

The Failed Resurrection of the Single Monopoly Profit Theory

*Einer Elhauge**

I. INTRODUCTORY SUMMARY

I am very grateful to CPI for generously holding a symposium on my article, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*.¹ Of course, the downside of having a bunch of academics invited to critique your article is that typically all of them will disagree, and often one will become disagreeable. The Comments in the CPI symposium are no exception to this norm. Luckily, the Comments all disagree with my article in largely different ways, so I can simply address them Comment by Comment.

Professor Paul Seabright claims that an absence of empirical proof supports the single monopoly profit theory. This claim fails because the single monopoly profit theory is an impossibility theorem. It also fails because my recommended exception applies to whatever empirical extent the necessary conditions for the single monopoly profit theory actually exist.

Seabright likewise claims that a lack of empirical proof favors critics of current tying doctrine. This claim fails because it is the critics that favor a categorical rule that requires empirical proof across the category: namely critics favor categorical legality either for all ties or for all ties that lack substantial foreclosure. In contrast, current tying doctrine uses no categorical rule, but rather weighs efficiencies against anticompetitive effects in each case and permits ties to whatever extent it turns out to be empirically true that the efficiencies outweigh the anticompetitive effects. Current tying doctrine is thus preferable to the critics' recommended alternatives whether the standard is consumer welfare or total welfare, and whether one thinks most ties flunk that standard or not.

*Einer Elhauge is the Petrie Professor of Law at Harvard Law School, author of *U.S. Antitrust Law & Economics*, co-author of *Global Antitrust Law & Economics*, and editor of the forthcoming *Research Handbook on the Economics of Antitrust Law*.

Seabright also makes the more minor claim that, absent empirical proof that most ties harm welfare, the law should shift the burden of proof on efficiencies away from defendants. But this claim fails for four reasons. First, the burden of empirical proof on legal issues is on those who want to overrule precedent. Second, the fact that defendants have better access to evidence on tying efficiencies favors giving defendants the burden to prove those efficiencies, regardless of what one assumes about the welfare effects of most ties. Third, in allocating this burden of proof, the relevant set of ties are those for which defendants would have the burden to prove efficiencies, which is not all ties, but rather is only ties of separate products with tying market power where my recommended exception does not apply. The relevant category thus excludes: (1) ties of items deemed a single product because they are routinely bundled in competitive markets, (2) ties without market power, *and* (3) ties without a substantial foreclosure share that bundle products lacking separate utility in a fixed ratio. Fourth, even without general empirical proof, theoretical considerations indicate that ties in the relevant set will usually reduce both consumer welfare (the actual antitrust standard) and ex ante total welfare.

Professors Daniel Crane and Joshua Wright claim that bundled discounts cannot credibly threaten unbundled prices that exceed but-for prices. This claim conflicts with the fact that firms demonstrably can credibly threaten the refusal to sell at any price that is necessary to get buyers to agree to tying and monopoly pricing. This claim also ignores the fact that, in markets with many buyers, buyers have collective action problems that make them price takers.

Professor Barry Nalebuff offers models on ties that achieve intra-product price discrimination by metering use of the tying product that confirm my model's conclusions on that subset of ties. To the extent our models diverge on some details, I think it is more accurate to model metering ties by assuming that buyers purchase a whole number of tied units, rather than infinitely divisible fractions of tied units (as he assumes). I also think it is more accurate to assume that buyers have varying valuations, rather than the same valuation for tied product usage over the relevant range (as some of his models assume).

My legal conclusions are also generally confirmed by the conclusions that Professor Harry First reaches with a multi-goal approach. However, I prefer a welfarist analysis because I find that the multi-goal approach and its non-welfarist components are conclusory and unpersuasive when they conflict with welfare.

II. The Seabright Attack

A. SEABRIGHT IS WRONG TO CLAIM THAT A LACK OF EMPIRICAL PROOF UNDERMINES MY ANALYSIS AND SUPPORTS THE CRITICS OF CURRENT TYING DOCTRINE

Seabright's main argument is that the single monopoly profit theory is "undead" because I have not empirically proven how often the conditions that invalidate

it apply.² This is an odd defense because the single monopoly profit theory is an *impossibility* theorem: it claims that a firm with market power cannot possibly increase monopoly profits with tying because there is only a single monopoly profit the firm can get. Given that Seabright acknowledges that many market conditions do invalidate the single monopoly profit theory,³ his argument does not resurrect this impossibility theorem, but rather adds a few more spadefuls of dirt on top of its grave.

Seabright does not dispute that I have correctly identified the market conditions that invalidate the single monopoly profit theory. While prior work has shown that the single monopoly profit theory is invalid under particular conditions, it remains undisputed that my synthesis of the literature shows that the

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single monopoly profit theory does not hold with or without a fixed ratio, with or without a strong positive demand correlation, and with or without a substantial foreclosure share.⁴ The conditions under which it does not hold thus clearly seem much broader than had previously been appreciated or than is suggested by Seabright's begrudging concession that "the Single Monopoly Profit theory is not true always and everywhere."⁵

Indeed, it remains undisputed that my analysis shows that the single monopoly profit theory holds *only* when there is a combination of a

fixed ratio, a strong positive demand correlation, *and* no substantial foreclosure share.⁶ If Seabright wishes to argue simply that there are *some* circumstances under which a tying firm can obtain only a single monopoly profit, then he agrees with me, but this argument does not resurrect the original single monopoly profit theory—at best it gives birth to a new baby single monopoly profit theory. Nor can this baby single monopoly profit theory justify the sweeping rule of *per se* legality for all tying that the Chicago School had advocated based on the original theory. Instead, the baby theory justifies only what I advocated in my article: a limited rule of *per se* legality applicable only to ties satisfying three conditions: (1) a fixed ratio, (2) a strong positive demand correlation (inferred from a lack of separate utility), *and* (3) no substantial foreclosure share.⁷

In short, Seabright offers no grounds to think that I have not correctly specified the conditions under which the single monopoly profit theory holds, nor any reason to think that the theory's rule of *per se* legality should extend beyond the set of cases where those conditions obtain. Nor is he right that my policy arguments depend on any empirical assumptions about how often those market conditions hold. To whatever empirical extent those conditions happen to hold, my proposed exception would apply a rule of *per se* legality.⁸ If those conditions usually hold, then my approach would usually apply a rule of *per se* legality. But if

those conditions usually don't hold, then my approach would usually not apply a rule of *per se* legality. My approach thus requires no empirical assumptions about the frequency with which those market conditions hold; it rather makes the legal results depend on empirical assessments of whether the conditions are present in actual cases.

In contrast, a rule of *per se* legality would require strong empirical evidence because it makes a categorical judgment that the single monopoly profit theory holds for all tying cases, even though Seabright himself admits that it actually does not hold in some tying cases.⁹ Such a categorical judgment would make sense only if one empirically believed *both* (1) that the conditions necessary for the single monopoly profit theory would apply in the vast bulk of cases covered by a tying doctrine with my exception *and* (2) that courts are incapable of distinguishing cases where those conditions do not apply from those where they do. Seabright offers no empirical evidence for the first conclusion, which seems implausible not only because of the limited conditions under which the theory is valid, but also because my exception would exclude ties that meet those conditions. Nor does Seabright offer any empirical evidence for the second conclusion, which again seems implausible because it does not seem especially difficult to determine when there are fixed ratios, separate utility, and a substantial foreclosure share.

In addition to mistakenly defending the single monopoly profit theory, Seabright criticizes my defense of the current *quasi-per se* rule because I have not provided empirical proof that ties usually harm welfare.¹⁰ But he is wrong that my defense of current tying doctrine depends on any such empirical premise. As I pointed out, calling current doctrine a *quasi-per se* rule is actually a misnomer.¹¹ Instead, current tying doctrine applies a particular form of rule of reason analysis that requires tying market power and then considers on a case-by-case basis whether any harmful effects are outweighed by offsetting efficiencies.¹² My defense of current tying doctrine thus does not depend on any empirical premise that welfare is usually worsened by the set of all ties with tying market power, but instead depends only on the claim that welfare is generally harmed by the *subset* of such ties that *lack offsetting output-increasing efficiencies*.

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In his text, Seabright asserts that my claim is “both unjustified as science and impractical as policy.”¹³ But the only support he provides for his condemnation simply ignores the fact that my claim was explicitly limited to ties without offsetting output-increasing efficiencies: he argues that when one considers the set of all price discrimination ties, they could conceivably increase or decrease wel-

fare.¹⁴ Buried in his endnotes, he admits that I am “correct” to claim that “the economic literature proves that price discrimination *always* decreases total welfare *unless it affirmatively increases output*.”¹⁵ It is hard to see how Seabright can say that the economic literature on price discrimination shows I am unjustified in claiming a proposition is “generally” true, when he acknowledges in the footnotes that this literature actually proves my proposition is “always” true.

Seabright nonetheless dismisses this economic literature on the ground that my above-quoted description of it was “phrased in such a way as to imply that increasing output is an unusual thing for price discrimination to do.”¹⁶ But there is nothing in my phrasing that implied any such thing, nor does justifying the current doctrine require such an empirical premise. If it empirically turns out to be true that defendants can usually prove an offsetting output-increasing efficiency, then current tying doctrine would usually not impose liability.¹⁷ But to

IN CONTRAST, THE QUASI-CHICAGO POSITION THAT TYING SHOULD NEVER BE ILLEGAL WITHOUT PROOF OF A SUBSTANTIAL FORECLOSURE SHARE DOES DEPEND ON A STRONG EMPIRICAL PREMISE BECAUSE IT MAKES A CATEGORICAL JUDGMENT THAT ALL TIES WITHOUT A SUBSTANTIAL FORECLOSURE SHARE SHOULD BE *PER SE* LEGAL.

the extent it is empirically the case that offsetting output-increasing efficiencies cannot be shown, then current tying doctrine would correctly impose liability. Once again, my position does not depend on any empirical premise; it rather makes the legal results turn on empirical assessments in each tying case of whether welfare-increasing effects actually exist.

In contrast, the quasi-Chicago position that tying should never be illegal without proof of a substantial foreclosure share *does* depend on a strong empirical premise because it makes a categorical judgment that all ties without a substantial foreclosure share should be *per se* legal.¹⁸

Although often described as the rule of reason position, this quasi-Chicago position really amounts to a rule of *quasi-per se* **legality** that mandates non-liability for all ties without a substantial foreclosure share. Seabright provides no explanation for why the law should *categorically* deem all ties without substantial foreclosure to be welfare-enhancing when he himself concedes that such ties can decrease welfare when tying market power exists.¹⁹ Justifying this *quasi-per se* legality position would require strong empirical evidence both (1) that ties with market power and no substantial foreclosure share almost always enhance welfare *and* (2) that courts cannot distinguish when such ties do or do not enhance welfare. Seabright provides no empirical evidence on either point. In contrast, the current tying doctrine that I defend requires no strong empirical premise because it empirically assesses whether welfare-increasing effects actually exist in challenged cases.

In short, the Chicago School position requires empirical evidence about all ties to justify its *per se* legality rule of categorical non-liability for all ties, and the quasi-Chicago School position requires empirical evidence about the set of all

ties without a substantial foreclosure share to justify its *quasi-per se* legality rule of categorical non-liability for all ties without a substantial foreclosure share. So critics of current tying doctrine certainly need powerful empirical evidence, which Seabright admits is lacking,²⁰ to justify their demands for radical changes to current tying doctrine. But defenders of current tying doctrine need no such empirical evidence because current tying doctrine, unlike its critics, makes no categorical judgment of liability or non-liability for ties with market power. Instead, current doctrine just requires case-by-case empirical assessment of the possibility that ties can harm welfare when there is tying market power. Given that Seabright himself admits that possibility is real even without a substantial foreclosure share, it is hard to fathom his objection to allowing courts to consider that possibility.

Moreover, to the extent the critics' proposals for radical change to current tying doctrine did turn on an assessment of the empirical evidence, it would be strange to say those proposals should be adopted even though (as Seabright admits), there is no empirical evidence to support them. Absent empirical evidence, standard law on *stare decisis* requires sticking with existing precedent. The burden of proof is on the critics who advocate changing existing law, not on those who favor adhering to long-established precedent. The critics' burden cannot be met by simply assuming they are empirically right until someone provides empirical evidence to the contrary.

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Given all this, what could possibly be Seabright's basis for asserting that my position hinges on an empirical claim? Other than simply ignoring the fact that my claim was limited to ties without offsetting output-increasing efficiencies, Seabright relies on two moves.

First, Seabright asserts that I claim "the support of the economic literature for the conclusion that 'imperfect price discrimination likely decreases consumer welfare,'" which he calls "a travesty of what the literature says."²¹ Now, while academics sometimes get disagreeable, it is not every day that an academic gets quite so disagreeable that he accuses another academic of committing a "travesty." Even when feeling impolite, no reasonable academic would do so unless he is absolutely sure his position is unassailable. But when one examines the full language of what I said in the passage that Seabright selectively quotes, it turns out that it did not even make the empirical claim that Seabright asserts it made. Instead, it stated that: "*The critics' analogy to perfect discrimination* means that imperfect price discrimination likely decreases consumer welfare."²² My point was that critics of current tying doctrine were using an analogy to make a claim that, because perfect price discrimination increased total welfare, imperfect price discrimination was likely to increase total welfare as well, and that if one applied

that same analogy evenhandedly, it meant that, because perfect price discrimination reduces consumer welfare, imperfect price discrimination is likely to reduce consumer welfare as well.²³ Which part of my actual proposition does Seabright find objectionable? Does he claim that perfect price discrimination doesn't reduce consumer welfare? If so, he claims a position that no competent economist holds. Or does he claim that analogies should not be applied evenhandedly? If so, he has a very self-serving view about analogical reasoning, for which he

provides no support. The only travesty here is that, because of his regrettable misquotation, Seabright provides no response to what I actually said.

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None of which means that it would be a travesty to claim that economic theory indicates that tying-induced price discrimination is more likely to reduce consumer welfare than increase it. I shall offer reasons below to think that it does, and Seabright offers nothing to the contrary other than bald assertion. But that isn't

the claim I was making, nor is it a claim that is required to defend current tying doctrine. The crucial analytical point, which Seabright appears to have missed, is that it is only the critics who have to make a categorical welfare claim because they are the only ones arguing for a categorical rule. What my analysis showed was that the analogy the critics relied on for their categorical welfare claim undermines their position because that analogy indicates that price discrimination ties are categorically likely to reduce consumer welfare, and antitrust law embraces a consumer welfare standard, rather than the *ex post* total welfare standard used by the critics.²⁴ This demonstration that the critics' own analogy undermines their position does not mean that current tying doctrine requires relying on this same analogy or on a contrary categorical welfare claim; it doesn't because current doctrine makes no categorical liability claim. In other words, a conclusion that the analogy is persuasive favors current tying doctrine (because the correct standard is consumer welfare), and a conclusion that the analogy is unpersuasive also favors current tying doctrine (because critics rely on it to make a categorical welfare claim that is necessary to their position, whereas current doctrine requires no such categorical claim).

