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Appropriate Antitrust Policy Towards Single-Firm Conduct

by

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Abstract

In this article we distinguish between two types of single-firm conduct. The first, which we call "extraction," is conduct engaged in by the firm to capture surplus from what the firm has itself created independent of the conduct's effect on rivals. The second, which we call "extension," is single firm conduct that increases the firm's profit by weakening or eliminating the competitive constraints provided by products of rivals. We propose as a fundamental antitrust policy towards single-firm conduct the following: Conduct merely to extract surplus the firm has created independent of the conduct's effect on rivals should be permitted. Conversely, conduct that extends the firm's market power by impairing the competitive constraints imposed by rivals presents a legitimate cause for concern.

We subscribe strongly to the view that an essential element of appropriate antitrust policy is to allow a firm to capture as much of the surplus that, by its own investment, innovation, industry or foresight, the firm has itself brought into existence. We believe that alternative approaches to single-firm conduct, including in particular ones aiming to enhance static efficiency at the possible cost of dynamic efficiency and ones seeking to maximize overall welfare through more targeted intervention on a case-by-case basis (not to mention the use of competition policy to protect competitors rather than consumers) threaten seriously to impede economic growth and welfare over time.

A policy that goes further, and which permits all unilateral conduct regardless of competitive effects (perhaps on grounds that "even more profit will generate even more innovation") is considered below and rejected as overly lenient, inconsistent with widely accepted presumptions in favor of inter-firm competition, and unwise, at least under the current state of economic knowledge. But we note that this conclusion is one based on our current economic knowledge and should remain a topic of ongoing research. It requires an empirical assessment of the gains from motivating more competition ex ante versus the subsequent loss of competition ex post.

I. Introduction

Antitrust policy is schizophrenic in its treatment of single-firm conduct. On the one hand, it generally permits conduct that is virtually guaranteed to reduce static welfare. An obvious example is simple monopoly pricing, which in the U.S. is legal *per se* under antitrust law.[1] The justification is presumably based on dynamic welfare considerations, where a firm is given the proper incentives to innovate by the possibility of subsequent monopoly pricing. On the other hand, it treats with considerable suspicion a variety of practices such as vertical restrictions or bundled pricing that frequently enhance static welfare and which, even when they do not, can serve purely to capture a larger share of the surplus that the firm itself has brought into existence. Yet the justification for simple monopoly pricing based on the creation of dynamic efficiencies would certainly apply here as well. Although their potential for reducing competition provides in our view some justification for taking a harder look at types of single-firm conduct that are more sophisticated than simple monopoly pricing, the logic underlying antitrust enforcement in this area remains confused and is likely harmful to the cause of economic efficiency and growth.

In this article we distinguish between two types of single-firm conduct. The first, which we call "extraction," is conduct engaged in by the firm to capture surplus from what the firm has itself created independent of the conduct's effect on rivals. A simple example would be pure price discrimination. The second, which we call "extension," is single firm conduct that increases the firm's profit by weakening or eliminating the competitive constraints provided by products of rivals. An example would be exclusive dealing where the effect is to eliminate smaller rivals from having access to distribution.

We subscribe strongly to the view that an essential element of appropriate antitrust policy is to allow a firm to capture as much of the surplus that, by its own investment, innovation, industry or foresight, the firm has itself brought into existence. We believe that alternative approaches to single-firm conduct, including in particular ones aiming to enhance static efficiency at the possible cost of dynamic efficiency, as well as ones seeking to maximize overall welfare through more targeted intervention on a case-by-case basis, threaten seriously to impede economic growth and welfare over time.

Our paper proposes as a fundamental antitrust policy towards single-firm conduct the following: Conduct merely to extract surplus the firm has created independent of the conduct's effect on rivals should be permitted. Conversely, where conduct that extends the firm's market power by impairing

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[1] Were maximization of static welfare antitrust's goal, pricing above marginal cost would constitute an antitrust violation and virtually all firms in the economy would be breaking the law. In some instances of natural monopoly, provision of water or electricity distribution services, for example, laws may provide for regulatory bodies to control the firm's prices or other terms and conditions. Similar arguments for regulation by specialty agencies may apply also in cases of potentially serious health or safety externalities. We do not discuss such situations here, noting simply that such situations are outside the realm of antitrust policy, per se. For a discussion of the boundaries between antitrust and regulation, see Carlton & Picker (2006).

the competitive constraints imposed by rivals (an example would be successful predation), presents a legitimate cause for concern.[2]

A policy that goes further, and which permits *all* unilateral conduct regardless of competitive effects (perhaps on grounds that "even more profit will generate even more innovation") is considered below and rejected as overly lenient, inconsistent with widely accepted presumptions in favor of inter-firm competition, and unwise, at least under the current state of economic knowledge. But we note that this conclusion is one based on our current economic knowledge and should remain a topic of ongoing research. It requires an empirical assessment of the gains from motivating more competition ex ante versus the subsequent loss of competition ex post.

The paper is organized around several underlying economic principles which lay bare the framework for current antitrust policy. One might think that these principles are well understood, perhaps even obvious, but we think not. For each principle, we discuss the theoretical and empirical validity of the principles. We then analyze the implications for antitrust policy that draw on considerations of administrability and consistency with general and widely held presumptions. These principles may, but may not, be susceptible to strong empirical verification. Where empirical testing is possible, it should be pursued so that antitrust will become over time more a science based on facts, and less a policy driven primarily by beliefs.

II. Policy Towards Single-Firm Conduct

The law and the courts have long recognized, if only implicitly, the critical role played by investment and innovation in our economy. And economic scholarship has demonstrated and measured more rigorously that investment and innovation are the dominant forces behind an economy's advances in productivity and growth.[3] For firms to have the proper incentives to invest and create, it is necessary that they be permitted to profit from their successes. Dynamic efficiency spurred by the lure of profits, rather than maximization of short-run consumer or even total welfare, represents an essential and in our view often ignored consideration in antitrust policy toward single-firm conduct. This leads to:

Underlying Principle # 1:

Simple monopoly pricing is legitimate because it spurs dynamic efficiency

As we noted earlier, even firms with considerable market power are generally permitted by antitrust law to engage in simple monopoly pricing. In jurisdictions other than the United States, the

[2] Despite the theoretical possibility that welfare could be enhanced by a surgical, case-by-case, policy of government intervention, our view is that such attempts are far inferior to a consistent application of the broader and more concrete policy recommended here. The knowledge of courts, lawyers, and even economists of when exceptions to it would enhance overall welfare is sufficiently imperfect, and our ability to construct and police remedies that might in theory produce improved outcomes is sufficiently poor, that using antitrust in this way appears more likely to reduce welfare than to enhance it.

