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Antitrust Policy

The term antitrust, which grew out of the US trust-busting policies of the late nineteenth century, developed over the twentieth century to connote a broad array of policies that affect competition. Whether applied through US, European, or other national competition laws, antitrust has come to represent an important competition policy instrument that underlies many countries' public policies toward business. As a set of instruments whose goal is to make markets operate more competitively, antitrust often comes into direct conflict with regulatory policies, including forms of price and output controls, anti-dumping laws, access limitations, and protectionist industrial policies.

Because its primary normative goal has been seen by most to be economic efficiency, it should not be surprising that antitrust analysis relies heavily on the economics of industrial organization. But, other social sciences also contribute significantly to our understanding of antitrust. Analyses of the development of antitrust policy are in part historical in nature, and positive studies of the evolution of antitrust law (including analyses of lobbying and bureaucracy) often rely heavily on rational choice models of the politics of antitrust enforcement.

The relevance of other disciplines notwithstanding, there is widespread agreement about many of the important antitrust tradeoffs. Indeed, courts in the US have widely adopted economic analysis as the theoretical foundation for evaluating antitrust concerns. Interestingly, however, antitrust statutes in the European Union also place heavy emphasis on the role of economics. Indeed, a hypothetical conversation with a lawyer or economist at a US competition authority (the Antitrust Division of the Department of Justice or the Federal Trade Commission) or the European Union (The Competition Directorate) would be indistinguishable at first sight.

While this article provides a view of antitrust primarily from the perspective of US policy, the review that follows illustrates a theme that has worldwide applicability. As our understanding of antitrust economics has grown throughout the past century, antitrust enforcement policies have also improved, albeit sometimes with a significant lag. In this survey the following are highlighted: (a) the early anti-big business period in the US, in which the structure of industry was paramount; (b) the period in which performance as well as structure was given significant weight, and there was a systematic attempt to balance the efficiency gains from concentration with the inefficiencies associated with possible anti-competitive behavior; (c) the most recent period, which includes the growth of high technology and network industries, in which behavior theories have been given particular emphasis.

1. The Antitrust Laws of the US

In the USA, as in most other countries, antitrust policies are codified in law and enforced by the judicial branch. Public cases may be brought under Federal law by the Antitrust Division of the Department of Justice, by the Federal Trade Commission, and/or by each of the 50-state attorneys-general. (The state attorneys-general may also bring cases under state law.) Further, there is a broad range of possibilities for private enforcement of the antitrust laws, which plays a particularly significant role in the USA.

1.1 The Sherman Act

Antitrust first became effective in the US near the end of the nineteenth century. Underlying the antitrust movement was the significant consolidation of industry that followed the Civil War. Following the war, large trusts emerged in industries such as railroads, petroleum, sugar, steel, and cotton. Concerns about the growth and abusive conduct of these combinations generated support for legislation that would restrict their power. The first antitrust law in the USA—the Sherman Act—was promulgated in 1890. Section 1 of the Act prohibits: 'Every contract, combination in the form of trust of otherwise, or conspiracy, in restraint of trade or commerce among the several States, or with foreign nations.'

Section 2 of the Sherman Act states that it is illegal for any person to '…monopolize, or attempt to monopolize, or combine or conspire with any other person or persons, to monopolize any part of the trade or commerce among the several States, or with foreign nations….' These two sections of the Act contain the two central key principles of modern antitrust policy throughout the world—conduct that restrains trade and conduct that creates or maintains a monopoly—is deemed to be anticompetitive.

1.2 The Clayton Act

Early in the twentieth century it became apparent that the Sherman Act did not adequately address combinations, such as mergers, that were likely to create unacceptably high levels of market power. In 1914 Congress passed the Clayton Act, which identified specific types of conduct that were believed to threaten competition. The Clayton Act also made illegal conduct whose effect 'may be to substantially lessen competition or tend to create a monopoly in any line of commerce.' Section 7 of the Clayton Act is the principal statute for governing merger activity—in principle Sect. 7 asks whether the increased concentration will harm actual and/or potential competition.