Second, Seabright argues that my position must rest on an empirical claim that ties generally harm welfare because current tying doctrine (which I defend) gives defendants the burden of proving an offsetting output-increasing efficiency.²⁵ But Seabright cites no support for his premise that, absent empirical evidence on whether a proposition is usually true, the burden of proof must favor the defendant. There are many reasons to allocate a burden of proof other than using the pro-defendant bias that Seabright favors. One simple reason is adhering to precedent, which in tying cases has long put the burden of proving efficiencies on a

defendant with tying market power. His claim that we lack empirical evidence in either direction hardly provides a compelling reason to deviate from *stare decisis*. Another reason favors putting the burden of proof on the party that has the best access to evidence on the relevant issue, because that is more likely to lead to accurate resolutions. Even if the ties covered by current doctrine generally have efficiencies, defendants clearly have better access to evidence about the efficiencies of their own ties than others can have. Finally, even if we didn't have those two compelling reasons, one might reasonably conclude that, absent empirical evidence on the issue, one should allocate the burden of proof based on theoretical considerations about which welfare effect is more likely across the set of cases covered by current tying doctrine.

B. ALLOCATING THE BURDEN OF PROOF BASED ON LIKELY WELFARE EFFECTS UNDER THE CURRENT CONSUMER WELFARE STANDARD

Suppose, just for argument's sake, that we put aside the first two grounds for allocating the burden of proof, and decide to allocate it instead based on theoretical considerations about whether consumer welfare was likely to increase or decrease for the set of ties covered by current tying doctrine. I begin with consumer welfare because it is the governing legal standard, but in the following sections I consider (and reject) Seabright's argument that antitrust and competition law should change to an *ex post* total welfare standard and show that in any event such a change in legal standard would require little change to the analysis of tying doctrine.

FIRST, THERE IS A POWER EFFECT THAT SEABRIGHT STUDIOUSLY IGNORES: TYING CAN CREATE INTER-PRODUCT PRICE DISCRIMINATION ACROSS THE BUNDLED PRODUCTS.

Because tying doctrine does not even apply unless the defendant ties separate products together, the relevant set of cases obviously would exclude any bundles that constitute a single product. When two bundled items are a single product, we have no tie that triggers tying doctrine at all, but rather have only the sale of a single product. Nonetheless, with no basis whatsoever, Seabright asserts that I would apply tying doctrine to the sale of bundled items that are plainly a single product under current law, such as guitars with strings, cameras with memory cards, and airplanes with toilets.²⁶ I have written over 100 pages elaborating single product tests and explaining their importance in screening out bundles whose efficiency can be inferred from market tests.²⁷ Nowhere in my tying article is there any suggestion that, having so carefully elaborated these single product tests, I now favor abandoning the separate products element that must be satisfied to show a tie at all. Perhaps Seabright is simply unaware of the well-known separate products element of tying doctrine, but whatever the explanation, he is simply mistaken in asserting that I would require defendants to show efficiencies for the sale of many single products just because he can imagine describing them as bundles of two items.

The relevant set of cases thus clearly includes only ties of separate products. Further, given the doctrine I am defending, it also includes only ties with tying market power and where the exception for products in a fixed ratio that lack separate utility does not apply. In such cases, there are, as I showed in my article, three relevant power effects.

1. Inter-Product Price Discrimination

First, there is a power effect that Seabright studiously ignores: tying can create inter-product price discrimination across the bundled products.²⁸ One can see why Seabright prefers to ignore this power effect. As I pointed out, the economic literature proves that “assuming a normal distribution of buyer valuations, [such] tying *always* decreases consumer welfare absent perfect positive demand correlation.”²⁹ But this proven result cannot properly be ignored if one wishes to accurately assess the likely effects of tying with market power. A normal bell-shaped distribution is a common assumption in economic analysis, and it seems quite reasonable to assume that usually there are more buyers with moderate valuations of a product than with extreme valuations. A perfect positive demand correlation also seems unlikely, especially in cases where the products have separate utility, which is the relevant set for my analysis given that this power effect assumes fixed ratio bundling and my exception would apply if the products also lacked separate utility. Absent empirical evidence to the contrary, it thus seems

entirely reasonable to think that ties with this power effect usually reduce consumer welfare.

SECOND, THERE IS A POWER EFFECT
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2. Extracting Individual Consumer Surplus

Second, there is a power effect that Seabright admits reduces consumer welfare and can leverage one monopoly profit into two monopoly profits: tying can extract individual consumer surplus.³⁰ This effect Seabright dismisses with

the combination of a theoretical claim, an empirical claim, and a conceptual claim, each of which is necessary to his argument, and each of which is unsupported and demonstrably false. His theoretical claim is that this power effect necessitates a requirements tie, which is a tie that obligates the buyer to make all its purchases of the tied product from the defendant.³¹ For this theoretical claim, he relies on my description of one illustration I gave, which did assume such a requirements tie, but he neglects to acknowledge that on the very next page I explicitly stated that: “extracting individual consumer surplus does not necessitate a requirements tie that forbids buying the tied product from rivals. . . . A firm could achieve the same effect by requiring buyers to buy some fixed quantity of the tied product at a supracompetitive price (say 200 scanners at \$400) if they want to make purchases of the tying product at the monopoly price.”³² Other

economic literature agrees with me that extracting individual consumer surplus does not necessitate a requirements tie.³³

Even if Seabright were right on his theoretical claim, his admission that requirements tying can have this adverse welfare effect means that he needs to couple his theoretical claim with an empirical claim, and it is a doozy. Seabright asserts that requirements tying is something “the world has rarely seen outside of gangster life.”³⁴ Now that is quite an empirical assertion, and remarkably he provides zero empirical support for it, despite having spent his entire paper repeatedly chastising me for my alleged lack of empirical support. It is also an assertion that reflects a charming naïveté about the actual world of law and business. He bases his assertion on a claim that no requirements tie “could possibly be enforced without illegal coercion” unless “the monopoly good is technologically complementary to the competitively supplied good in such a way as to make useless (or more generally to lower the value of) any version of the latter supplied by a competitor.”³⁵ But single-product exclusive dealing and requirements contracts are in fact commonplace, and by definition their enforcement cannot depend on rivals’ technological incompatibility with a tying product. Indeed, requirements and exclusive dealing contracts are so common that they get their own sections under both contracts and antitrust statutes.³⁶ Nor is it at all uncommon to attach such exclusive conditions to a tying agreement. At least seven Supreme Court cases have involved requirements ties, and in none of those cases was it true that the rival tied product was technologically incompatible with the defendant’s tying product.³⁷ Indeed, the description of the requirements clauses in three of these cases indicates that the ties were not even limited to tied products that were used with the defendant’s tying product.³⁸

SEABRIGHT ASSERTS THAT REQUIREMENTS TYING IS SOMETHING “THE WORLD HAS RARELY SEEN OUTSIDE OF GANGSTER LIFE.” NOW THAT IS QUITE AN EMPIRICAL ASSERTION, AND REMARKABLY HE PROVIDES ZERO EMPIRICAL SUPPORT FOR IT.

Although these seven Supreme Court cases involved requirements ties of the sort that Seabright claims are rare for non-gangsters to impose, they did involve tied products that were needed to get value out of the tying product, so were likely metering ties, rather than ties that extract individual consumer surplus. However, bundled loyalty discounts frequently involve products with no strong positive demand correlation, for which extracting individual consumer surplus is possible. For example, in *LePage’s*, the defendant used bundled loyalty rebates “conditioned on purchases spanning six of 3M’s diverse product lines” and that also covered both brand name and private-label tape which, if anything, have negatively related demand.³⁹ Likewise, in *Masimo*, the Ninth Circuit found that: “Tyco’s bundling contracts gave customers a price discount for purchasing a number of *unrelated* products together, one being pulse oximetry. However, receipt of the discount was conditioned upon customers purchasing 90-95% of *their requirements of those products* from Tyco.”⁴⁰ Indeed, bun-

dled loyalty rebates spanning unrelated products are rampant in U.S. health-care.⁴¹ I am sure the firms that use them would be surprised to learn that Seabright equates all of them with gangsters.

Nor is there any great mystery why buyers comply with exclusivity obligations even when gangsters are not around to enforce them. Sellers can require contractual promises (which most businesses honor voluntarily)⁴² or buyer self-reporting (even fewer business are willing to lie and commit fraud) or rely on simple observation,⁴³ followed by threats to enforce the contract, withhold bundled rebates, or cut off supply of the tying product when buyers are noncompliant. Seabright asserts this would amount to “illegal coercion” that is “unenforceable . . . in law,” but cites no law to support his legal conclusion.⁴⁴ The irony, of course, is that such exclusive tying conditions would be illegal only if tying doctrine continues to make them illegal, which is precisely the doctrine that Seabright criticizes.

Seabright’s conceptual claim is that, if the conditions for this power effect are rare, the law should ignore it rather than focusing the doctrine on cases when those conditions hold. He provides no basis for this claim. Even if Seabright were right in his empirical assertion that ties usually involve fixed ratios,⁴⁵ the more logical response would be (as I advocate) precluding litigation of this power effect when the tie actually involves a fixed ratio, but allowing it to be litigated when the right to buy the tying product is tied to an obligation to buy a tied product without a fixed ratio.⁴⁶ This does not mean that all fixed ratio ties should be *per se* legal because the power effect that Seabright studiously ignores—inter-product price discrimination—remains possible with a fixed ratio.⁴⁷ However, a

fixed ratio does preclude the other two power effects, and thus should preclude the *quasi-per se* rule entirely if coupled with evidence of a lack of separate utility that indicates the sort of strong positive demand correlation that makes inter-product price discrimination impossible as well.⁴⁸ Because such cases fit within my exception, they are not within the relevant set of cases whose likely welfare effects are at issue.

In short, there is no basis for Seabright’s theoretical claim that extracting consumer surplus necessitates requirements ties, no basis for his empirical claim that such requirements ties are rare for non-gangsters, and no basis for his conceptual claim that, if the conditions are rare, litigation should be prohibited rather than focus-

ing the doctrine on cases when the conditions are met. His concession that this power effect harms consumer welfare thus helps support a conclusion that theoretical considerations indicate consumer welfare is likely to be harmed in the rel-

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evant set of cases, which are ties with market power that lie outside the exception for products in a fixed ratio that lack separate utility.

3. Intra-Product Price Discrimination

Third, there is the one power effect that Seabright does address on the merits: the fact that metering ties can enable intra-product price discrimination. It is true that, other than proving that imperfect price discrimination cannot increase welfare unless it produces output-increasing efficiencies that offset its misallocation inefficiency, the economic literature before my article tended to simply say that imperfect price discrimination might or might not do so, and then pronounce the issue ambiguous. But this is rather unhelpful if one needs to know the general tendency across a range of cases, as tying critics need to know to support categorical non-liability, and as Seabright asserts we need to know in order to allocate the burden of proof under current tying doctrine. After all, tomorrow you may live or die, so I suppose we could say the issue is “ambiguous,” but that doesn’t mean you should assume the two are equally likely when planning your calendar.

To fill this gap in the literature, I offered my own model of the welfare effects of metering ties that create imperfect intra-product price discrimination, and mathematically proved that metering ties reduce consumer welfare significantly in that linear model, with the reduction converging for large numbers of tied items on a 18.85% loss of the consumer welfare that would be enjoyed without price discrimination.⁴⁹ Using a linear model that assumes the number of tied products is continuous rather than discrete, Professor Nalebuff’s Comment on my article reaches the similar conclusion that metering ties reduce consumer welfare by 18.75%.⁵⁰ Seabright complains that we cannot be sure my results will be the same without linear demand.⁵¹ That is true, but my article used my linear model only to help rebut the assertion by critics that the welfare effects were likely to be categorically positive, not to make any claim of categorical liability.⁵² Further, linear models are commonly used in antitrust economics and, indeed, were commonly used by the Chicago school to develop many of their propositions. Absent other models that can tell us the likely effects, linear models appear to be the best we have.

Moreover, there remains the fact that perfect discrimination clearly does lower consumer welfare, no matter what one assumes about the shape of the demand curve. To be sure, reasoning by analogy is less satisfactory than having a formal model for every possible demand curve. But no matter what the demand curve is, we know that the overall move from uniform pricing to perfect discrimination

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lowers consumer welfare. We also know that the entire point of metering ties is to increase the perfection of price discrimination. While some movements that increase the perfection of price discrimination might not reduce consumer welfare, the sum of all movements that increase the perfection of price discrimination must, in aggregate, reduce consumer welfare, just like we know the driver whose final destination is east must go east more often than west, even though some of the movements in his trip might not. It thus seems likely that metering ties that increase the perfection of price discrimination on average reduce consumer welfare. Given that this analogy points in the same direction as the linear demand model, theoretical considerations certainly provide more reason to think that metering ties reduce consumer welfare than increase it. This conclusion gets even stronger if we include the costs of implementing and monitoring a tying scheme, which I omitted from my analysis to be conservative but which others have stressed.⁵³

4. Summary

In short, of the three power effects produced by ties with market power that don't fit into my exception, theoretical considerations indicate that two of those power effects almost surely reduce consumer welfare and the third likely does so as well. This more than suffices to conclude that theoretical considerations favor putting the burden of proof on the defendant. Moreover, even if theoretical considerations were too ambiguous, as Seabright insists, the burden should still be put on defendants because they have the best access to information about the efficiency and output effects of their ties. Finally, even if both those factors were

ambiguous, we would have no more grounds to put the burden on the plaintiff than on the defendant, so it would make more sense to allocate the burden by sticking to *stare decisis*.

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IMPLICATION IS INCORRECT.

