CPI COMPETITION POLICY INTERNATIONAL

The CPI Antitrust Journal
January 2010 (2)

Competition and Innovation: A Non-Zero Sum Approach to Economic Growth

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I. INTRODUCTION

A. Establishing Competitive Markets: The Challenges

There has been a gradual shift over the last two decades towards competitive markets and competition agencies have appeared around the world.Twenty years ago, there were only a handful of competition agencies worldwide; now, there are over one hundred.Many equate the presence of competition agencies with greater competition; however, merely having a competition agency does not automatically lead to a pro-competitive market.Whether a market will be truly competitive—i.e., whether the market allows competition on the merits to determine market outcomes—depends on whether competitive forces or managed outcomes define the market.

A competition agency's action (and inaction) can play a major role in defining the market.Under-enforcement of anticompetitive practices encourages price cartels and helps create monopolies wherein monopolists absorb rents out of the economy and visit inefficiency on the market.Over-enforcement of anticompetitive practices can lead to inefficiency, such as lower levels of productivity and higher prices for consumers in the long run.Therefore, competition agencies must find the happy medium between over- and under-enforcement.This paper endeavors to answer the question of what enforcement standard competition agencies should apply in order to reach this happy medium.

When the spread of competition agencies in the 1990s accompanied the trade barrier reductions wrought by the Uruguay Round, many commentators believed that markets in all countries would tend towards greater levels of competition.Unfortunately, this belief opened the door to the dangerous view that "more competition" is always synonymous with "competitive markets."Treating the two ideas synonymously does not take into account over- and under-enforcement, both of which detrimentally impact competitive market equilibrium.This paper posits that rather than maximizing and "protecting competition" for the sake of more competition alone, competition agencies should encourage competition that maximizes consumer welfare.The fact that competitive markets are good for society has less to do with the fact that they level the playing field for competitors, and more to do with the fact that competitive markets eliminate inefficiency and promote innovation.

Competition agencies frequently fall into the trap of finding anticompetitive practices where none exist (so-called false positives).Often, the agency's over-estimation of the market impact on present consumers and under-estimation of the market impact on future consumers are to blame for such false positives.Put another way, when there is a false positive, the competition agency has likely failed to useconsumer welfare as its guiding principle.

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This paper analyzes how competition agencies, principally competition agencies in the United States and the European Union, have historically handled these issues.In addition, the paper recommends that competition agencies should approach any competition issue with an eye toward consumer welfare in order to improve the market outcomes of competition decisions.

B. The Meaning of "Consumer Welfare"

Consumer welfare, which should be the guiding principle of competition policy implementation, is often mistaken for consumer protection.Whereas consumer protection looks to the interests of present consumers, the concept of consumer welfare looks to the long term impacts of a given competition policy and, by extension, the interests of future consumers.The term "consumer welfare," an economic term of art, refers to the maximization of allocative and productive efficiency.Present consumers benefit from the efficient distribution of goods that results from the maximization of allocative efficiency; future consumers benefit from innovations in production and design that result from the maximization of productive efficiency.Thus, consumer welfare contemplates both present and future consumers.

Investment in research and development both maximizes allocative efficiency and improves productive efficiency with new technologies.In most circumstances,bias in favor of the interests of future consumers will not make any difference since the interests of present and future consumers are usually aligned.With a cartel, for example, the interests of present and future consumers are aligned because a cartel leads to the misallocation of present resources and also damages future incentives to engage in research and development, harming both present and future consumers.

When the interests of present and future consumers are not aligned or are in opposition to one another, the interests of future consumers should trump the interests of present consumers.Society's interest in reducing costs through innovation outweighs society's interest in present consumers.Just as advantaging present consumers over future consumers would have a negative impact on innovation, "[a]n antitrust policy that reduces prices by 5% today at the expense of lowering by 1% the annual rate at which innovation reduces the cost of production would be a calamity."[2]Innovation losses in excess of 1 percent are particularly risky in the high tech sector, which is discussed in this paper.

C. Consumer Welfare and Competitor Welfare

There has been much literature written on the difference between consumer welfare and competitor welfare.Since the first U.S.Supreme Court cases holding that the purpose of the antitrust laws is to protect the process of competition (not individual competitors), there has been a gradual—some would say slow—recognition of the importance of consumer welfare as an arbiter for competition enforcement.[3]But the term "consumer welfare" is itself fraught with misunderstanding.[4]

A lack of understanding of the true meaning of the word "consumer" contributes to the misunderstanding of the term "consumer welfare."Consumers are not just individuals buying goods or services at the end of a chain, but are also businesses and other users who buy products and services in order to sell what they make of those products and services to other consumers.This paper examines a number of industries where failure to properly account for the interests of future consumers is not a marginal error,

[2] Willard Tom & Joshua Newberg, *Antitrust and Intellectual Property: From Separate Spheres to Unified Field*, 66 ANTITRUST L.J. 167 (1997).

[3] *See* Harold Demsetz, *Do Competition and Monopolistic Competition Differ?*, J. OF POL. ECON. (1968).

[4] This is particularly so in new markets characterized by marginal cost curves that are not traditional U-shaped curves and in markets where there are multiple sets of consumers.

but a central one, that threatens the entire structure of innovation and economic growth.Typically, such industries are characterized by network effects or by sharply declining marginal cost curves.

D. Industries Characterized by Network Effects

Network effects occur where a particular product or service increases its value in proportion to the number of users.The most obvious example is the telephone, where two or more users greatly increase the "network's" overall value, but a single phone has little value.There are many other industries that are characterized by network effects.Similar to the telephone industry, the other industries' networks have some intrinsic value beyond the incremental value of each element of their networks. Network effects distort the simple U-shaped marginal cost curve, driving marginal cost towards zero and the price a firm can charge towards zero, thus altering the fundamental economics of the industry.

Markets subject to network effects are also subject to positive feedback, a powerful force.When a market is subject to positive feedback, slight success is amplified exponentially, leading to rapid dominance by winning firms. Conversely, positive feedback amplifies even marginal failure, usually forcing exit.To compensate for the impacts—both beneficial and ruinous—of positive feedback, firms must alter their business practices. Furthermore, competition agencies must analyze the business practices of industries subject to network effects differently because the impacts on such markets are not intuitively obvious.

Firms in markets with network effects must take steps to attempt to secure temporary monopolies over platform technologies to increase their installed base in order to survive.These temporary monopolies encourage and strengthen inter-platform competition, thereby making them (counter-intuitively, perhaps, to some) pro-competitive.Rather than disciplining firms that seek temporary monopolies in such markets, competition authorities should laud them for the efficiency-increasing benefits such practices create.