Other sections of the Clayton Act address particular types of conduct. Section 2, which was amended and replaced by Sect. 1 of the Robinson-Patman Act in 1936, prohibits price discrimination between different purchasers of the same type and quality of a commodity, except when such price differences are cost-justified, or if the lower price is necessary to meet competition.

Section 3 of the Clayton Act specifically prohibits certain agreements in which a product is sold only under the condition that the purchaser will not deal in the goods of a competitor. This section has been used to challenge exclusive dealing arrangements (e.g., a distributor that is obligated to sell only the products of a particular manufacturer) and 'tied' sales (e.g., the sale of one product is conditioned on the buyer's purchase of another product from the same supplier). The Act does not prohibit all such arrangements—only those whose effect would be likely to substantially lessen competition in a particular line of commerce.

1.3 The Federal Trade Commission Act

The US is nearly unique among competition-law countries in having two enforcement agencies. In part to counter the power granted to the Executive branch under the Sherman Act, Congress created the Federal Trade Commission (FTC) in 1914. Section 5 of the Federal Trade Commission Act, which enables the FTC to challenge 'unfair' competition, can be applied to consumer protection as well as mergers. In addition, the FTC has the power to enforce the Clayton Act and the Robinson-Patman Act. While the agencies act independently of one another, the FTC and the DOJ's enforcement activities have generally been consistent with one another during most of enforcement history.

What then are the differences between the two enforcement agencies? A simple answer is that the FTC is responsible for consumer protection issues, whereas criminal violations of Sect. 1 of the Sherman Act (e.g., price fixing and market division) are the responsibility of the Antitrust Division. It is also important to note that most enforcement activities, when successful, lead to injunctive remedies, where the party that has violated the law is required to cease the harmful activity. Exceptions are the criminal fines that are assessed when Sect. 1 of the Sherman Act is criminally violated, and fines that are assessed in certain consumer protection cases. Damages are rarely assessed by the federal agencies, otherwise, although in principle there can be exceptions (e.g., when the US represents the class of government employees).

2. The Goals of Antitrust

Despite considerable economic change in the economy over the twentieth century, the federal antitrust laws have continued to have wide applicability in part because their language was quite vague and flexible. This has led, quite naturally, to extensive historical study of the legislative history and substantial debate about congressional intent, especially where the Sherman Act is concerned. Some scholars have argued that the Sherman Act was directed almost entirely towards the achievement of allocative efficiency (e.g., Bork 1966). Others have taken the view that Congress and the courts have expressed other values, ranging from a broad concern for fairness, to the protection of specific interest groups, or more simply to the welfare of consumers writ large (e.g., Schwartz 1979, Stigler 1985).

The debate concerning the goals of the antitrust laws continues today. The enforcement agencies, for example, evaluate mergers from both consumer welfare and total welfare (consumer plus business) points of view, in part because the courts are not clear as to which is the appropriate standard under the Clayton Act. While it seems clear that the Sherman Act was intended in part to protect consumers against the inefficiencies of monopolies and cartels, it is significant that at the time of the passage of the Act many economists were in opposition because they believed that large business entities would be more efficient. Whatever the goals of the Sherman Act, it is notable that a merger wave (1895–1905) soon followed the passage of the Act. It may be that outlawing various types of coordinated behavior (Sect. 1) may have encouraged legal coordination through merger.

3. Historical Developments

Because antitrust focuses on the protection of competitive markets, it was natural to suspect other nonstandard organizational forms as potentially anticompetitive. During the early part of the 1900s, most antitrust enforcement was public, and it was directed against cartels and trusts. Early successes included convictions against the Standard Oil Company (*Standard Oil vs. US*) and the tobacco trust for monopolization in 1911.