C. SEABRIGHT'S MISTAKEN ARGUMENTS AGAINST THE CURRENT CONSUMER WELFARE STANDARD

I argue that antitrust law correctly embraces a consumer welfare (i.e., consumer surplus) standard rather than a total welfare (i.e., total sur-

plus) standard. Seabright raises various arguments against my use of a consumer welfare standard. None are valid. First, he argues that: "Professor Elhauge claims that producer surplus should essentially be given zero weight in social welfare, even though most of the arguments he gives for this conclusion (such as the higher average income of shareholders when compared to consumers) imply that they should be given a lower weight but still one greater than zero."⁵⁴ However, his characterization of my arguments is false. Of the five arguments I put forth for the consumer welfare standard, only one of them even arguably implies that

producer surplus should be given a lower weight, and even for this one the implication is incorrect.

The only one of my arguments that even arguably has this implication is the one that Seabright mentions: the argument that, given average incomes, a consumer welfare standard has beneficial distributive effects compared to a total welfare standard. But, in fact, even this argument does not imply that courts should give producer surplus some weight between zero and 1, nor that one should (as Seabright suggests in a footnote) vary the weight depending on the income of particular consumers and producers.⁵⁵ Varying the weight of producer surplus is judicially inadministrable. Doing so depending on the wealth of particular consumers and producers is even worse because the economic literature proves that liability rules that vary with litigant income are less efficient at redistribution than income taxation. The reason is that while income taxes inefficiently discourage income creation, liability rules that vary with each litigant's income discourage not only income creation, but also some efficient conduct regulated by the rule.⁵⁶ Thus, even if (contrary to fact) the distributive point were the only argument, it would not imply that the law should change to adopt Seabright's weighing approach. Instead, antitrust law should continue furthering distributive goals with a general rule that uses a consumer welfare standard, assuming one agrees, as Seabright admits is "probably correct," that consumers generally have lower income than shareholders.⁵⁷ A consumer welfare standard is not only far more administrable than Seabright's weighing approach, but also does not penalize income creation because it does not vary the liability rule with each litigant's income, whereas his weighing approach would. In any event, the point is moot because the other four arguments for a consumer-welfare standard obviate any need to weigh producer surplus at all.

Seabright simply ignores three of the other four arguments for a consumer welfare standard. (1) He does not dispute the point that antitrust law in fact requires a consumer welfare standard, which is true both in the United States and the EU.⁵⁸ This point makes his arguments legally irrelevant to the issue of how courts should interpret tying doctrine. (2) Seabright also does not dispute my point that any conduct that truly enhances total welfare can generally be restructured to shift enough of the gain to consumers to advance consumer welfare while still profiting the producer.⁵⁹ This point means that a consumer welfare test does not in fact require avoiding conduct that increases total welfare, but instead helps verify that the relevant conduct really does produce a net gain to total welfare by forcing producers to

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put their money where their mouth is regarding the claimed size of efficiency gains.⁶⁰ (3) While Seabright suggests that adjudicators should simply give different weights to consumer and producer welfare, he does not dispute my point that, in a world of concurrent antitrust jurisdiction, only a pure consumer welfare standard gives optimal enforcement incentives to the decisive regulator.⁶¹ This point seems confirmed by the fact that the only court I know of to try a weighing approach approved a merger that it acknowledged would increase prices by 11% because most of the merging firms' product was exported to foreign consumers, whose interests the court gave zero weight.⁶²

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Seabright addresses my fifth argument for a consumer-welfare standard, but misunderstands it. What I pointed out was that those who argued that tying's power effects usually increased total welfare were really only pointing out situations where they would increase *ex post* total welfare, which is *not* at all the same as overall total welfare.⁶³ The reason is that some or all of the additional monopoly profits created by the power effects would be dissipated by

ex ante costs.⁶⁴ The cases of interest are those where the difference in standards leads to different results, namely those where tying's power effects reduce consumer welfare but increase *ex post* total welfare, which means cases where the *ex post* monopoly profit increase outweighs the consumer welfare harm. If some or all of that *ex post* monopoly profit increase is dissipated by *ex ante* costs, then the overall monopoly profit increase may well be smaller than the consumer welfare harm, in which case the tying power effect lowers total welfare even though it increases *ex post* total welfare.

For example, let's take the power effect that provides the best case for critics (and thus, not surprisingly, the one that many critics prefer to discuss to the exclusion of others): metering ties that create intra-product price discrimination. Suppose a market with linear demand in which, at a uniform monopoly price, consumer surplus is \$100 million, monopoly profits are \$200 million, and thus total welfare is \$300 million. The models by myself and Nalebuff indicate that, at least for high numbers of tied items, allowing metering ties that create intra-product price discrimination would reduce consumer welfare by 19% and increase total welfare by 5%.⁶⁵ This means that allowing metering ties would reduce consumer surplus by \$19 million, increase *ex post* total welfare by \$15 million, and thus increase *ex post* monopoly profits by \$34 million. If more than \$15 million (or 44%) of those additional *ex post* monopoly profits would be dissipated by the *ex ante* costs of *all* firms' efforts to acquire that monopoly position, then a rule allowing such metering ties would result in an overall producer profit increase of less than \$19 million, which is smaller than the consumer harm, and

thus would reduce total welfare even though it would increase *ex post* total welfare. The degree of dissipation required is even smaller if we consider metering ties with fewer tied items (because the ratio of consumer welfare loss to *ex post* total welfare gain is usually larger for them⁶⁶) or ties with the other two power effects (because their *ex post* total welfare effects are more ambiguous compared to their consumer welfare harm).⁶⁷

Seabright offers various responses to this argument, none of which are valid. First, he argues that this argument amounts to a claim that producer surplus “should be given a lower weight” than consumer surplus.⁶⁸ But that is not what this argument shows. Instead, this argument shows that some or all of the nominal producer surplus increase is a mirage caused by failing to consider *ex ante* producer costs. This point is no different than saying that consumer surplus measurements should subtract the costs that consumers paid for the products. The point is about accurately measuring overall producer surplus, not about weighing it differently than consumer surplus.

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Second, Seabright complains that I lack “any empirical backing” for my claim that the additional monopoly profits produced by tying will be dissipated by *ex ante* costs.⁶⁹ But it is hard to see what he is complaining about because he admits: “That there is some such dissipation is not seriously disputed by economists.”⁷⁰ His implication appears to be that I asserted that monopoly profits would always be *completely* dissipated. But that is not what my article says. To the contrary, I explicitly stated: “There are thus two possible cases. In cases where Judge Posner is right that 100% of monopoly profits are dissipated, then any *ex post* increase in monopoly profits effectively washes out *ex ante*, which means that the consumer welfare effects actually determine the overall total welfare effects.... In cases where Fisher is right, then some share less than 100% of monopoly profits are dissipated, which still means that tying that increases *ex post* total welfare will often decrease overall total welfare. It will do so whenever the consumer welfare harm exceeds the non-dissipated share of the monopoly profit gain.”⁷¹ Because Seabright never confronts my actual argument, he never explains what, if anything, he deems wrong about this analysis. Instead, he oddly complains that I don’t provide empirical proof for a proposition he admits is not seriously disputed.

Third, Seabright claims that my analysis is somehow rebutted by the fact that “there are also beneficial effects on innovation of competition to obtain market power, as is recognized in the patent system.”⁷² But this fact is perfectly consistent with my analysis. Indeed, I affirmatively base my analysis on it. What I pointed out, and Seabright ignores, is that the patent system has already considered this beneficial effect and set patent lengths on the assumption that: “Patent holders are entitled to the normal monopoly profits they make by selling their

patented goods, but are not currently entitled to extract more than those profits through tying.”⁷³ Changing current tying doctrine to allow firms to use tying to get more than normal monopoly profits thus gives them more than what patent law determined was the optimal reward for their innovation.

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Relatedly, Seabright suggests that my analysis is somehow in tension with the fact that “several scholars have found ‘U-shaped’ results, with some degree of market power being more beneficial to innovation and growth than either complete monopoly or a high degree of competition.”⁷⁴ The literature that he cites is actually about an entirely different issue—the extent to which *existing* market power fosters more or less

ex post innovation—whereas the relevant issue at hand is about whether the *future prospect* of gaining more than normal monopoly profits from successful innovations is necessary to induce optimal *ex ante* investments in innovation.⁷⁵ Moreover, on the relevant issue, my analysis affirmatively *relied* on an inverted U-shaped result proven by other economic literature that models competition to obtain patents.⁷⁶ As I stated, this literature proves that there is a socially optimal fraction of the total surplus created by an innovation that the firm winning a patent should get in order to induce socially optimal investment in innovation. If the patent holder captures all of this total surplus with perfect price discrimination, then that would lead to socially excessive investments. Thus, as I said, “What keeps that fraction from being exceeded is precisely the fact that part of the total surplus is instead enjoyed by consumers, as the consumer surplus they earn at a uniform monopoly price.”⁷⁷ On the other hand, if the patent holder received no fraction of this total surplus because no patent was recognized, then there would be socially insufficient incentives to invest.

Whether patent holders get the socially optimal fraction of overall total surplus will turn both on the patent length and the share of total surplus they get during the patent term. Currently, patent law attempts to achieve this optimal fraction by setting the length of patents on the assumption that, during the patent term, the share of total surplus received by patent holders will reflect normal monopoly profits, but will not reflect any additional profits that could be earned by using tying to extract the consumer surplus that buyers would earn at normal monopoly prices.⁷⁸ Thus, the efforts by patent law to award the optimal fraction would be undermined if tying law were changed to allow patent holders to extract more than their normal monopoly profits during the patent term.⁷⁹ This does not mean that anything that decreases the fraction earned by patent holders is desirable. To the contrary, I have equally objected to other proposals to deprive patent holders of some of those normal monopoly profits because such proposals would reduce their share of total surplus during the patent term below

the share that patent law assumed when setting the patent length.⁸⁰ If we assume patent law has set patent lengths to achieve the optimal fraction, then changes that try to increase or decrease that fraction will necessarily move us away from the social optimum; i.e., away from the apex of the inverted U-curve. If patent law has not been set to achieve the optimal fraction, then the correct solution is to reform patent law systematically, rather than change antitrust or other laws to allow certain *ad hoc* deviations from the normal monopoly profits that patent holders are entitled to get during the patent term.⁸¹

In short, even if we care only about total welfare, we have no basis to favor changing tying doctrine to allow ties that increase *ex post* total welfare by giving firms more than their normal monopoly profits at the expense of consumer welfare. If we assume patent law has already set the socially optimal patent terms, then allowing such ties will give patent holders more than the socially optimal fraction of total surplus, and thus will affirmatively reduce total welfare. In addition, if Judge Posner is right that 100% of any additional monopoly profits would be dissipated by *ex ante* costs, then allowing any tie that harms consumer welfare will, once again, reduce total welfare even if it creates enough additional monopoly profits to increase *ex post* total welfare. Finally, in cases where Professor Fisher is right that less than 100% of additional monopoly profits will be dissipated, then ties that increase *ex post* total welfare but reduce consumer welfare will still reduce total welfare unless the former effect sufficiently outweighs the latter, which is unlikely because the consumer welfare harm is generally stronger and less ambiguous than any *ex post* total welfare gain. Overall, then, when judging ties that allow firms to reap more than normal monopoly profits from their market power (i.e., ties that have one of the three power effects I identified), using a consumer welfare standard is more likely to further total welfare than using an *ex post* total welfare standard would.

IN SHORT, EVEN IF WE CARE ONLY ABOUT TOTAL WELFARE, WE HAVE NO BASIS TO FAVOR CHANGING TYING DOCTRINE TO ALLOW TIES THAT INCREASE EX POST TOTAL WELFARE BY GIVING FIRMS MORE THAN THEIR NORMAL MONOPOLY PROFITS AT THE EXPENSE OF CONSUMER WELFARE.

D. CHANGING TO AN EX POST TOTAL WELFARE STANDARD WOULD HAVE LITTLE IMPACT ON PROPER TYING DOCTRINE

Even if one believed (despite all the above) that we should change antitrust law to adopt an *ex post* total welfare standard, it is striking what little difference that would make to proper tying doctrine. Because even critics like Seabright admit that ties with power effects can reduce *ex post* total welfare, there would still be no sound basis for any categorical rule of non-liability for either all ties (the Chicago view) or all ties without a substantial foreclosure share (the quasi-Chicago view). Instead, it would remain the case that court should stick with current tying doctrine, which balances power effects against efficiencies under

the misnamed *quasi-per se* rule. The only clear difference would be that the defendant could win by proving that the tradeoff resulted in a net improvement to *ex post* total welfare, rather than (as under current law) having to prove that the tradeoff resulted in a net improvement in consumer welfare. I already pointed this out in my initial article.⁸² The only other arguable difference would be

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that, under an *ex post* total welfare standard, the argument for changing the current burden of proof on efficiencies would be not be quite as weak as it is now under the consumer welfare standard used by current antitrust law.

Although changing antitrust law to adopt an *ex post* total welfare standard would make the argument for changing the current burden of proof somewhat less weak, this does not mean it

would make that argument strong. Consider the three power effects that ties can have. Ties that extract individual consumer surplus would reduce *ex post* total welfare in the typical tying case where spending or valuation is significantly higher for the tying product than the tied product.⁸³ Ties that achieve inter-product price discrimination across both products increase *ex post* total welfare only if demand strength relative to cost is high, and otherwise decrease *ex post* total welfare.⁸⁴ Ties that achieve intra-product price discrimination on the tying product generally increase *ex post* total welfare unless the number of tied items is small or the buyers are intermediaries.⁸⁵ The last power effect is the only one favorable to critics, which is why it is the one they like to focus on, but even this effect is smaller and somewhat more mixed than the decrease in consumer welfare, and does not apply when the buyers are intermediaries, which is actually typical in most tying cases.⁸⁶ Considering the three power effects as a group, we have no reason to think that ties with market power are more likely to increase *ex post* total welfare than decrease it, and thus these predicted effects provide no reason to allocate the burden to plaintiffs even under a pure *ex post* total welfare standard. The reasons are even weaker if the *ex post* total welfare standard is advocated based only on the mistaken belief that it provides a closer proxy to overall total welfare than a consumer welfare standard. Given that the predicted consumer welfare decrease is stronger and more uniform and that, in at least some cases, an *ex post* total welfare increase will mean a decrease in overall total welfare given monopoly profit dissipation, the predicted total welfare effects if anything suggest the burden should be put on defendants.

Even if we ignore *ex ante* effects, the ambiguous *ex post* total welfare effects provide no reason to reallocate the burden of proof to plaintiffs for all ties with market power. Thus, even under a pure *ex post* total welfare standard, the proper burden allocation would turn on factors other than predicted effects. Those other two factors—*stare decisis* and allocating the burden to the party with the best access to the relevant evidence—support putting the burden of proof on the

defendant to show that the output-increasing efficiencies do offset the anticompetitive effects.