As compared with industries where network effects do not apply, the effects of either success or failure are magnified in industries subject to network effects, putting a greater premium on success.Marginal success can quickly translate into rapidly increasing market share; similarly, any marginal failure can quickly translate into the total failure of a particular company, as evidenced by plummeting market shares.As an example of the dramatic effects of positive feedback loops, in the early years of Microsoft's web browser, Internet Explorer ("IE"), Microsoft had a high market share, which fell dramatically over the subsequent years.In November 2003, IE's combined market share (for all versions of the browser) was 85 percent; Mozilla, with the next highest, had a market share of 7.2 percent(for its web browser, Firefox).By November 2006, IE's market share had fallen to 58 percent, while Firefox's had increased to almost 30 percent.As of August 2009, Firefox had a 47 percent market share compared to IE's combined market share of 38 percent.Such a precipitous fall in market share, though rare in other industries, is common in those subject to network effects.[5]

1. Marginal Costs Declining to Zero Means that Industry Pricing is Reduced to Zero

Where marginal cost is declining to zero, as is the case for industries that manifest strong network effects, the price a producer can charge for a given good or service also tends towards zero.To compensate for this fundamental economic driver, a firm must massively increase its installed base of consumers in order to offset the reduction in price that results from the declining marginal cost.Increasing the installed base better promotes the kind of inter-platform competition that leads to increased welfare by ensuring continued competition.

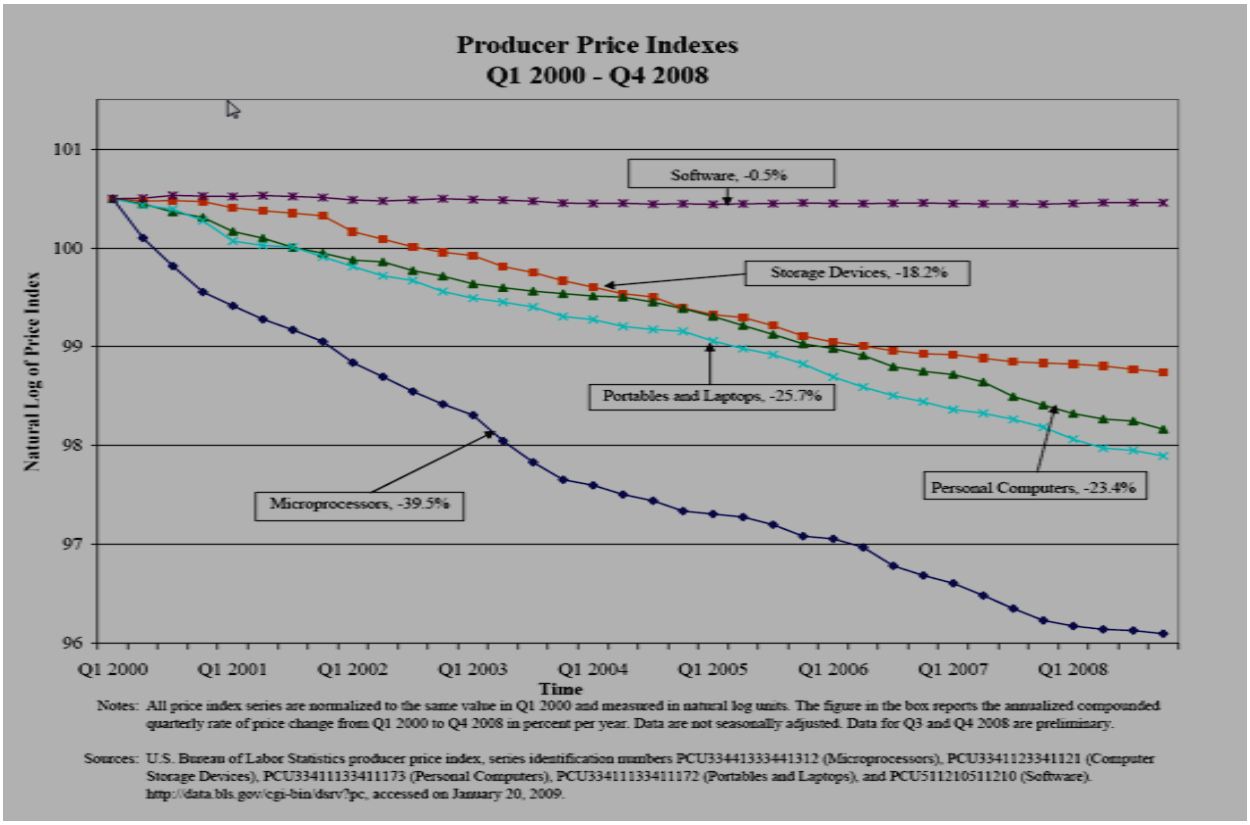
[5] A further example is the market for Internet search engines: Google, which did not even exist a decade or so ago, has seen its market share rise quickly since its launch to 65-70 percent in 2008. Google benefited from positive feedback which led to rapid market share increase.

There has been a sharp rise recently in the number of platforms that compete with each other within a relevant product market.Much of the rise in the number of platforms can be attributed to the convergence in the high tech/telecommunications industry, where products that historically never competed against each other are now in direct competition.In the new media economy, for instance, software companies now compete with old-line print newspapers and other platforms in the market for the dissemination of information.The relevant competition in this market is the competition among these different platforms, that is, inter-platform competition.In order to strengthen inter-platform competition, the individual platforms must themselves be strengthened.To do so, firms operating within a particular platform often seek temporary monopolies.If one only considers the particular platform concerned, as opposed to all the different platforms that compete against each other, a temporary monopoly may look anticompetitive.Such an assessment, however, is misguided.For example, to build up their installed base, some producers offer deep discounts, rebates, and other low cost options for consumers; others (particularly those in high tech industries), even give away products for free.[6]At first glance, these efforts to grow the installed base may appear anticompetitive; however, they promote efficiencies in inter-platform competition ensuring the continued health of the market.

In the computer chip industry, prices have gone down dramatically in the last ten years (see Figure 1).Although it is not a network industry in the traditional sense, the computer chip industry manifests network effects because the marginal cost curve is declining, albeit for another reason: Moore's Law.Gordon Moore's prediction (known as Moore's Law) states that the cost per transistor will decrease over time because the number of computer chips that can be placed on a transistor through research and design ("R&D") process improvements increases by a factor of two each year.This dynamic, driven by strong competition and the desire to increase the available market by providing lower cost microprocessors, is illustrated below.

Figure 1 – Quality Adjusted Prices for Selected IT Products (2000-2008)

[6] For example, a company like Apple may give away free MacBooks to college students to increase its network among end consumers of computers. Apple can subsidize the cost of giving away MacBooks for free by increasing the prices of its second set of consumers—software developers. Apple can do this and, indeed, wants to do this because end consumers of computers value a computer with more available software applications. Software developers, on the other hand, want their applications used by the maximum number of computer users. Thus, the larger each of Apple's networks is, the more valuable both are.



