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# Market Power in Aftermarkets

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Many recent antitrust cases involve aftermarkets — the provision of spare parts or service for use with a previously purchased durable good. These cases rely on the Supreme Court's decision in *Eastman Kodak Co. v. Image Technical Services, Inc.*[1] to argue that imperfectly informed consumers may find themselves 'locked-in' to a particular brand of equipment after they make their initial equipment purchase. As a result, even if intensive competition exists when consumers make their equipment purchase, a manufacturer may possess significant market power, if not a monopoly, in the aftermarket and may use this power to increase aftermarket prices.

This paper explains why aftermarket prices often are high and examines the implications of such high aftermarket prices for antitrust. Contrary to the 'lock-in' analysis of the Supreme Court's decision, the many instances of systematically high aftermarket prices we observe in the marketplace are unlikely due to manufacturers taking advantage of imperfectly informed consumers to charge supracompetitive package prices. We show that even if consumers are totally uninformed about aftermarket conditions when they purchase their equipment, they pay a competitive package price because competition forces manufacturers to offset later aftermarket price increases with initial equipment price decreases.

The Supreme Court's example of an aftermarket hold-up, where consumers do pay a higher than competitive package price, requires a market 'surprise' and, therefore, is an unlikely explanation for the systematically high aftermarket prices we observe in the marketplace.

Rather than uninformed consumers or hold-ups, high aftermarket prices are explained as a form of price discrimination. Manufacturers selling differentiated products use the aftermarket as a way to meter intensity of individual consumer demand and thereby to discriminate between consumers in terms of the package prices they pay. While such discriminatory pricing could not exist in a perfectly competitive world, it is not indicative of antitrust market power. In fact, such pricing is a ubiquitous and important element of the competitive process. Economists that advocate antitrust regulation of such 'market imperfections' illustrate the danger of using deviations from the abstract economic model of perfect competition as a policy standard.

## I. THE KODAK CASE

The most noteworthy aftermarket antitrust case concerns the policies adopted by Eastman Kodak in providing service for its high-volume photocopier and micrographics equipment. In the early 1980s independent service organizations (ISOs) began servicing this equipment in competition with Kodak, often at prices substantially lower than Kodak's service prices. There was no systematic evidence that the service supplied by ISOs was of a lower quality than Kodak's service; in fact, some customers testified that ISO service was of a higher quality than Kodak's service. In spite of this, in late 1985 and 1986 Kodak adopted policies to limit the availability to ISOs of replacement parts for Kodak equipment. Kodak had previously sold its replacement parts in three ways: a) to customers as part of a Kodak service call; b) to customers who did not use Kodak service and either serviced their machines themselves or made the parts available for use by ISOs; and c) to ISOs directly. After the change in policy, Kodak sold replacement parts for its high-volume copying and micrographic machines only

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to customers who used Kodak service or who repaired their own machines, eliminating sales to ISOs and customers who made the parts available for ISOs. Unable to obtain parts, many ISOs were forced out of business and their customers were forced to switch to Kodak service. In 1987 eighteen of these ISOs brought suit against Kodak, claiming an illegal tie of the sale of service to the sale of Kodak replacement parts and the monopolization of the aftermarket of service for Kodak machines.

At the time of the litigation, Kodak had a 23 percent share of the high-volume copier market and less than a 20 percent share of the micrographic equipment market. The ISOs conceded that Kodak did not have market power in either original equipment market. However, the ISOs claimed that the tying product was not Kodak equipment but Kodak replacement parts, of which Kodak controlled essentially 100 percent. Kodak was alleged to have used its monopoly power in the Kodak parts aftermarket to gain control of the Kodak service aftermarket by means of an illegal tie of its service to its parts. The primary issue before the Court was whether Kodak's absence of market power in the equipment market necessarily precluded as a matter of law an absence of market power in the aftermarkets for replacement parts and service.

The district court granted summary judgment for Kodak, accepting Kodak's argument that competition in the equipment market made it impossible for Kodak to harm purchasers in the service aftermarket.[2] Kodak's theoretical argument, accepted by the district court, was that any increase in prices of aftermarket parts or service would be viewed as tantamount to a price increase for equipment and, therefore, given that there is competition in the equipment market, Kodak would have to offset any aftermarket price increase with a decrease in equipment prices or else would experience a dramatic loss of equipment sales. Consumers would demand on offsetting equipment price decrease because they can be thought of as demanding an equipment-service-parts package and Kodak can be assumed to face a highly elastic demand for this package.

The Ninth Circuit reversed the district court's grant of summary judgment, stating that the question of whether competition in the equipment market prevented Kodak from exercising market power in the Kodak parts aftermarket was an issue of material fact and noting that 'market imperfections' may keep economic theories about how consumers act in the marketplace from mirroring reality.[3] Justice Blackmun, writing for the Supreme Court majority in affirming the reversal, endorsed this 'market imperfections' argument, stating that the correctness of an economic theory is an empirical issue that must be determined by an examination of 'actual market realities', not solely by resort to theoretical arguments.[4]

The actual market realities considered by the Court were buyer information costs and switching costs. The Court noted that, contrary to Kodak's theory of package price competition, buyers are unlikely to be fully informed at the time they make their equipment purchases about the prices of parts and service they will later have to purchase.[5] In addition, the Court noted that when buyers do become aware of higher aftermarket prices, they may find it costly to switch to an alternative equipment supplier. Switching costs are present because the market for used equipment is likely to be imperfect and because buyers make investments that lock themselves in to the Kodak equipment, such as the development of manuals and the training of employees in the use of the particular Kodak machines and software.

Because of this lock-in, Kodak can take advantage of their existing customers by increasing aftermarket prices. In particular, Kodak can use a parts tie to increase aftermarket service prices without fear of competition from ISO service competitors and thus force consumers to pay supracompetitive package prices. Whether a firm such as Kodak could profitably hold up its existing locked-in customers in this way, the Court emphasized, is an empirical question that involves a company trading off the increased short-run profit received from existing locked-in customers with the reduced long-run profit received from sales to new customers. Such a trade-off is more likely to be profitable, the Court claimed, when switching costs are high relative to the increase in service prices and when the number of locked-in customers is high relative to the number of new customers.

*Kodak* has been recognized as standing for the proposition that economic theory should be rejected in favor of an examination of 'the facts' of a case. However, what the Court actually did in *Kodak* was not reject all economic theory for the facts but, rather, reject a particular economic theory that appeared to be inconsistent with the facts and accept an alternative economic theory which it found more plausible, or at least plausible enough to survive Kodak's summary judgment motion. In particular, the Court rejected the defendant's economic theory of fully informed consumers that consider full package prices before making purchases and accepted the plaintiffs' economic theory of an aftermarket hold-up of imperfectly informed consumers locked in due to high switching costs.

## II. THE ROLE OF CONSUMER INFORMATION IN AFTERMARKET HOLD-UPS

To analyze the role of imperfect consumer information that underlies the Court's alternative economic theory, I initially consider two cases. In the first case I assume consumers are fully informed about the aftermarket at the time they make their equipment purchases; in the second case I assume consumers are completely uninformed about aftermarket conditions at the time of their equipment purchases. In both cases I assume a lock-in which forces consumers to deal solely with their chosen equipment manufacturer in the aftermarket. In both cases, whether consumers are fully informed or uninformed, consumers will pay a competitive package price as long as sufficient competition exists among sellers in the equipment market.

*case 1: when customers are fully informed about aftermarket prices, a hold-up is not possible.*

If consumers know at the time they make their equipment purchases that later they will have to purchase aftermarkets parts and services from the same manufacturer and if consumers also know the prices they will be charged for these parts and services, then manufacturers do not have the ability to hold up consumers.[6] Consumers can take account of known aftermarket conditions before they make their initial equipment purchase and become locked in to a particular brand in either of two ways. Informed consumers may attempt to control aftermarket prices contractually, for example, by negotiating long-term aftermarket prices as part of the initial equipment purchase. This could take the form of a parts and services warranty. Or, when contractual control of aftermarket prices is not possible, informed consumers will demand an offsetting decrease in equipment prices for the higher aftermarket prices they know they will pay after they become locked in. As a result, informed consumers will pay a competitive price for the total package of equipment, parts and service. This is the essential economic analysis underlying the argument presented by Kodak at trial.

The fact that consumers pay a competitive package price does not mean that some elements of the package may not be supracompetitively priced. For example, consider the case of 'overpricing' of popcorn in a movie theater. Moviegoers can be thought of as facing a sole supplier of an important complementary input, popcorn, after they purchase a theater ticket, similar to the case in which consumers face a sole supplier of aftermarket parts and service after they purchase a durable good.[7] Theater owners can be assumed to be engaging in a type of 'tie in' sale by preventing consumers from bringing into the theater their own popcorn or popcorn purchased from competing suppliers. If consumers wish to buy the movie ticket, the popcorn they buy must be supplied by the theater owner.

While popcorn may not be essential to viewing a movie in the way a replacement part can be essential for using a machine, even if buying popcorn were a requirement for movie viewing, we would not consider high popcorn prices to be an aftermarket hold-up. This is because consumers purchasing movie tickets presumably know in advance that popcorn prices in the theater are high. The theater owner is not unexpectedly increasing popcorn prices after consumers purchase their movie tickets. Perhaps when I buy a movie ticket for the very first time I may be surprised to find out that the theater's popcorn prices are very high, but I soon learn about and anticipate high popcorn prices. High popcorn prices are not the result of poorly informed, locked-in buyers, but are merely a part of the total package price informed buyers pay in the competitive movie theater marketplace. That some elements of the competitive package price may be priced high (and other elements correspondingly priced low) is not a concern of the antitrust laws. In fact, the Supreme Court explicitly concludes in *Kodak* that there is not an antitrust problem in cases of high aftermarket prices as long as the overall package price is competitive.[8]

Why competitive popcorn prices are high in spite of the fact that consumers are fully informed ex ante about the popcorn aftermarket is a separate, interesting question. It seems that knowledgeable customers would demand (and theaters supply) lower popcorn prices in return for a willingness to pay higher ticket prices. One possible reason high aftermarket overpricing may survive in a competitive environment where consumers are fully informed is because of the inability to write complete aftermarket contracts. As a result manufacturers cannot commit contractually to charge low aftermarket prices and informed consumers must demand offsetting equipment price decreases up front.