[3] See, Solow (1956) and Griliches (1979).

principle is not always followed. For example, the European Commission can attack excessive pricing as "exploitive" under its competition laws, though such attacks have been rare. The principle seems to us sound.[4] Indeed, the logic underlying it has, as we discuss below, implications for antitrust's treatment of more complex forms of single-firm behavior as well.

Firms who have obtained their market power legitimately are generally allowed to set prices as much above cost as they like and, at times, earn very high profits. This is in part because most of us accept that high profits are a deserved reward for success. More important (to an economist) than considerations of "fairness," however, is the fact that the prospect of monopoly pricing (albeit, with the static deadweight loss that generally accompanies it) provides a critically important incentive for welfare-enhancing investment and innovation, and so antitrust should permit simple monopoly pricing.[5]

Capping prices (and hence returns on investments) will, among other drawbacks, generally deter risky but economically desirable investments. This is hardly a prescription for innovation and economic growth. Price and profit regulation tends to focus on the short-run where investment activity is taken as more or less exogenous and regulation is imposed to promote static efficiency.

To the extent it employs a static analysis, however, regulation fails to take properly into account the dynamic inefficiency resulting from adverse investment incentives. This shortcoming of ignoring dynamic efficiency is especially peculiar since the justification for simple monopoly pricing is based precisely on consideration of dynamic efficiency.[6] The more the law limits a firm's anticipated profit from bringing something successful to market, the lower the incentive to do so in the first place.

To illustrate this basic point with a simple example, consider the effect on innovation incentives from a policy of regulating price–not at so low a level as to "obviously" impair future investment incentives, but nevertheless low enough to constrain significantly the market power of a highly successful (perhaps even "dominant") firm.

A Hypothetical

[4] In countries where the government has privatized industries once owned by the government, one could argue that constraining the exercise of that market power is justifiable because it was not necessarily achieved through competition in a market. We think it unwise to ask courts to act as regulators. Where regulation is appropriate, we believe it should be handled by an expert regulatory agency. Often, however, the ability of privatized firms to exercise monopoly power over any significant period of time can be avoided through a properly structured privatization process.

[5] As the American jurist Learned Hand once famously admonished in a widely quoted opinion, "the successful competitor, having been urged to compete, must not be turned upon when he wins." See, e.g., U.S. v. Aluminum Co. of America, 148 F.2d 416, 424 (1945). In jurisdictions that are not centers of innovation and where innovation has in recent years lagged behind that in the U.S., considerations of dynamic efficiency should arguably play a particularly important role in the formulation and application of antitrust policy. For a detailed treatment of the recent lag in productivity by the European Union relative to the United States see, for example, van Ark, O'Mahony, and Timmer (2008).

[6] Indeed, a similar economic logic underlies the patent system's explicit policy of protecting what may be a successful innovator's monopoly power in order to generate greater investment ex ante.

Firm A has an idea for a new software product. After researching the potential market, evaluating the competition, and assessing the uncertainties inherent in a risky venture of this sort, its owners conclude that if the venture fails they are likely to lose their $5 million investment. They conclude also, however, that should they succeed, they can expect to earn a profit of $50 million. After much internal debate and negotiations with outside lenders, firm A calculates that although it is a fairly close call, it will take the gamble.

Fortunately for its owners and investors (and indeed, the consuming public!), firm A hits it big and develops an extremely valuable product. Unfortunately for its owners and investors, the local competition authority receives a number of complaints about the high prices and large profits earned by firm A. Investigation confirms that this extremely popular product is generating a rate of return several times what a typical firm earns. The local competition authority contemplates its options.

Reasoning that no firm merits so large a return on investment (the authority calculates that net revenue of $50 million on a total investment of only $5 million represents a return of fully 900 percent) and believing that future innovation incentives could hardly be reduced much by capping price to where the firm's return is "only" 100 percent, the competition authority considers imposing such a cap.[7] The authority notes further that not only will consumers benefit from lower prices, but also that prices closer to marginal cost (which is zero) will lower the deadweight loss, enhance static efficiency significantly, and move output closer to the competitive level.

Discussion

What, if anything, is wrong with this analysis? What has been ignored is a proper appreciation of the important difference between ex ante expectations on the one hand, and ex post outcomes on the other. Missing also is an understanding of the predictable adverse effect on investment incentives from the action under consideration.

In our example, firm A has indeed earned ten times the amount it invested. However, at the time firm A decided whether to invest, it viewed the investment as being virtually a break-even proposition. Had it known that the maximum it would be permitted to earn would be capped by antitrust regulators, it would not have made this particular investment in the first place. Importantly, nor will an untold number of others faced with similar prospects in the future.[8]

Could there in principle be circumstances in which investment activity and dynamic efficiency would not be significantly discouraged by anticipated antitrust restrictions on pricing and profit, such as those sometimes referred to as "exploitive" in the EU and other jurisdictions? Might there be situations in which the static deadweight loss suffered from supracompetitive pricing exceeds the

[7] To fix ideas, we assume for purposes of this discussion that firm A is able neither to price discriminate, nor to maintain its profitability by evading price regulation through the use of other business practices.

[8] It is for this reason that regulators are well-advised to exercise extreme caution before mandating "reasonable" prices for blockbuster drugs, the success of which was likely very uncertain ex ante, and which typically represent a small fraction of the many risky projects engaged in by pharmaceutical companies.

expected dynamic efficiency benefits from marginal investment incentives? Conceivably, there could be such cases. That having been said, however, to infer from this possibility that price and profit regulation are desirable tools for antitrust to employ requires that we dismiss several additional and exceedingly important practical considerations.

To begin with, it will frequently be impossible for antitrust to distinguish cases where dynamic efficiency is important from cases where dynamic efficiency is not important. Even if it were possible to identify such cases, the costs of administering a rule prohibiting pricing above some to-be-determined "reasonable" level are likely very high. And, the deterrent effect on investment incentives from signaling to potential investors or innovators that their future prices and profits will be subject to antitrust scrutiny is potentially quite large. Indeed, the cost of having antitrust cap prices is especially large when one considers not only the difficulty of calculating an appropriate maximum price, but also the strong incentives for price-constrained firms to engage in all manner of non-price "regulatory evasion." Such costs can easily exceed the hoped-for savings in static welfare even where dynamic efficiency is not impacted adversely.[9]

The recognition that expected profit affects the incentives to invest leads directly to our second principle.

Underlying Principle #2:

Extraction of surplus through means other than simple monopoly pricing is equally as "legitimate" as monopoly pricing, based principally on its impact on dynamic efficiency, all else equal.