Moore's Law is not an immutable law of nature; rather, it seeks to explain the declining marginal cost curve, the key economic factor.Costs decline because of gains in technology, which ensure reduced production costsas well as increases in the capability and power of the computer chip.Simply put, even though the price of the computer chip goes down, what is available on each computer chip (i.e., the computer chip's quality) increases dramatically.[7]

Consumers' increased technology usage is changing and applying downward pressure on price.However, aproducer's ability to lower costs does not necessarily translate into lower price.A lower price will occur only if buyers exert sufficient downward pressure.In the computer chip industry, the biggest first set of consumers, original equipment manufacturers, known as OEMs or computer manufacturers, exert the most downward pressure and have the most bargaining power.

E. Multiple Consumers and Two-Sided Markets

In the new economy, there are many industries in which there are multiple sets of consumers.Some industries are characterized by two-sided markets, with two sets of consumers—e.g., flight reservation systems, auction houses, and credit cards.Some two-sided markets are characterized by strong two-sided effects, others by weak two-sided effects.Strong two-sided effects occur where the market must, of necessity, be a two-sided market.Weak two-sided effects occur where, often as a result of new technology, one side of the market can bypass the other side and buy goods and services directly from producers.An example of the latter is the flight reservation system, where the two sides of the market are (i) travel agents and (ii) end-consumers (travelers), and the seller is the airline.As a result of the Internet, consumers no

[7] Indeed, in some cases, the increases in the capabilities and power of the newest computer chips might lead one to argue that a new computer chip is an entirely different product than its predecessors.

longer have to purchase airfare from a travel agent.Instead, they can buy their tickets by logging onto the airline's website and buy their tickets directly from the airline.This type of two-sided market operates similarly to traditional markets.On the other hand, the credit card market is an example of a strong two-sided market, for consumers are unable to purchase merchandise with credit directly from banks.[8]

Two-sided markets are often present in high technology industries.Microsoft, for example, sells operating systems directly to consumers as well as to OEMs.The OEMs, in turn, sell both hardware and software packages to the consumer.The market for Microsoft software is a "weak" two-sided market because consumers can buy software directly from Microsoft and install it in the computer themselves.

By comparison, a strong two-sided market would be the market for computer chips sold directly to OEMs.Consumers buy hardware from OEMs or from stores because it is more difficult to install, thereby creating two sets of consumers of computer chips: (1) the OEMs and (2) the end-purchasers of hardware.It is in the interest of the seller of computer chips to maximize this end-consumer market.The more people who are in the market for hardware, the more chips the firm will sell to the OEMs.The competition analysis of the relationship between the chip manufacturer and the OEM must take into consideration the fact that the OEM is not the ultimate end-consumer.A chip manufacturer may engage in certain pricing and other practices because of the ultimate pro-competitive efficiencies with respect to the end-consumer, notwithstanding the impact of those practices on the first set of consumers—the OEMs.Any perceived anticompetitive impacts to the OEMs are offset by their high degree of bargaining power (as a result of their size) and the downward pressure they can exert on the firms that sell goods and services.

1. Meaning of Consumer in Markets with Network Effects or Declining Cost Curves

In the markets with the network effects described above, markets with declining marginal costs curves or those with multiple sets of consumers are particularly prone to confusion in the determination of consumer welfare.To use the earlier example of the computer chip, if consumer welfare is only judged by reference to the immediate consumer of chips, i.e., the OEM, the analysis will exclude the ultimate end consumer (not to mention the future consumer).Thus, the analysis looks only to whether a given practice by a producer is anticompetitive vis à vis other producers or the OEMs and ignores the fact that behaviors which appear to damage one set of consumers actually may lead to gains for the second set of consumers.

If a particular industry is heavily driven by the need to maximize one set of consumers, it will behave accordingly in order to survive, and competition agencies must take this into consideration in their overall analysis of anticompetitive effects.The key is to understand the dynamics of an industry driving a particular practice. Reasons for a particular practice could include the need for the industry to reach ultimate end-consumers and build an ultimate end-consumer market.If the need to build a broader ultimate end-consumer market is paramount, then the economic drivers will push firms to engage in practices that maximize this end-consumer market; these practices may consist of loyalty rebates and other rebates that may, without deeper analysis, appear anticompetitive.

For example, in the computer chip industry, OEMs may be only too happy to press producers for the kinds of rebates and pricing practices that might flag an antitrust concern if the only market considered is the immediate OEM consumer market.The end consumer of computer chips is the purchaser of computer hardware.There are a handful of very large OEM personal computer manufacturers that sell to end consumers and make up a significant percentage of the market share for personal computers.Some of

[8] A steel manufacturer that sells to an automobile manufacturer is another example of a two-sided market. The end consumer (and the consumer that the steel company ultimately wants to see maximized) is the purchaser of vehicles. The larger that market of vehicle purchasers, the more steel the steel manufacturer will sell to vehicle manufacturers, and the better the steel companies will do.

these OEMs have two to three times the annual revenue of the largest computer chip manufacturer, Intel, and have a keen interest in both securing the lowest possible cost for computer components and expanding the end user market.Conditions of competition at the OEM level of the market have a profound impact on the business decisions of chip manufacturers, thus the chip manufacturer may be motivated to make strategic decisions in order to maximize inter-platform competition among the different OEMs.

II. THE SHIFT IN POLICY THINKING BETWEEN MANAGED COMPETITION AND OPEN COMPETITION

By way of background, in the last century, there has been a shift in U.S.antitrust enforcement away from managed competition toward ensuring open markets characterized by competition on the business merits.To some extent, this shift has been mirrored in the European Union ("EU").Simply by having a competition agency, it does not necessarily follow that a country will have a competitive market in the consumer welfare-enhancing sense.The purpose of a competition agency is to determine whether the market is truly competitive.Unlike the United States, whose competition policy has evolved slowly over the course of many years, the EUhas had the benefit of U.S. experience and history and, as a result, is evolving more quickly than the United States.Other countries with even newer agencies are facing similar challenges to the United States and EU as they start to see the practical effects of their decision-making.If these newer competition agencies enact competition laws in order to promote competition policy as a normative economic framework (as opposed to an industrial policy goal), their transitions will doubtless be faster and more seamless than either the US or the EU.

In the United States, there have always been questions about the goals of the antitrust laws.In the earliest antitrust cases, there were questions as to whether an economic or legalistic vision would undergird the administration of the new laws.The early debate between those who advocated a per se approach to certain antitrust offences and those who wanted to apply a rule of reason was an expression of this discussion.The economic vision supported an approach that was based on a rule of reason because with such an approach, one could weigh the pro-competitive benefits of a certain activity against the anticompetitive harm.The certainty-based legalistic view favored a per se approach, at least for certain kinds of practices, for, it was argued, bright line rules would enable firms to understand what they could and could not do, creating a sense of clarity and certainty.Ever since, many bad economic policies have been hidden under the cloak of business certainty.