While it is obviously correct that contracts are not complete, incomplete contracts are an unlikely explanation for the existence of high aftermarket prices. At least partial contractual control of aftermarket prices is a fairly easy thing to accomplish in many cases and, as we shall see, established manufacturers can and do use their reputations as a way to commit on elements of their performance that are not controlled contractually. However, in many of the cases of high aftermarket prices we do not see transactors even attempting to control aftermarket prices and the companies do not experience a loss of reputation as would be evidenced by declining sales. I discuss later a more reasonable explanation for high aftermarket prices. What we know now is that if consumers are fully informed at the initial point of purchase and manufacturer competition is present at this point, high aftermarket pricing cannot be explained by a consumer aftermarket hold-up that results in a supracompetitive package price.

A fundamental legal implication of this economic analysis is that when consumers are fully aware of the existence of an aftermarket tie and of increased aftermarket prices, the level of competition should be measured at the point in time before the buyer makes any specific investments and before any lock-in occurs. If the market at this point in time is competitive, then the tie is merely the form in which a company is collecting the total competitive price. This economic reasoning is, in fact, consistent with much of the established law on tying. For example, in *Mozart v. Mercedes*,[9] where Mercedes dealers were required to purchase replacement parts from Mercedes, the Court correctly emphasized that Mercedes had no market power at the point in time when individuals were deciding whether to become Mercedes dealers.[10] Presumably, the individuals who decided to become Mercedes dealers accepted the parts tie as an element of a freely negotiated, competitive contractual arrangement.[11]

This economic reasoning, that when a tie pre-exists and buyers are aware of it, competition should be determined at the point in time before buyers make any specific investments, is not disturbed by *Kodak*. The Court in *Kodak* was not concerned about the legality of a pre-existing tie that fully informed consumers were aware of when they purchased their equipment, but about the legality of an unanticipated *change* Kodak made in its marketing policy in 1985, after consumers were locked in and established ISOs were servicing Kodak equipment. Indeed, Steven Salop, the economic expert for the plaintiff ISOs, recognized that pre-existing ties in a competitive equipment market are not anti-competitive, stating that 'if Kodak had announced its policy in advance and applied it prospectively only to new purchasers, then the installed base opportunism theory [what he calls a hold-up] would not apply. Its policy would have been simple bundling of service and equipment by a firm without market power.'[12]

The Court in *Kodak* correctly emphasized, citing *Jefferson Parish*, that relevant antitrust product markets should be determined by the choices available to consumers.[13] However, the key unstated economic question that must be answered in all aftermarket cases is: choices available to consumers at what point in time? We have seen that when consumers are fully informed, one should consider choices available to consumers before they have made any specific investments and have become locked in to particular suppliers. However, when consumers are not fully informed, *Kodak* cannot be read for the contrary proposition that one must consider the choices available to buyers after they have made specific investments and are locked in to particular suppliers. It certainly would make no sense to claim that at the point in time a patient is being wheeled into an operating room at Jefferson Parish Hospital the patient has no choice regarding an anesthesiologist and, therefore, the hospital has market power. Although consumers may not have been fully informed about aftermarket conditions and, in particular, may not have been fully aware of the fact that the hospital had chosen to contract exclusively with a particular group of anesthesiologists, the Court in *Jefferson Parish* believed that the relevant product market should be defined at the earlier point in time when consumers were choosing their hospitals. Why the Court was correct to focus on competition before a lock-in occurs even when consumers are imperfectly informed is now analyzed by considering the extreme case where consumers are totally uninformed about aftermarket conditions when they make their foremarket purchasing decisions.

*case 2: when customers are totally uninformed about aftermarket conditions, a hold-up is not possible as long as competition exists among informed sellers in the primary market.*

The level of consumer information that actually exists in the real world deviates substantially from the assumption of full consumer information that permits us to ignore aftermarket 'monopolies' and to focus solely on the equipment market. For example, even in a case such as *Kodak*, where consumers were generally sophisticated and highly knowledgeable and considered complete life-cycle pricing, consumers were far from omniscient about aftermarket conditions at the time they made their initial equipment purchase. However, the existence of fully informed consumers is a sufficient condition, but not a necessary condition for focusing solely on the primary equipment market and ignoring the aftermarket. If consumers are not fully informed about aftermarket conditions but equipment sellers are informed, it remains appropriate to consider the level of competition in the equipment market and to ignore the aftermarket.

For example, consider a case in which equipment purchases are made by consumers that are much less sophisticated and informed than the customers in *Kodak*, such as individuals purchasing small copiers or printers intended for home use. Rather than assuming consumers are omniscient about the aftermarket, and therefore are fully aware of the package price they will pay over time, let us now make the opposite assumption that these unsophisticated consumers are totally uninformed about aftermarket conditions. In particular, assume that these consumers are totally unaware at the time they purchase their machines that later they also will have to purchase toner cartridges for use with the machines. Therefore, rather than demanding fully offsetting equipment price decreases whenever aftermarket prices are increased, in this case consumers are assumed not to consider aftermarket prices at all when making their equipment purchases.

Sellers of copiers and printers in this environment know that consumers will become locked in after they make their equipment purchase. Hence, sellers know they will be able to increase aftermarket cartridge prices up to the amount of the consumer's switching costs. (The present discounted value of aftermarket prices cannot be increased by more than switching costs because consumers would, by definition, switch sellers after they learn about the high cartridge prices.) As a result, sellers competing with one another for sales in the equipment market are forced by competition to reduce equipment prices by the same amount by which they will later increase aftermarket cartridge prices. Any supplier that does not lower equipment prices by this amount will lose sales to competing suppliers because consumers, even though they are totally unaware of aftermarket prices, will not purchase equipment from such higher priced suppliers in a competitive market. As informed suppliers of equipment actively compete with one another to make initial equipment sales by lowering initial equipment prices, any supracompetitive profit being earned in the industry will be competed away. Therefore, even in this extreme case where consumers are totally ignorant about aftermarkets, consumers will pay a competitive package price, with equipment prices lower and aftermarket service prices higher by the magnitude of consumer switching costs. In spite of consumer ignorance, competition is taking place when consumers are choosing among alternative equipment suppliers and, therefore, once again, the relevant antitrust market should be defined at this point in time.

However, the examples in which aftermarket prices are high, such as Kodak copier service, popcorn prices and printer toner cartridges, are unlikely to be explained on the basis of firms competing to take advantage of ignorant consumers in the aftermarket by charging low offsetting equipment prices initially. Although initial equipment prices are generally low in these cases, it is not realistic to assume that this is because consumers are totally uninformed about the aftermarket. We would expect ignorant consumers to learn about the aftermarket over time and for competing sellers to serve as one channel of information, instructing consumers about why other firms' initial equipment prices may be low and of the importance of aftermarket prices in making equipment purchase decisions. High aftermarket pricing due to consumer ignorance will not survive because, once again, we would see attempts in the market to control the phenomenon.

The one example which may fit the assumptions of totally uninformed consumers is government purchasers of equipment. The Court in *Kodak* notes that these buyers, such as the U.S. General Services Administration, are required by their purchasing systems to consider only equipment prices and to ignore aftermarket prices when making their purchase decisions.[14] However, even in this case buyers will get the full benefits of the competitive process and not pay a supracompetitive package price. The buyers may be unhappy when they later pay high aftermarket prices, but they are getting the full benefit of competition in the form of lower negotiated equipment prices and competitive package prices at the original point of their decision. These are the buyers ISOs would be expected to concentrate their sales efforts on. However, if sellers were forced from the start to charge lower aftermarket prices (e.g., if they were required to make parts available and thereby permit competing sellers of lower priced service), then competition would result in higher initial equipment prices. Sellers would not be able to charge lower initial equipment prices because they would not be able to make it up in the aftermarket.

The fact that competition exists in the equipment market does not imply that a hold-up in the sense of a supracompetitive package price can never occur. What a hold-up requires, in addition to consumers having imperfect information, is that sellers also possess imperfect information of future market conditions, the case we now turn to.

## III. WHY AFTERMARKET HOLD-UPS OCCUR

To analyze the conditions under which an aftermarket hold-up in the sense of a supracompetitive package price is likely to occur, we first make more realistic assumptions regarding consumer information. We do not assume that when consumers make their equipment purchases they are perfectly informed about aftermarket conditions (case 1) or that they are totally ignorant about aftermarket conditions (case 2). Under either of these assumptions a hold-up would not be possible. As we have seen, fully informed consumers either control aftermarket prices or demand an offsetting initial equipment price decrease that corresponds to the known maximum aftermarket price increase (determined by consumer switching costs); and totally uninformed consumers will receive an offsetting initial equipment price decrease from competing suppliers that similarly corresponds to the maximum aftermarket price increase. Instead, we assume that consumers are generally informed enough to recognize at the time they make their equipment purchases that they are making investments that will place them in a position where they will become locked in and, therefore, where aftermarket prices can later be increased. Because consumers presumably know the magnitude of switching costs, they also know the maximum amount by which aftermarket prices can be raised in the future. However, rather than accepting this maximum aftermarket price increase and demanding an offsetting initial equipment price decrease, consumers generally decide it is more efficient to pay higher equipment prices and take precautions to protect themselves against the possibility of an aftermarket hold-up.