Why, if high prices (and profits) are permissible, is antitrust often hostile to less orthodox methods of unilaterally exercising market power?[10] And perhaps even more importantly, is there a compelling economic justification for differential treatment? Included among the numerous "unorthodox" forms of single-firm conduct that competition authorities and courts often view with suspicion (or worse), are common practices such as differential pricing across customers, tying, exclusive dealing, resale price maintenance, refusals to deal, and non-linear pricing that rewards customer loyalty. Under certain circumstances, we argue below, greater suspicion of such conduct is indeed warranted. Nevertheless, those circumstances are limited and often confused with efficient, or even procompetitive, uses of such practices.

[9]While it is true that even in the U.S. we resort to price regulation in a number of markets, a large body of empirical economic literature documents that regulation frequently imposes very high direct and indirect costs, often greatly exceeding the hoped for benefits. Moreover, numerous studies have shown that regulation is often used for the benefit of the firm(s) being regulated and/or their competitors, rather than to benefit consumers or otherwise enhance economic welfare.

[10] As discussed below, some of these "unorthodox" methods may do no more than enable a firm, by in effect committing credibly not to lower price to others, to earn what appears could be obtained from simple monopoly pricing.

Antitrust hostility to these practices is in some respects quite surprising from the perspective of an economist[11], given that simple monopoly pricing produces a clear and well-recognized static, deadweight loss to the economy, while these other forms of unilateral conduct are believed frequently (though not always) to increase output, provide incentives for more effectively marketing a firm's products, or otherwise enhancing welfare.[12] Firms employ strategies more sophisticated than simple monopoly pricing when they believe that doing so will enhance profitability. Let us begin by asking whether there is a compelling economic justification for limiting a firm's profit to what it can earn through simple monopoly pricing. If there is, what is it, and when does it apply?

As an initial matter, there is no reason to believe that the outcome generated by simple monopoly pricing is optimal–either from the narrow profit-maximizing perspective of the firm, or from the perspective of consumers, or from the perspective of economic welfare as a whole. A profit maximizing firm practices simple monopoly pricing only when it lacks the information and ability to charge different customers different prices. A standard that caps maximum profit at what would be earned by pricing at the point where marginal cost equals marginal revenue–or indeed which prohibits successful firms from pricing in other ways or engaging in a variety of other forms of unilateral conduct--would not necessarily generate a more nearly optimal level (or type) of investment or innovation. Indeed, we know that efficient incentives for investment generally improve, the more surplus the firm is able to capture when its innovations create the surplus.

Fixed costs vary greatly across projects, as does the degree of investment risk. Demand for final products obviously varies greatly. Sophisticated pricing or other business strategies may be necessary for the firm to generate revenue greater than the total cost of economically desirable investment and production.[13] Beyond this, it is well-known that complex strategies such as vertical restrictions and/or non-linear pricing can frequently benefit both producers and consumers.[14]

Antitrust's hostility towards conduct that generally represents little more than a creative effort by a firm to capture a larger share of available surplus–surplus it has created through its own skill,

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[11] Though it is not necessarily surprising from the perspective of political economy, which predicts that organized private interest groups–including at times a dominant firm's rivals-- can and will devote resources to having antitrust policy serve their own private interests, rather than the interests of the economy as a whole.

[12] See, Bork (1978) and Posner (1977).

[13] We are not saying that the optimal amount of R&D is necessarily forthcoming even when firms capture the full surplus of their activities. Despite the possibility that too much R&D can in some circumstances take place, we think that antitrust policy should not inhibit incentives for R&D resulting from improved surplus extraction. (An entirely separate policy issue is the scope of protection, e.g., through patents, for intellectual property.)

[14] Apart from the many efficiency justifications provided by the Chicago School and others for price discrimination and vertical restraints, it can easily be demonstrated that in some circumstances simple monopoly pricing will fail to cover total costs even where total surplus would exceed total cost (i.e., where from the standpoint of total economic welfare, production should take place). Indeed, although we do not recommend that antitrust policy be altered to sanction monopoly extension on these grounds, the fact that, as discussed below, firms generally capture less than the total surplus created by their innovations suggests that there may well be underinvestment in R&D and a less-than-optimal level of innovation.

industry or foresight--is due in part to a concern over consumer welfare, narrowly defined. When the firm is engaged in price discrimination, for example, its higher profits may come at the expense of some, or even all, consumers. And those whose focus is entirely on the welfare of consumers may condemn such conduct even when the effect on the economy as a whole (consumers + producers) is positive. They may even, intentionally or inadvertently, condemn price discrimination whose effect is to reduce the welfare of some consumers while enhancing the welfare of others.[15] Concerns are likely to be heightened further when efforts to extract greater surplus via price discrimination threatens to impose a larger static deadweight loss than would result from simple monopoly pricing.

And yet, as we noted in our discussion of simple monopoly pricing itself, interference with a firm's efforts to capture more of the value generated by its product will likely be a reduction in the quantity and quality of desirable products and services brought into existence in the future. Indeed, because available evidence suggests that in many industries there are already sub-optimal incentives to innovate and develop new and better products, antitrust policies that further deter such activity may be of particularly great concern.

As Jonathan Baker points out in a recent article,

> From one generation to the next, innovation is undoubtedly a central determinant of the welfare of humankind. Economists studying individual projects, moreover, routinely find that the benefits of innovation to society as a whole greatly exceed the benefits to the firms that develop the innovation.[16]

As with simple monopoly pricing, it is appropriate for antitrust to permit such conduct despite the possible (though by no means certain) adverse impact on static welfare, in order to improve dynamic efficiency.

III. Extraction vs. Extension

The quest for an optimal set of rules toward single-firm conduct is complicated, and we are hardly the first to enter this debate. In our view there exists no simple set of rules, the application of which is guaranteed to maximize welfare under all circumstances. For example, one cannot, unfortunately, reach general welfare conclusions merely by looking at the *form* taken by single firm conduct. Tying, exclusive dealing, various pricing strategies including aggressive low prices and non-linear pricing can, depending on the facts, enhance welfare or reduce it.

Policymakers are appropriately less concerned with the form taken by, or even the motivation given for, business conduct than they are with economic effects. And effects will vary depending on the particular facts. Perhaps most frustrating is that even specifying welfare as the criterion by which

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[15] On the consumer vs. total welfare debate in the context of merger policy, see Williamson (1968), Heyer (2006), Farrell & Katz (2007) and Pittman (2007).