Similarly, in Europe, early competition enforcement consisted of requiring market participants to fit their behavior into various block exemptions.In the United Kingdom, under the now superseded Restrictive Trade Practices Act of 1976, firms had to notify the Office of Fair Trading of every agreement regardless of its impact on the market.These legalistic interpretations in Europe have gradually given way to more economically sound methods of implementing the competition laws, culminating in the hiring of a Chief Economist for the first time in 2003.

Initially, U.S. courts' views of competition focused on competitor welfare, and the notion that large firms were somehow intrinsically bad and that there was some intrinsic good in a fragmented market for its own sake.There was a succession of cases espousing the virtues of small fragmented markets, including the *U.S. v. Aluminum Co. of Am.*("*Alcoa*") case.[9]The *Alcoa*court suggested that concerns other than consumer welfare could drive antitrust decision-making.The mere acquisition of monopoly power, according to the court, could lead to strictures that would render "monopolists" all but inert and severely limited in their range of action.

[9] United States v. Aluminum Co. of Am., 148 F.2d 416 (2d Cir. 1945) (hereinafter referred to as "Alcoa").

Famously, Justice Learned Hand in *Alcoa*stated in dicta that:

> Having proved that "Alcoa" had a monopoly in the domestic ingot market, the plaintiff had gone far enough; if it was an excuse, that "Alcoa" had not abused its monopoly power, it lay upon Alcoa to prove that it had not.[10]

Although not required for the ultimate decision, this statement demonstrates that monopoly power on its own could support a Section 2 Sherman Act claim, which the alleged monopolist would then have to defend.This shifting of the presumption of anticompetitive unilateral conduct alters the incentives for innovative activity in radical and negative ways.Had this been the law in the 1970s and 1980s, whole industries, such as the software or biotech industries, would have been stillborn.

Another problem was the interpretation the court gave to the word "fair." Learned Hand asserted that:

> In any event, the mere fact that a producer, having command of the domestic market, has not been able to make more than a "fair" profit, is no evidence that a "fair" profit could not have been made at lower prices.[11]

The language of Learned Hand in much of the *Alcoa* decision is language drawn from "competitor welfare."The word "fair" itself begs the question "fair to whom?"It seems Learned Hand meant fairness to some combination of competitors and present consumers, but not fairness to future consumers.He focused on the structure of the market, using words reminiscent of those used today:

> It is possible, because of its indirect social or moral effect, to prefer a system of small producers, each dependent for his success upon his own skill and character, to one in which the great mass of those engaged must accept the direction of a few.[12]

Here, Learned Hand unquestionably favors small businesses, simply because they are small, and the idea that a fragmented market is somehow an intrinsic public good.He went on to suggest that a monopoly should be regarded like a price fixing agreement and should be deemed per se illegal.Indeed, he suggested that only an "inert" monopoly would not attract the per se approach of the antitrust laws to horizontal price-fixing arrangements.

Eventually a number of economic scholars began to criticize this approach.Even in the legislative history of the Sherman Act, legislators expressed concerns that the new law should not make monopolies illegal per se.For example, Senator Hoar differentiated between the acquiring of a monopoly through good business activities and the acquiring of a monopoly through "the use of means which made it impossible for other persons to engage in a fair competition, like the engrossing, the buying up of all other persons engaged in the same business."[13]

A. Evolution of Unilateral Conduct Analysis A More Economic Approach Radically Changes Key Unilateral Conduct Tests

1. Predatory Pricing

An early case in the evolution of predatory pricing jurisprudence is *Utah Pie Co. v. Continental Baking Co.*[14]This case typifies the rule-based, competitor-centric model for evaluating exclusionary activity.In *Utah Pie*, a Salt Lake City-based producer of frozen fruit pies charged three larger competitors with primary-line

[10] *Id*. at 427.
[11] *Id*.
[12] *Id*.
[13] *See* 21 Cong. Rec. S3151, 3152 (1890) (statement of Sen. Hoar).
[14] Utah Pie Co. v. Continental Baking Co., 386 U.S. 685 (1967).

price discrimination.Utah Pie Company ("Utah Pie") alleged that during the period of the complaint (from 1958 to 1961) the defendant pie companies charged lower prices—prices below Utah Pie's prices—in the Salt Lake City market than in markets closer to their own production facilities.The purpose of such pricing, it was alleged, was to eliminate Utah Pie.The U.S. Supreme Court upheld the trial court's decision in favor of Utah Pie, finding that a jury could have "reasonably concluded that a competitor who is forced to reduce his price to a new all-time low in a market of declining prices will in time feel the financial pinch and will be a less effective competitive force."[15]

Not long after it was published, *Utah Pie* was widely assailed as a classic example of non-economic antitrust analysis of price competition that was more injurious to a competitor (Utah Pie) than to competition or consumers.*Utah Pie*, in essence, denied price competition in order to manage competition between competitors and to give benefits to a particular competitor.

Many cases have found predatory pricing even where prices were above cost.[16]Fortuitously, there was a significant shift in analysis largely brought about by scholarly critiques of previous decisions in both the legal and economic literature.In *Barry Wright Corporation v. ITT Grinnell*,[17] writing for the First Circuit, future Supreme Court Justice Breyer cited with approval Areeda & Turner's textbook,*Antitrust Law*[18] in which the authors limit exclusionary conduct to "conduct, other than competition on the merits or restraints reasonably 'necessary' to competition on the merits, that reasonably appear capable of making a significant contribution to creating or maintaining monopoly power."[19]The court explained that where pricing is below incremental cost, a price cut can make consumers worse off rather than better off,since below cost pricing can knock other competitors out and the predator can then raise prices as a monopolist.The danger, then, of low prices now is higher prices in the future, that is, placing the interests of present consumers above future consumers. If the bad outcome is not possible because the lower price will not lead to the kind of market power that can be used to knock out competitors, then the fact that the entity intends the result is of no consequence and is merely a bad business decision."Intent" should be no part of the test, consistent with a more economic and less legislative approach.

Eventually, in the *Brooke Group v. Brown & Williamson Tobacco*[20] decision, the Supreme Court approved the formula in Areeda & Turner, which provided that predatory prices would only be problematic if pricing was below cost, the predator had market power, and the predator could recoup the lost profit in the future.The recoupment test was a key element of the analysis, centering on the anticompetitive harm of higher prices later, not low prices now.The recoupment test, in that way, is an expression of consumer welfare.A test that does not take into account the firm's ability to raise prices later is an expression of competitor or producer welfare.In simple terms, competitors frequently complain about activities that are good for consumers but damage them.