It is important to note, however, that the Sherman Act does not prohibit all restraints of trade—only those restraints that are unreasonable. The distinction between reasonable and unreasonable restraints remains a subject of debate today. It is significant, however, that the distinction between *per se* analysis (in which a practice is deemed illegal on its face) and rule of reason (in which one trades off the procompetitive and anticompetitive aspects of a practice) was made during this early period, and it remains important today.

By its nature, a *per se* rule creates a rebuttal presumption of illegality once an appropriate set of facts is found. *Per se* rules have the advantage that they provide clear signals and involve minimal enforcement costs. Yet actual firm behavior in varying market contexts generates exceptions that call for indepth analyses. It is not surprising, therefore, that the *per se* rule is the exception to the rule-of-reason norm.

An example of the application of rule of reason is price discrimination. Viewed as an exercise of monopoly power, the practice was seen as suspect. Indeed, the Robinson-Patman Act presumes that with barriers to entry, price discrimination marks a deviation from the competitive ideal that was presumed to have monopoly purpose and effect. Efficiency justifications for price discrimination and other 'restrictive practices'—promoting investment, better allocating scarce resources, and economizing on transaction costs—were overlooked during the early enforcement period. Confusion also arose between the goal of protecting competition and the practice of protecting competitors. At the beginning of the twenty-first century, however, efficiency arguments are clearly pertinent to the evaluation of Robinson-Patman claims.

There is no doubt that antitrust enforcement is difficult, even with the more sophisticated tools of industrial organization that are available today. The Sherman Act does not offer precise guidance to the courts in identifying illegal conduct. In both the Clayton Act and the Sherman Act, Congress has chosen not to enumerate the particular types of conduct that would violate the antitrust laws. Instead, Congress chose to state general principles, such as attempts to monopolize, and contracts or combinations that restrain trade, without elaborating on what actually qualifies for the illegal behavior. It was left to the courts to ascertain the intent of the antitrust statutes and to distinguish conduct that harms competition from conduct that does not.

In a significant early case, *Board of Trade of the City of Chicago vs. USA* (1918), the Supreme Court reiterated the reasonableness standard for evaluating restraints of trade. The Court concluded that 'The true test of legality is whether the restraint imposed is such as merely regulates and perhaps thereby promotes competition or whether it is such as may suppress or even destroy competition.' In this and in subsequent cases, the court failed to provide a clear statement of when and how a rule of reason analysis should be applied.

Antitrust enforcement agencies and the courts continue to debate the mode of analysis that is most appropriate in particular market contexts and when particular practices are at issue. Both courts and agencies deem it appropriate to undertake some form of 'quick-look analysis,' one which goes beyond the application of a per se rule, but which falls short of a full rule of reason inquiry (see *California Dental Association vs. FTC* 1999, Melamed 1998). *Per se* rules are applied to certain horizontal restraints, involving two or more firms operating in the same line of business. Quick-look and rule of reason analyses are more prevalent when the restraints at issue are vertical (involving two or more related lines of business, e.g., a manufacturer and a supplier).

Quick-look and more complete rule-of-reason analyses have relied on a number of basic principles. First and foremost is the market power screen. Courts have appreciated that antitrust injury necessitates the exercise of market power. Antitrust analysis typically begins with the measurement of market share possessed by firms alleged to engage in anticompetitive conduct. As many scholars have noted (e.g., Stigler 1964), in the absence of collusion, the exercise of market power in unconcentrated markets is unlikely. Market concentration is often seen as a necessary but not sufficient condition for the exercise of market power, since ease of entry, and demand and supply substitutability can limit the ability of firms to raise prices even in highly concentrated markets (e.g., Baumol et al. 1982). But, market concentration—market power screens are not essential; witness the Supreme Court's opinion in *FTC vs. Indiana Federal of Dentists* (1986).