[16] See, Baker (2007 pg. 576). See also studies by Griliches (1992), Bresnahan(2003) and others cited by Baker who have found that the aggregate social returns to R&D investment exceed the private returns to the investor.

single-firm conduct will be judged provides no guarantee that welfare will in fact be maximized if each case is subject to review.[17]

Although we believe that conduct engaged in unilaterally by firms, even by so-called "dominant" firms, is generally benign and procompetitive, we agree that in certain circumstances single-firm conduct may be quite anticompetitive and economically harmful. Firms can generally be expected to seek out profits for either or both reasons. What principle, we need to ask, can usefully distinguish the "good" from the "bad"?

We recommend that antitrust policy towards single-firm behavior distinguish importantly between two types of conduct. One type, behavior we would call "extraction" (or, for the less politically correct, "exploitation"), is unilateral conduct engaged in by the firm to capture more of the value that it has itself brought into existence absent anticompetitive effects. A second type of conduct, "extension," enhances the firm's profit by eliminating or weakening competitive constraints provided by rivals. Although conduct can fall into both categories, antitrust could be simplified, and in our view improved, if conduct falling squarely into the extraction category was immune from antitrust attack.

Extraction

Total gains from trade are divided in some way between the buyer and the seller. Terms are arranged and an exchange takes place. The seller earns producer surplus (the difference between what the seller receives and what the seller would have been willing to accept) and the buyer retains consumer surplus (the difference between what the consumer pays and what the consumer would have been willing to pay). The simple textbook example of a firm profit-maximizing by setting a uniform price at the point where its marginal revenue just equals marginal cost illustrates one way in which a firm captures a share of available total surplus.

There are more complex methods by which a single firm might seek to maximize its share of this surplus. Some of these will generate both larger profits for the firm and enhanced welfare for consumers. For example, rather than charge a single price to all comers, a seller might earn more by a price discrimination program that selectively lowers price to (only) new customers. Those who are currently unserved might be willing to pay more than the cost of serving them, but less than what the firm finds it most profitable to charge others. In such circumstances, the beneficiaries of this program would include not only the seller (who earns more total profit), but the new consumers as well (who are better off than when they'd been priced out of the market entirely).

[17] Recently, for example, Steve Salop (2006) proposed that antitrust employ a consumer welfare standard for judging conduct on a case-by-case basis. While application of a welfare standard is seemingly ideal in principle (we would favor one based on total welfare, rather than consumer welfare), such policies have been criticized for generating potentially large costs of their own. Not only would the cost to competition authorities and courts of determining ex post whether the conduct at issue actually did reduce welfare be potentially large, but as critics such as Doug Melamed (2006) and Greg Werden (2006) have argued, considerable costs could fall on businessmen ill-equipped to determine ex ante whether the conduct they are planning to engage in would result in liability. This, in turn, would doubtless serve to deter at least some welfare enhancing conduct.

Price discrimination need not always enhance the welfare of each and every consumer, or even of consumers as a whole. For example, a move from simple monopoly pricing to "perfect" price discrimination would increase the firm's profits while leaving initial consumers worse off and new ones indifferent. With perfect price discrimination, however, "total" welfare will be greater than under simple monopoly pricing. In more complex situations, however, imperfect price discrimination can (as discussed further below) increase the seller's profits while at the same time lowering static consumer *and* total welfare relative to simple monopoly pricing[18].

Importantly, static welfare comparisons of, for example, alternative pricing programs through which a firm attempts unilaterally to extract more value from what it has produced ignore the dynamic efficiency benefits to permitting such conduct. They ignore also the potentially large costs of attempting to constrain through antitrust regulation the conduct of firms that possess monopoly power. Such costs include the direct costs of monitoring and enforcement. They include also serious indirect costs from the chilling effect on competition and attempts at regulatory evasion.

For the foregoing reasons, we recommend that where the firm's conduct leaves inter-firm competitive constraints intact (implying that the firm is capturing no more than the value of what it has itself brought into existence), the conduct should be permitted by antitrust--regardless of the particular form the conduct takes, and despite what may at times be an adverse impact on static welfare.

An important implication of this rule is that certain common forms of single-firm conduct frequently at risk of antitrust attack, especially outside the U.S., would be permitted. This includes, in particular, price discrimination, practices aimed at preventing the firm from behaving opportunistically (and, in effect, "competing against itself") and simple refusals to deal[19].

a. Price Discrimination

Where a firm is price discriminating–speaking loosely, where it is capturing a larger fraction of the area under a demand curve it has created--the conduct should be immune from antitrust challenge.

Consider, for example, the use of tying for purposes of metering. In such cases, the firm is price discriminating by, effectively, charging a higher price for the tying good to heavy demanders and a

[18] See, Stole (2007). It is worth noting that the firm and its customers will have a joint incentive to try to limit the extent of any static welfare distortions–though their efforts may be less than fully successful. There is a wide literature examining when price discrimination lowers total welfare.

[19] Despite the theoretical possibility that they can, under certain limited circumstances, reduce welfare, we argue below that still other forms of single-firm conduct should generally be permitted by antitrust. These include, in particular, above-cost pricing, entry, and product improvements that are themselves non-predatory–i.e., that make business sense even absent any weakening of competitive constraints.

lower price to light demanders. Under our proposed framework, such conduct would be completely legal.[20]

Economic analysis of price discrimination tends to focus on static welfare considerations, such as "Did the tie result in greater total output?" or "Did the tie lead to a more efficient allocation of existing output across customers?" or "Is 'systems' competition sufficient to prevent the firm from capturing monopoly profits on the package it offers?"

Economists have long known that the static welfare effects of price discrimination are, in general, ambiguous. Tying to meter can result in higher output (and higher total welfare) by making it profitable to, in effect, sell not only to "high demanders" at high prices, but also to "low demanders" at low prices.[21] And yet, it is easy to provide examples of where price discrimination, even tying to meter, lowers welfare. For example, it can be shown that where demand curves are linear, third-degree price discrimination (e.g., selling to two different groups at different per unit prices) reduces welfare.[22]

In particular cases, or under specific assumptions, however, the effect may well be predictable and could imply a static deadweight loss in welfare. Should this matter for antitrust? One approach might be for courts to attempt to determine as best they can in each individual case whether the price discrimination raises or lowers static welfare. A better approach, we suggest, is to permit the practice *regardless of its effect on static welfare*.

Even where prohibiting price discrimination might conceivably enhance static welfare in some cases,[23] the resulting dynamic inefficiency from policies that reduce a successful firm's ability to profit from its success threatens to stifle economic growth and lower economic welfare in the long run. For this critical reason and others, we would permit such conduct to go unchallenged.[24]

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[20] While the tying of cards to IBM machines in the IBM case, or the tying of salt or ink or staples to the purchase of machines in other cases , has been characterized as "extending the firm's monopoly to complements used with the monopoly product," unless the tie somehow enables the firm to exercise market power in products not used with the tying product itself, the market power of the firm has not been extended. If there were a ban on tying, the firm would be restricted in how it is permitted to exploit its power–restrictions that we have argued are inappropriate for antitrust.