2. Exclusionary Activity

Another area where a more economic approach has altered the analysis in unilateral conduct cases is the area of exclusionary activity by single firms.Here, different approaches to the fundamental economics can have very different enforcement results.In the early days, following the trajectory of the predatory pricing reasoning, many behaviors that were actually beneficial to consumers were disciplined.Certain kinds

[15] *Id*. at 699-700.

[16] *See* Transamerica Computer Co. v. IBM, 698 F.2d 1377 (9th Cir. 1983); Int'l Air Indus. v. Am. Excelsior, 424 U.S. 943 (1976).

[17] Barry Wright Corp. v. ITT Grinnell, 724 F.2d 227, 230 (1st Cir. 1983)

[18] *See* P. AREEDA & D. TURNER, ANTITRUST LAW, 1978.

[19] Barry Wright Corp. 724 F.2d at 230 (quoting P. AREEDA & D. TURNER, ANTITRUST LAW (1978)).

[20] Brooke Group v. Brown & Williamson Tobacco, 509 U.S. 209 (1993)

of behaviors are particularly prone to complaints by rivals, such as tying and exclusive dealing.[21]Until *Jefferson Parish v. Hyde*[22] courts frequently applied an overly legalistic approach and held that tying was per se illegal (though the requirement that the alleged tying firm had monopoly power in the tying product ameliorated the less-than-robust economic approach).Because of their vertical nature, exclusive dealing arrangements have always been reviewed by reference to the Rule of Reason.

3. How to Treat One's Rival

Competition policy can vary widely depending on which guiding principles are applied to a firm's treatment of its rivals and whether the firm's activities violate competition law.In the early days of competition enforcement, a legalistic analysis would often be suspicious of activities undertaken by firms to exclude their rivals from business opportunities.The early U.S. antitrust enforcement cases reveal that while the courts considered allocative efficiency concerns paramount, they rarely considered productive efficiency.As noted above, consideration of allocative efficiency concerns alone protects only one group of consumers—present consumers.Productive efficiency, on the other hand, delivers innovation, which leads to a reduction of costs and, consequently, benefits for future consumers.

The problem with focusing solely on allocative efficiency is that such a focus ignores the fact that all business activity, to some extent, seeks to exclude competitors.Moreover, any one sale to consumers, by definition, results in another company's lost sale.The *United Shoe Machinery*[23] decision also paid insufficient attention to economic analysis.In that case, the court suggested that once a company attains market power, any exclusionary conduct constitutes grounds for illegal maintenance of such power.Under such a test, since almost any conduct by definition excludes rivals, once a firm attains market power, it follows that nearly every business activity will be outlawed.This results in one rule for the business activities of larger firms and a separate rule for firms that have yet to achieve market power.This disparity, as well as the effects of a myopic focus on allocative efficiency,serve to deter legitimate and needed business activities.

The most recent line of cases on essential facilities or refusals to deal also evidence the overall trend towards a more economic analysis and the appropriate weighing of the interests of present and future consumers.The oft-cited *Aspen Skiing v. Aspen Highlands Skiing Corp*. opinion[24] is regarded as the Supreme Court's most important analysis of the so-called essential facilities doctrine.In *Aspen Skiing*, the Supreme Court found that the defendant operator of three out of four skiing areas in Aspen violated Section 2 of the Sherman Act by refusing to offer a multi-area ski pass to its three facilities, but not that of the rival mountain.The case turned on the fact that there was a pre-existing relationship between the defendant operator and the rival ski mountain and that the defendant operator was trying to change that pre-existing relationship in order to exclude its rival.

In the recent cases, *Verizon Communications, Inc. v. Law Offices of Curtis V. Trinko, LLP*[25] and*Pacific Bell Telephone Co. et. al., v. LinkLine Communications, Inc.,*[26] the Supreme Court debated whether the telecommunications regulations imposed a duty to deal on certain telecommunications operators.In the absence of regulatory provisions, the Supreme Court found no antitrust duty to deal with competitors and that such a duty to deal is very unlikely ever to be found (the narrow *Aspen Skiing* exception requires

[21] Tying occurs where a firm with market power in one particular market conditions purchase of a product in that market on purchase of the product in a related market. Exclusive dealing occurs where a buyer agrees to purchase all his requirements from an exclusive seller.

[22] Jefferson Parish v. Hyde, 466 U.S. 2 (1984)

[23] United States v. United Shoe Mach. Corp., 391 U.S. 244 (1968)

[24] Aspen Skiing Co. v. Aspen Highlands Skiing Corp., 472 U.S. 585 (1985)

[25] Verizon Commc'ns, Inc. v. Law Offices of Curtis V. Trinko, LLP, 540 U.S. 398 (2004)

[26] Pac. Bell Tel. Co. et. al., v. LinkLine Commc'ns, Inc., 129 S.Ct. 1109 (2009)

discontinuance of a pre-existing business relationship solely to exclude a rival).In *Trinko* and *LinkLine*, the Supreme Court recognized that the ability to control one's property was an integral part of competition and should not be tampered with lightly.

B. Strategic Behavior

Strategic behavior is another area that has attracted antitrust scrutiny over the years.As with other forms of unilateral conduct, strategic behavior is prone to erroneous economic analysis, the trumping of present consumers' interests over those of future consumers, and false positives.

The Federal Trade Commission's ("FTC") decision in *DuPont*[27] deserves careful attention, as it is an old world example of the high tech phenomenon described in this paper.In *DuPont*, the FTC filed a complaint against E.I. DuPont de Nemours ("DuPont") for what has been termed "strategic capacity preemption."The FTC alleged that by using a cost advantage to build capacity and increase its market share, DuPont had engaged in strategic conduct designed to damage its competitors and monopolize the market.

DuPont and its competitors were involved in the production of titanium dioxide ("TiO_2"), a pigment used in paints and paper as a whitening agent.There were a number of ways to produce TiO_2, and DuPont had access to large quantities of one type of raw material: ilmenite ore.The other raw material used in the production of $TiO_2$was rutile ore, but this was in limited supply.Production from ilmenite ore was costly and difficult because it involved a great deal of experimentation and "learning by doing."When rutile ore was readily available, DuPont's rivals were able to take advantage of the lower cost process.When the rutile ore supply diminished in the 1970s—a surprise to all in the industry—DuPont found itself with a huge cost advantage over its rivals.Importantly, the cost advantage did not result from any benefit conferred on DuPont except by this accident.After holding production relatively static, DuPont elected to substantially increase production in the hope that it would make its cost advantage pay.Its strategy was so successful that it rapidly gained over 65 percent of the TiO_2 market.

The FTC alleged that DuPont's increased production was an attempt to pre-empt competitive expansion of its rivals so that DuPont could achieve a durable monopoly in the sector.However, DuPont did nothing to create the cost disparity, and took substantial risk in expanding its production at a time when it would have been hard to do so; any change in the relative supply of ilmenite and rutile ores would have been catastrophic to DuPont.In addition, the FTC alleged that DuPontannounced that it would substantially increase capacity in the hope that the announcement by itself would chill competition (foreshadowing some of the allegations in the *US v. Microsoft Corp.*).[28]The FTC also alleged that DuPont refused to license its proprietary technology for domestic production, but licensed it to certain foreign producers.