Although courts have long recognized the importance of market power to conclusions about antitrust injury, the standards by which they adjudicate antitrust cases, and their willingness to apply sophisticated economic analysis, has varied significantly over time. Antitrust policy once treated any deviation from the competitive ideal as having anticompetitive purpose and effect. Vertical arrangements were particularly suspicious if the parties agreed to restraints that limited reliance on market prices. Over time, however, the critique of such arrangements diminished as economists began to appreciate the importance of efficiencies associated with a range of contractual practices.

3.1 *The Structure-conduct Interventionist Period*

During the 1950s and the 1960s the normative analysis of antitrust was dominated by the work of Joe Bain on barriers to entry, industry structure, and oligopoly (Bain 1968). Bain's relatively interventionist philosophy was based on the view that scale economies were not important in many markets, that barriers to entry are often high and can be manipulated by dominant incumbent firms, and that supracompetitive monopolistic pricing is relatively prevalent. This tradition held, not surprisingly, that nonstandard and unfamiliar practices should be approached with skepticism. During this era, antitrust enforcers often concluded that restraints which limited the number of competitors in a market necessarily raised prices, and that the courts could protect anticompetitive conduct by appropriate rule making.

In this early structure-conduct era, industrial organization economists tended to see firms as shaped by their technology. Practices, such as joint ventures, that reshaped the boundaries of the firm (e.g., joint ventures) were often seen as suspect. Significant emphasis was placed on the presence or absence of barriers to entry, which provided the impetus for a very tight market power screen.

Because the government was often seen as benign, it was not surprising that antitrust looked critically at mergers and acquisitions. Moreover, absent a broader theory that encompassed a variety of business relationships among firms, it is not surprising that the Supreme Court often supported government arguments without seriously evaluating the tradeoffs involved (e.g., *USA vs. Von's Grocery Co*. 1966).

Economies of scale are illustrative. That they can create a barrier to entry was emphasized under Bain's point of view, whereas the clear benefits that scale economies provide were given little recognition. For example, the Supreme Court argued that 'possible economies cannot be used as a defense to illegality' (*Federal Trade Commission vs. Procter & Gamble Co*. 1967).

Government hostility during this period also applied to markets with differentiated products. In *USA vs. Arnold, Schwinn & Co*. (1907), for example, the government was critical of franchise restrictions that supported product differentiation because the restrictions were perceived to foster the purchase of inferior products at higher than competitive prices. The possibility that exclusive dealing was procompetitive was not given serious consideration during the 1950s and 1960s.

The failure of antitrust enforcers to appreciate the benefits of discriminatory contractual practices was also evident in the early enforcement of the Robinson-Patman Act. Through the 1960s, the Act was vigorously enforced. Legitimate reasons for discriminatory pricing were very narrow (e.g., economies of scale in production or distribution). Since the mid-1960s, however, there has been a significant shift. Fears that the Act might discourage procompetitive price discrimination have led to less aggressive enforcement by the FTC.

The 1960s and 1970s marked a period of substantial empirical analysis in antitrust, motivated by structural considerations. The literature on the correlation between profit rates and industry structure initially showed a weak positive correlation, suggesting that high concentration was likely to be the source of anticompetitive firm behavior. However, this interpretation was hotly disputed. If behavior that is described as a barrier to entry also served legitimate purposes, what can one conclude even if there is a positive correlation between profitability and concentration? The challenge to this line of empirical work is typified by the debate between Demsetz (1974) and Weiss (1974). Demsetz argued that concentration was a consequence of economies of scale and the growth of more efficient firms—in effect the early empirical work suffered from problems of simultaneity. If concentrated markets led to higher industry profits, these profits were the consequence and not the cause of the superior efficiency of large firms and they consequently are consistent with competitive behavior. Today, these early studies are viewed critically, as having omitted variables that account for research and development, advertising, and economies of scale. It is noteworthy that the observed positive correlation reflected both market power and efficiency, with the balance varying on a case-by-case basis.