There are two general ways in which consumers aware of the possibility of an aftermarket hold-up attempt to protect themselves. First of all, consumers may attempt to control aftermarket prices or otherwise limit contractually what the seller may do in the future.[15] Consumers are aware that there are costs associated with specifying future performance contractually and, therefore, that such aftermarket control will not be perfect.[16] Therefore, consumers may attempt to control aftermarket prices in a second way, by deciding to deal with a seller that possesses a sufficiently strong reputation for fair dealing. Because reputable sellers are collecting a premium on their sales (which may be thought of as a return on their brand name or reputational capital), such sellers have more to lose than less reputable sellers if their future sales decline. Therefore, reputable sellers can be expected to honor non-contractually specified constraints regarding future aftermarket prices.

Consumers and sellers jointly will decide to use both contractual and reputational mechanisms in designing their contractual relationships. However, because contracts are imperfect and seller reputational capital is limited, the contractual and reputational protections chosen by transactors will only reduce but not eliminate the possibility of an aftermarket hold-up. As a result, conditions may develop where sellers will find it profitable to hold up their customers in the aftermarket.

*case 3: a hold-up occurs when a marketplace surprise impacts the contractual relationship chosen by imperfectly informed buyers and sellers.*

We implicitly assumed in case 2, when analyzing the competitive actions undertaken by sellers in the equipment market in response to the prospect that they can charge high aftermarket prices, that sellers were aware of the level of prices they would be charging in the aftermarket. While this is a reasonable general assumption, sellers in fact are not fully informed about all future changes in market conditions and, therefore, of the level of aftermarket prices they will charge under all circumstances. This has important consequences for hold-ups.

As I have analyzed in detail elsewhere,[17] it is unanticipated changes in market conditions that determine whether a manufacturer will find it profitable to engage in an aftermarket hold-up. At every point in time a seller considering an increase in aftermarket prices to locked-in customers can be thought of as comparing the short-run gain of such a change in terms of the increased profit on existing sales with the long-run cost of such a change in terms of the loss profit on future sales.[18] If the long-run cost to the seller of engaging in a hold-up exceeds the short-run hold-up gain, the contractual understanding (that the seller will not engage in a hold-up) will be 'self-enforcing'.

Consumers enter contractual relationships with sellers generally believing that it will not be in the sellers' interest to engage in a hold-up, that is, consumers believe the seller has more to lose in terms of long-run costs than it has to gain in terms of engaging in a hold-up. However, an unanticipated change in market conditions may move the contractual relationship outside 'the self-enforcing range' (defined by the contractual terms chosen by the parties and by the parties' reputational capital) so that it would become profit-maximizing for the seller to engage in a hold-up by increasing aftermarket prices. That is, a change in market conditions can make the seller's reputational capital inadequate to prevent the seller from engaging in a hold-up.[19]

For example, a seller may find it in its interest to engage in an aftermarket hold-up when there is an unexpectedly large increase in the demand for aftermarket services by locked-in customers. Such an increase in demand raises the seller's short-run gain from violating the intent of the contractual understanding by engaging in a hold-up. If the demand increase is large enough, the short-run gain from engaging in a hold-up may become greater than the long-run reputational cost and a hold-up will take place. This is, for example, what occurred in the now infamous General Motors-Fisher Body case, where General Motors' demand for Fisher's bodies increased dramatically, making it profitable for Fisher Body to hold up General Motors.[20]

Another situation where a seller may find it in its interest to engage in a hold-up is when there is an unexpectedly large decrease in the future likely demand for equipment by new (non-locked-in) customers. This decreases the seller's long-run reputational cost from engaging in a hold-up. If the future demand decrease is large enough, the long-run cost of engaging in a hold-up may become less than the short-run gain of such an action and a hold-up will occur. This is, for example, what is likely to have occurred in the aftermarket case of *Systemcare v. Wang*.[21] When Wang raised aftermarket prices its sales had begun to decline dramatically and Wang may have believed that it was going out of business in the near future. In such a 'last period' situation, the brand name cost associated with the lost premium on future sales becomes an unimportant constraint on seller behavior and it becomes wealth maximizing for the seller to hold up its existing locked-in customers.

Transactors enter their contractual arrangements knowing that contractual and reputational protections are limited and, therefore, that there is a probability of an aftermarket hold-up occurring if market conditions change sufficiently.

Transactors entering contractual arrangements have decided to assume this residual risk that they know they cannot protect themselves against and presumably have been compensated for this risk up-front. In particular, the expected value of a hold-up occurring will be in the initial equipment price, either because consumers demand such an initial offsetting price decrease (case 1) or because sellers supply such an offsetting price decrease (case 2). Therefore, in an expected value sense, package prices are competitive. However, ex post when a change in market conditions leads to an aftermarket hold-up, the package price actually paid by consumers will turn out to be exceptionally high.

This analytical framework may be consistent with the hold-up alleged to have occurred in *Kodak*. The change instituted by Kodak in its policy regarding parts availability to ISOs can be thought of as an unanticipated change in its contract with its existing locked-in customers. One could argue that these customers did not demand explicit contract protections regarding aftermarket service prices and did not demand offsetting lower initial equipment prices before they became locked-in because they believed ISO service was available as a competitive alternative. This is why the fact that successful ISOs were forced out of business by Kodak's policy change is economically important — it is evidence that customers may have anticipated the availability of competing lower-priced suppliers of service when they made their initial equipment purchase decision and, therefore, were willing to pay higher initial equipment prices than otherwise. If this is the case, it implies that Kodak's parts availability policy change resulted in supracompetitive package prices.[22]

However, this does not appear to be what happened in *Kodak*. First of all, no obvious change occurred in the marketplace to push Kodak's relationship with its customers outside the self-enforcing range. Rather than Kodak's customers purchasing their equipment with the expectation of the availability of low priced ISO-supplied aftermarket service, when Kodak entered the market in 1975 it was the sole supplier of aftermarket parts and service for its machines.[23] In fact, one can argue that intially, when Kodak was the only one familiar with its machines, it was necessary for them to supply aftermarket service in order to effectively compete against Xerox. Similar to the other competing manufacturers, Kodak charged relatively high prices for service, and correspondingly low competitive prices for its equipment. (Why competitive package pricing took this form is discussed later.)

When the ISOs, established by ex-Kodak employees who had access to Kodak manuals, tools, testing equipment and knowledge of Kodak's customers,[24] entered in 1982, this was an unexpected windfall gain to the existing locked-in customers. The customers that switched their service from Kodak to these ISOs were paying a lower than competitive package price. (If Kodak had known ex ante that it would not be making the service sales, it would have charged these customers a higher equipment price.)[25] This customer switching led Kodak in 1985 to formalize in writing and to enforce vigorously what previously it had considered to be its long-established policy, namely that it would sell parts only to customers who used Kodak's service or serviced their own machines.[26]

If Kodak equipment customers were implicitly relying on low priced service supplied by ISOs when they made their equipment purchases, we would expect customers to demand offsetting lower equipment prices after Kodak's parts policy change in 1985. On the contrary, the evidence indicates that new equipment prices were not adjusted downward by Kodak, and that Kodak's sales did not decline after the policy change. The Court used this failure of Kodak's demand to decline as evidence against Kodak's theory of perfect competition.[27] However, even if Kodak faced a less than perfectly elastic demand, we would expect some decrease in its demand if its effective package prices had increased as a result of the policy change. The fact that Kodak's demand did not decline can only be confirming evidence for the fact that there was not any increase in the effective package price caused by the policy change, i.e., that a hold-up did not take place for any significant number of customers.

Further evidence that a hold-up in the sense of supracompetitive package prices did not occur after the Kodak parts policy change in 1985 is the fact Kodak's contract terms with its customers did not change. If Kodak equipment customers were implicitly relying on low priced service supplied by ISOs when they made their equipment purchases and were held up with the policy change, we would expect customers to insist upon aftermarket contract protections. Instead, there is no evidence that contract terms are significantly different in terms of aftermarket protections after 1985 than the contract terms buyers agreed to before 1985.

Finally, and perhaps most significantly, additional evidence that Kodak was not engaging in a hold-up is the fact that Kodak made every effort to make the change in its parts supply policy prospective. In particular, Kodak instituted its restrictive parts policy only for purchases of new (post-1985) models of micrographic equipment and continued to supply parts to ISOs to service pre-1985 models. If Kodak had wanted to hold up its customers, it would have maximized its gain by making the restrictive policy change on all parts sales, especially targeting existing locked-in customers who had purchased the old models. Limiting the marketing change to new models and continuing to supply parts to ISOs on old models is clear evidence that Kodak was concerned about taking any actions that could be interpreted as a hold-up.

## IV. AFTERMARKET HOLD-UPS ARE NOT EVIDENCE OF ANTITRUST MARKET POWER

Even if a hold-up were occurring in *Kodak*, it would not be an exercise of market power. Identifying hold-ups with the exercise of market power would imply that market power was present in most contract disputes, including cases which everyone would agree do not involve market power. To illustrate, in Klein (1993) I used the hypothetical example of a tenant leasing office space from a landlord in a competitive office rental market. After the tenant signs a competitive lease agreement and makes nonsalvageable investments in the space, an unanticipated change occurs in market conditions so that it becomes wealth maximizing for the landlord to take advantage of the incompleteness of the lease contract (and the fact that his reputational capital is limited) to raise parking rates in the building. The tenant's disagreement with the landlord in this case clearly is a business dispute that should be handled by contract law. The fact that reliance investments have been made which locks the tenant in to the particular space may be a relevant legal consideration in contract disputes, but that does not make the landlord a monopolist or the disagreement between the landlord and tenant an antitrust case. In particular, it does not make economic sense to define the relevant office rental market so narrowly as to encompass solely the particular office space of the individual tenant. The landlord's decision to engage in a hold-up in the parking aftermarket may be a violation of an implicit contractual understanding, but it has nothing to do with the exercise of market or monopoly power.