[21] See, Carlton & Perloff (2004), Chapter 9.

[22] Because of the linearity assumption, total output remains the same with and without third-degree price discrimination. And if output is unchanged, it is most efficient for that output to be allocated across consumers so that their marginal valuations are equated. This is what happens when all face a common price, but not when the price charged to the two groups differs. See, Schmalensee (1981). Pigou (1932), and Robinson (1933) gave early proofs of this result. For a less technical discussion, see Chapter 9 of Carlton & Perloff (2004).

[23] As would, as discussed earlier, an antitrust rule requiring prices to be set at or closer to marginal cost.

[24] The other reasons include the not insubstantial cost of determining whether and when the attempt to price discriminate actually does lower static welfare, and the costs of devising and policing remedies to prevent the firm from switching to alternative, perhaps even more costly, business practices crafted to achieve a similar purpose.

b. Restraints as Credible Commitments to Permit Rent Extraction

In our discussion of antitrust policy toward single-firm conduct thus far, we have been presenting the case for permitting the firm to set the simple monopoly price or even to use price discrimination as a means of capturing a larger share of available surplus. We have argued that such a policy is justified by dynamic efficiency effects, as well as by other, more practical, considerations.

Surprising as it may seem, there are circumstances in which, despite strong demand for its product, a firm that is not competitively constrained by the offerings of actual (or potential) rival producers may be incapable of capturing available surplus by pricing above its marginal cost of production. Attempts to do so can fail, as customers fearing post-sale "opportunistic behavior" by the seller may refuse to pay more than what it would cost the seller to make additional sales to others.[25] In such situations, the firm may wish to use one or another vertical restraint in order to, in effect, prevent it from competing against itself. Although the result is higher prices, here again we believe that considerations of dynamic efficiency argue strongly against using antitrust policy to attack such conduct.

Serious treatment of this issue by the economics profession grew out of a short note published by Ronald Coase in 1972 in the *Journal of Law and Economics.*[26] In his article, Coase conjectured that in the absence of special contractual arrangements with customers, a durable goods monopolist might be unable to charge customers a price greater than marginal cost.

To demonstrate this, Coase considered the case of a durable good monopolist who reduces output below the competitive level in order to charge the simple monopoly price for his good. Using for illustrative purposes a hypothetical monopolist of land (he later generalizes the argument to the case of durable goods that are manufactured), Coase asks the following:

> Suppose [the original landowner] did this...In these circumstances, why should the original landowner continue to hold [land] off the market? The original landowner could obviously improve his position by selling more land since he could by this means acquire more money. It is true that this would reduce the value of the [monopoly quantity of land] owned by those who had previously bought land from him–but the loss would fall on them, not on him...The process [of selling] would continue as long as the original landowner retained any land...And if there were no costs of disposing of the land, the whole process would take place in the twinkling of an eye.

Coase goes on to list some contractual arrangements that might enable the monopolist to avoid this result, including agreements not to produce any more of the good after the monopoly quantity has been offered, offers to buy back the good in the future at an attractive price, the use of leasing rather

[25] See, O'Brien & Schaffer (1992), as well as McAfee & Schwartz (1994).

[26] See, Coase (1972).

than outright sale, and the production of a less durable good.[27] These arrangements remove, or weaken, the incentive that the monopolist might have to, in effect, compete against itself.

A variant of Coase's original insight turns out to apply to many products other than durable goods. And, as subsequent authors have shown, efforts by the seller to credibly commit not to engage in opportunistic conduct vis a vis its customers potentially takes the form of a wide range of restrictive vertical arrangements. These may include exclusive territories, resale price maintenance, and more.[28]

Exclusive territories, for example, may be used as a way of preventing the firm from arranging one set of terms with one distributor and then opportunistically contracting on even more competitive terms with one of the distributor's rivals.[29] Resale price maintenance clauses can help serve a similar purpose. Indeed, at the extreme, the firm may be able to solve its problem through complete vertical integration. To the extent that integrating is more costly than selling through independent distributors, however, the economy is worse off by adopting antitrust policies that induce firms to move in that direction.

In cases where the monopolist has come upon its monopoly legitimately, should its adoption of practices purely to avoid the opportunism outcome create antitrust liability? In particular, should antitrust authorities challenge conduct explicitly on these grounds? We believe that, for the same dynamic efficiency and practical reasons why we would permit other forms of rent extraction (including simple monopoly pricing, but not including what we refer to below as "extension"), they should not.

c. Refusals to Deal

The creator of property is usually entitled to its exclusive use. A doctrine that forces an owner to share his property or otherwise dictates the terms and conditions of exchange deprives the owner of an incentive to create the property. In Trinko,[30] for example, the U.S. Supreme Court recognized this point and ruled that, with rare exceptions, refusals to deal with one's rivals should not be construed as an antitrust violation.

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[27] Id. at 147.

[28] See, Rey & Tirole (2007). The authors, drawing on influential early articles by O'Brien & Schaffer (1992) and McAfee & Schwartz (1994), summarize the relevant literature.

[29]Vertical restrictions of this type can increase a seller's profit whenever the seller wishes to convince a distributor that the seller will not face additional competition. This can arise as in the Coase example of land but it also can arise in the more typical settings in which vertical restrictions have been analyzed–namely in cases where a seller wants to induce a distributor to engage in selling effort but the distributor is concerned about free riding. Again, we would treat this use of vertical restrictions as unobjectionable since it represents a firm's decision of how best to extract value from its product. Indeed, using vertical restrictions to prevent free riding on the distributor's selling efforts can benefit not only the seller and its distributors, but final consumers as well.

[30] See, Verizon v. Trinko, 540 U.S. 398 (2004).

It is important to distinguish between situations where a property owner refuses unconditionally to sell to (or buy from) others and quite different situations where a firm's willingness to deal is made contingent upon the other dealing party (or parties) engaging in conduct that itself amounts to an antitrust violation. In these latter circumstances it is not the refusal to deal that is properly objected to on antitrust grounds. Rather, it is the anticompetitive conduct that a willingness to deal may be inducing others to engage in. The proper focus of antitrust is in such cases not on the property owner's refusal (or more accurately, his willingness) to deal, but on the competitive consequence of whatever conduct this leads other parties to engage in. Indeed, the appropriate antitrust analysis should be no different if the objectionable conduct is induced by a willingness to deal than if it is induced by the offer of a cash payment or any other form of consideration.