3.2 The Influence of the Chicago School

All of the assumptions that underlie the tradition of the 1950s and 1960s came under increasing criticism during the 1970s, led in part by the influence of the Chicago School. While the views of its proponents (e.g., Posner 1979, Easterbrook 1984) are themselves both rich and varied, they have come to be typified as including the following: (a) A belief that the allocative efficiencies associated with economies of scale and scope are of paramount importance; (b) A belief that most markets are competitive, even if they contain a relatively few number of firms. Accordingly, even if price competition is reduced, other nonprice forms of competition will fill the gap; (c) A view that monopolies will not last forever. Accordingly, the high profits earned by dominant monopolistic firms will attract new entry that in most cases will replace the monopolist or at least erode its position of dominance; (d) A view that most barriers to entry, except perhaps those created by government, are not nearly as significant as once thought; (e) A belief that monopolistic firms have no incentive to facilitate or leverage their monopoly power in vertically related markets (the 'single monopoly rent' theory); (f) A view that most business organizations maximize profits; firms that do not will not survive over time; (g) A belief that even when markets generate anticompetitive outcomes, government intervention, which is itself less than perfect, is appropriate only when it improves economic efficiency.

The period of the late 1960s and 1970s not only marked a significant influence by the Chicago School; it also saw an upgrading of the role of economists in the antitrust enforcement agencies. The increased role continued through the end of the twentieth century in the US, as it did in the European Union. For example, two economists play decision-making roles at the Department of Justice—one a Deputy for Economics and the other a Director in charge of Economic Enforcement.

Because of the influence of the Chicago School, nonstandard contractual practices that were once denounced as anticompetitive and without a valid purpose were often seen as serving legitimate economic purposes. Not surprisingly, for example, the *per se* rule limiting exclusive distribution arrangements in *Schwinn* was struck down by the US Supreme Court in *GTE Sylvania, Inc. vs. Continental TV, Inc.* (1977). Although the US DOJ–FTC Merger Guidelines does not explicitly spell out a tradeoff analysis of efficiencies and competitive effects, accounting for the economic benefits of a merger is now standard practice. Antitrust enforcement is alert to tradeoffs, and less ready to condemn conditions for which there is no obvious superior alternative.

3.3 The Post-Chicago School Analyses of Strategic Economic Behavior

In the 1970s and continuing through the 1990s new industrial organization tools, especially those using game-theoretic reasoning came into prominence. These tools allow economists to examine the ways in which established firms behave strategically in relation to their actual and potential rivals. The distinction between credible and noncredible threats, which was absent from the early entry barrier literature, has been important to an assessment of the ability of established firms to exclude competitors and to the implications of exclusionary conduct for economic welfare (e.g., Dixit 1979). These theories also illuminated a broader scope for predatory pricing and predatory behavior. Previously scholars such as Robert Bork (1978) had argued that predatory pricing imposes high costs on the alleged predator and is unlikely to be profitable in all but extraordinary situations. Developments in the analysis of strategic behavior provide a richer perspective on the scope for such conduct. Thus, nonprice competitive strategies that 'raise rivals' costs' (Krattenmaker and Salop 1986, Ordover et al. 1990) are now thought to be quite prevalent. Indeed, models of dynamic strategic behavior highlight the ability and opportunity for firms to engage in coordinated actions and for firms to profit from conduct that excludes equally efficient rivals (e.g., Kreps and Wilson 1982, Milgrom and Roberts 1982).

The implications of the various models of strategic behavior remain hotly debated. On the more skeptical side is Franklin Fisher, who stresses that while these new developments offer insights, they are insufficiently complete to provide firm conclusions or to allow us to measure what will happen in particular cases (Fisher 1989). A more optimistic view is given by Shapiro (1989) who believes that we can now analyze a much broader range of business competitive strategies than before. We also know much more about what to look for when we are studying areas such as investment in physical and intangible assets, the strategic control of information, network competition and standardization, and the competitive effects of mergers.

