes contain restrictions that limit competition and actually discourage innovation. These restrictions may violate the antitrust laws.

The recent case involving the British firm Pilkington plc, the world's largest float glass producer, provides one example of the Justice Department's attempts to use antitrust enforcement to encourage innovation. Beginning in 1962, after acquiring hundreds of patents worldwide on glass production processes, Pilkington entered into licensing agreements with all of its principal competitors. These agreements generally included territorial restrictions, so that each licensee could construct and operate float glass plants in only one country or group of countries. These restrictions allegedly limited the incentives of Pilkington's competitors to innovate in glass processing, by geographically restricting their opportunities to exploit such innovations. Their incentive to innovate was allegedly further limited by requirements to report any improvements in float glass technology and to cede the rights to such improvements back to Pilkington. In 1994 the Justice Department entered into a consent decree with Pilkington, which, among other prohibitions, enjoined Pilkington from enforcing its licensing restrictions against U.S. licensees. The Justice Department's case was strengthened by the fact that Pilkington's principal patents had expired long before the complaint was filed. The Department does not, however, in general limit its attention to restrictions that outlive the life of patents.

The 1995 Antitrust Guidelines for the Licensing of Intellectual Property explain the balanced approach taken by the antitrust agencies. The guidelines recognize that intellectual property licensing can create efficiencies by allowing firms to combine complementary factors of production. However, licensing arrangements such as those used by Pilkington may contain restrictive terms that reduce competition among alternative technologies, and the antitrust agencies have sought to eliminate such anticompetitive arrangements. In evaluating the licensing of intellectual property, the agencies balance the procompetitive and anticompetitive effects.

NETWORK EXTERNALITIES

Many high-technology industries such as computers and communications exhibit network externalities: that is, consumers derive more value from the products of these industries the more people use them. For example, a computer program often becomes more valuable as its

network of users grows, because users like to trade data files and exchange ideas about how to use the program effectively. Network externalities can sometimes therefore make entry difficult, because small firms may be unable to compete effectively against large ones, whose products enjoy additional value from widespread usage.

The challenge for antitrust policy is to preserve the benefits of network externalities for consumers while preventing firms from exploiting the market power to which these externalities can give rise. When sellers agree to standards, consumers benefit because the products of different sellers are then compatible. Unfortunately, however, firms can sometimes manipulate the standards-setting process to their own advantage, as the FTC claimed happened in a 1995 action against Dell Computer Corp.

Dell was a member of the Video Electronics Standards Association (VESA), a standards-setting organization in the computer industry. In 1992 VESA set a new standard for the design of computer bus hardware (the hardware that transmits information between a computer's components). According to the FTC, before the standard was approved, Dell certified that it did not violate any of its intellectual property rights, but after the standard was implemented the company announced that the standard did violate one of its patents. Since by then over a million computers using the standard had already been sold, other computer manufacturers could not switch to an alternative design without creating a compatibility problem. This would have put Dell in a good position to collect substantial royalties on its patent, were it not for a settlement with the FTC, in which Dell agreed not to enforce its patent rights against computer manufacturers using the standard.

FAST-PACED TECHNOLOGICAL CHANGE

The fast pace of change in high-technology industries makes it hard for antitrust enforcers to anticipate the impact of future developments when deciding the proper course of action. For example, a merger that seems innocuous today may eliminate future competition. Alternatively, a merger may increase concentration significantly today but may not pose anticompetitive problems, either because of entry, as discussed earlier, or because of exit, as revealed by the 1997 merger between Boeing Co. and McDonnell Douglas Corp.

Although the Boeing-McDonnell Douglas merger reduced the number of sellers of large commercial aircraft worldwide from three to two, thereby sharply increasing concentration, the FTC decided that McDonnell Douglas's 5-percent market share overstated the company's likely future competitive significance, because this market share reflected only the filling of old orders. Extensive interviews by the FTC revealed that advances in aviation design had left McDonnell Douglas behind: since the firm had not invested as much as its competitors in improving the technology of its aircraft, the vast majority of airlines no

longer considered purchasing its aircraft. As a result, the merger did not eliminate viable future competition in the commercial aircraft market. Moreover, after consulting with the Department of Defense, the FTC concluded that there were no prospects for Boeing and McDonnell Douglas to bid on the same defense projects. Having concluded that the merger raised antitrust concerns in neither commercial nor defense markets, the FTC did not challenge the merger.

Future competition was a critical issue in the investigation of Bell Atlantic Corp.'s 1997 acquisition of NYNEX Corp. The merger did not increase current concentration in any local telephone market, because neither Bell Atlantic nor NYNEX competed in each other's markets at the time of the merger. However, the Justice Department and the Federal Communications Commission (FCC) needed to assess the likelihood that, in the absence of the merger, each company would someday enter the other's geographic market, and the likely extent of other firms' entry. One focus of the Justice Department's investigation was the effect of the merger on future competition in local service in New York City and nearby portions of NYNEX's service area. NYNEX was the dominant supplier in that area, whereas Bell Atlantic was one of many potential entrants.

After carefully studying the plans of other potential entrants, such as AT&T Corp. and MCI Communications Corp., the Justice Department concluded that the prospect for entry by a number of experienced, capable, and well-financed competitors was significant. Therefore it was by no means clear how much the loss of Bell Atlantic as an independent competitive force would adversely affect consumers, particularly given the evidence concerning efficiencies. The Justice Department concluded that it could not meet its burden of proving that the loss of Bell Atlantic as an independent entrant was likely to have so significant a market impact as "substantially to lessen competition," the test of a violation under Section 7 of the Clayton Act.