The most one can say is this: *If* antitrust law chooses to change to a pure *ex post* total welfare standard that ignores *ex ante* effects, *and* decides to change the burden of proof in tying cases to reflect *only* the most likely effects across a set of cases (without considering precedent or access to evidence), *and* elects to have different burdens of proof for different power effects, *then* in cases involving ties that are alleged to *only* increase intra-product price discrimination among final consumers, it makes sense to reallocate the burden of proof to plaintiffs on the issue of whether offsetting efficiencies outweighed anticompetitive effects enough to produce a net increase in *ex post* total welfare. But *even* in this case, the initial burden of *production* to show such offsetting efficiencies should be on the defendant because that burden should always be allocated based on who has the best access to the evidence. We would be switching the burden of proof only after that burden of production had been met, only for a limited set of tying cases based on a contestable view about how to allocate burdens of proof, and only if antitrust law first wrongly changed to a pure *ex post* total welfare standard.

EVEN IF WE IGNORE *EX ANTE* EFFECTS, THE AMBIGUOUS *EX POST* TOTAL WELFARE EFFECTS PROVIDE NO REASON TO REALLOCATE THE BURDEN OF PROOF TO PLAINTIFFS FOR ALL TIES WITH MARKET POWER.

In short, even if we spot the critics an undesirable change in both the antitrust welfare standard and the standards for allocating burdens of proof, the economic literature shows that the only change to tying doctrine that could possibly be warranted would be changing the burden of proof (but not production) on one subset of ties with market power. If this is the only doctrinal change that could even arguably be justified under the critics' own (quite dubious) standards, then the once-mighty single monopoly profit theory is down to a minor quibble indeed.

III. The Crane-Wright Challenge

Although Crane and Wright mainly focus on a theoretical claim about bundled discounts, their Comment starts with some assertions about the relevant empirics and welfare standards. I thus address those assertions briefly before moving on to their theoretical challenge.

A. THE EMPIRICAL EVIDENCE DOES NOT SUPPORT CHANGING CURRENT TYING DOCTRINE

Unlike Seabright, who argues that the necessary empirical evidence does not exist, Crane and Wright make an affirmative claim that the empirical evidence shows that very few ties harm consumer welfare, stating: "the best available empirical evidence suggests the frequency of instances of bundled discounts and

tying arrangements resulting in harm to consumers as compared to those arrangements improving consumer welfare is very low.”⁸⁷ They cite two articles for this empirical claim, but neither supports it. The cited articles do assert that bundling is usually efficient, but do so based on what one of the articles admits is “casual empiricism” rather than any rigorous empirical study.⁸⁸ More important, the relevant question is not whether bundling is generally efficient, but whether the

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ties condemned by current tying law are generally efficient. After all, as I have noted, it would be improper to conclude that, because driving is generally desirable, the drunk driving condemned by law is generally desirable as well.⁸⁹

Currently, tying law condemns only ties that (1) involve separate products, (2) have tying market power, and (3) lack any proven offsetting efficiency, and the cited articles provide no evidence that ties meeting those three conditions are generally efficient. To the contrary, their argument that bundling is generally efficient is based largely on bundles that exist on competitive markets,⁹⁰ which would flunk not only the market power requirement, but also the separate products element necessary to have a tie at all, because two items are deemed a single product if they are routinely bundled in a competitive market under a test I elaborated in my portion of an antitrust treatise.⁹¹ The rest of their argument is based on the possibility of various efficiencies,⁹² which I fully acknowledge, but if offsetting efficiencies exist, the tie would not be condemned under current tying doctrine. No empirical evidence is presented in either cited article that the ties that are actually condemned under current doctrine generally benefit consumer welfare. To the contrary, one of the cited articles expressly acknowledges that we do not have empirical studies of the effects of antitrust actions that condemned ties.⁹³

Moreover, even if Crane and Wright were right that most ties are efficient and that the conditions necessary for ties to be anticompetitive are rare,⁹⁴ that is no reason to change current tying doctrine to adopt either the Chicago view that *all* ties should be categorically legal or the quasi-Chicago view that *all* ties without a substantial foreclosure share should be categorically legal. After all, Crane and Wright themselves explicitly acknowledge that ties and bundled discounts can create monopoly leverage, impose efficiency-reducing price discrimination, exclude competitors, and harm consumers.⁹⁵ Thus, rather than adopt a categorical rule that denies the possibility of what they admit is possible, it is better to have a doctrine that makes case-by-case determinations of whether the necessary conditions exist for anticompetitive effects and whether they are offset by output-increasing efficiencies, which is precisely what occurs under current tying doctrine and is the approach I advocated.

Of course, one could argue that, although offsetting efficiencies often exist, it is hard for defendants to prove them.⁹⁶ But the empirical evidence cited to sup-

port this claimed defendant inability is weak: it consists of the fact that, lacking access to “internal cost information,” two scholars were unable to establish cost savings in 2 of 3 case studies where they felt confident cost savings must explain the tie.⁹⁷ But defendants would have access to precisely the internal cost information that these scholars lacked, and findings from 2 of 3 handpicked case studies is hardly sufficient to draw general empirical conclusions. Moreover, a balanced analysis would have to acknowledge it is also hard for plaintiffs to prove the absence of efficiencies and the existence of anticompetitive effects, so the relative difficulty of proof may not favor defendants.

In any event, even if one thinks that most cases covered by current tying doctrine involve efficiencies and that defendants have much more difficulty proving those efficiencies than plaintiffs have proving their absence, that would at most justify shifting the burden of proof on efficiencies to plaintiffs.⁹⁸ It would not justify the categorical non-liability rules advocated by the Chicago or quasi-Chicago view. Nor has any rigorous empirical evidence been provided for the premises necessary to justify a change in the litigation burden of proof. Given that the policy burden of proof is on those who want to overrule decades of *stare decisis*, that burden has clearly not been met.

B. THE CRANE-WRIGHT ARGUMENT AGAINST A CONSUMER WELFARE STANDARD

Crane and Wright also argue against judging ties with market power under a consumer-welfare standard. They state that they object: “to Professor Elhauge’s claim that antitrust law has committed to a course that would require it to micromanage markets to identify and sanction instances of tying, bundling, and bundled discounts that reduce static consumer welfare. We believe such a policy would be counterproductive for consumers, unadministrable, and run afoul of antitrust law’s tolerance of simple monopoly pricing (which obviously reduces static welfare), and would be inconsistent with the Supreme Court’s antitrust jurisprudence.”⁹⁹

Their claim that my position conflicts with antitrust tolerance of monopoly pricing is quite mistaken. I explicitly noted that tying that merely extracts more profits out of monopoly power, rather than extending that monopoly power by excluding rivals, cannot be condemned as monopolization.¹⁰⁰ Because monopoly pricing does not exclude rivals, it also cannot be condemned as monopolization, and because it involves no agreement or conditioned sale, it cannot be condemned under other antitrust provisions. In contrast, tying and

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bundled discounts do involve agreements and conditioned sales and thus can be judged under doctrines other than monopolization. The Crane-Wright argument thus amounts to a claim that, if we allow monopoly pricing that has adverse welfare effects, we must allow agreements that have similar adverse welfare effects. That claim obviously conflicts with antitrust law not just on tying but on all agreements in restraint of trade, including horizontal price-fixing. Nor does their argument bear on the choice between a consumer or total welfare standard because their mistaken analogy to monopoly pricing would apply no matter which welfare standard were used.

The Crane-Wright claim that my approach would be unadministrable and contrary to antitrust jurisprudence is hard to square with the fact that current tying doctrine clearly does weigh any efficiencies of a tie against its anticompetitive effects, as does the rule of reason for all agreements in restraint of trade. Further, while the authorities I collected clearly establish that consumer welfare is the legal metric for making such a trade off, the Crane-Wright objection to the administrability of case-by-case rule of reason analysis would be equally applicable if total welfare were the metric. This argument thus also fails to bear on the choice of welfare standard. Instead, its logic amounts to a radical claim that all agreements in restraint of trade should be judged either *per se* legal or illegal, with no case-by-case rule-of-reason analysis under any welfare metric.

C. THE CRANE-WRIGHT ARGUMENT ON BUNDLED DISCOUNTS IGNORES THE FACT THAT BUYER COLLECTIVE ACTION PROBLEMS MAKE THEM PRICE-TAKERS

Crane and Wright mainly argue that bundled discounts cannot have the same power effects as tying.¹⁰¹ They reason that a firm cannot credibly threaten to charge an unbundled price that exceeds the monopoly price to buyers who refuse a bundle because carrying out that threat against noncompliant buyers would be

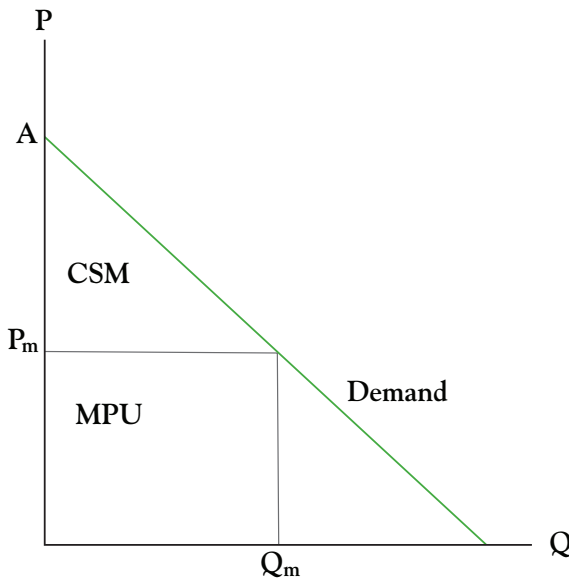
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less profitable to the firm than lowering its unbundled price to the monopoly level.¹⁰² Their claim here repeats Crane's critique that a prior article by Nalebuff was invalid because it assumed that the seller could threaten an unbundled price that exceeded the monopoly price, which Crane asserted was not a credible threat for the same reason.¹⁰³

However, it is easy to show that a threat to charge an unbundled price that exceeds the monopoly price has as much (if not more) credibility than the conventional tying threat not to sell an unbundled product at any price, and that the Crane-Wright argument would thus imply that tying is also impossible, which is clearly untrue. To see why, let's take the simple case of a market where each buyer has linear demand

of $A - P$ and costs are zero. The monopoly price will thus be $P_m = A/2$, each buyer will purchase a quantity Q_m , and the consumer surplus for each buyer at this monopoly price will be the triangle marked “CSM.”

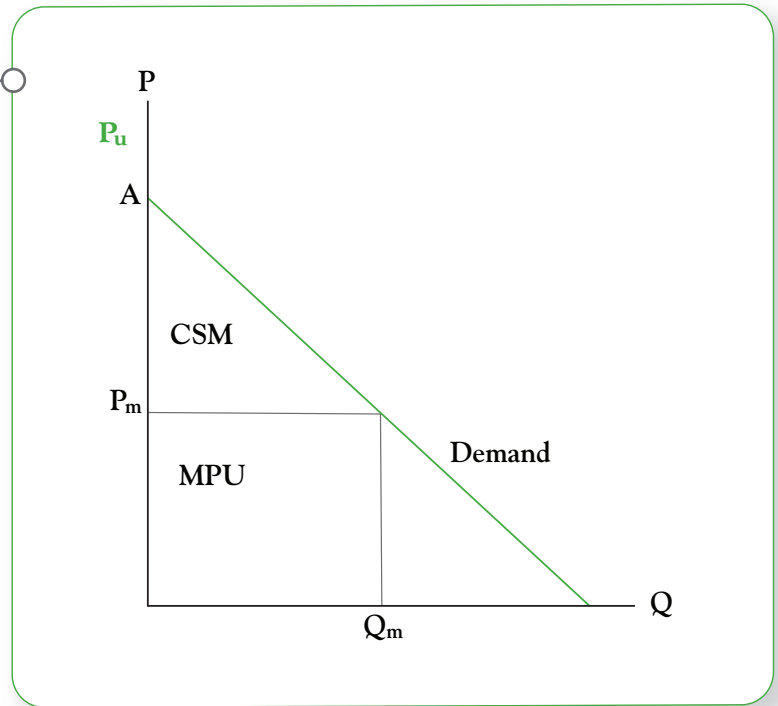
Figure 1



Suppose this monopolist used a conventional tie where it refused to sell this monopoly product at the monopoly price unless the buyer buys the tied product from it at a supra-competitive price. Then standard economic analysis finds that the buyer will accept the tie if CSM exceeds the consumer surplus lost (“CSL”) on the tied product from having to buy it at a supra-competitive price.¹⁰⁴ The buyer will do so because the buyer gets more surplus by accepting the tie than by rejecting it. Thus, through tying, the monopolist can increase its profits per buyer from MPU (its monopoly profit at a uniform price) up to MPU + CSL.

Now suppose the monopolist instead imposes a bundled discount where the unbundled price P_u exceeds A , the lowest price that chokes off demand, but the monopolist gives a “discount” of $P_u - P_m$ on the monopoly product to buyers who purchase the tied product at the same supra-competitive price as in the conventional tying case.

Figure 2



Then, just as in the conventional tying case, standard economic analysis finds that the buyer would accept the bundle if $CSM > CSL$ because the buyer gets more surplus by accepting the bundle than by rejecting it, and the monopolist will thus increase its monopoly profit to $CSM + CSL$.¹⁰⁵ Under the Crane-Wright logic, the buyers would instead reject the bundle because the seller's threat to charge P_u to a non-compliant buyer is not credible given that the monopolist would make more money by caving to a rejecting buyer and selling the monopoly product at the monopoly price. But by that logic, one could equally say that buyers would reject any tie because the seller's threat not to sell the tying product at any price to a non-compliant buyer is not credible given that the monopolist would make more money by caving to a rejecting buyer and selling the tying product at the monopoly price. In either the tying or bundled discount case, the seller would lose the profits on selling to this buyer at a uniform monopoly price (MPU) by carrying out its threat. The cases are economically indistinguishable. Yet we know that tying threats can be sufficiently credible to induce buyers to accept ties, which Crane and Wright do not deny. Thus, bundled discounts must be equally credible when they make a threat that is economically indistinguishable from the tying threat.