The analysis of strategic behavior has emphasized the potential for exercising market power, often to the detriment of consumers. At the same time, other analyses have stressed that there are gains to consumers from coordinated behavior among firms with market power. Thus, Coase (1937) argued that market forces were only one means to organize market activities, and that nonmarket organizations could provide a viable alternative. Further, Williamson (1985) developed the theory of nonmarket organization to show that contractual restraints can provide improved incentives for investments in human and physical assets that enhance the gains from trade. This transaction cost approach helps to provide a foundation for understanding the efficiency benefits of contractual restraints in vertical relationships.

Coupled with the game-theoretic analyses of firm behavior in imperfect markets has been the application of modern empirical methods for the analysis of firm practices. These newer methods allow for the more precise measurement of market power, and they indicate generally that market power is relatively common, even in markets without dominant firms (Baker and Rubinfeld 1999).

3.4 The Public Choice Approach

Today, a balanced normative approach to antitrust would involve reflections on the broad set of efficiencies associated with various organizational forms and contractual relations, as well as the possibilities for anticompetitive strategic behavior in markets with or without dominant firms. A positive (descriptive) approach focuses on the relationship between market structure and the politics of the interest groups that are affected by that structure.

The theory of public choice has been used as the basis for limiting competitor standing to bring antitrust suits. In support is the argument that competitors' interests deviate from the public interest because competitors view efficiencies associated with alleged exclusionary practices to be harmful, and therefore are not in a position to distinguish efficient from inefficient practices. On the other hand, competitors are often the most knowledgeable advocates, and are likely to know more about the socially harmful effects of exclusionary practices long before consumers do. The debate over standing to sue has surfaced with respect to indirect purchaser suits (e.g., *Illinois Brick Co. vs. Illinois* 1977) and with respect to predatory pricing (*Brooke Group Ltd. vs. Brown & Williamson Corp.* 1993).

4. *High Technology and Dynamic Network Industries*

In the latter part of the twentieth century rapid changes in technology have altered the nature of competition in many markets in ways that would most likely have surprised the antitrust reformers of the late nineteenth century. The early debates centered on scale—did the benefits of economies of scale in production outweigh the associated increase in market power? In many dynamic high technology industries today, demand, rather than supply is often the source of substantial consumer benefits and significant market power. Economies of scale on the demand side arise in industries such as computers and telecommunications because of the presence of network effects, whereby each individual's demand for a product is positively related to the usage of the product (and complementary products) by other individuals. Network effects apply to communications networks (where consumers value a large network of users with whom to communicate, such as compatible telephone systems and compatible fax machines), and they apply to virtual networks or hardware–software networks (where there is not necessarily any communication between users).

In industries in which network effects are significant, a host of issues challenge our traditional views of antitrust. Because network industries are often characterized by large sunk costs and very low marginal costs, there is a substantial likelihood that a successful firm will come to dominate a market and to persist in that dominance for a significant period of time. Indeed, while there is no assurance that a single standard will arise in network industries, it is nevertheless often the case that users will gravitate toward using compatible products. This combination of economic factors makes it possible for firms to adopt price and nonprice policies that exclude competition and effectively raise prices significantly above what they would be were there more competition in the market (Rubinfeld 1998).

A host of hotly debated antitrust policy issues are raised by the increasing importance of dynamic network industries. Whatever view one holds, there is little doubt that the antitrust enforcement stakes are raised. On one hand, because the path of innovation today will significantly affect future product quality and price, the potential benefits of enforcement are huge. This perspective clearly motivated the Department of Justice and twenty states when they chose to sue Microsoft for a variety of antitrust violations in 1998 (*US vs. Microsoft* 1998). On the other hand, because the path of innovation is highly uncertain and technology is rapidly changing, barriers to entry that seem great today could disappear tomorrow, and the potential costs of enforcement are large as well. The threat of potential entry by innovative firms has been a significant part of Microsoft's defense in the Department of Justice case.