A hold-up problem such as a landlord-tenant disagreement is economically distinct from a monopoly problem in a number of ways. A hold-up requires a) that specific investments be made by transactors, b) that there are gaps in the contractual arrangement covering the transactors' relationship, and, as we have seen above, c) that there is an unanticipated event that places the relationship outside the self-enforcing range given by the transactor's reputational capital and the agreed-upon contract terms. On the other hand, none of these three conditions is necessary for the existence of a monopoly. For example, if there is only one potential landlord of office space in a city, then that landlord will be able to charge a monopoly price for office space even if tenants do not make specific investments, even if lease contracts are fully specified, and even if nothing unanticipated occurs after the lease agreement is signed. The monopoly landlord will not be able to hold up the tenant under these conditions, but the landlord will still be able to exercise its monopoly power in the setting of rental terms. In addition, a hold-up problem is necessarily a one-time phenomenon, dependent upon the existence of unique ex-post market conditions not anticipated when the original contractual agreement was reached. Transactors will not make any new specific investments unless these conditions are controlled (with sufficient contractual/reputational protections) so that such a hold-up is prevented from occurring in the future. A monopoly, on the other hand, need not be a one-time phenomenon, but can continue to exist over the long term.

Contract law is superior to antitrust law in hold-up cases because it explicitly takes account of the contractual environment. In particular, contract law generally recognizes the pervasiveness of transactor-specific investments and the imperfect nature of written contracts, and that transactors generally are aware that they cannot eliminate entirely the hold-up risks associated with exchange that are implied by these two facts. In particular, contract law recognizes that transactors, by adopting contractual arrangements that they understand protect against but do not eliminate hold-up risks, may voluntarily place themselves in a position where they know they can be held up. Therefore, in return for accepting such hold-up risks, transactors are compensated in the terms set at the initial point of contractual agreement. Moreover, even in cases where consumers are not aware ex ante of the hold-up risk, if suppliers are aware ex ante of the hold-up risk, competition will lead to initial compensation. As a result contract law deals with hold-up problems in a subtle way by not attempting to eliminate (and certainly by not imposing treble damages against) every perceived hold-up that may arise in a continuing contractual relationship. Instead, contract law deals with hold-ups on a case-by-case basis, recognizing the importance to commerce of a legal system that generally enforces agreements, however 'imperfect' or 'unfair' they may appear to be at times.[28]

Antitrust law should not interfere with the competitive contracting process even though that process sometimes results in a hold-up. In particular, transactors should not be prevented from voluntarily making specific investments that lock themselves in to another transactor and from using incomplete contracts where they knowingly put themselves in a position where they may face a hold-up in the future. As long as sufficient competition exists at the point in time before transactors make their specific investments and become locked-in, any resulting hold-up is part of the competitive bargain. This is a fundamental difference between alleged aftermarket and foremarket market power. Although supracompetitive package prices are paid when a hold-up caused by unanticipated changes in market conditions leads to an ex-post increase in aftermarket prices, this is very different from the case when foremarket power imposes a high aftermarket price or perhaps an aftermarket tie ex ante. While consumers in both cases appear to face reduced choices at the point in time aftermarket prices are increased, in the former case of alleged aftermarket market power the consumer being held up in the aftermarket has assumed the hold-up risk at the initial point of contracting in a competitive market and, therefore, has been compensated for the risk of paying a supracompetitive package price. In the latter case of foremarket market power, on the other hand, the high package price is imposed upon the consumer initially when the consumer faces a less than competitive situation and, therefore, there is no way for the consumer to avoid or to demand compensation for the supracompetitive package price.

For example, consider the case discussed above of the fully anticipated and freely negotiated contractual tying arrangement in *Mozart v. Mercedes*. It is reasonable to assume that when Mercedes dealers negotiated their initial parts contract with Mercedes, Mercedes had no market power. However, Mercedes dealers knew by accepting the tie-in terms they were placing themselves at risk of a hold-up. For example, if market conditions changed dramatically so that the future expected demand for Mercedes automobiles was reduced significantly, it could pay Mercedes to hold up existing dealers and consumers by increasing parts prices. An extreme example of this phenomenon would arise if market conditions shifted so dramatically that Mercedes anticipated going out of business in the near future, as may have occurred in the Wang and Prime Computer cases.[29]

Mercedes dealers (and consumers) presumably assured themselves that the reputational capital of Mercedes and the other terms contained in their contracts minimized this hold-up risk. But they knew they were not omniscient and that unanticipated changes in market conditions could occur so that it could become profitable for Mercedes to engage in such a hold-up. Because Mercedes offered and dealers accepted their contract terms in a competitive market where Mercedes was competing for dealers with other automobile companies and perhaps with all franchisors, the contractual arrangement offered by Mercedes and accepted by dealers must have adequately compensated the dealers for the residual risk they voluntarily assumed. (Presumably companies with less of a history of success and more of a likelihood of going out of business in the future would have to compensate their dealers even more for this added risk in the initial competitive contracting market.) However, if market conditions changed unanticipatedly so that it became profitable for Mercedes to take advantage of their locked-in dealers, would we now assert that the relevant product market has changed and, in particular, that Mercedes had become a monopolist in a single firm market? This would not be a useful definition of monopoly. Such an ex-post monopoly is quite different from the case where Mercedes was the only automobile franchisor, or, perhaps, the only company offering franchise contracts for any product and, therefore, where ex-ante contract terms are set in a monopolistic way.

*Kodak* does not claim that all hold-ups are exercises of market power, but appears to extend the protection of the antitrust laws to one particular type of hold-up — a hold-up of uninformed consumers with the use of a tie to accomplish the unexpected increase in aftermarket prices. When consumers are uninformed, it can be argued that they have not knowingly assumed any hold-up risk. (But they may still have received the benefits of competition, including some compensation for hold-up risks, in the initial equipment prices charged by competing sellers.) When the hold-up does not occur via a tie, for example, if Kodak had merely increased replacement parts prices to its locked-in customers without imposing a tie and continued to sell parts to ISOs, it is unlikely the Court would consider such a hold-up as constituting an exercise of market power.[30] Antitrust law, and in particular *Kodak*, does not require the courts to microregulate the reasonableness of all aftermarket prices.

However, what is the fundamental difference between these two cases if the aftermarket price increase is unanticipated and results in supracompetitive package prices? The only difference is that in one case the hold-up has been accomplished with the use of a tie and in the other case without a tie. Although a tie is a per se offense, an illegal tie requires market power in the tying good. And market power is present in both types of hold-up cases only in the misleading sense that a consumer lock-in can be claimed to create market power in the aftermarket for an individual company's product — power that exists independent of the size of a company and is present merely because of the nature of the product under consideration.[31] However, by this consumer lock-in standard of market power, a replacement parts price increase or, for example, an unanticipated increase in tenant parking rates would represent exercises of market power, a result that is counter to common sense and accepted legal doctrine.

## V. HIGH AFTERMARKET PRICES AS DISCRIMINATORY MARKETING

Whether or not one wishes to label a hold-up as an exercise of market power, it is unlikely that our examples of high aftermarket prices, such as the pricing of Kodak copier service or computer printer toner cartridges or movie theater popcorn, can be explained on the basis of a hold-up. These examples of high aftermarket prices clearly are not one-time surprises, but survive as long-run phenomena. As we have seen, it also is unlikely that high aftermarket prices can be explained by the inability of fully informed consumers to make contractual arrangements that protect against high aftermarket prices at the time they make their initial equipment purchases, with informed consumers accepting high aftermarket prices but demanding offsetting decreases in equipment prices (case 1). In addition, it is also unlikely that high aftermarket prices can be explained by an assumption that consumers are totally uninformed about aftermarket conditions, with uninformed consumers charged high aftermarket prices but receiving offsetting decreases in equipment prices from firms competing for the privilege to charge the high aftermarket prices (case 2).

Instead of imperfect contracts, uninformed consumers, or unexpected hold-ups, high aftermarket prices primarily exist because they serve as a way to meter intensity of consumer demand. In particular, high aftermarket prices is a way to charge more intensive users higher package prices and low intensive users lower package prices. The price discrimination I am referring to here is not price discrimination in the sense prohibited under the Robinson-Patman Act, where competing buyers are charged different prices for the same commodity. It is price discrimination purely in a technical economic sense, where a company uses a marketing arrangement to induce buyers to voluntarily separate themselves into classes on the basis of some particular variant of the good they decide to buy, in this case the intensity of aftermarket demand, so that the company can indirectly set different package prices (and earn different profit margins) on sales to the different classes of customers.[32]

The marketing arrangement generally recognized as an example of this phenomenon is the sale of razors at relatively low prices (in fact, razors are sometimes given away free of charge) while razor blades are sold at relatively high prices. By placing an 'upcharge' on the price of blades in the aftermarket in this way the company can, in effect, charge different consumers different prices for its shaving system based upon how intensively they use blades. This will be profitable if consumers that use more blades per unit time place a greater value on the company's shaving system (either because they have heavier beards or because they have a greater demand for a closer shave).