What is the flaw in the Crane-Wright logic? It is that they have one-sidedly focused on the credibility of only the seller's threat, without considering the

credibility of their assumed buyer threat to reject the bundle. They simply assumed that all buyers have credibly rejected the bundle, so that the seller's only choice is to sell at the unbundled price (which here results in no sales) or cave and sell at the monopoly price with the bundle. But, in fact, the buyer threat to reject the bundle is not credible because each buyer would lose CSM - CSL in consumer surplus if the buyer rejected the bundle. If the market had only one seller and one buyer, then one could imagine a bargaining game of chicken with unclear resolution, but in a typical market the seller faces many buyers who have a collective action problem. It is better for each buyer to accept than reject, and no single buyer's rejection would cause the seller to deviate from a bundling strategy that increases seller profits by CSL to all other buyers. The seller is a unitary actor, but the buyers have a collective action problem. Thus, each buyer would accept the bundle and the seller need never carry out the threat or sacrifice any profits, as Nalebuff correctly concluded in prior work.¹⁰⁶

Indeed, the seller's threat has as much, if not more, credibility as conventional monopoly pricing itself. In the standard monopoly pricing case, the seller's threat is to refuse to sell the product at any price unless buyers agree to pay the monopoly price. Under the Crane-Wright logic, the seller threat under monopoly pricing would not be credible because, if the buyer threatened not to buy the product unless the monopolist lowered the price below the monopoly price to some above-cost level, the monopolist would find it more profitable to sell at that above-cost price than to forego sales and lose all profits to that buyer. Thus, the Crane-Wright logic would imply that monopoly pricing itself is impossible, which again conflicts with commonplace observation. Instead, standard economics finds that monopoly pricing works because collective action problems among many buyers make them price takers.

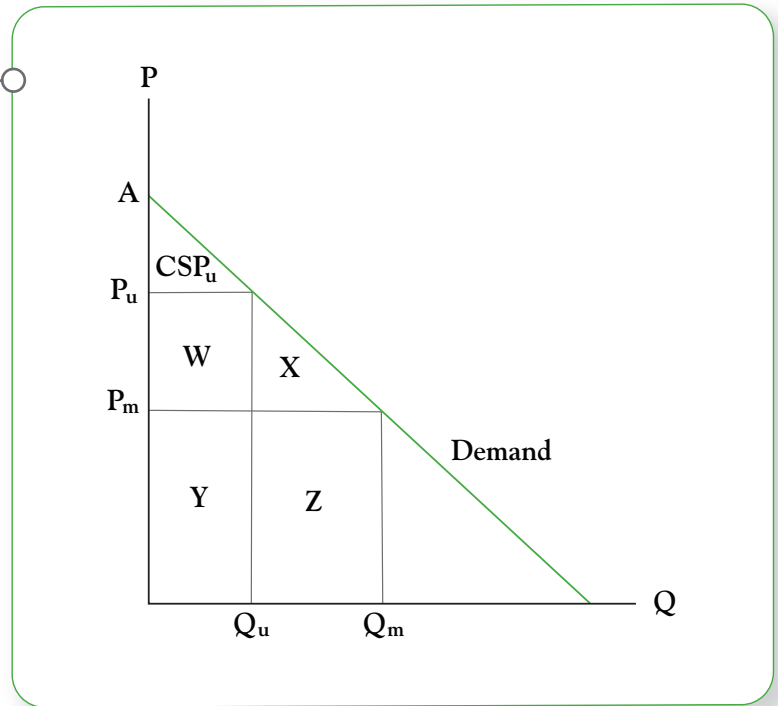
Crane and Wright's contrary logic thus conflicts with the standard economic observation that buyers are price takers in any typical market with many buyers. If we instead stick to this standard price-taker observation, then, in tying and bundled discount cases, buyers will accept because they prefer accepting the tied or bundled terms to doing without the tying product, just like buyers pay the monopoly price because they prefer paying it to doing without the product.

THE CRANE-WRIGHT LOGIC
WOULD IMPLY THAT MONOPOLY
PRICING ITSELF IS IMPOSSIBLE,
WHICH AGAIN CONFLICTS WITH
COMMONPLACE OBSERVATION.

Now consider the case where the unbundled price is below the choke price, A . If a buyer rejected the bundle, it would not lose all of CSM, because rejecting buyers would buy some quantity Q_u at the unbundled price P_u and thus get their consumer surplus at the unbundled price, which is CSP_u . But if they are price takers, all buyers would accept the bundle as long as the difference between CSM and CSP_u , which in Figure 3 is $W + X$, exceeds the consumer surplus lost by purchasing the linked product at supra-competitive prices. The dynamic on the buyer side is precisely the same as the conventional tying case where buyers com-

pare CSM to CSL, with the only difference being that here the buyers compare $W + X$ to CSL.

Figure 3



On the seller's side, the threat to charge P_u to noncompliant buyers is no less credible than the seller's threat in a conventional tying case. To the contrary, it is *more* credible. In the conventional tying case, carrying out the seller's threat means not selling the tying product at all and thus sacrificing all of $Y + Z$. In the bundled discount case where $P_u < A$, carrying out the seller's threat means selling the monopoly product at P_u and getting Q_u in sales, thus earning $W + Y$ rather than $Y + Z$. The profits that would be sacrificed if this threat ever had to be carried out are thus just $Z - W$, which is much smaller than $Z + Y$. Thus, if a buyer rejected a bundled discount where the unbundled price was lower than the choke price, carrying out the seller threat would require much less of a profit sacrifice than carrying out a conventional tying threat, making the bundled discount threat, if anything, more credible. Accordingly, if one thought (like Crane and Wright) that the credibility of the seller threat mattered, then the threat to charge an unbundled price that exceeds the monopoly price (but is below the choke price) is clearly more credible than the threat under conventional tying (or monopoly pricing) not to sell the product at any price. In fact, buyers have a collective action problem that makes them price takers, so buyers in either case will accept the bundle, and the seller will never have to carry out the threat.

The rest of Crane and Wright's arguments about the credibility of an unbundled price that exceeds the monopoly price all rest on their mistaken premise that buyers would respond by rejecting the bundle, thus forcing the seller to sacrifice profits and lose sales to rivals or substitute products.¹⁰⁷ In reality, no profit sacrifice is required because price-taking buyers will accept the bundle, which increases seller profits. Nor does the above analysis change if we assume that the seller has rivals in the tying market or that the tying product has substitutes. The existence of rivals and product substitutes will simply affect the shape of the seller's firm-specific demand curve. As long as that firm-specific demand curve has a downward slope—i.e., as long as the seller has tying market power—then buyers who buy from that firm will get some consumer surplus at the profit-maximizing price for the tying product, and all the analysis above will continue to hold. (I already pointed this out in analysis that Crane and Wright do not address.¹⁰⁸) Accordingly, the seller can offer a tie or bundled discount that all its buyers will accept because the consumer surplus that each buyer would lose by rejecting the bundle exceeds the consumer surplus that each buyer would lose by accepting it. The bundling seller with market power thus need not sacrifice any profits nor lose any sales to its rivals or substitute products.

THE BUNDLING SELLER WITH MARKET POWER THUS NEED NOT SACRIFICE ANY PROFITS NOR LOSE ANY SALES TO ITS RIVALS OR SUBSTITUTE PRODUCTS.

The above focuses on bundled discounts that extract individual consumer surplus, but we can say much the same about the credibility of bundled discounts that cause the other two power effects. For bundled discounts that cause inter-product price discrimination, the economic literature has already mathematically proven that bundled discounts are *more* profitable for the seller than a pure tie *and* that sellers will maximize profits by setting the unbundled price above the but-for price for any product over which it has market power.¹⁰⁹ Crane and Wright offer no rebuttal to these mathematical proofs.

For bundled discounts that create intra-product price discrimination, if the unbundled price exceeds the choke price, then the bundled discount is economically equivalent to a tie. Thus, the threat to charge the unbundled price to buyers who refuse the bundle has precisely the same credibility as the conventional tying threat of refusing to sell the tying product at any price to buyers who do not accept the bundle. If the unbundled price is lower than the choke price, then the price discrimination effects are the same as tying for any buyers who value the tying product less than the unbundled price. Consider Figure 3 again, but with Q now meaning the number of buyers who purchase the tying product, and assume each buyer purchases only one unit of a tying product whose value correlates with usage of a tied product. This bundled discount could not price discriminate among the buyers from 0 to Q_u because those buyers could always avoid any effort to extract the portion of their valuation above P_u by just purchasing the tying product at P_u . But this bundled discount could achieve precise-

ly the same profitable price discrimination effects as tying for the buyers who value the tying product less than P_u .¹¹⁰ Again, this threat is, if anything, more credible than conventional tying, because if buyers were to reject the bundled discount, the seller only loses $Z - W$, whereas if buyers were to reject a conventional tie, the seller would lose $Y + Z$. However, because buyers are price takers in any market with many buyers, in fact buyers who value the tying product less than P_u would accept the bundle as long as the surcharge on the tied product did not exceed the consumer surplus each buyer enjoyed on the tying product, just as they would with a conventional tie.

D. BUYER-INITIATION DOES NOT DISPROVE ANTICOMPETITIVE EFFECTS

Crane and Wright also argue that buyers may initiate bundled loyalty discounts that create efficiencies.¹¹¹ However, buyer initiation of bundled or unbundled loyalty conditions does not disprove anticompetitive effects because such conditions can raise market-wide prices when they cover a sufficient share of the market, and the lions' share of that market-wide price increase is externalized onto other buyers in the market.¹¹² Even more of that market-wide price increase is externalized if the buyers are intermediaries who pass most or all of the price increase on to downstream buyers.¹¹³ Because of that externality, entering into a loyalty agreement in exchange for side-payments or some trivial discount from the elevated market price will be individually profitable for each buyer, even though the externality means it is harmful to buyers collectively. Each buyer thus

EACH BUYER THUS HAS
INDIVIDUAL INCENTIVES TO ENTER
INTO LOYALTY AGREEMENTS EVEN
THOUGH THE RESULT OF ALL OF
THEM FOLLOWING THOSE
INDIVIDUAL INCENTIVES IS THAT
ALL BUYERS ARE HARMED.

has individual incentives to enter into loyalty agreements even though the result of all of them following those individual incentives is that all buyers are harmed.

Whether buyers initiate such a loyalty agreement is thus irrelevant because the same externality problem that makes it individually profitable for buyers to accept an anticompetitive loyalty condition also makes it individually profitable for buyers to initiate an anticompetitive loyalty condition that harms all buyers collectively.¹¹⁴ Buyer initiation is thus no more relevant than voluntary action is in any other situation where externalities exist. For example, in the classic tragedy of the commons, each cow herder initiates bringing too many cows to the commons because each considers only the individual benefit of doing so and ignores the harm to other cow herders, but this does not alter the inefficiency of them doing so. Likewise, individuals may initiate littering because they ignore the effects of their littering on others, but this does not alter the desirability of laws against littering to prevent everyone from initiating littering that collectively harms everyone.

Crane and Wright argue that this externality problem is inapplicable to bundled loyalty discounts procured by Group Purchasing Organizations ("GPOs") or

Pharmacy Benefit Managers (“PBMs”) because those groups can solve the collective action problem among their members.¹¹⁵ But their argument falters on two scores. First, even Crane and Wright admit that intermediate buyers may initiate anticompetitive loyalty agreements because they pass the price increase on to downstream consumers.¹¹⁶ GPOs and PBMs have even more incentive than intermediate buyers to initiate anticompetitive loyalty agreements because GPOs and PBMs don’t purchase the product at all, but rather serve as brokers who earn a percentage of the purchase price, and thus have affirmative incentives to agree to loyalty conditions that increase market prices.¹¹⁷ Second, even if one thought that GPOs and PBMs perfectly represented their downstream purchasers, each GPO or PBM would still externalize most of its agreement’s adverse effect on market prices onto other groups and downstream purchasers. Under U.S. guidelines, each GPO must keep its share of purchases in any market below 35% to avoid possible challenge for being an illegal horizontal combination.¹¹⁸ Thus, each GPO externalizes 65% or more of the market harm caused by its agreement to an anticompetitive loyalty agreement. The largest PBM has a smaller market share than the largest GPO and thus would externalize even more of the market harm that would be caused if it agreed to an anticompetitive loyalty agreement.

EACH GPO EXTERNALIZES
65% OR MORE OF THE MARKET
HARM CAUSED BY ITS AGREEMENT
TO AN ANTICOMPETITIVE
LOYALTY AGREEMENT.

Crane and Wright also assert that, although customer-initiated bundled discounts can harm consumers, they can do so only if they create predatory below-cost discounts that exclude rivals.¹¹⁹ However, as the economic literature shows, and as I explained in my article using concrete illustrations, above-cost bundled loyalty discounts can harm consumer and total welfare by raising the costs of equally efficient rivals or by excluding less efficient rivals who would otherwise constrain market prices.¹²⁰ Further, the economic literature also shows that above-cost bundled loyalty discounts can—without excluding rivals or reducing rival efficiency—reduce the incentives of firms and their rivals to compete on price, which rivals may have no incentive to undo because it is profitable for them.¹²¹ Crane and Wright simply provide no substantive response to this economic literature.

Finally, Crane and Wright rely heavily on a recent article by Professors Benjamin Klein and Kevin Murphy that argues that retailers may have incentives to initiate exclusive dealing agreements in differentiated product markets.¹²² In essence, Klein and Murphy argue that, in such a differentiated market, bidding for an exclusive contract with a retailer can increase the relevant demand elasticity by combining downstream buyers with high and low valuations for the seller’s product.¹²³ This, they argue, will cause sellers to price at cost and result in a gain in consumer surplus that outweighs the lost product variety.¹²⁴ Crane and Wright argue that this analysis can be extended by analogy to bundled loyalty

discounts that are initiated by buyers.¹²⁵ But there are several problems with this line of argument.

First, the Klein-Murphy model is problematic. Under their model, the two sellers in a differentiated market would sell at cost and earn zero profits if they used exclusive contracts, but would sell at prices that were double their cost if they did not.¹²⁶ Given that premise, it is hard to see why the sellers would be willing to bid on an exclusive basis, let alone why, as Klein and Murphy assert, sellers would have “the exact same motivation” as retailers to initiate exclusive bidding.¹²⁷ Under their model, exclusive contracts harm the sellers and thus any seller with market power would avoid them. A seller who agrees to bid on an exclusive contract would earn zero profits and thus earn just as much by not bidding.¹²⁸ The seller can thus costlessly threaten not to bid on an exclusive contract, and the retailer cannot credibly respond by insisting on an exclusive contract because doing so would mean buying exclusively from the other seller at a monopoly price (given the resulting lack of competitive bidding). Further, while the sellers have market power, the retailers are plentiful and will suffer from a collective action problem that makes them price takers, not entities who can insist that sellers with market power bid on the basis that is most advantageous to retailers. The Klein-Murphy model seems to oddly flip the assumption about who the price taker is when a seller has market power in a market with many buyers.