Finally, refusals to deal cases have at times arisen in the context of standard setting bodies.[31] Typically, in such cases, the owner of a patent is accused of having misled the standard setting body as to the patents it possesses and/or the royalties it will charge for its patents if a standard is selected that requires its use. Ignorant of the fact that users of the standard will subsequently be subject to hold up by the patent holder, the standard setting body agrees on a standard that employs the patent holder's intellectual property. At this point, and after the sinking of considerable standard-specific investments by others, the patent holder refuses to license its intellectual property at "reasonable rates." Because the rates the patent holder is able to demand from others may exceed greatly what the patent holder would have been able to charge had the existence of its patent rights been known ex ante, such conduct has at times been attacked as an antitrust violation.

This is not the place for a complete treatment of this complex issue.[32] We note, however, that although unmitigated conduct of the type in question might well cause harm to final consumers, there exists a serious question as to whether the conduct is more properly treated under contract law than under antitrust law. To the extent that contracting parties–i.e., other participants in the standards setting body--have adequate incentives to sue, i.e., where harm to third parties is largely internalized by prospective litigants, it may be more appropriate to challenge such conduct as a contract violation rather than as an antitrust violation. Under U.S. law, antitrust liability triggers treble damages while contract liability triggers only single damages. From the economic viewpoint of optimal deterrence, whether liability (even antitrust liability) should trigger treble damages should depend, in part, on how easy it is to detect the conduct.

Extension

In contrast to what we are calling "extraction" is a second type of single-firm conduct. This behavior, which we refer to as "extension," differs from extraction in the following sense (made more precise later): it enhances the firm's profitability by weakening the constraints imposed by competitors. In that way it extends the firm's market power. "Extension," as we use the term, may involve either the creation of market power over additional products (so-called "monopoly leveraging"), or protecting

[31] See for example, FTC v. Rambus (2007), and FTC v. Dell Computer Corp. (1996).

[32] For an extensive treatment of the issues involved, see Shapiro et al (2007).

the firm's legitimately obtained market power by weakening the competitive threats or constraints provided by rival firms ("monopoly maintenance").

It is worth noting that simple monopoly pricing does not raise such concerns because the act of charging the monopoly price does not alter whatever pricing constraints other firms may exert. Indeed, the higher the price charged by a firm with monopoly power, the more attractive and more successful competing products are likely to be. Thus, if one accepts the "extract vs. extend" distinction we propose, simple monopoly pricing would properly be immunized from antitrust intervention while more sophisticated forms of single-firm conduct can, depending on the purposes for which they are being employed (and their likely effects) at least warrant greater scrutiny.

To ask whether single-firm conduct actually does weaken competitive constraints is to raise a set of issues that can at times be surprisingly (and frustratingly) subtle. At one extreme, consider the case of below-cost predatory pricing. If successful, price predation weakens competitive constraints by eliminating rivals. When predation is successful, neither entry nor re-entry (nor the mere prospect of such) prevent the firm from subsequently raising price to a level higher than would be permitted by initial competitive constraints.

Competitive constraints can also be weakened in less obvious ways. For example, in his path-breaking work on tying, Whinston demonstrates that by committing to sell its monopoly product only bundled with a competitively supplied product (itself a condition frequently not satisfied–except perhaps in cases of "technological tying"), the dominant firm can create an incentive for itself to respond to entry with very aggressive pricing of its bundle, thereby deterring the entrant without any apparent pricing below cost.[33]

To illustrate how tying can profitably extend a firm's market power, consider the case of a hypothetical island on which there is a monopoly hotel serving many tourists.[34] Natives live on the island. The hotel operates a restaurant, which competes for diners, both tourists and natives, in competition with local restaurants. By tying meals to lodging, the hotel can so diminish the number of tourists dining at local restaurants that, in the extreme, lack of scale prevents any local restaurants from surviving. The hotel thus acquires a monopoly over natives in the provision of restaurant services. This last example illustrates our third principle.

Underlying Principle # 3:

Where scale economies matter, conduct that deprives rivals of scale may (but will not necessarily) harm competition

An essential feature of monopoly extension (or maintenance), whether it takes the form of eliminating competitors or simply weakening the competitive constraint they provide, is that the conduct permits

[33] See, Whinston (1990). Carlton & Waldman (2002) build on the same basic insights to develop a model in which a firm with monopoly power in one period may be able to extend that monopoly over time to future periods.

[34] See, Carlton (2001). This example is due to Rob Gertner.

the monopolist to charge a price (or prices) above what would prevail with unchanged constraints presented by rivals.

A practical requirement for extension to be of concern is that scale economies matter nontrivially. Where they do not, efficient competitors cannot be handicapped or excluded. One or a small number of customers can themselves support competition–if only by entering via vertical integration themselves–and unless existing rivals are literally driven from the market (which cannot happen with constant returns to scale in production), an unchanged marginal production cost suggests that their price-constraining impact will continue as before.[35] Where there are scale economies, depriving a rival of scale does not necessarily raise its marginal cost, though it could raise its average cost. Unless marginal cost is declining, scale deprivation does not raise a rival's marginal costs, the relevant costs for determining competitive constraints, assuming the firm remains in existence.[36]

The safe harbor we would provide for conduct that does not seriously raise rivals' marginal costs or threaten their very survival captures much behavior that might otherwise, and inappropriately, be challenged by antitrust. Where scale economies *are* significant, however, conduct that deprives rivals of scale can weaken competitive constraints and permit monopoly extension or maintenance.

Unfortunately, much of the conduct that denies rivals scale and thus falls outside of our proposed safe harbor is in most circumstances highly desirable. Consider, for example, a firm's use of exclusive dealing to combat free-riding and promote investment, or its decision to charge aggressively low (but above-cost) prices in order to capture business from less efficient rivals. Or consider even, as we discuss in greater detail below, the introduction of a new and better product. These forms of conduct are all generally laudable, and yet because they help a firm capture business that might otherwise go to price-constraining rivals, they can, at least in theory, result in harm to competition and economic welfare.

Why might this be the case? Where scale economies are important, the more business a firm takes from its rivals, for whatever combination of reasons, the more it weakens the rivals' ability to exercise a constraining influence on price by threatening the rival's survival. In the extreme, all rivals may be driven from the market. At that point the surviving firm may have monopoly power and be able to set prices above pre-exit levels. Competition–whether actual or potential–may fail to constrain price as effectively as before. Victimized consumers may wish that there would be new entry, however if entry requires sunk costs and will involve competition against a more efficient incumbent, firms may be unwilling to make that investment. If the harm from high post-exit pricing exceeds the benefits from pre-exit competition, economic welfare can decline.[37]

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[35] Where network effects are significant, these can play a role similar to returns to scale in manufacturing.