The key issue with all strategic behavior is that firms compete in order to achieve monopoly status. Indeed, the drive to increase market share at the expense of rivals is at the very heart of the competitive process.If the eventual decision in *DuPont* had been that these behaviors either separately or taken together constituted illegal activity, this would chill many of the pro-competitive behaviors that are at the heart of business competition.In the end, the FTC found that DuPont's activities constituted a legitimate business objective.The case may have been differently decided if DuPont's cost advantage were based on some government benefit, or some other anticompetitive practice, or if there were some regulatory advantage that DuPont had procured for itself.Central here was the fact that the initial cost advantage on which the FTC based the challenged conduct was an advantage that DuPont did not engineer for itself.Instead, the

[27] In re E.I. DuPont de Nemours & Co., 96 F.T.C. 653 (1980)

[28] *See* United States v. Microsoft Corp., 97 F. Supp. 2d 59 (D.D.C. 2000).

Court found praiseworthy DuPont's foresight in working out a process for ilmenite ore at a time when it did not have significant reserves of rutile ore.

The FTC adopted similar reasoning in *U.S. v ITT Continental Baking*.[29] In *ITT*, the FTC filed a complaint against the company, alleging that ITT was acting anticompetitively in the wholesale bread baking industry. At the time, ITT was the world's largest bread baker, with a steadily growing market share, and the largest producer of snack cakes (under the brand name "Hostess"). ITT had over 75 percent of the wholesale baker market in four regional and local markets, over 60 percent in eight others, and over 40 percent in thirty-seven more. The FTC alleged that ITT planned to attain a monopoly in the wholesale baking industry by acquiring a number of wholesale bakers, by selling bread below cost or at predatory prices, and by subsidizing below-cost sales in various geographic regions with sales at higher prices in less competitive geographic markets.

On appeal, ITT argued that it did not attempt to monopolize the wholesale bread baking market, rather it was simply behaving competitively given the characteristics of the market. In the 1950s and 1960s, the number of bread producers declined sharply due to technological changes in the industry, costly labor contracts and high ingredient costs, selling and distribution costs, among other factors. Being unable to match the lower costs and prices of larger firms with newer, more technologically-advanced equipment, many smaller firms were forced to either close up shop or sell to other firms in the industry. Citing *DuPont*, the Commissioner held that ITT's pricing and acquisition of smaller bread producers was profitable, economically rational given the market conditions, and not anticompetitive. Moreover, ITT's behavior was strategic and competitive.

The FTC drew a distinction between engaging in strategic moves to attain a monopoly position—the very nature of business competition—and abusing an already-acquired monopoly position. This leaves a gray area in Section 2 of the Sherman Act as to what the precise meaning of "attempt to monopolize" is and whether there are any strategic activities that could fall into this category in addition to the well-established ones (tying and bundling, predatory pricing, refusals to deal, etc.). It is well established that monopoly is not unlawful if gained through a superior product, business acumen or, as was the case for the sharp increase in the cost of rutile ore in *DuPont*, historical accident.[30]

Strategic behavior can take many forms—it can include behavior that leads to cost increases for rivals, use of regulations to increase costs or erect entry barriers, raising input costs for rivals, and raising switching costs for consumers. Many of these are perfectly legitimate business strategies that have little to no anticompetitive or harmful impacts to consumer welfare.

III. THE CHANGING ROLE IN MARKET SHARE

The role played by market share has also changed to reflect the increased importance of economic analysis, and the interests of future consumers. Initially, there were bright line rules defining when conduct was per se illegal and when the rule of reason should apply. It took some time before court cases applied robust economic reasoning to the issue of what level of market share was "problematic' from an antitrust standpoint.

The overruling of *U.S. v. Arnold, Schwinn & Co.*[31] by *Continental T.V. v. GTE Sylvania Inc.*[32] fundamentally changed the role that Rule of Reason analysis played. *Sylvania* was the first case in which the

[29] U.S. v ITT Cont'l Baking Co., 485 F. 2d 16 (1973).

[30] Indeed, contrary to the FTC's challenge, DuPont never increased its market share beyond the 60 percent or so that it achieved with its growth strategy.

[31] United States v. Arnold, Schwinn & Co., 388 U.S. 365 (1967)

Court noted that a different approach must be applied to vertical restraints because they could have pro-efficiency economic benefits not present with horizontal restraints.Justice Powell's analysis in *Sylvania* specifically explained that the market impact of vertical restrictions was complex because of their potential to reduce intrabrand competition and simultaneously increase interbrand competition.This is the functional equivalent of this paper's assertion that today's firms must be allowed to behave strategically to achieve temporary monopolies over competing platforms in order to maximize inter-platform competition.

The court in *Jefferson Parish* attempted to determine whether a given market share conferred market power.Antitrust analysis prior to *Sylvania* was prone to bright line rules and legalistic responses.Pre-*Sylvania*, courts assumed that market share was an expression of market power without any further analysis.[33]From an economic standpoint, market share on its own does not really tell us much about the type of market power a firm may or may not have.Market power, at its simplest level, means the ability of a firm to raise price without losing its customer base.In addition to a given firm's market share, its market power depends on: (i) the other firms controlling the rest of the market, (ii) the elasticity of demand, and (iii) how these factors are divided among competing firms.A firm may be able to act in an allegedly anticompetitive way depending on the breakdown of market shares and elasticities.

A. Market Share of Downstream Markets

The ability of a supplier of a particular product to leverage its market power will depend in some measure on the market shares in the ultimate downstream markets.If those markets are highly concentrated, then this may well offset high market shares in the original market and countervail any market power that might be found there.

Monopsony or oligopsony buyers of products supplied by firms with significant market shares may be able to set the terms of sale with the supplier firm, notwithstanding the fact that the supplier firm has a high market share.Market share may also be limited if the barriers to entry are such that the market power conferred by high levels of market share is not durable.This is true in the high tech sectors where new technologies are constantly being developed.Firms cannot retain very high market shares in these sectors unless they can maintain significant and durable cost advantages over rivals, which typically require constant innovation and increased productive efficiency to benefit future consumers.

In the case of those who sell goods and services to OEMs, the nature of the buyer market (and, in particular, whether it displays oligopolistic characteristics) is an important factor in the overall market dynamic.These market dynamics impact how behavior in the market should be judged from a competition standpoint when an economic analysis is properly applied.