Numerous examples of similar discriminatory marketing arrangements exist in the marketplace. For example, a company may separate customers on the basis of their willingness to forego particular product features and price 'deluxe' models of a product (which include these features) at a higher level (relative to marginal cost) than 'standard' models. Another example is a restaurant's 'over-pricing' of after-dinner coffee and dessert so that customers willing to forego these elements of a meal end up paying a lower price relative to marginal cost than customers that consume coffee and dessert with their meal. This is also the likely rationale for the tie and over-pricing of popcorn in movie theaters. Presumably those customers that have a greater demand for the movie viewing package also are more likely to demand popcorn. Therefore, by tying and over-pricing popcorn the theater can separate out and earn a greater profit margin on those customers that have a higher reservation demand. Other marketing arrangements may involve a company separating customers on the basis of their willingness to delay consumption of a product, with the company pricing earlier versions of the product at a higher level than later versions. Examples include pricing of first-run versus later-run movies, or hardback versus paperback books. Other marketing arrangements may involve separating customers on the basis of their willingness to expend time and effort searching for a price discount, with a company using, for example, coupons to give a subset of customers a price discount. Since it is costly for customers to collect and redeem coupons because of the extra time and effort involved, this is a way for the company to charge customers with lower time values lower prices.[33]

Kodak's tie may facilitate a similar type of price discrimination because it is likely that the value different buyers place on Kodak equipment is correlated with their demand for service, i.e., those buyers that demand more parts and service have a greater value for the equipment. This metering explanation for the Kodak service tie makes sense presumably because those consumers who use the Kodak equipment more intensively and, therefore, demand more aftermarket service presumably place a greater value on the particular Kodak package.

However, if metering of the intensity of consumer demand is the explanation for Kodak's equipment-service tie, an obvious question is why Kodak did not merely use replacement parts as the meter. Since some of Kodak's replacement parts were proprietary, Kodak could have placed an extra upcharge over marginal cost on these replacement parts and thereby discriminated among buyers on the basis of intensity of use without resorting to a service tie.

As I noted in Klein (1993), the problem with Kodak using its proprietary replacement parts as the sole metering device is that parts and service are not demanded in fixed proportions.[34] Parts and service are to some extent substitutes for one another. In particular, parts will need to be replaced less frequently if customers maintain their equipment more carefully. Therefore, an increase only in the price of parts would lead customers to economize on parts by servicing their equipment more often. (And, similarly, an increase only in the price of service would lead customers to reduce maintenance service by replacing parts more often.) Moreover, if Kodak had placed its entire aftermarket metering surcharge solely on parts, the substitution effect between parts and service would likely have been large. This is because the cost of Kodak proprietary parts is a relatively small share of total aftermarket expense. As a consequence, Kodak would have had to increase the price of parts substantially if they wished to meter intensity of demand and collect differential equipment profit solely with their pricing of parts. This would have created a very large incentive to substitute competitively supplied (ISO) service for Kodak parts and have resulted in a significant reduction in Kodak's profit.[35]

In addition, Kodak may not have used its proprietary replacement parts as the sole metering device because parts demand is not as good a meter of consumer value as service demand. In particular, some buyers, such as individuals who service their own equipment, may demand a relatively large quantity of Kodak parts per unit time but have a relatively low reservation demand for the Kodak package. As a result, if replacement parts were used by Kodak as the sole metering device, replacement parts would be priced above the profit maximizing level and Kodak would lose a significant share of sales in the self-service segment of the market.[36]

Finally, Kodak's service tie, as opposed to solely a parts upcharge, may have facilitated another form of profitable price discrimination. Kodak buyers are likely to differ in the value they place on the Kodak package based upon not only the quantity but also the type of service they demand. In particular, buyers that demand more immediate service (e.g., one-hour response, the availability of weekend and evening calls, etc.) are likely to have a higher reservation demand for the Kodak package than buyers that require less immediate attention (e.g., next day response). Therefore, those buyers who demand more immediate service can be charged a higher price relative to marginal cost than buyers who demand less immediate service. This form of price discrimination can be accomplished only if the equipment manufacturer controls the provision of service. Otherwise, competition in service would cause the manufacturer to lose a significant number of immediate-service customers.

## VI. DISCRIMINATORY MARKETING IS NOT EVIDENCE OF ANTITRUST MARKET POWER

The existence of discriminatory marketing arrangements such as 'over-priced' razor blades and 'under-priced' razors or 'over-priced' popcorn and 'under-priced' theater tickets or 'over-priced' service and 'under-priced' equipment in the *Kodak* case do not imply the presence of market power. All that is necessary for such practices to exist is that each individual firm's product have some unique features. For example, when Kodak entered the market in 1975 its product possessed some unique features such as its particular superior document feed device.[37] Another unique product feature is a firm's brand name or reputation. Once companies produce products that are somewhat distinguishable from their competitors' products, they face a downward sloping demand and, hence, have the ability to price discriminate. Competing firms do not have the ability to arbitrage the discriminatory arrangement because they cannot produce an identical product.

It is not surprising that Kodak did not provide a price discrimination explanation for its tie given the confusion that exists on the issue of whether the existence of price discrimination is evidence of market power. For example, Areeda and Turner claim that price discrimination provides 'direct evidence' of market power.[38] And even Scalia's *Kodak* dissent incorrectly asserts that Kodak's assumed absence of market power in equipment implies an inability to price discriminate, claiming that the 'opportunity to engage in price discrimination is unavailable to a manufacturer — like Kodak — that lacks power at the interbrand level.[39]

However, market power is not necessary for a firm to successfully engage in discriminatory pricing. All that is necessary is that the firm face a negatively sloped demand for its products, as all firms selling unique products do. Although such a negatively sloped demand and ability to price discriminate would not exist under the assumptions of perfect competition, it must be distinguished from the negatively sloped demand and ability to price discriminate that is present because a firm possesses a large share of the market. An example would be Alcoa's discriminatory pricing of aluminum depending on how the buyer planned to use the aluminum (for example, Alcoa charged high prices for aluminum used in airframe manufacture than for aluminum used in cable wire manufacture) when Alcoa essentially controlled all aluminum production.[40]

One must determine why a firm has a negatively sloped demand to determine whether a firm possesses market power. If a firm has a negatively sloped demand solely because it is producing one of many unique products with particular features that some consumers find valuable, this is different from a case where the firm has a negatively sloped demand because it possesses a large market share.[41]

The idea that a negatively sloped demand and the ability to engage in profitable price discrimination implies the possession of antitrust market power is based on a fundamental misconception of the nature of antitrust market power, a misconception grounded on the economic model of perfect competition. It is a misconception that is, unfortunately, accepted by many economists. For example, Carlton and Perloff in their leading industrial organization text assert: 'Whenever a firm can influence the price it receives for its product, the firm is said to have monopoly (sometimes called market power).'[42] Under the definition of market power, I, for example, would possess market power in the sale of economic consulting services. Although I compete with thousands of other suppliers of economic consulting services and have a trivial market share, if I increase my price a small amount, the demand for my services will not vanish. I face a negatively sloped demand curve, primarily due to my reputation from past experience with particular buyers and to the fact that I may have particular talents that are especially well-suited to specific tasks.

Carlton and Perloff recognize that this economic definition of market power is not useful because it implies that every firm in the economy, except possibly the wheat farmers of the economics principles textbook, has some market power. They attempt to solve this problem with their definition of market power by claiming that the existence of market power is a matter of degree and that one should define the degree of market power possessed by a firm by the amount by which the firm's demand deviates from a perfectly elastic demand curve. However, this commonly accepted economic idea that a firm's elasticity of demand can be used to define the degree of monopoly present in any situation is likely to lead to the wrong answer. For example, I may have more market power under this criteria than, say, General Motors. The definition confuses an individual firm's pricing discretion with a firm's market power.

Many relatively small firms operating in highly competitive industries engage in the type of discriminatory marketing practices described above. But these firms do not have significant market power. For example, studies of elasticities of demand for many of the branded products sold in supermarkets, such as particular brands of orange juice, coffee, beer and other products, find the majority of estimated own elasticities between 2.5 and 5, implying prices that are between 25 percent and 67 percent greater than marginal cost.[43] The sellers of these products also frequently employ coupons and other discriminatory marketing devices. It is incredible that these firms, that have small market shares, earn modest rates of return, and operate in highly competitive industries against vigorous competitors under conditions where potential entry is a real threat, possess any significant market power. Although these firms producing branded products are not 'price-takers' facing perfectly elastic demand curves, no court would conclude that the firms possess market power. Because the brand names or particular features of the products are important to various degrees to alternative consumers, the firms face negatively sloped demand curves and, therefore, the ability to price discriminate.

Only by using the economist's definition of market power can we infer the existence of market power from the presence of price discrimination. However, one would not want to infer from the pervasive examples of price discrimination in the real world that market power in any relevant policy sense also is pervasive. Certainly we would not want to declare all discriminatory marketing arrangements to be illegal exercises of market power because they would not exist in a perfectly competitive world. This would imply a level of detailed regulation that would be both economically inefficient and inconsistent with existing law.

All that the pervasiveness of price discrimination means is that most firms in the marketplace possess some 'individual pricing discretion' in the sense that they possess the ability to influence their own prices. However, instead of defining the degree of antitrust market power possessed by a firm in terms of the firm's *own* elasticity of demand, it is more useful to define a firm's antitrust market power in terms of whether changes in the firm's prices have any significant effect on *market* quantities and prices. Although a firm has the ability to influence its own prices, this does not imply the ability to influence market prices. For example, although a small breakfast cereal manufacturer may have a negatively sloped demand for its product, it may have essentially no power to restrict the aggregate supply or to increase the market price of breakfast cereal and, hence, have no real market power.[44].