[36] See, Carlton & Waldman (2008). In markets where ongoing R&D is important for future competitiveness, denial of scale that reduces the profitability of investments in R&D could in theory weaken future competitive constraints as well.

[37] In addition to the gain in welfare from low pre-exit prices, society benefits also from any reduction in production costs by the now-more-efficient firm. These savings, which presumably continue to exist even after rivals are driven from the market, may, but need not, fully offset the harm from post-exit monopoly pricing.

This is a somewhat disturbing theoretical possibility. It suggests that, where economies of scale are significant, there may be no simple and easily administrable rule for distinguishing between conduct that is welfare-enhancing while harming competitors, and conduct that can be welfare-reducing largely *because* it harms competitors. Indeed, the very notion that efficient firms should under certain circumstances be prevented from competing aggressively puts one on a very slippery slope towards chilling competition, perhaps through suggestions that antitrust should generally be used to handicap efficient firms in order to protect their less efficient rivals. It also raises serious questions about the meaning of the widely expressed adage that "Antitrust is about protecting competition, not about protecting competitors."

Although a complete examination of this difficult issue lies outside the scope of this article, we note that practical considerations against chilling competition and regulating efficiently argue strongly in favor of broadening somewhat the "extraction" safe harbor we have proposed for single firm conduct. These additional safe harbors are discussed in the next section. In cases of generally procompetitive conduct not covered by our safe harbors, but where that conduct may serve under some circumstances also to extend monopoly power, we would restrict antitrust intervention to cases where the evidence of net harm to welfare is strong, where the harm is likely to be very substantial, and where better alternatives (possibly regulation) are unavailable.

Making a Better Product or Producing More Efficiently

Under virtually any coherent competition policy regime, the creation of market power achieved through the introduction of better products ought to be viewed as legitimate–indeed, laudable. The provision of better and less costly goods and services constitutes virtually the essence of competition itself, and achieving it should be a primary objective, rather than a concern, of sound competition policy. Competitors will doubtless suffer when a rival develops a better mousetrap. And indeed, market concentration may increase dramatically–but only to the extent that consumers defect voluntarily to the better offering of one firm's particularly attractive product.[38]

Producing a better product may, to be sure, convey upon its creator market power. And yet, the market power being created will in general increase not only the welfare of the producer, but the welfare of consumers as well. An automobile monopolist setting a monopoly price for autos, for example, is likely better for consumers and for the economy as a whole than is a world with no automobiles but perfect competition among horse drawn carriages.

Improving one's offering does, however, have in common with what we are calling monopoly extension, the fact that it will tend to make one's competitors worse off. An important difference, however, is that if the offering is improved one's competitors are worse off because their actual or potential consumers are being attracted away by something that they believe makes them better off.

[38] Advertising is another form of competition that, where successful, tends to attract business away from one's competitors. It should be subject to similarly lenient treatment by antitrust authorities, assuming the advertising does not constitute fraud or libel.

In this critical sense, even where a better product eliminates competitors, it represents more competition, not less.[39]

Nevertheless, as discussed earlier, the development of an improved product (or the achievement of efficiencies through merger, or competition through aggressive above-cost pricing by a dominant firm), may result in both the elimination of inefficient rivals **and** higher prices after they exit. Such a possibility cannot be ruled out on purely theoretical grounds, and an argument could be made that in these cases seemingly desirable conduct has caused the firm's market power to be "extended." Such outcomes appear likely only under highly specialized circumstances, however, and are exceedingly difficult to predict ex ante.

"Possibility theorems" do not translate readily into efficient or practical policy recommendations. We are far from omniscient, and neither competition authorities nor courts have anything like full information about even the present, much less the future. Costly mistakes are not only possible, but likely, despite one's best intentions.

This is one reason why, due to the serious risk of chilling beneficial price competition, antitrust policy towards predatory pricing–in the U.S. at least–requires that the alleged predator's price be below an appropriate measure of its cost. Applying antitrust policy to attack product improvement strikes directly at the very core of dynamic efficiency and economic welfare, and the cost of occasional mistakes in this area, mistakes which, in the language of decision theory, mistakenly "convict the innocent," likely dwarf the hoped-for benefits from not "acquitting the guilty."

Heyer (2005) addresses a related argument in the context of merger policy. He notes that while cost-reducing mergers can, in theory, lower consumer welfare by driving out inefficient rivals and permitting the more efficient firm to then charge prices above pre-merger levels, blocking mergers for this reason would be a poor use of merger policy. His skepticism towards the use of merger policy to head off such possibilities applies equally in the case of single-firm conduct:

> This analysis does not suggest that projected merger-specific efficiencies should be used as a rationale for blocking mergers...There are a number of reasons why doing so might be bad public policy. For one thing, in the short run at least (prior to possible exit by less efficient incumbents), society saves resources...and consumers can be expected to benefit from lower prices. This round of competition may possibly be quite long. In addition, the length of time during which any future monopoly position might be obtained and exploited is unknown and relatively speculative. Indeed unless...a natural monopoly [results], rivals may well remain in business and provide the same competitive constraint they provided pre-merger. And, if the...efficiencies are large enough, it may be the case that the monopoly price of the...firm will be no higher than (or not much higher than) the [previous] price.

[39] Where introduction of a better product is accompanied by contractual restrictions–including tying--that may potentially extend monopoly power, our view is that when there is a proper antitrust concern it is with the contracts themselves. For a discussion of the difficulties of treating technological tying as an antitrust offense see Carlton & Waldman (2002).

> Second, rivals may themselves find ways of reducing their costs...to better compete and survive. Although rivals who may be harmed by...a more efficient competitor have an incentive to lobby the antitrust agencies...holding a price umbrella above the heads of inefficient rivals does not provide much incentive for them to develop efficiencies themselves...
>
> Finally, in a worst-case scenario, if the firm eliminates its competition, there is no competitive entry/alternative on the horizon, and consumers are being seriously and adversely impacted, government (though generally not competition authorities themselves) could, in principle, opt to regulate the firm directly–as we regulate a number of utilities. Though regulation is generally costly and undesirable, if the alternative is a clearly entrenched (though perhaps more efficient) natural monopoly, explicit regulation may be more efficient policy than...essentially requiring that there be multiple, inefficiently-sized competitors.[40]

This leads us to:

Underlying Principle # 4:

Certain core components of competition–introducing better products and lowering production costs in particular-- are in virtually all circumstances so likely to promote welfare and economic growth that they should be permitted by antitrust despite a theoretical possibility that protecting competitors from them will in rare circumstances enhance welfare. The costs of identifying and effectively remedying those rare but theoretically possible exceptions are too high to merit exposing such conduct to possible antitrust attack.