Even if we posit that, for some reason, retailers can credibly threaten not to buy from a seller with market power unless the seller bids on an exclusive basis that results in zero seller profit, such retailers could, with equal credibility, threaten not to buy from the seller unless it bids at cost on a *non*-exclusive basis. Each seller would, in this scenario, sell half of the retailer’s demand at cost, but if Murphy and Klein are right that each seller would prefer to sell all of the retailer’s demand at cost rather than not sell to the retailer at all, then each seller would also prefer to sell half of the retailer’s demand at cost rather than not sell to the retailer at all.¹²⁹ Retailers would be better off buying at cost on a nonexclusive basis because that increases the satisfaction of their consumer’s varying

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brand preferences compared to buying at cost on an exclusive basis.¹³⁰ Thus, if retailers had the ability to credibly insist on bids that led to seller prices that equaled cost, retailers would be better off doing so without any exclusivity.

Second, even if the Klein-Murphy model were convincing on single-product exclusive contracts, one cannot simply extend it by analogy to bundled loyalty discounts. Other models

that have analyzed bundled loyalty discounts in differentiated markets find that they produce an inefficient product mix and excessive bundling.¹³¹

Third, even if the Klein-Murphy model were convincing and applicable to bundled loyalty discounts, it shows that retailer-initiated exclusive contracts can lead to efficiencies only under very particular assumptions about market differentiation and costs, not that exclusive contracts always or usually do so, let alone that any efficiencies always or usually outweigh any anticompetitive effects. If a particular bundled loyalty discount actually did create such efficiencies, then the test I propose would fully consider them.¹³² The Crane-Wright analogy to the Klein-Murphy model thus provides no reason to deviate from my suggested test for bundled discounts.

IV. THE NALEBUFF MODELS

Nalebuff's Comment makes a major contribution to modeling imperfect price discrimination created by metering ties. This is just the sort of article I searched for when I wrote the section of my article on that power effect, and if it had existed earlier, it could have saved me a lot of time. However, the Nalebuff Comment does proceed on a misapprehension about my claim regarding metering ties. Correcting that misapprehension shows that his models support my actual position. To the extent our models diverge on some details, I think my model better captures the imperfect price discrimination produced by real metering ties by assuming that: (1) buyers purchase a whole number of tied units, rather than infinitely divisible fractions of tied units (as he assumes), and (2) buyers have varying valuations, rather than the same valuation for tied product usage over the relevant range (as some of his models assume).

A. THE MISAPPREHENSION

As Nalebuff correctly observes, metering ties are just one of the three power effects that I considered in assessing the overall effects of ties, and I argued that we should focus on consumer welfare, or at least total welfare, rather than on *ex post* total welfare.¹³³ Thus, my defense of current tying doctrine holds on these grounds whether or not metering ties usually increase *ex post* total welfare.

EVEN IF *EX POST* TOTAL WELFARE WERE THE RIGHT STANDARD, A CONCLUSION THAT METERING TIES USUALLY INCREASE *EX POST* TOTAL WELFARE WOULD NOT JUSTIFY REPLACING CURRENT DOCTRINE WITH A CATEGORICAL RULE OF LEGALITY FOR METERING TIES, BECAUSE SUCH A CATEGORICAL RULE WOULD INSTEAD WRONGLY ASSUME THAT METERING TIES ALWAYS INCREASE *EX POST* TOTAL WELFARE.

However, Nalebuff incorrectly states that I also claimed that the imperfect price discrimination produced by metering ties usually reduces *ex post* total welfare.¹³⁴ That is not what I said. My claim was that: "Imperfect intraproduct price discrimination actually reduces *ex post* total welfare by misallocating output, *unless that inefficiency is offset by an output-increasing efficiency*."¹³⁵ Although I pointed out cases when an offsetting output-increasing efficiency would not

exist, I did not deny that they can or usually exist. Quite the opposite, I found that (assuming linear demand and equal-sized groups) a metering tie “lowers *ex post* total welfare for 2 or 3 tied units, but increases it for 4 or more units,” with the *ex post* total welfare gains “ranging from 0.4% to 9% and converging on 4.85% for large numbers of tied units.”¹³⁶ My argument was not based on a claim that metering ties generally reduce *ex post* total welfare, but was rather that: “in those cases where tying-induced price discrimination does increase *ex post* total welfare, the defendant should be able to prove an output-increasing efficiency. . . . Indeed, if (by hypothesis) the critics were right that the relevant legal welfare standard is *ex post* total welfare, then that would be the standard the quasi-per se rule applies to determine whether the efficiency offsets the harm, and the quasi-per se rule would never condemn a tie that increased *ex post* total welfare.”¹³⁷

Thus, even if *ex post* total welfare were the right standard, a conclusion that metering ties *usually* increase *ex post* total welfare would not justify replacing current doctrine with a categorical rule of legality for metering ties, because such a categorical rule would instead wrongly assume that metering ties *always* increase *ex post* total welfare.¹³⁸ Even less would such a conclusion justify replacing current doctrine with a categorical rule of legality for all ties with power effects,

given that the other two power effects are less likely to have positive effects on *ex post* total welfare.¹³⁹

EVEN IF THE PROPER STANDARD WERE TOTAL WELFARE, THERE IS NO REASON TO FIXATE ON *EX POST* TOTAL WELFARE, WHICH IN TYING CASES PROBABLY CORRELATES LESS WELL TO TOTAL WELFARE THAN CONSUMER WELFARE DOES.

Further, I pointed out that consumer welfare is actually the right standard, and that the same theoretical considerations that suggest metering ties might usually increase *ex post* total welfare mean they are even more likely to reduce consumer welfare.¹⁴⁰ Finally, I showed that even if the proper standard were total welfare, there is

no reason to fixate on *ex post* total welfare, which in tying cases probably correlates less well to total welfare than consumer welfare does.¹⁴¹

That was the policy argument, no part of which relied on a claim that metering ties usually reduce *ex post* total welfare. With my actual policy argument in mind, let’s consider Nalebuff’s three models.

B. NALEBUFF’S BASELINE MODEL

In his baseline model, Nalebuff assumes that each buyer values the tying product in direct proportion to the number of tied units they use and that each buyer puts the same value as other buyers on each usage.¹⁴² Given these assumptions, a tie that prices those tied units at that value amounts to perfect price discrimination. Nalebuff correctly acknowledges this and that, in reality, “price discrimination is usually imperfect. . . .”¹⁴³ However, he argues that this baseline model provides

some intuition for the claim that metering ties “will typically increase [*ex post*] total welfare and decrease consumer welfare.”¹⁴⁴ Nalebuff mistakenly thinks I disagree with this claim,¹⁴⁵ but in fact I confirmed it in my own model of metering ties. My argument was instead that: (1) this intuitive analogy did not mean that the metering ties that are actually condemned by current tying doctrine would usually increase *ex post* total welfare, because that doctrine permits metering ties that have offsetting efficiencies,¹⁴⁶ and (2) this intuitive analogy did not support the critic’s claim that the consumer welfare effects of metering ties were more ambiguous than the *ex post* total welfare effects.¹⁴⁷ Nalebuff does not address the first argument, but supports me on the second because he affirms that metering ties “typically . . . decrease consumer welfare.”¹⁴⁸

Nalebuff also argues that this baseline model does a surprisingly good job of describing the tie of printer heads to ink that was at issue in *Illinois Tool Works v. Independent Ink*.¹⁴⁹ I’m not sure about that; it seems to me quite plausible that different customers would use printer heads to print different amounts and value what they printed differently. Indeed, in his amicus brief in *Illinois Tool Works*, Nalebuff argued against the metering tie in that case based partly on his conclusion that, given customer variation, the tie would produce only imperfect price discrimination that could not be assumed to increase efficiency.¹⁵⁰

But suppose Nalebuff is now right in his characterization of *Illinois Tool Works*: what are the implications? One implication is that such a perfect metering tie totally eliminates all consumer surplus.¹⁵¹ Because consumer welfare is the actual legal standard, that implication resolves the economics that are relevant to the law. Although Nalebuff’s Comment suggests it might be better to use some weighed sum of producer profits and consumer welfare,¹⁵² such an approach would raise the problems already detailed above in Part I. Further, Nalebuff’s amicus brief in *Illinois Tool Works* agreed with me that consumer welfare is actually the correct standard as a matter of both law and policy.¹⁵³

Another implication is that a perfect metering tie reduces total welfare, even though it increases *ex post* total welfare. The reason is that, while there is some debate about precisely what fraction of total surplus to give innovators in order to maximize total welfare, we know that giving 100% of total surplus to the successful innovator produces excessive investment and reduces total welfare.¹⁵⁴ That is, we know, as discussed above, that the curve does not constantly increase up to 100% but is instead an inverted-U.¹⁵⁵ Thus, to the extent that metering ties like in *Illinois Tool Works* do produce perfect price discrimination, they will reduce total welfare, even though they maximize *ex post* total welfare.¹⁵⁶

TO THE EXTENT THAT METERING
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EX POST TOTAL WELFARE.

Nalebuff’s baseline model thus provides no basis to conclude that metering ties likely increase total welfare. A superficial reading of Nalebuff might suggest otherwise, but he is careful to explain that he is using the term “total welfare” to refer only to “*ex post* total welfare,” and that he has not considered *ex ante* effects.¹⁵⁷ Moreover, his baseline model also shows a clear decline in the consumer welfare that his prior work acknowledged is the correct antitrust standard.

C. NALEBUFF’S MODEL I

The model that Nalebuff’s paper discusses the most is his Model I, which is very similar to my own model of metering ties with the exception that Nalebuff assumes buyers make a continuous choice about how many tied units to buy, whereas I assumed buyers make discrete choices.¹⁵⁸ That is, whereas I assumed buyers can buy 1, 2, 3 or some other whole number of cartridges, Nalebuff assumes buyers can also buy 1.1 or 2.26 cartridges or any other infinitely divisible fraction of cartridges. This permits Nalebuff to offer a more mathematically powerful proof than I could. However, it also means his model deviates more from reality because in fact buyers cannot buy fractions of cartridges. Nor can buyers purchase fractions of other tied product units; if they could, then by definition whatever minimum fraction they could buy would be the tied “unit” used in my model.

Nalebuff’s model comes in two flavors, both of which confirm my own conclusions about the likely welfare effects of metering ties. In one version, Nalebuff assumes that buyers can buy any fraction of tied units, even less than one tied unit. Because, in his model, buyers are basically choosing among an infinite number of tied unit choices, his results are, not surprisingly, quite similar to my findings when the number of tied units is very large, as the following table shows. Nalebuff’s conclusions thus strongly confirm my own for large numbers of tied units. In particular, Nalebuff and I both find that metering ties reduce consumer welfare by almost 19%, which supports presumptive condemnation under the consumer welfare standard used by antitrust law.

Table 1

| | Elhaug Model Conclusion ¹⁵⁹ (for large numbers of tied units) | Nalebuff Model I Conclusion ¹⁶⁰ (for infinitely divisible tied units) |
|----------------------|---|---|
| Consumer Welfare | −18.85% | −18.75% |
| Total Welfare | +4.85% | +4.88% |
| Tying Product Output | +39.79% | +39.66% |
| Tied Product Output | −2.29% | −2.29% |

In the other version of Nalebuff Model I, he assumes that buyers have to buy at least one tied unit but can buy any fraction of units above one. Here, he finds that *ex post* total welfare effects are positive only if the number of tied units exceeds 4.58.¹⁶¹ I found that the *ex post* total welfare effects are positive only if the number of tied units is 4 or higher.¹⁶² Thus, Nalebuff's latter model is quite consistent with my findings and indicates that, if anything, my model is slightly conservative about when metering ties are likely to reduce *ex post* total welfare.

Nalebuff and I both find that, even if metering ties increase *ex post* total welfare and tying product output, they decrease the number of tied products used. As Nalebuff notes, this was a surprising result, and I am glad his analysis confirms it.¹⁶³ However, because usage of the tied product is what correlates with actual productive output in a metering tie, this result does cut against metering ties for those who think that antitrust should focus on the extent to which restraints increase or decrease productive output. Further, in the real world (unlike in our model) there are real costs to making the tying product, so that productive efficiency seems likely to be adversely affected to the extent that metering ties result in the increased creation of costly tying products that are utilized less often.

NALEBUFF AND I BOTH FIND
THAT, EVEN IF METERING TIES
INCREASE EX POST TOTAL
WELFARE AND TYING PRODUCT
OUTPUT, THEY DECREASE
THE NUMBER OF TIED
PRODUCTS USED.

I should caution also that both of our models depend on the assumption that, at a competitive tied product price, the number of tying product buyers who would use a low amount of tied units equals the number of buyers who would use a medium or high amount. Although this assumption is a useful heuristic, it often may not hold. One may reasonably think that buyers who would use many tied units would be more enthusiastic about the tying product and that there would thus be more of them. If so, then that will increase the size of the groups that use many tied units, which means that metering ties will have worse effects on consumer welfare and total welfare. Or one might think that buyers are likely to reflect a normal bell-shaped distribution where buyers who use a medium amount of tied units are more likely than buyers at either extreme. In that case, I conjecture (but have not proven) that the welfare effects of metering ties would be worse because a uniform price would generally result in sales to the medium buyers and there would be relatively fewer low unit buyers picked up by metering ties.

This last paragraph doesn't mean that one can assume that metering ties will usually decrease *ex post* total welfare. It simply means that, even if one thought that *ex post* total welfare were the correct standard, one should not over-read our models as showing that metering ties always increase *ex post* total welfare unless the number of tied units is fairly small. Metering ties may well often or usually decrease *ex post* total welfare under different assumptions about the distribution of buyers who use low, medium, and high amounts of tied units. Thus, even if the law were to switch to an *ex post* total welfare standard, the law should stick to

judging metering ties under current tying doctrine, which makes case-by-case judgments that can reflect varying buyer distributions.