Defining a firm's market power by the firm's ability to influence *market* conditions, rather than focusing on the firm's own elasticity of demand, is consistent with how monopoly or market power is used in antitrust case law.[45] The definition is certainly consistent with the authoritative judicial definition of market power set forth in *Cellophane* cases as 'the power to control prices or exclude competition.'[46] Landes and Posner (1981) mistakenly believe that 'the power to control prices' is referring to the economic definition of market power, i.e., to a firm's own elasticity of demand. However, they do not address the ambiguity present in the *Cellophane* and other similar judicial definitions of market power. Does 'the power to control prices' refer to a firm's ability to control its own prices or to a firm's ability to control market prices? Contrary to the Landes and Posner analysis, this ambiguity is clearly resolved in *Cellophane* against the technical economic definition and in favor of the market impact definition. In particular, the Court concluded, despite substantial evidence that Dupont could control its own prices at which it sold cellophane, that Dupont did not have market power.[47]

When more generally considering the case of firms which have the power to control their own prices because they sell nonstandardized products, the Court in *Cellophane* states:

> [O]ne can theorize that we have monopolistic competition in every nonstandardized commodity with each manufacturer having power over the price and production of his own product. However, this power that, let us say, automobile or soft-drink manufacturers have over their trademarked products is not the power that makes an illegal monopoly. Illegal power must be appraised in terms of the competitive market for the product.[48]

The overwhelming majority of other antitrust cases that define market power so that one can distinguish between whether the Court is referring to a firm's ability to affect its own prices or referring to a firm's ability to impact the market, clearly define market power in the latter sense of the ability of a firm to influence market outcomes. Very few cases explicitly adopt the technical economic (own elasticity) definition of market power. Judge Posner, perhaps knowing too much economics, is the only jurist who consistently attempts to use such an economic definition. For example, in *Olympia Equipment Leasing v Western Union* he defines market power as 'the power to raise prices without losing so much business that the price increase is unprofitable'.[49] This definition unambiguously defines market power in terms of a firm's own price elasticity. Judge Posner cites as support for his definition of market power a decision by Judge Easterbrook in *Ball Memorial Hospital, Inc. v Mutual Hospital Inc.*[50] However, Judge Easterbrook defines market power in *Ball Memorial Hospital* as 'the ability to cut back the market's total output and so raise price', a clear reference to the alternative, more useful and legally relevant ability to influence the market definition of market power.[51]

## VII. PERFECT COMPETITION IS AN INAPPROPRIATE POLICY STANDARD

A major problem in using the economic definition of market power, i.e. own elasticity of demand, as the standard by which to measure antitrust market power is that it leads economists to label every real world deviation from the perfectly competitive model that results in a less than perfectly elastic demand, such as the conditions that produce discriminatory marketing arrangements as 'market imperfections'. The implication that then appears to follow is that these 'imperfections' require fixing. However, labeling something an imperfection merely indicates that there is a discrepancy between actual conditions and an artificial assumption of the economists' model of perfect competition. They are not imperfections in any relevant policy sense.

The economists' perfectly competitive model is merely an abstract construct. It is a useful abstract construct because it provides us with useful categories to analyze the basic economic forces or causal relationships at work in many situations and with accurate predictions in many cases. However, as is the case for all abstract theoretical constructs, the perfectly competitive model is unlikely to be a useful device to analyze all questions. Analogously, although the frictionless model in physics is extremely useful, the existence of friction is not an imperfection. And when deciding how to build a bridge one should employ a model that modifies the simplifying assumption of zero friction.

Similarly, the *Kodak* Court in rejecting Kodak's description of the competitive forces at work in the copier marketplace advocated use of a more complex model that more closely mirrored market realities than the perfectly competitive model. In particular, the Court believed it was necessary to modify the simplifying assumption of zero consumer information costs. However, the Court did not claim that this necessary modification implied that there was something anti-competitive in Kodak's behavior. One must clearly distinguish between rejection of a specific model as an accurate or useful description of reality and the use of deviations from the specific model as a policy standard. Deviations of real world conditions from the assumptions of the perfectly competitive model are pervasive throughout the economy. All that such deviations suggest is that it may be necessary to use a more realistic model to explain some phenomenon. It does not imply that these deviations are in any way anti-competitive or inefficient. The Court did not draw this implication, but unfortunately many economists do.

Some economists would want to use the government's antitrust enforcement budget to minimize the gaps between price and marginal cost, weighted by output, across the economy. However, this would imply that the government would, for example, be attacking supermarket coupons and other discriminatory marketing devices. Do we really think the antitrust laws should be concerned about, for example, fully anticipated 'high' popcorn prices in movie theaters or high after-dinner coffee prices in restaurants? Distinct from the infeasibility of carrying out such a policy, the policy would not be attacking the monopolistic problems isolated by the antitrust laws or the problems that should be of concern to society. Using the perfectly competitive model as a justification to attack such phenomenon would be analogous to pouring grease over a roadway when building a bridge to get as close as we can to the frictionless model of physics.

Perhaps the most extreme example of 'grease pouring' in aftermarket analysis is the alleged aftermarket inefficiency analyzed by Borenstein, MacKie-Mason and Netz (1994, 1995). As discussed above in connection with case 1 where consumers were assumed to be fully informed about aftermarket prices, Borenstein, MacKie-Mason and Netz believe that high aftermarket prices exist because of the inability of informed consumers to write contracts that fixed aftermarket prices. Therefore, they claim that manufacturers will increase aftermarket prices after consumers become locked in and consumers anticipating this aftermarket price increase demand initial offsetting decreases in equipment prices. As was noted above, this is an extremely unlikely explanation for the high aftermarket prices we observe in the real world. Transactors do not find it necessary to rely completely on written contracts, but instead commonly use unwritten reputational sanctions to prevent firms from acting contrary to a contractual understanding. Moreover, it would be fairly easy for consumers to more closely control aftermarket prices in many of the cases of high aftermarket prices and we do not see consumers even attempting to write such contracts. However, even if the Borenstein, MacKie-Mason and Netz incomplete contract explanation for high aftermarket prices were correct, their claim that this is an inefficient result, in spite of the fact that consumers pay a competitive package price, is not correct.

The supposed inefficiency isolated by Borenstein, MacKie-Mason and Netz from the fact that consumers pay high aftermarket service prices and low equipment prices in their model is that this leads consumers to substitute away from aftermarket service and towards equipment, a distortion that manifests itself primarily by consumers over-economizing on aftermarket service and prematurely replacing equipment. As noted above, the Supreme Court in *Kodak* is unconcerned about such relative price distortions as long as consumers pay a competitive package price. The Court is rightly unconcerned about such distortions because a competitive package price implies that there is competition in the initial equipment market. Therefore, the Court can be assured that any competitive pricing arrangements that are truly inefficient will be eliminated by the competitive process.

The market does not eliminate the alleged inefficiency of aftermarket overpricing and equipment underpricing isolated by Borenstein, MacKie-Mason and Netz because of an assumed inability of transactors to make contractual or reputational commitments. However, even accepting this abitrary assumption, their alleged inefficiency exists solely in the context of their specific unrealistic model. In particular, the Borenstein, MacKie-Mason and Netz model makes the counterfactual assumption that there are constant returns to scale in the production of equipment, ignoring the high fixed costs (including R&D expenditures) that are generally present in equipment production. Therefore, their model ignores by assumption an "inefficiency" that is reduced when equipment prices are lowered, namely that equipment is generally sold at a price greater than marginal cost. When aftermarket service prices are raised and equipment prices lowered, this offsetting efficiency gain from equipment prices moving closer to marginal cost must be included in the Borenstein, MacKie-Mason and Netz calculus, but it is not. In particular, Borenstein, MacKie-Mason and Netz do not consider the reduction of inefficiency associated with the fact that high equipment prices and low aftermarket prices would deter some low intensity consumers (such as households) from purchasing the equipment. These consumers benefit when equipment prices fall and move closer to marginal cost as a consequence of the rise in the price of aftermarket services. Borenstein, MacKie-Mason and Netz can ignore this factor only by making an artificial constant returns to scale assumption.

If equipment manufacturers were forced by regulation to abandon their aftermarket service tie (and any alternative method by which they similarly could price discriminate), and to reduce their aftermarket service prices, this necessarily would be accompanied by an increase in the price of equipment. (No regulatory limits have been placed on the manufacturer's control over the average package price it can charge customers. If equipment prices did not increase, this would imply that package prices would decrease to all customers, which we know would not be profit maximizing.) As a result, only some customers would gain from a regulatory change that controlled aftermarket service prices, while other customers would lose. In particular, high intensity, high service quality users would gain and low intensity, low service quality users would lose. For example, in the case of home copiers and computer printers, if manufacturers were prohibited from overpricing aftermarket service or parts such as toner cartridges and are thereby forced to raise equipment prices, low intensity users would lose by being priced out of the market. Discriminatory marketing does not necessarily involve the exploitation of uninformed customers that the Court claims is the case in *Kodak*. It is the small (relatively less informed) customers that are receiving the *best* deal with discriminatory pricing facilitated by high aftermarket prices. Borenstein, MacKie-Mason and Netz ignore the fundamental pro-competitive effect of high aftermarket prices — that many more individuals are likely to get low-priced equipment (such as copiers) in their homes and businesses.[52]

More important than the question of which customers gain and which lose if a discriminatory marketing practice is prohibited is the question of whether antitrust policy should be concerned with controlling discriminatory marketing practices adopted by competitive firms. It is absurd to believe that the type of deviaiton from the perfectly competitive solution isolated by Borenstein, MacKie-Mason and Netz are what the antitrust laws are designed to protect consumers against. In general, if such inefficiencies were large, we would expect transactors to use improved contractual arrangements and increased reputational capital to minimize them. As opposed to cases such as a horizontal conspiracy or a horizontal merger between competitors, here it is in the consumers' and manufacturer's joint interest to attempt to solve this supposed aftermarket 'monopoly' problem. A competitive manufacturer earns no more by taking advantage of locked in consumers since it is offset by initial equipment price decreases, but a manufacturer could expect its demand to increase dramatically and to earn additional profit (in the transitional period before other companies follow) if it figures out a solution to the failure to control aftermarket prices problem. For example, the manufacturer and consumer may find it in their joint interest to specify fixed long-term aftermarket prices, or to use a long-term warranty, or to have the manufacturer guarantee a second source supplier of aftermarket services. Although these contractual solutions are likely to be imperfect, if the distortion analyzed by Borenstein, MacKie-Mason and Netz were significant, competitors would make substantial efforts to design and use the best type of contractual guarantee possible. That we do not see transactors adopting these contractual arrangements suggests that the inefficiencies are not large or possibly non-existent.[53]

What can the antitrust laws do to improve these competitive contracting efforts? There is no reason to believe that the Antitrust Division, for example, can assure a second source supply more effectively than private action. More generally, this type of government regulation would not have anything to do with the desired goals of the antitrust laws. In particular, the Court in *Kodak* clearly was not intending the antitrust laws be expanded to alleviate the supposed inefficiencies isolated by Borenstein, MacKie-Mason and Netz. The Court is not concerned when relative prices in a total package, such as the pricing of after-dinner coffee, are set at the 'wrong' level. Antitrust law does not require us to micro-regulate the economy so as to eliminate all deviations from the perfectly competitive model. Instead, antitrust should be concerned with the degree of competition present when contractual arrangements are formed between consenting transactors, not with whether the particular terms competitively chosen by individual transactors are 'inefficient' based upon some abstract standard of perfect competition. To believe otherwise would imply a level of detailed government planning that is inconsistent with the fundamental goals of antitrust, which is to set ground rules that permit the competitive market process to operate.