It is worth emphasizing that creating a better product or lowering costs would not, under our approach, immunize a firm from antitrust entirely. Firms would continue to be subject to the usual prohibitions against, for example, (below cost) predatory pricing or the anticompetitive use of vertical restraints. In this sense we would distinguish between conduct that is almost always welfare-enhancing and makes business sense apart from possible anticompetitive consequences, and conduct which does not.

IV. Is There a Limiting Principle for Permitting Single-Firm Conduct?

We noted earlier that an important economic justification for monopoly extraction is the increased incentive that higher profit potential provides for dynamic efficiency. Why then, one might ask, shouldn't antitrust be even more permissive than it is now–perhaps permitting all unilateral conduct that increases profits, even conduct amounting to monopoly extension? Failure to address or even recognize this tension in current antitrust points to a widely ignored gap in our knowledge.

One immediate response is that monopoly extension is objectionable because, like cartels and anticompetitive mergers, it represents an elimination of inter-firm competition, which we normally take to be a good thing. Because the creation of a cartel or anticompetitive merger has no obvious

[40] See, Heyer (2005).

positive incentive effect on R&D, there is no dynamic efficiency justification for them. Indeed, it is difficult to envision firms electing to engage in more R&D or innovation in response to a more lenient approach by competition authorities towards naked price-fixing agreements or clearly anticompetitive mergers.

But even if one accepts that the elimination of interfirm rivalry through cartels or merger is undesirable, what about monopoly extension--unilateral conduct that antitrust regularly condemns? Permitting monopoly extension will in one obvious sense eliminate competition, but it will in an indirect sense potentially enhance it. Anticipating that part of the expected return from obtaining market power would be the prospect of even greater profit--from leveraging that power into additional markets (or maintaining it longer)--firms would possibly have stronger ex ante incentives to develop desirable new products in the first place. Would permitting monopoly extension simply drive competition backwards in time as firms compete to be "the" monopolist and, conceivably make competition even more vigorous? And while the degree and effectiveness of ex post competition (and static welfare) might suffer under such a regime, what basis is there for concluding that these costs likely outweigh the potential benefits of greater incentives to innovate?[41]

We view this as an issue that should be a significant focus for future empirical research on the effects of antitrust policy. Although we are nervous about making errors by failing to intervene when we should, we are equally nervous about the error costs of intervening when we should not. U.S. antitrust law stops short of recognizing that a durable monopoly may be subjected to efficient regulation.[42] And, we know that regulation is itself imperfect. Especially, though not only, in cases where antitrust intervention can prevent monopoly extension that maintains long-run monopoly power, antitrust should continue to play a role.

There seems no particular reason for believing that the prospect of greater profits through monopoly extension would itself foster, rather than perhaps even deter, innovation. The future beneficiaries of additional profits from monopoly extension will not obviously be those who have developed the best or most innovative products. And indeed, anticompetitive behavior by firms temporarily in the lead (or "dominant") in particular markets may as well prevent and deter, rather than enhance, the chances of better products achieving success (and hence being developed and introduced in the first place).

While we are unaware of empirical studies showing that an added incentive to become a bigger and more impregnable monopolist through legalizing monopoly extension would lower welfare, we remain skeptical. Although we do not favor a change in the current system that would permit virtually all manner of unilateral conduct by firms, we remain open to further evidence.

V. Liability vs. Remedy

[41] See, Carlton & Gertner (2003) for an analysis of this issue.

[42] Antitrust authorities around the world clearly differ in their use of regulatory remedies in cases of demonstrated market power.

It is important to recognize that the efficiency argument for permitting firms to extract fully the value of their product do not readily transfer to situations in which the firm has been found guilty of illegally obtaining, or of abusing its monopoly power. Where a firm has already been found liable (presumably for conduct other than what we have argued should itself be exempt from antitrust liability), an efficient remedy may well prohibit or restrict behavior that would in other contexts be perfectly acceptable.

Acceptable, indeed efficient remedies for antitrust violations typically involve interference with, perhaps even elimination of, the firm's property rights. Just as anticompetitive mergers, for example, are frequently dealt with by requiring the merging parties to divest assets to an independent firm, so might it be appropriate for monopoly extension to be dealt with by remedies such as divestiture of IP rights, or a requirement that IP be licensed to others at a low or zero royalty.

The economic rationale for not interfering with a firm's ability to extract profit from its property–dynamic efficiency--simply does not apply in cases where either the property itself has been illegally obtained or maintained, or where it has been used to extend the firm's monopoly power.

Where the firm has violated the antitrust laws by illegally obtaining or using monopoly power, imposing costs on that firm or otherwise limiting its ability to profit maximize can serve as a valuable deterrent to firms contemplating possibly violating the antitrust laws in the future themselves. Moreover, appropriately crafted remedies can at times serve to move the price towards the more competitive market equilibrium that would have existed had the firm not violated the antitrust law to begin with.

More generally, efficiency considerations should play a critical role in the design of any remedy. Some remedies are more costly to police than are others, and some remedies can generate serious economic costs of their own. This is one reason why the use of fines can at times be more efficient than structural or conduct remedies. In any event, whatever form of punishment is chosen, its magnitude should be proportionate to the expected harm from the violation. Excessive punishment results in over-deterrence, which produces its own inefficiency.

Nevertheless, it is important to emphasize that in the course of remedying antitrust harm it will often be appropriate to apply a quite different standard than one should apply in the context of determining liability.

VI. Conclusion

We propose that antitrust distinguish between conduct that is purely extractive and conduct that might also be exploitive in the sense of extending market power. Where single firm conduct is being used for no purpose other than extracting value from what the producer itself has lawfully created, the conduct should be permitted by competition authorities. Apart from the cost savings to enforcement officials and the courts, this would make our policy towards single-firm conduct consistent with how

we treat simple monopoly pricing. And it would do so for the same basic reasons: the importance of incentives for dynamic efficiency, along with avoiding a variety of regulatory costs.

For conduct that enables a firm to extend its market power by rendering its rivals' competitive constraints less effective in the precise way defined in this paper, antitrust scrutiny is warranted. We appreciate that the distinction we are making between extraction and extension will not always be a clean one, and that implementing policy based on this distinction will not in all cases be easy. Principles do count, however, and recognizing the distinction between extension and extraction should immunize a lot of conduct now susceptible, wrongly in our view, to antitrust challenge.

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