D. NALEBUFF MODEL II

In his final model, Nalebuff assumes that each customer has a declining marginal value for usage of the tied product such that each “customer of type a values the q th copy at $a - q$.”¹⁶⁴ This assumption allows customers to have a range of valuations for the first tied unit they buy. But by assuming that buyers keep buying units of the tied product until the valuation of the last unit they buy equals the tied product price, this model assumes that all buyers have precisely the same valuation for the last tied unit they buy, as well as the same valuation for the penultimate unit, and so on until we get up to the value

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JUDGMENTS THAT CAN REFLECT
VARYING BUYER DISTRIBUTIONS.

of the first unit (that is, a) for any customer group. Thus, for small increases in the tied product price, the model effectively assumes that all buyers will have the same valuation for the marginal tied product usage affected.

Nalebuff Model II accordingly assumes a lot more uniformity about valuation than my model or Nalebuff Model I, which assumed that buyers within and across groups had different valuations for usage of the tied product. Instead,

Nalebuff Model II assumes uniformity in buyer valuation for small increases in the tied product price, which is the relevant price range considered in this model. His Model II thus effectively assumes a form of quasi-perfect price discrimination that comes close to Nalebuff’s baseline model. Not surprisingly, Model II thus leads to the similar result that small increases in price discrimination via metering ties always increase *ex post* total welfare.¹⁶⁵ Although Nalebuff also says that the effect on consumer welfare is ambiguous in his Model II, his Theorem 5 and Appendix do not claim to have proven the consumer-welfare effect is ambiguous.¹⁶⁶ Instead, he infers this ambiguity in consumer-welfare effect from the fact that the tying product price decreases while the tied product price increases.¹⁶⁷ But that is also true for tying-tied product pricing under the perfect price discrimination produced by metering ties with constant valuation per tied unit, and we know that such ties *unambiguously reduce* consumer welfare, so parallel conclusions about pricing for metering ties that imperfectly price discriminate do not suffice to prove that their consumer-welfare effects are ambiguous.

The reader will have to judge for himself or herself the plausibility of the Nalebuff Model II assumption that consumers keep using printer cartridges up until the point when the value of printing equals the cartridge price, so that all consumers value the last thing they print precisely the same. My own sense is to the contrary, that I (and those I know) value the last thing we print at way more than the marginal price of printing, and we stop printing instead because we

have no use for an additional unit. To be sure, there must be some marginal buyers in the market who value the last thing they print at the marginal price of printing, or else the cartridge price would increase. However, I suspect most of us are infra-marginal (like most of us in most markets) and enjoy consumer surplus even on the last cartridge we use. Further, I suspect that the amount of consumer surplus we enjoy on that last cartridge varies considerably. If so, that makes a model like mine or Nalebuff Model I more appropriate than Nalebuff Model II.

The situation might be different when the buyers are intermediaries whose usage of the tied product creates a downstream output whose valuation largely reflects a common downstream market price. In those cases, each buyer might keep expanding usage/output until valuation reflects the marginal tied product price. But when the buyers are intermediaries rather than consumers, then there are other reasons (not considered by Nalebuff or any of the other Comments) to conclude that tying-induced price discrimination is likely to reduce both consumer welfare and *ex post* total welfare.¹⁶⁸

V. THE FIRST FUNDAMENTAL QUESTION

Professor First raises a more fundamental question: should the goal of antitrust be limited to enhancing welfare at all? Instead, he argues for considering multiple goals, including: (1) consumer welfare, (2) producer welfare, (3) preserving the competitive process, (4) consumer choice, (5) innovation efficiency, (6) preventing firms from getting “too big to fail,” and (7) other distributive concerns.¹⁶⁹ Applying these goals, he concludes that I am right to defend the current *quasi-per se* rule, but wrong to recognize an exception to it.¹⁷⁰ I am glad to have his support for my major conclusion, but find myself in disagreement with his multi-goals approach and with his rejection of my exception.

A. THE MULTI-GOAL APPROACH

I disagree with First’s multi-goal approach at both the wholesale and retail levels. My wholesale objection is that using such a *mélange* of goals makes the analysis entirely indeterminate. One person might apply this set of goals to ties and reach one conclusion, another might reach the opposite conclusion, and there would be no real way to choose between them. Nor is the problem limited to the fact that different people would reach different judgments. Even if we imagined only a single adjudicator, the rejection of any overarching goal means we would have no common metric for weighing each of the multiple goals, making them incommensurable. Making tradeoffs among such incommensurable goals is like asking whether a car is bluer than it is fast; the question has no real answer (unless we made the characteristics commensurable by measuring their contribution to an overarching goal like consumer preference

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satisfaction). The sheer multiplicity of goals thus means the goals will provide no real guidance in resolving doctrinal issues. We will instead be back to making conclusory judgments based on raw intuitions about whether tying or other conduct seems good or bad.

At the retail level, the problem is that each of the stated goals beyond consumer welfare is unhelpful because each is unpersuasive when it conflicts with consumer welfare. Let me address each of First's additional goals in turn.

1. Producer Welfare

First argues "we can't be completely indifferent to what happens to producer surplus. How else to understand antitrust's continuing concern for efficiencies?"¹⁷¹ This question is easy to answer. We should understand antitrust as being concerned about efficiencies only to the extent they are passed on to consumers to a sufficient extent that they improve consumer welfare. This is precisely what antitrust law provides.¹⁷² There are also several sound policy reasons not to weigh

producer surplus against consumer surplus, which I detailed in Part I.

THE COMPETITIVE PROCESS GOAL
IS VACUOUS AT ITS CORE BECAUSE
SOMETIMES DECREASING THE
NUMBER OF COMPETITORS AND
INCREASING COLLABORATION
AMONG THEM IS TREATED AS
WORSENING THE COMPETITIVE
PROCESS AND SOMETIMES IT IS
TREATED AS IMPROVING IT.

2. The Competitive Process

As First acknowledges, the goal of preserving the competitive process is "poorly defined."¹⁷³ But the problem is not merely vagueness at the edges. The competitive process goal is vacuous at its core because sometimes decreasing the number of competitors and increasing collaboration among them is treated as worsening the competitive process and sometimes it is treated

as improving it.¹⁷⁴ The only way to make sense of this pattern is to realize that what drives the results is not some freestanding notion of process, which would indicate that all those cases should be condemned because they reduce the process of competition. Instead, the results turn on whether the relevant conduct likely increases or decreases consumer welfare. The "competitive process" conclusion is simply a label applied to signal whether a court has concluded the conduct seems likely to increase consumer welfare or not. It thus adds nothing useful to a consumer-welfare standard. Indeed, the vacuity of the competitive process standard for judging issues of tying doctrine seems neatly illustrated by the fact that, while First apparently concludes it favors retaining the current *quasi-per se* rule, precisely the opposite conclusion is reached by Gregory Werden, the main current champion of the competitive process standard.¹⁷⁵

In response, First does not so much defend the competitive process standard as cite Werden's arguments that consumer welfare is also poorly defined, mainly because Werden claims that a consumer-welfare standard is inconsistent with the

fact that antitrust law condemns buyer cartels.¹⁷⁶ But as I already explained: “Condemnation in such cases is perfectly consistent with a consumer welfare standard because, if such conduct affects consumer welfare at all, the effect can only be negative. Allowing the anticompetitive ... creation of upstream market power could only reduce output and market choices in the downstream consumer market not only currently, but also in the future by making firms less willing to enter such markets.”¹⁷⁷ That is, buyer cartels lead to subcompetitive upstream prices which lower upstream output to subcompetitive levels. That reduced upstream output will be passed on downstream, because one cannot sell output that does not exist or make it from inputs that don’t exist. But the reduced upstream price will *not* be passed on downstream because the downstream price will be determined by the lower downstream output, which will raise downstream prices.

So, even though it seems counterintuitive, upstream monopsony power that reduces upstream prices will increase downstream prices to the extent it has a downstream effect. This effect could certainly be muted to the extent that the firms in the upstream buyer cartel lack downstream market power as sellers. But it would not be entirely eliminated unless downstream rivals of the cartel members really have infinitely elastic supply, which is rare. In any event, even if the effect can be muted and sometimes eliminated by downstream rival expansion, the direction of any effect is bad for downstream consumers. That is, the upstream buyer cartel either harms downstream consumers or has no discernable effect on them, but it doesn’t ever benefit downstream consumers. Because the only possible effect on downstream consumers is negative, it makes perfect sense to condemn the conduct under a consumer-welfare standard.

Even if we imagine some product for which there is no new output—like some set of famous old paintings—allowing buyer cartels could only reduce the willingness of other artists to produce new paintings. The reason is that the prospect that future buyer cartels would be allowed to suppress resale prices (once the new paintings become old) would reduce the new paintings’ expected value and thus would reduce the initial price the first buyer would be willing to pay for any new painting. Thus, allowing buyer cartels that were nominally directed only at old paintings could only decrease the output of new paintings and harm consumer welfare.

As the above suggests, a consumer-welfare standard does not require proving a harm to consumer welfare in each case. Sometimes antitrust uses rules rather than standards, and given the possible harm to consumer welfare and lack of any possible benefit to it, there is nothing wrong with a *per se* rule that condemns all buyer cartels without requiring proof in each particular case of a harm to consumer welfare. Using such a rule does not alter the fact that “consumer welfare is

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the ultimate metric used to design antitrust laws, whether they take the form of rules or standards.”¹⁷⁸

In the end, I am not sure First disagrees with me on this point because he ultimately acknowledges that by “the competitive process” he means “processes that are likely to achieve the results that consumer surplus tries to measure.”¹⁷⁹ That appears to agree with my conclusion that “courts judge whether conduct worsens the competitive process by whether it produces a process that is likely to harm consumer welfare.”¹⁸⁰ But if one agrees with that, then it seems to me that the competitive process notion is not an independent goal and does no useful work. To the contrary, it just obscures the ultimate welfare question. One might as well proceed directly to analyze whether the challenged conduct or class of conduct seems to be the sort that is likely to harm consumer welfare, and whether a standard that looks at each case or a rule that applies to a category of cases seems the best approach for advancing consumer welfare.

3. Consumer Choice

Consumer choice is an important goal, but only because it bears on consumer welfare. If conduct reduces consumer choice, then absent some offsetting benefit, that will tend to reduce the satisfaction of consumer preferences and thus lower consumer welfare. To the extent the consumer choice goal is meant to be a corrective to the view that the only way to harm consumer welfare is by raising prices, then I think it is all to the good. But I don’t think this means consumer choice should be pursued as a goal even when it conflicts with consumer welfare. Instead, the consumer choice goal is just a factor that should be consid-

ered only to the extent it affects consumer welfare. While consumer choice is certainly relevant to consumer welfare, the latter remains the ultimate standard.

WHILE CONSUMER CHOICE IS
CERTAINLY RELEVANT TO
CONSUMER WELFARE, THE LATTER
REMAINS THE ULTIMATE STANDARD.

The scholars that First cites for the consumer choice goal, Neil Averitt and Robert Lande, seem to agree with me about its subordinate relevance because they do not claim it is a goal

distinct from consumer welfare. Instead, they argue that often “[t]here is no good way to assess consumer welfare ... without considering the non-price choice issues.”¹⁸¹ This leads them to conclude that: “The consumer choice model of antitrust ... explains ..., better than the price or efficiency models can, why antitrust is good for consumer welfare.”¹⁸² Moreover, one of those scholars, Robert Lande, has argued strongly for a consumer-welfare standard.¹⁸³

To test whether consumer choice should be a freestanding goal, rather than a subordinate factor relevant to consumer welfare, the cases of interest are those where the goals conflict. In particular, consider a tie that reduces consumers’ ability to chose the tying and tied products separately, but also creates some efficiency that is sufficiently passed on to consumers that it enhances consumer wel-

fare. First apparently believes that in such a case the consumer choice goal would be thwarted because consumers are “denied a choice they might prefer in the tied product market.”¹⁸⁴ His conclusion seems right if we define the consumer choice goal to be violated by anything that reduces the number of consumer choices. But why should we condemn a tie that would give consumers an alternative choice that makes them better off? There seems little reason to expand the number of consumer choices when that harms consumers. Alternatively, one might instead conclude that the consumer choice factor is ambiguous in such a case because, although the tie deprives consumers of the choice of picking the products separately, condemning the tie deprives consumers of a choice too—the ability to choose a tie that they would prefer to either of the separate choices. Because the ability to choose a tie makes consumers better off, we could say that allowing the tie furthers the consumer choice goal. But then we are really making decisions based on consumer welfare rather than on some freestanding notion of consumer choice. In short, either the consumer choice goal is undesirable (if defined in a way that allows it to conflict with consumer welfare) or subordinate (if defined to be consistent with consumer welfare).

4. Innovation Efficiency

Innovation efficiency is another goal that is important, but only as a means to the end of improving welfare. Nor does the goal offer much independent guidance when assessing ties because people have countervailing intuitions on whether ties advance or worsen innovation.¹⁸⁵ First objects to ties on the grounds that “innovation in the tied product market might be dampened or suppressed.”¹⁸⁶ Crane, Wright, and others favor ties that extract more than normal monopoly profits because they think that will increase incentives to innovate.¹⁸⁷ In the end, as discussed in Part I, economics favors an inverted-U approach, where we maximize innovation efficiency by allowing firms to reap all their normal monopoly profits from having created a market option that is preferable to other options, but do not allow firms to also use ties to extract the consumer surplus that consumers enjoy at normal monopoly prices. Thus, maximizing innovation efficiency is entirely consistent with prohibiting ties that reduce consumer welfare, and considering innovation efficiency separately does nothing to clarify the analysis.

INNOVATION EFFICIENCY IS ANOTHER GOAL THAT IS IMPORTANT, BUT ONLY AS A MEANS TO THE END OF IMPROVING WELFARE.

5. Preventing Firms From Becoming “Too Big to Fail”

As I understand it, the concern with firms becoming “too big to fail” is that their failure would create too many systemic problems in the economy, so the government must bail them out if they do fail. The prospect of these bailouts then gives these large firms incentives to engage in excessively risky transactions because

they externalize much of the downside costs onto taxpayers. This is a legitimate concern that, if valid, would justify some form of legal regulation.

But it seems to me the law should directly target the distorted incentive by regulating, taxing, or requiring insurance premiums for the excessively risky transactions engaged in by firms that are too big fail. One solution would be to say that, when a firm reaches such a size, the implicit government insurance should be made explicit and an insurance premium should be charged that reflects the level of risk the firm incurs. That would deter inefficient risk taking, protect tax-

payers, and prevent economic dislocation because failure would result in a pre-defined insurance payment.

IT IS THUS PREFERABLE TO KEEP
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INSURANCE FOR FIRMS THAT
ARE TOO BIG TO FAIL.