The competitive contracting process does not entirely eliminate price discrimination because high intensity customers that are paying relatively high prices place a relatively high value on the particular features of the specific manufacturer's product and competing manufacturers cannot supply a perfect substitute. This does not mean that the negatively sloped demand created by such product features that permit price discrimination is anti-competitive. In fact, creation of such features is exactly what we want to encourage. The competitive process — whereby firms attempt to shift up their demand by creating differentiated products that are sold at higher price-cost margins — produces value for consumers. The fact that a firm faces a negatively sloped demand for the product created by this competitive process does not imply that the firm has created a monopoly. It merely implies that the firm can collect less than the consumer value it has created if it must sell the product at a single price. (The gain to the firm is related to how much it can push up its demand at various outputs. Steepness, that is, that fact that the firm's demand does not increase the same amount at all outputs is not of any value to the firm.) This dynamic competitive process by which firms attempt to shift their demand up involves the spending of money on research, product development, and distribution and marketing activities, all of which produce value for consumers. Therefore, the marketing innovations designed by firms, including the discriminatory marketing arrangements by which firms attempt to collect more of the added consumer value they have created should be encouraged because it leads firms to devote more resources to the product-improving competitive process.

Posner's (1976) contrary argument, that price discrimination is inefficient because it increases the return to a monopolist and thereby increases the wasteful expenditures made by firms to obtain a monopoly, mistakenly identifies the existence of a negatively sloped demand and hence the ability to price discriminate with the existence of a monopoly — a confusion that once again can be attributed to the use of the perfectly competitive model as the standard of monopoly. It is necessary to look at the source of a firm's negatively sloped demand and the rents it may be earning. In particular, one must distinguish between expenditures made by a firm to obtain a monopoly on a pre-existing asset (for example, an asset created by governmental decree such as taxi cab franchise) and expenditures made by a firm to create a more valuable product the demand for which is negatively sloped. It is true that resources devoted to establishing property rights on a pre-existing asset, such as resources devoted to bribing government officials for an exclusive right to operate taxicabs within a municipality, is merely redistributive wasteful rent dissipation. However, investments devoted to creating property rights on new valuable assets that do not have their source in governmental action is not merely redistributive but highly productive and should be encouraged — even if it leads to negatively sloped demands and price discrimination.

## VIII. CONCLUSION

It is clear that Kodak priced service for its high-speed copier and micrographic equipment at relatively high prices, creating an opportunity for ISOs to enter. In attempting to answer the question of why Kodak found it profitable to price service in this way, it is important to recognize that overpricing of service implies the corresponding underpricing of equipment. This is not solely because many of Kodak's customers were large sophisticated business firms who explicitly considered full life-cycle pricing before making their purchasing decisions and demanded offsetting equipment price discounts, as was argued by Kodak and rejected by the Court. It is also because equipment manufacturers are knowledgeable about likely aftermarket prices and will compete with one another in supplying offsetting equipment price discounts. As a result, equipment price discounts will be received by consumers even when they are uninformed about the aftermarket or are forced by government purchasing regulations to ignore anything other than equipment prices in making their purchase decisions. When the equipment market is competitive, all consumers, whether informed or not, obtain the full benefits of competition and pay competitive package prices.

The only case where consumers pay a supracompetitive package price is when a manufacturer charges a higher aftermarket service price than was anticipated at the initial point of contracting. This can occur if consumers attempt to control aftermarket prices with contractual and reputational mechanisms (and therefore equipment prices will not be fully adjusted downward for the maximum possible later increase in aftermarket service prices determined by switching costs) and then an unexpected change in market conditions makes it profitable for the manufacturer to hold up its existing locked-in consumers by raising aftermarket service prices the maximum amount. Only in this case of unanticipated changes in market conditions that override contractual and reputational protections will consumers end up paying supracompetitive package prices.

Although such a hold-up is what is discussed by the Court in *Kodak*, Kodak's high aftermarket service prices are unlikely to be explained in these terms. While some evidence is consistent with a hold-up, namely the fact that Kodak made a parts availability policy change, the overwhelming force of the evidence is inconsistent with a hold-up explanation. There appears to have been no fundamental change in market conditions, as for example occurred in *Systemcare v. Wang*,[54] and Kodak made every effort to make the change prospective. Moreover, there does not appear to have been any bump up in package prices nor any decrease in Kodak's demand. Kodak was merely trying to formalize and enforce their long-established pricing arrangements. It is for this reason that on remand the ISO plaintiffs largely dropped the hold-up element of their claim. The ISOs emphasized not the *change* in Kodak's parts policy, as the Supreme Court did, but Kodak's parts policy itself, claiming that it was an illegal refusal to deal which resulted in the monopolization of the market for aftermarket service for Kodak machines.[55]

To defend against this monopolization claim, it would have been useful for Kodak to have supplied a reasonable business rationale for their pricing arrangement. As opposed to Kodak's quality assurance and free-riding justifications, which were summarily rejected by the Court, a price discrimination explanation is fully consistent with the facts. However, given the confusion that exists on whether price discrimination is evidence of market power, it is not surprising that Kodak did not present such an explanation for the overpricing of service and the de facto tie of service to parts. Nevertheless, discriminatory marketing arrangements are pervasive throughout the economy and exist in highly competitive industries. Such arrangements survive under competition because every manufacturer's product is unique. Taking advantage of such uniqueness in pricing one's product is not anti-competitive, but actually encourages the investments in product features and company reputations that consumers value. Moreover, such pricing arrangements generally benefit low intensity consumers (such as households) who would not otherwise purchase the product.

It is true that discriminatory marketing arrangements would not exist under perfect competition. However, antitrust law, including the law of *Kodak*, does not label all deviations from the perfectly competitive model as antitrust market power. Kodak presumably could have rented its machine to customers and included a direct charge related to intensity of use as an element of the rental price without any legal problem. This would have been similar to the mileage fee pricing used by car rental firms or to the percentage of sales royalty rate pricing used by franchisors. Although these examples of competitively determined discriminatory marketing arrangements would not exist under perfect competition, only economists who use the perfectly competitive model as a policy standard would suggest that they be prohibited.