B. The Increasing Role for Efficiencies

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[32] Continental T.V. Inc. v. GTE Sylvania Inc., 433 U.S. 36 (1977)

[33] There is a need for further analysis for, as Judge Easterbrook stated in his article, *The Limits of Antitrust* (63 TEX. L. REV. 1, 10 (1984)),

> As time goes by, fewer and fewer things seem appropriate for per se condemnation. We see competitive benefits in practices that once were thought uniformly pernicious. Ten years ago tying arrangements, boycotts, territorial allocations, and resale price maintenance were unlawful per se . . . . These changes in the structure of antitrust analysis follow ineluctably from changes in our understanding of the economic consequences of the practices involved. If condemnation per se depends on a conclusion that almost all examples of some practice are deleterious, then discoveries of possible benefits lead to new legal rules. We cannot condemn so quickly anymore. What we do not condemn, we must study. The approved method of study is the Rule of Reason.

The role of efficiencies in antitrust analysis increased during the 1960s largely in response to academic writings on the subject.The scholarship of Nobel Laureate Oliver E. Williamson focused on the fact that efficiencies could offset social welfare losses and, therefore, should be considered in the antitrust analysis.The implicit assumption in Williamson's thesis was that efficiency should be an important goal of antitrust policy and that this goal had not been properly factored into previous analysis.[34] Coincidentally, at this time Harold Demsetz also published his groundbreaking work on competition and monopolistic competition, *Do Competition and Monopolistic Competition Differ?*[35]Nearly a decade later, the Supreme Court used this scholarly work in the *Sylvania* case to announce what had long been recognized in economic circles: that, instead of a bright-line rule, the impact on competition in the market should determine what constitutes an actionable anticompetitive practice.This view was further strengthened by the Department of Justice's 1985 Vertical Restraint Guidelines which highlighted that economic analysis should be the normative framework in the inquiry into allegedly anticompetitive practices.

IV. ROLE OF PROCEDURAL FAIRNESS AND TRANSPARENCY

Because future consumers have no voice, it is vital that the procedures used to handle competition cases properly elicit the impact on future consumers and do not skew the analysis in favor of the interests of present consumers or, worse yet, competitors.In the context of competition analysis, procedural fairness and transparency are not optional "extras" to the economically sound administration of competition law and policy.Due to the fact that economic analysis must answer very specific questions, the process by which one elicits the data supporting those answers is vital to the economic analysis itself.Without procedures that elicit the full economic picture of a given market, competition authorities will be unable to properly evaluate alleged anticompetitive practices.Having procedures in place that show the full economic picture help protect a firm's substantive, as well as due process, procedural rights. Likewise, non-economic approaches to antitrust analysis usually result in processes that are not transparent or that lack fundamental due process requirements.This is because any economic antitrust analysis relies entirely on the quality of the information on which that analysis is based.

Economic analysis advocates for the interests of future consumers and must have a full seat at the table where decisions regarding competition implementation take place.It is vital that the functions of judges and investigator are kept separate for, if they are not, the natural bias in favor of the investigator's theory will be skewed towards competitors (since, generally, competitors are the ones who complain and for whom investigators advocate) and present consumers.Yet again, future consumers will have no voice.

V.MODERN CASES AND UNILATERAL CONDUCT ANALYSIS; INNOVATION AND AVOIDANCE OF CALAMITY

The recent European case against Intel Corporation highlights the need to fully understand how each of the different consumer groups is affected by certain patterns of behavior.The subject of the complaint was, primarily, Intel's pricing for discounts, rebates, and marketing assistance.The European Commission found that Intel had abused its dominant market position by pricing practices.Had the EC applied the thesis of this paper, however, in order for Intel's behavior to have been "abusive" (in the antitrust context), Intel's practices must have had damaging effects on consumer welfare and must have resulted in pricing below some appropriately calculated measure of cost.The EC's decision, however, did not take into account the fact that Intel's behavior was predicated largely on the fact that its business model required it to persuade large, sophisticated OEM consumers (as well as end-user purchasers) to buy the largest number of microprocessors as possible.In other words, Intel operated in a two-sided market in

[34] *See* O. E. Williamson, *Economics as an Antitrust Defense: The Welfare Trade-Offs*, AM. ECON. REV. 58 (March 1968).
[35] Harold Demsetz, *Do Competition and Monopolistic Competition Differ?* J. POL. ECON. (1968).

which its only mode of success was to maximize the platforms of its two sets of consumers: OEMs and end-users.

Intel is important because it is representative of the high tech industry at large.Prices have decreased dramatically in the last eight years for a number of high tech products.For example, during this period, the quality-adjusted price of micro-processors has declined 39.5 percent annually, as has the cost of components for the production of high-tech products—e.g., personal computer prices have declined by 23.4 percent, laptops by 25.7 percent, and storage devices by 18.2 percent annually.

Recall that the exchange of an annual loss of innovation at a rate of 1 percent for a 5 percent price reduction now would be a calamity.[36]The recent EU enforcement action against Intel likely will result in a 6.4 percent loss in innovation on an annual basis.[37]This loss in innovation is traded for, at most, a projected consumer surplus of 2.5 percent if Intel is projected to be a monopolist (something that the presence and profits of AMD, Intel's only competitor, militates against).With prices going down in all areas, it is unlikely that this level of surplus will be realized.In any event, compared with Willard Tom's projection of a "calamitous" policy, a 6.4 percent loss in innovation will be beyond calamitous in the microprocessor industry.

The EC also analyzed Intel's exclusive dealing arrangements.The competitive harm associated with exclusive dealing arrangements is very different from the competitive harm associated with below cost pricing.When firms engage in exclusive dealing, such behavior cartelizes the market, directly leading to higher prices.The higher prices from below-cost pricing, on the other hand, arise indirectly: The firm charging the low price will be able to knock out competitors and then recoup any lost profit by increasing prices to monopoly levels.By confusing direct price harm with indirect price harm, competition agencies run the risk of finding anticompetitive harm where none exists (or not finding harm that actually does exist).Even more importantly, any limitations placed on innovative price competition will lead to higher cost levels in the long term.Exclusive dealing, by its very nature, means that the party that is subject to the exclusion does not have a choice.By contrast, low pricing offers an incentive, but does not coerce another party to enter into an agreement.

The EC analysis in the Intel case appears to confuse the two types of price harm and ignore the interests of future consumers.The analysis draws exclusively from allocative considerations, similar to the early U.S. antitrust enforcement decisions, *Utah Pie* and *Alcoa*.The EC did not sufficiently consider the impact of Intel's behavior on productive efficiency and, thus, was able to ignore or downplay (i) the impact of rapidly decreasing marginal costs in the market; (ii) the oligopoly nature of the OEM consumers; (iii) the transitory nature of the exclusive agreements, which more than offset present harm to consumers with efficiencies for the benefit of future consumers; and (iv) internal market dynamics driving market participants to behave strategically to increase the end-consumer market (i.e., encouraging end-consumers to buy from OEMs).