5. *Standard Setting*

In network industries competitive problems may arise in the competition to develop market standards. Dominant firms may have an incentive to adopt competitive strategies that support a single standard by preventing the products of rivals from achieving compatibility. Indeed, when the dominant firm's product becomes the standard for the industry, firms that are developing alternative standards may find it difficult to compete effectively (Farrell and Katz 1998). Alternatively, firms might collude to affect the outcome of the standard-setting (price-setting) process. Such collusion can be difficult to detect because firms often have pro-competitive reasons for cooperating in the race to develop new technology. Indeed, firms often possess assets and skills that can make collaboration in developing a market standard an efficient arrangement. An example is the pooling of technology related to video and audio streaming on the Internet. In its business review letter of the MPEG-II patent pooling agreement, the Antitrust Division of the Department of Justice spelled out a set of conditions under which the pooling of assets would be deemed to be pro-competitive. Where and how to draw the line between procompetitive sharing of assets of skills and other anticompetitive activities that will discourage competitors in the battle for the next generation standard remains a highly significant antitrust issue.

As a general rule, one should expect that sufficient competition will exist to develop a new product or market standard whenever more than a few independent entities exist that can compete to develop the product or standard. This rule of thumb is consistent with case law and conclusions in guidelines published by the US antitrust authorities. For example, the DOJ/FTC *Antitrust Guidelines for the Licensing of Intellectual Property* conclude that mergers or other arrangements among actual or potential competitors are unlikely to have an adverse effect on competition in research and development if more than four independent entities have the capability and incentive to engage in similar R&D activity (DOJ/FTC 1995). Similarly, the 1984 DOJ/FTC *Merger Guidelines* (revised in 1992) conclude that mergers among potential competitors are unlikely to raise antitrust concerns if there are more than a few other potential entrants that are similarly situated.

5.1 Leveraging

Leveraging occurs when a firm uses its advantage from operating in one market to gain an advantage in selling into one or more other, generally related markets. Leveraging by dominant firms in network industries may take place for a variety of reasons that can be procompetitive or anticompetitive, depending on the circumstances. The challenge for antitrust policy is to distinguish between the two. On one hand, leveraging can be seen as a form of vertical integration, in which a firm may improve its distribution system, economize on information, and/or improve the quality of its products. Leveraging, however, can be anticompetitive if its serves as a mechanism by which a dominant firm is able to raise its rivals' costs of competing in the marketplace.

Leveraging can be accomplished by a variety of practices (e.g., tying, bundling, exclusive dealing), each of which may have anticompetitive or procompetitive aspects, or a combination of the two. For example, with tying, a firm conditions the purchase (or license) of one product—the tied product—on the purchase (or license) of another product—the tying product. A firm might choose a tying arrangement for procompetitive reasons, including cost savings and quality control. Suppose, for example, that a dominant firm offers to license its dominant technology only to those firms that agree to also license that firm's complementary product, and suppose that the complementary product builds on the firm's next generation technology. Such a tying arrangement could allow the dominant firm to create a new installed base of users of its next generation technology in a manner that would effectively foreclose the opportunities of competing firms to offer their products in the battle for the next generation technology (Farrell and Saloner 1986).

6. International Antitrust

The emergence of a global marketplace raises significant antitrust policy issues. On one hand, free trade and the opening of markets makes it less likely that mergers will significantly decrease competition, and indeed, creates greater opportunities for merging or cooperating firms to generate substantial efficiencies. On the other hand, international price-fixing agreements are more difficult for US or other domestic enforcement agencies to police, since success often requires some degree of cooperation with foreign governments or international organizations. In the 1990s we saw a significant increase in the prosecution of international price-fixing conspiracies. Indeed, in 1998, the Department of Justice collected over \$1 billion in criminal fines, the bulk of which arose from the investigation of a conspiracy involving the vitamin industry.