## NOTES

1. 112 S.Ct. 2072 (1992).
2. *Kodak*, 1989-1 Trade Cos. (CCH) at 60,213.
3. *Kodak*, 903 F.2d 612, 617 (9th Cir. 1990).
4. *Kodak*, 112 S.Ct. at 2082.
5. In addition to making its theoretical package price argument, Kodak argued as a factual matter that many of its customers considered aftermarket costs when making their initial purchase decision. See Wall (1992) at 5.
6. This conclusion is consistent with the economic literature that has developed over the past two decades on the potential for firms to hold up locked-in buyers. See, for example, Klein, Crawford and Alchian (1978); Williamson (1979) and Farrell and Shapiro (1989).
7. While a theater ticket is not a complex durable good of the type usually covered by lock-in analysis, the economic forces at work are identical to what is involved in the pricing of aftermarket services for a complex durable good. Although the term lock-in has an ominous connotation, it merely refers to the cost to the consumer of switching to another product once an initial purchase has been made. In the case of a movie theater ticket, the ticket probably has little resale value after it is purchased by a consumer. Moreover, even in the unlikely event that a theater owner would refund the ticket purchase price to a consumer after the consumer discovered high popcorn prices inside the theater, the consumer still would have the nonsalvageable investments associated with time costs, babysitting costs, travel costs, etc. that would make switching costly. Therefore, while a theater ticket does not represent a very large investment, a consumer can be said to be 'locked-in' after a ticket is purchased.
8. *Kodak*, 112 S.Ct. at 2092.
9. *Mozart Co. v. Mercedes-Benz of North America*, 833 F.2d 1342 (9th Cir. 1987).
10. *Id* at 1346-1347.
11. Similar reasoning can be found in *Grappone, Inc. v. Subaru of New England, Inc.*, 858 F.2d 792, 798 (1st Cir. 1988); *A.K. Root Co. v. Computer/Dynamics, Inc.*, 806 F.2d 673, 676 (6th Cir. 1986); *Will v. Comprehensive Accounting Corp.*, 776 F.2d 665, 673 n 4 (7th Cir. 1985); *General Business Systems v. North American Phillips Corp.*, 699 F.2d 965, 977 (9th Cir. 1983); and *Tominaga v. Shepard*, 682 F.Supp. 1489, 1495 (CD Cal. 1988). Some tying decisions are inconsistent with this reasoning. For example, *Metrix Warehouse, Inc. v. Daimler-Benz Aktiengesellschaft*, 828 F.2d 1033 (4th Cir. 1987), concerns the same business practice challenged in *Mozart*, but reaches a contrary result. However, *Metrix Warehouse* ignores the question of Mercedes' market power and concentrates solely on the validity of Mercedes' business justification for the parts tie.
   Mercedes' business justification, namely that a tie is used to assure that consumers receive high quality repair service, potentially makes sense in the Mercedes context. This is because absent a tie consumers would not know the source of the replacement parts used by Mercedes dealers in their cars. However, such an explanation does not make sense in the Kodak context, where consumers obviously knew when they were purchasing non-Kodak service from ISOs. Rather than using a tie to prevent consumer deception, Kodak attempted to justify its policy on the basis that consumers were incapable of judging service quality for themselves and would incorrectly blame the Kodak equipment for problems that were caused by "improper diagnosis, maintenance or repair by an ISO". *Kodak*, 112 S.Ct. at 2091 (quoting Brief for Petitioner at 6-7).
12. Salop (1992) at 16.
13. 112 S.Ct. at 2090 (citing *Jefferson Parish Hospital District No. 2 v. Hyde*, 466 U.S. 2 (1984)).
14. *Kodak* 112 S.Ct. at 2086.
15. See Joskow (1988) for a summary of the empirical literature on the different types of long-term contracts used by transactors to avoid hold-up problems.
16. See, for example, Klein (1996).
17. Klein (1996).
18. This is the analytical framework outlined by the Court in *Kodak*, 112 S.Ct. at 2087.
19. Klein (1996).
20. Klein, Crawford and Alchian (1978).
21. *Systemcare v. Wang*, 787 F.Supp. 179 (D. Colo. 1992). A similar analysis also may explain *Virtual Maintenance, Inc. v. Prime Computer, Inc.*, 1993-2 Trade Cos. ¶ 70, 446 (6th Cir. 1993), amended and withdrawing 995 F.2d 1324 (6th Cir. 1993) after the Supreme Court remanded and directed the Sixth Circuit to reconsider its prior opinion, 957 F.2d 1318 (6th Cir. 1992), in light of *Kodak*, 113 S.Ct. 314 (1992). Prime Computer argued that it could not take advantage of locked-in buyers by tying the purchase of hardware maintenance to its software support and software upgrades because of competition for new equipment sales. However, Prime Computer has since liquidated its equipment manufacturing operations and reorganized itself under the name Computervision.
22. Fox (1994) believes that the fact that successful ISOs were driven out of business, taken by itself, may have been what motivated the Court and that the Court used the economic concepts of lock-ins and aftermarket hold-ups merely as a way to reach what it considered to be the just or fair result of protecting small business firms and their customers.
23. Kodak entered with other competing manufacturers after Xerox was forced (pursuant to an FTC decree) to begin licensing its patents to all entrants at nominal cost. See Bresnahan (1985) and Xerox Corp., 86 F.T.C. 364, 373-79 (1975).
24. Festa (1993).
25. Hence the ISOs were in a sense 'free riding' on Kodak's pricing arrangement, but not (as Kodak claimed in its Brief) on Kodak's capital and R&D investments. The Court correctly rejected Kodak's free riding argument because Kodak did not pre-

sent any reason why it could not collect for its investments by fully pricing its equipment and parts, i.e., Kodak presented no rationale for underpricing equipment and overpricing service as elements of its competitive package price.

26. ISOs previously had obtained parts from customers who purchased parts from Kodak and then resold them to ISOs, from brokers who purchased parts from Kodak or who stripped used machines for parts, from used equipment purchased by ISOs themselves, and (as claimed by the plaintiff ISOs) from Kodak directly. See Festa (1993) at 627, n. 31.
27. Justice Blackmun notes that while 'service prices have risen from Kodak customers ... there is no evidence or assertion that Kodak equipment sales have dropped'. *Kodak*, 112 S.Ct. at 2085. Justice Blackmun states that 'Kodak never has asserted that it prices its equipment or parts subcompetitively and recoups its profits through service. Instead, it claims that it prices its equipment comparably to its competitors ...' *Id.* Justice Blackmun fails to understand (and Kodak apparently made no effort to clarify) that both of these propositions are true if all manufacturers in the industry are 'under-pricing' their equipment and 'over-pricing' their service. Justice Scalia in his dissent confusingly attempts to answer Justice Blackmun's argument by claiming that 'Gaps in the availability and quality of consumer information pervade real world markets' and create 'zones within which otherwise competitive suppliers may overprice their products without losing appreciable market share'. *Kodak*, 112 S.Ct. 2097-98.
28. See Klein (1980). Craswell (1982) agrees that contract law and consumer protection regulations rather than antitrust law should handle hold-ups.
29. Note 21 *supra*.
30. Areeda and Hovenkamp (1993) ¶ 1709.2 at 1195-96 believe that *Kodak* only deals with the definition of market power in tying cases. Arthur (1994), on the other hand, believes it is difficult to limit the *Kodak* reasoning to tying cases.
31. Arthur (1994) distinguishes between 'structural' and 'non-structural' market power with a hold-up asserted to be non-structural market power because price is set above cost not due to industry structural characteristics, such as the company's market share or barriers to entry, but merely because of deviations from the perfectly competitive model, in particular the absence of perfect consumer information. While I am generally sympathetic with this distinction and with Arthur's policy recommendation that only structural market power should be of concern to the antitrust laws, it fundamentally begs the question of the relevant product market. In particular, he does not discuss but merely assumes that, for example, one landlord's building is not a market. An outline of an answer to this question based upon defining generic and firm-specific elements of all products is discussed in Klein (1993).
32. This is referred to in the economics literature as third-degree price discrimination. See Pigou (1920).
33. Although in all these examples some buyers pay a higher price relative to marginal cost than other buyers, these examples of economic price discrimination do not violate the Robinson-Patman law because in some cases the products are not 'commodities', in other cases because the products are not considered of 'like grade and quality', and in all the cases because there is no primary-line or secondary-line competitive injury.
34. Justice Scalia's *Kodak* dissent incorrectly assumes, on the contrary, that parts and service are demanded in fixed proportions. 112 S.Ct. at 2097 n.2.
35. See, for example, Warren-Boulten (1974) for a discussion of the economics of tie-ins in the face of variable proportions.
36. Self-service customers were a small enough share of total sales (perhaps five percent) so that this effect alone was probably insufficient to prevent Kodak from maintaining its package pricing by increasing parts prices and decreasing service prices after the entry of competing service suppliers. On the contrary, in *Digidyne Corp. v. Data General Corp.*, 734 F.2d 1336 (9th Cir. 1984), which involved a tie by Data General of its hardware to its operating system after the entry of emulators that sold competing hardware, Data General had a significant number of customers (perhaps 40 percent) that purchased only hardware. Therefore, Data General could not profitably increase the price of its operating system while simultaneously decreasing the price of the hardware in response to emulator entry because it would have placed Data General's hardware price significantly below the profit-maximizing level on hardware only sales and had a large effect on its profit. See Klein (1993), n. 32 and n. 46.
37. Bresnahan (1985) at 17-18. The Court recognized that Kodak's copiers were distinct. *Kodak*, 112 S.Ct. at 2077.
38. Areeda and Turner (1978) Vol II, ¶ 514 at 342.
39. *Kodak*, 112 S.Ct. at 2099.
40. U.S. v. Aluminum Co. of America 148 F. 2d 416 (1945).
41. The importance of the source of rents in determining whether a firm has market power is emphasized by Hay (1992), who uses the example of a successful restaurant to illustrate a competitive firm with a negatively sloped demand. It is also emphasized by Fisher (1991) who claims that the term monopoly should be used only in cases where a negatively sloped demand is created artificially from collusion, legally restricted entry, or predation.
42. Carlton and Perloff (1989) at 97.
43. Telser (1972) at 274-306.
44. There remains the question of defining a relevant product market (see n. 31 *supra*). *Changes* in own elasticity may be the appropriate standard to judge the effect of a horizontal merger of, for example, two breakfast cereal manufacturers, and in some circumstances this will imply relatively narrow relevant product markets as defined in the Guidelines. (Department of Justice and Federal Trade Commission Horizontal Merger Guidelines, 57 Fed. Reg. 41,552 (1992).) However, this does not imply

that the level of own elasticity is the appropriate standard to judge whether an individual firm possesses market power. Once again, it is the source of the level or change in the elasticity of demand that is key.

45. A more complete discussion of the relevant antitrust case law can be found in Klein (1993).
46. *United States v E. I. Dupont de Nemours & Co.*, 351 US 377, 391 (1956).
47. Note I am concerned here with clarifying the Court's definition of market power, not with whether the Court's conclusion regarding the absence of such power in the particular case was correct.
48. *United States v E. I Dupont de Nemours & Co.*, 351 US 377, 393 (1956) (citation omitted).
49. 797 F.2d 370, 373 (7th Cir 1986).
50. 784 F.2d 1325, 1335 (7th Cir 1986).
51. Posner's definition does not necessarily lead to incorrect conclusions because a firm with a highly elastic demand does lack the ability to influence the market. A highly elastic demand is a sufficient (but not a necessary) condition for the absence of market power.
52. It is surprising that they ignored this effect since the result, along with the general, fairly broad conditions for increased social efficiency associated with discriminatory marketing which encourages new users, is outlined in an article co-authored by Mackie-Mason. See Hausman and MacKie-Mason (1988).
53. Shapiro (1995) presents a model where the type of distortion isolated by Borenstein, MacKie-Mason and Netz is unlikely to be large relative to the pure monopoly-type overcharge the antitrust laws are designed to protect against.
54. Note 21 *supra*..
55. *Kodak*, DCN Calif, No. C87 1686 AWT, 9/18/95.

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