The case also highlights the difference between the EC and U.S. approaches to antitrust analysis.The EC concerned itself with exclusive supply relationships between Intel and OEM, even though those exclusive relationships were for very short durations, typically 90 days.U.S. antitrust agencies, on the other hand, would rarely find that a short-term, vertical exclusive arrangement in a dynamic environment violated the antitrust laws.

[36] *See supra*, Part 1.2 and Note 2.

[37] *See* Competition and Innovation in the Microprocessor Industry: Does AMD Spur Intel to Innovate More? Goeltler & Gordon, June 23, 2009.

The EC's lack of attention to the market dynamics is also reflected by the fact that the EC ignored AMD's increasing market share during the period under investigation, when Intel's market share was decreasing.The volume discount of which the EC complained operated very specifically in a market where there are only two competitors.The EC did not consider that when there are only two competitors in a market, any deal to purchase from one competitor is going to look like a foreclosing exclusive supply arrangement.

In order to evaluate the effect of the unilateral conduct on consumer welfare, the EC applied a test known as the "As Efficient Competitor" test ("AEC test").The AEC test asks whether a firm that is "as efficient" as the firm with market power would be excluded by the alleged antitrust violations.When there is no data, the EC will substitute its own assessment of what constitutes an "as efficient competitor" for an analysis of the data.

The problem with the AEC test is that it ignores the reasons how and why the challenged firm achieved such a low level of costs.Thus, the test tends to overlook investments in intellectual property (in the case of Intel, for example, the EC ignored Intel's significant investment in the x86 CPU) and efforts to sell and expand new technologies, such as Intel's work to convince OEMs to use, purchase and sell the x86 CPU.In effect, the AEC not only ignores, but alsopenalizes productive efficiency gains.The test misses the fundamental point that the cost base of competing firms is different and the effort to drive down production costs lies at the heart of the competition process.The way the EC projected Intel's cost—thirty five per cent of the selling price—looks more like a trade test, similar to the way that trade remedy tools project firm costs.

Perhaps most troubling of all is the inevitable result of any reading of the case.The EC's approach first looks to establish dominance, then, if it finds dominance, the EC regards any form of vertical restraint as a competitive harm.In a market with only two competitors, this would appear to preclude a plethora of legitimate business activities if conducted by a dominant player.This means that the unstated goal of EU competition laws is, in essence, to equalize market shares (i.e., to avoid dominance).Under the EC's analysis, monopoly is always a bad thing.Accordingly (to follow the EC's reasoning to its logical end), firms should pull their competitive punches in order to avoid the risk of success, for success could lead to (very costly) dominance.Such an approach will undoubtedly lead to significant innovation-chilling harm in markets that share the characteristics of Intel's.The EC's approach is nothing more than the modern day "inert monopoly" theory of Judge Learned Hand in *Alcoa*.[38]

A. Modern Cases and Procedural Fairness

Recently, some have raised concerns about procedural fairness in the European context.These concerns center on the potential lack of checks and balances.[39]Since competition proceedings are quasi-criminal in nature, it is important that affected firms received full procedural protections, as competition proceedings often evolve into criminal proceedings.Thus, procedural fairness and due process protections are more necessary in competition proceedings than in purely administrative ones.

Commentators have expressed reservations that the EC blurs prosecutorial and judicial functions and that since the EC applies criminal-type standards, criminal-type protections should be available to defendants.For example, the EC levies fines on firms if they are repeat offenders—a standard criminal practice—and therefore the criminal protections of due process should apply.In cases with criminal consequences, it is imperative that full due process rights are afforded to defendants.In the recent EC case,

[38] *See supra,* Part 2.

[39] *See* Donald Slater, Sebastien Thomas, & Denis Waelbroeck, *Competition Law Proceedings Before the European Commission and the Right remaining highlighting to a Fair Trial: No Need for Reform*, EUR. COMPETITION J., Volume 5, April 2009 at pp. 97-143.

Akzo,[40] the CFI condemned the EC's reliance on criminal proceedings and its threats of sanctions to force individuals to comply with lengthy EC requests for documents.It seems that the EC is attempting to have its cake and eat it, too, by applying criminal provisions to antitrust violations while at the same time denying the defendant ordinary due process rights normally available to criminal defendants.

It is important to recognize that the Commission has stated that the intended function of its fines is, at least partly, to be deterrent in nature (much like the purpose of criminal laws).When criminal law sanctions are threatened, defendants should receive criminal law protections because in cases where the sanctions exceed the actual lost profits caused by the anticompetitive activity (in other words, when sanctions are used as a deterrent), the risk of societal harm and consumer welfare losses caused by a false positive justifies procedural protections for defendants beyond what would normally apply to ordinary commercial disputes.

The panoply of rights ordinarily granted to criminal defendants, including the right to a public hearing, the right to a hearing before the person deciding the case, and the right to due process to ensure that evidence is not improperly admitted or considered, do not appear to have been present in the *Akzo* case or in later European cases, such as the proceedings against Intel.If there are flaws in fundamental principles of due process, it is very unlikely that such analysis will lead to an economically sound result.Both recent EC cases fell short here.

VI. CONCLUSION

There has been a transition in competition analysis in developed markets, particularly with respect to unilateral conduct.Competition agencies must recognize that a non-economic approach to competition analysis damages the incentives for innovation by, among other things, leading to false positives.Countries with new competition agencies should look to the evolution of U.S. antitrust laws for guidance, and learn from U.S. agencies' past mistakes.Applying an economic approach from the outset is likely to yield more competitive markets, greater efficiency and more innovation.

In the first half of the twentieth century, allocative efficiency was prioritized over productive efficiency.In other words, the interests of present consumers trumped the interests of future consumers.When the interests of future and present consumers are identical, this practice is acceptable.And although the interests of present and future consumers are frequently aligned, when their interests differ or conflict—as they often do—considering only allocative efficiency will lead to unsettling results, such as the outlawing of legitimate, consumer-friendly business practices.The resulting harm will lead to a reduction in innovation and will hinder cost-reducing business innovations.A competitor welfare approach tends to be favored when only allocative efficiency is maximized, whereas the discovery and implementation of product innovations to lower costs maximizes productive efficiency.Consumer welfare is enhanced when both productive and allocative efficiency are maximized.

Competition policy does not exist in an economic vacuum.It exists in order to give effect to society's understanding that competitive markets and the proper protection of the property rights lead to greater economic development, more innovation, and benefits for society as a whole.Competition agencies can act as a positive or negative force in achieving these goals, depending on how they enforce their laws.Agencies must exercise the most caution in the area of single firm conduct in high tech markets, where the impact of the wrong decisions is magnified, sometimes to disastrous result.

[40] Akzo Nobel Chemicals and Akcros Chemicals v Commission, ECR [2007] II-3523.