The internationalization of antitrust raises a host of difficult jurisdictional and implementation problems for all antitrust enforcement countries. One can get a sense of the enormous difficulties involved by looking at the problems from the perspective of the US. The Sherman Act clearly applies to all conduct, which has a substantial effect within the US. However, crucial evidence or culpable individuals or firms may be located outside the US. As a result, it is imperative for US antitrust authorities to coordinate their activities with authorities abroad. This is accomplished in part through mutual assistance agreements, as, for example, in the agreement between the US and Australia under the International Enforcement Assistance Act. It is also accomplished through informal 'positive comity' arrangements, whereby if one country believes that its firms are being excluded from another's markets, it will conduct a preliminary analysis and then refer the matter to the foreign antitrust authority for further investigation, and, if appropriate, prosecution. (Such an agreement was reached with the EU in 1991.) Further, in 1998, the Organization for Economic Cooperation and Development formally recommended that its member countries cooperate in enforcing laws against international cartels. What role, if any, the World Trade Organization will play in encouraging cooperation or resolving antitrust disputes remains an open question today.

7. Conclusions

Antitrust policy has undergone incredible change over the twentieth century. As the views about the nature of markets and arrangements among firms held by economists and others have changed, so has antitrust. The early focus was on the possible anticompetitive effects of mergers and other horizontal arrangements among firms. The primary source of market power was the presence of scale economies in production. However, vertical arrangements receive significant critical treatment, and the sources of market power are seen as coming from the demand side as well as the supply side. Further, a wide arrange of contractual practices are now judged as creating substantial efficiencies, albeit with the risk that market power will be used for exclusionary purposes. Finally, significant changes in international competition, resulting from free trade and the communication and information revolution, have reinforced the importance of reshaping antitrust to meet the needs of the twenty-first century. Significant new antitrust challenges lie ahead. Whatever those challenges may be, we can expect that industrial organization economics and antitrust policy will be sufficiently flexible and creatively to respond appropriately.

8. Statutes

Clayton Act, 38 Stat. 730 (1914), as amended, 15 USCA §§12-27 (1977).

Federal Trade Commission Act, 38 Stat. 717 (1914), as amended, 15 USCA §§41-58 (1977).

Robinson-Patman Act, 49 Stat. 1526 (1936), 15 USCA §13 (1977).

Sherman Act, 26 Stat. 209 (1890), as amended, 15 USCA §§1-7 (1977).

9. Cases

Board of Trade of the City of Chicago vs. USA, 246 US 231 (1918) (see Sect. 3).

Brooke Group Ltd. vs. Brown & Williamson Tobacco Corp., 509 US 209, 113 S. Ct. 2578 (1993) (see Sect 3.4).

California Dental Association vs. FTC, 119 S.Ct. 1604 (1999) (see Sect. 3).

Federal Trade Commission vs. Indiana Association of Dentists, 476 US 447 (1986) (see Sect. 3).

Federal Trade Commission vs. Procter & Gamble Co, Inc., 386 US 568, 574 (1967) (see Sect. 3.1).

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Standard Oil Co. vs. United States, 221 US 1 (1911) (see Sect. 3).

USA vs. Arnold, Schwinn & Co., 388 US 365 (1907) (see Sect. 3.1).

USA vs. Microsoft, Civil Action, 98-1232 (1998) (see Sect. 4).

USA vs. Von's Grocery Co., 384 US 270, 301 (1966) (see Sect. 3.1).

See also: Business History; Business Law; Firm Behavior; Policy Process: Business Participation; Regulation and Administration; Regulation, Economic Theory of; Regulation: Empirical Analysis; Regulation Theory in Geography; Regulatory Agencies

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Anxiety and Anxiety Disorders

In addition to happiness, sadness, anger, and desire, anxiety is one of the five important normally and regularly occurring emotions which can be observed