The FCC, on the other hand, which also had authority to review the Bell Atlantic-NYNEX merger, operates under a different statute with a different substantive standard. Under the FCC's interpretations of the Communications Act of 1934, the merging parties had the burden of proving that the merger would on balance enhance competition and be in the public interest. The FCC concluded that the merger would not enhance competition, and it exercised its power to place conditions on its approval of the merger. To remedy the merger's possibly anticompetitive effects, and to advance the goal, set forth in the Telecommunications Act of 1996, of opening local telephone markets to competition, Bell Atlantic offered to make several market-opening commitments, which the FCC accepted before approving the merger.

THE GLOBAL MARKETPLACE AND INTERNATIONAL ANTITRUST EFFORTS

The emergence of a global marketplace for many goods and services has important implications for U.S. antitrust policy. On the one hand, as transportation costs and trade barriers fall, many problems in antitrust become easier. Mergers that would have led to significant concentration in the absence of international trade may not do so once one accounts for foreign competitors. Also, domestic price-fixing agreements will be undermined if foreign competitors are willing to sell in the U.S. market at a lower price. On the other hand, international price-fixing agreements are more difficult than domestic ones for U.S. antitrust enforcement agencies to police; success often requires cooperation with foreign governments or international organizations.

Unlike in the 1980s, when most antitrust fines were imposed in domestic bid-rigging cases, the vast bulk of the over $200 million imposed by the Justice Department's Antitrust Division during fiscal 1997 was collected in judgments against large international price-fixing conspiracies. This suggests that even though international trade may make price fixing more difficult, it will probably remain a serious concern for some time to come.

Criminal prosecution in international price-fixing conspiracies is generally much more difficult and complex than prosecuting domestic conspiracies. First, the antitrust authorities must demonstrate that U.S. antitrust law applies. In 1997 the Justice Department made significant headway on this point, when the First Circuit Court of Appeals held that Section 1 of the Sherman Act applies to "wholly foreign conduct which has an intended and substantial effect in the United States," regardless of whether the case is civil or criminal. Even when U.S. antitrust laws do apply, crucial evidence or culpable individuals or firms may be located outside the United States and be beyond the jurisdiction of U.S. courts.

These jurisdictional problems make it imperative that U.S. antitrust enforcement authorities coordinate their activities and cooperate with authorities abroad. In several recent investigations, the United States made good use of its mutual legal assistance treaties with a number of foreign countries: the Justice Department sought and received assistance in cartel investigations from several countries, including Japan and Canada.

In 1994 the Congress passed the International Antitrust Enforcement Assistance Act (IAEAA), which empowered the U.S. antitrust enforcement agencies to negotiate reciprocal agreements with foreign antitrust enforcers. Under these agreements each government will assist the other in obtaining evidence located in the country of the former, while ensuring confidentiality. Unfortunately, foreign antitrust authorities have been slow in following the U.S. lead

in negotiating these agreements, in many cases because they lack similar legislative authorization from their own governments. In April 1997 the United States nonetheless managed to negotiate its first proposed agreement under the IAEAA, with Australia. The United States has also been pursuing discussions with the Organization for Economic Cooperation and Development toward a formal recommendation by that body that would encourage its member countries to enter into mutual assistance agreements that would permit more sharing of evidence with foreign antitrust authorities.

At the same time the United States has also worked to improve international antitrust enforcement through the so-called positive comity approach. This approach is used in cases where markets outside U.S. jurisdiction are affected by anticompetitive behavior that harms U.S. interests. Under a positive comity agreement, if one country believes that its firms are being excluded from another's markets by the anticompetitive behavior of firms there, it will conduct a preliminary analysis and then refer the matter to the foreign antitrust authority for further investigation and, if appropriate, prosecution. In April 1997 the Justice Department announced its first formal request to the European Union under a 1991 positive comity agreement. The Justice Department asked the Directorate General IV (DG IV), the European Union's antitrust arm, to investigate possible anticompetitive conduct by European airlines that may be preventing U.S.-based computer reservation systems from competing effectively in Europe. DG IV has announced that it is actively pursuing the matter.

Another notable ongoing effort in this domain is the competition advocacy program undertaken jointly by the Justice Department and the FTC. The two agencies are working together, in programs funded by the U.S. Agency for International Development, to educate and otherwise assist governments of developing countries in setting up antitrust enforcement programs. This assistance has included helping countries to draft competition laws, setting up implementation procedures, training their staffs, and, in some countries, placing long-term U.S. advisers in the antitrust office. Several countries in Eastern Europe have benefited from this extensive interaction with the U.S. agencies, and the program has now expanded into countries of the former Soviet Union and Latin America.

Although significant progress has been made in international antitrust enforcement, the growing importance of international trade makes it imperative that the antitrust enforcement agencies continue their efforts in this area. To this end, the Justice Department has established the first-ever International Competition Policy Advisory Committee, comprised of distinguished business, labor, academic, economic, and legal experts, to advise it on these cutting-edge issues. Investing in expanded enforcement and globalization of antitrust principles will lead to better protection of competition worldwide, and will yield substantial benefits that can be shared by many.