In contrast, simply blocking mergers that would produce firms that are too big to fail seems a poor remedy to the problem. Blocking such mergers would be of no help if firms grow to be too big to fail through internal expansion rather than through mergers. Nor would blocking such mergers be necessary if we had a regulation, tax, or mandatory insurance that directly addressed the risk-taking externality. Indeed, blocking such mergers seems affirmatively

undesirable if the merger would lower costs after considering any increased tax or premium costs, because then the merger would lower prices in a way that benefits consumer welfare without imposing any uncompensated externalities. Blocking such a merger would harm consumer welfare, but be unnecessary to protect taxpayers or prevent the inefficient distortion that prompts the concern. It is thus preferable to keep antitrust focused on the task of protecting consumer welfare, and let other regulatory strategies protect taxpayers and deal directly with the externalities caused by implicit government insurance for firms that are too big to fail.

In any event, it is hard to see how “too big to fail” concerns are likely to have much relevance in a tying case. Ties rarely have any bearing on whether a firm becomes too big to fail. So even if this were a valid independent goal for antitrust, it would have little impact on tying doctrine.

6. Other Distributive Concerns

Finally, First suggests that antitrust should consider “distributive concerns in more specific cases where business practices may have uncertain effects on the welfare of infra-marginal customers but substantial effects on customers who are priced out of the market.”¹⁸⁸ But if, as in the examples First cites, a restraint raises market prices in a way that prices out some consumers, then that does harm

consumer welfare. Such consumer harm could hardly be outweighed by ambiguous effects on infra-marginal customers.

Perhaps First has in mind the claim that, if conduct benefits some consumers and harms other consumers, antitrust should consider the income of the particular consumers at issue rather than decide cases based on the aggregate effect. But such an approach would be judicially inadministrable and, to my knowledge, no U.S. court has been willing to engage in it. Moreover, even if administrable, it would be theoretically flawed because taxation is a more efficient means of achieving redistribution than varying liability rules with the income of the affected parties. Although income taxation inefficiently discourages income creation, varying conduct liability with income not only discourages income creation to the same degree as income taxation, but also adds a discouragement of welfare-enhancing conduct.¹⁸⁹ In contrast, antitrust rules that protect consumer welfare do not create this distortion (even though they have favorable distributional effects) because such rules do not make conduct liability vary with party income and thus does not discourage income creation. Moreover, banning agreements that lessen overall consumer welfare: (1) is consistent with precedent, (2) is more administrable because it does not require consumer-by-consumer analysis, (3) helps coordinate global enforcement; (4) does not prevent efficiency-increasing conduct because compensating payments can be made; and (5) optimizes investment in innovation and improves *ex ante* total welfare.¹⁹⁰

B. DEFENDING THE EXCEPTION

Because the single monopoly profit theory does hold for “ties that involve a fixed ratio, no separate utility, *and* no substantial foreclosure share or effect,” I would recognize a rule of *per se* legality for such ties.¹⁹¹ First objects on several grounds, but with all respect I do not think any of his objections is persuasive.

One objection he raises is that such a tie might still harm consumer choice and innovation efficiency. Thus, he asks: “Why not stick with the presumption of illegality and shift the burden to the defendant to show an efficiency justification for refusing to sell the products unbundled?”¹⁹² The answer is simple. In the limited conditions when the single monopoly profit theory does hold, we know the firm could profit from imposing the tie only if it has some efficiency justification.¹⁹³ Thus, proving those conditions itself rebuts any presumption by showing there must be some efficiency justification. Such efficiencies will, to some extent, be passed on to consumers and the tie cannot otherwise harm consumers, so such ties should benefit consumer welfare. For reasons discussed above, this suffices to allow the

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tie even if it reduces notions of consumer choice that conflict with consumer welfare. Nor, as also discussed above, do we have any reason to think such a tie would reduce innovation efficiency. To the contrary, developing such a tie would itself be an efficient innovation.

Another objection he raises is that the firm might impose such a tie “to impede or deter entrants in the tied product market that might grow to challenge its monopoly position in the tying product market.”¹⁹⁴ That is a valid concern, but as I showed, that anticompetitive effect requires a substantial foreclosure share or effect in the tied market.¹⁹⁵ If a substantial foreclosure share or effect has not been shown, then this concern is invalid and we know efficiencies must motivate the tie; thus, my approach reaches the right result with *per se* legality. If a substantial

foreclosure share or effect has been shown, then my rule of *per se* legality would not apply. My exception to the *quasi-per se* rule for ties involving a fixed ratio and lack of separate utility would instead trigger a traditional rule of reason analysis, under which showing a substantial foreclosure share or effect would (as First desires) shift the burden to the defendant to show an efficiency justification.¹⁹⁶

Relatedly, First objects to my conclusion that the *Microsoft* case was right to recognize an exception to the *quasi-per se* rule because the tie there involved a fixed ratio and lack of separate utility.¹⁹⁷ He reasons that many customers didn’t want to use the browser at all and varied in how often they upgraded browsers and operating systems, so that their proportions were not truly

fixed.¹⁹⁸ But to defeat the possibility of power effects for products that lack separate utility, the products need only be “used or tied in fixed ratios,” so it suffices that “the ties ... involve a fixed ratio.”¹⁹⁹ Even if buyers might want to use the products in varying proportions, the fact that the tie bundles them in a fixed proportion suffices to mean that “buyers would experience any tied product price increase as an increase in the marginal price of buying the tying product.”²⁰⁰ In *Microsoft*, regardless of whether buyers might desire varying proportions, the challenge was to conduct that did bundle the operating system and browser in a fixed ratio, and (assuming the browser lacked separate utility) such a fixed bundle cannot have the power effects that justify the *quasi-per se* rule.²⁰¹ Instead, the real anticompetitive concern was, as First correctly recognizes, that a substantial foreclosure share or effect in the browser market could help preserve market power in the operating system market.²⁰² But focusing on that inquiry is precisely what is correctly achieved by recognizing the exception to the *quasi-per se* rule.

THE COMMENTS ALL AGREE WITH ME THAT TIES WITH MARKET POWER CAN REDUCE CONSUMER WELFARE AND TOTAL WELFARE EVEN WITHOUT A SUBSTANTIAL FORECLOSURE SHARE. THAT CONCLUSION IS ALL WE NEED TO REJECT NOT ONLY THE SINGLE MONOPOLY PROFIT THEORY BUT ALSO A CATEGORICAL RULE OF *PER SE* LEGALITY FOR EITHER ALL TIES OR ALL TIES WITHOUT A SUBSTANTIAL FORECLOSURE SHARE.

VI. CONCLUSION

The Comments all agree with me that ties with market power can reduce consumer welfare and total welfare even without a substantial foreclosure share. That conclusion is all we need to reject not only the single monopoly profit theory but also a categorical rule of *per se* legality for either all ties or all ties without a substantial foreclosure share. Because the critics of current doctrine advocate one of those categorical rules, this conclusion thus suffices to reject their legal position whether one thinks the proper standard is consumer welfare or total welfare.

In fact, the correct standard is consumer welfare as a matter of both law and policy. Consumer welfare should thus be the standard used when judging whether, under the current *quasi-per se* rule, a particular tie with market power has output-increasing efficiencies that offset any harmful anticompetitive effects. Allocating the burden of proof on those efficiencies to defendants remains supported by precedent, access to evidence, and the fact that theoretical considerations indicate that ties with market power will generally reduce consumer welfare. Even if we instead think that total welfare should be the standard, there is no good reason to fixate on *ex post* total welfare, and judging ties based on their consumer welfare effects is likely to correlate better to overall total welfare.

However, when the tie involves no substantial foreclosure share or effect and the bundled products lack separate utility and are used or tied in fixed proportions, then the tie cannot harm consumer or total welfare even with tying market power. While the old single monopoly profit theory is dead, a new baby single monopoly profit theory does apply to such ties, and thus they should be *per se* legal. ▼

1 Einer Elhauge, *Tying, Bundled Discounts, and the Death of the Single Monopoly Profit Theory*, 123 HARV. L. REV. 397 (2009).

2 Paul Seabright, *The Undead? A Comment on Professor Elhauge's Paper*, 5(2) COMPETITION POL'Y INT'L 243, 243-44 (2009).

3 *Id.* at 243, 246-47.

4 Elhauge, 123 HARV. L. REV. at 400.

5 Seabright, *supra* note 2, at 243.

6 Elhauge, 123 HARV. L. REV. at 400-01.

7 *Id.* at 402.

8 *Id.*

9 Seabright, *supra* note 2, at 243, 246-47.

10 *Id.* at 244-45.

11 Elhauge, 123 HARV. L. REV., at 425-26.

12 *Id.*

13 Seabright, *supra* note 2, at 244.

14 *Id.* at 244-45.

15 *Id.* at 250 n.8 (emphasis added) (quoting my article).

16 *Id.*

17 Elhauge, 123 HARV. L. REV. at 401, 427.

18 *Id.*

19 Seabright, *supra* note 2, at 243-47.

20 *Id.* at 245.

21 *Id.* at 245.

22 Elhauge, 123 HARV. L. REV. at 401. Seabright quotes to page 2 of my September 30th working paper rather than to my final article, see Seabright, *supra* note 2, at 250 n.2, but the passage he selectively quotes was identical in that working paper with the trivial difference that it said "their analogy" rather than saying "the critics' analogy."

23 Elhauge, 123 HARV. L. REV. at 401, 430, 435-36.

24 *Id.* at 435-42.

25 Seabright, *supra* note 2, at 248, 250 n.15.

26 *Id.* at 248-49.

27 X AREEDA, ELHAUGE, & HOVENKAMP, ANTITRUST LAW 175-279 (1996).

28 See Elhauge, 123 HARV. L. REV. at 405-07.

29 *Id.* at 406 (emphasis added).

30 Seabright, *supra* note 2, at 246-28.

31 See *Id.* at 247.

32 See Elhauge, 123 HARV. L. REV. at 409.

33 See Jose Carbajo et al., *A Strategic Motivation for Commodity Bundling*, 38 J. INDUS. ECON. 283, 284 (1990).

34 Seabright, *supra* note 2, at 247.

- 35 *Id.* at 247.
- 36 See U.C.C. §2-306; Clayton Act §3.
- 37 *Illinois Tool Works v. Independent Ink*, 547 U.S. 28, 32 (2006); *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 458 (1992); *Jefferson Parish Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2 (1984); *Int'l Salt Co., Inc. v. United States*, 332 U.S. 392 (1947); *Int'l Bus. Machs. Corp. v. United States*, 298 U.S. 131 (1936); *United Shoe Mach. Co. v. United States*, 258 U.S. 451, 456 (1922); *Motion Picture Patents Co. v. Universal Film Mfg. Co.*, 243 U.S. 502 (1917).
- 38 *Illinois Tool*, 547 U.S. at 32 (buyers who used any of the seller's printheads had to "agree that they will purchase their ink exclusively from petitioners."); *Kodak*, 504 U.S. at 458 (seller refused to sell parts to buyers who bought any service from Kodak's rivals); *United Shoe*, 258 U.S. at 456 (lessees of shoe machinery had to agree to "purchase supplies exclusively from the lessor.")
- 39 *LePage's Inc. v. 3M*, 324 F.3d 141, 154 (3d Cir. 2003) (en banc).
- 40 *Masimo v. Tyco*, 2009 WL 3451725, at *1 (9th Cir. 2009) (emphasis added). I was an expert witness for Masimo in the liability trial, and have been an expert witness for both plaintiffs and defendants in other cases involving bundled or loyalty discounts.
- 41 See Elhauge, *The Exclusion of Competition for Hospital Sales Through Group Purchasing Organizations*, at 7 (2002) (report to the U.S. Senate on behalf of the Medical Device Manufacturer's Association).
- 42 Most contractual enforcement is not by law, but by reputational sanctions. See Alan Schwartz & Robert E. Scott, *Contract Theory and the Limits of Contract Law*, 113 YALE L. J. 541, at 557 (2003).
- 43 In cases involving hospitals, such observation can be accomplished by sending salespersons to the hospitals or by having distributors and GPOs track the products each hospital purchases through them.
- 44 Seabright, *supra* note 2, at 247.
- 45 *Id.*
- 46 See Elhauge, 123 HARV. L. REV. at 402, 409, 443.
- 47 See *id.* at 405-07.
- 48 *Id.* at 402, 443.
- 49 See Elhauge, 123 HARV. L. REV. at 433-434, 479-481.
- 50 Professor Nalebuff states the percentage as 18.7% with rounding, but his proof indicates that the figure to two decimal places is 18.75%. See Barry Nalebuff, *Price Discrimination and Welfare*, 5(2) COMPETITION POL'Y INT'L 221, 227, 236 (2009).
- 51 Seabright, *supra* note 2, at 245.
- 52 See Elhauge, 123 HARV. L. REV. at 432-34.
- 53 See Nalebuff, *supra* note 50, at 232.

54 Seabright, *supra* note 2, at 246.

55 *Id.* at 250 n.9.

56 See Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667 (1994).

57 Seabright, *supra* note 2, at 250 n.9.

58 This is true not only under U.S. antitrust law, see Elhauge, 123 HARV. L. REV. at 436-38, but also under EU competition law, see ELHAUGE & GERADIN, GLOBAL ANTITRUST LAW & ECONOMICS 69-70 (Foundation Press 2007).

59 See Elhauge, 123 HARV. L. REV. at 438.

60 *Id.*

61 *Id.*

62 Commissioner of Competition v. Superior Propane Inc., 2000 Canada Comp. Trib. 16 (April 4, 2002).

63 See Elhauge, 123 HARV. L. REV. at 439-432.

64 *Id.* at 441-42.

65 *Id.* at 479-81; Nalebuff, *supra* note, at 225, 227.

66 See Elhauge, 123 HARV. L. REV. at 481.

67 *Id.* at 434-35.

68 Seabright, *supra* note 2, at 246.

69 *Id.*

70 *Id.*

71 See Elhauge, 123 HARV. L. REV. at 442.

72 Seabright, *supra* note 2, at 246.

73 Elhauge, 123 HARV. L. REV. at 440.

74 Seabright, *supra* note 2, at 246.

75 Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 298-300 (2003) (explaining the distinction between these two issues).

76 See Elhauge, 123 HARV. L. REV. at 440 (relying on literature finding such an invested U-shaped result).

77 *Id.*

78 *Id.*

- 79 *Id.* at 440-441.
- 80 Elhauge, *Do Patent Holdup and Royalty Stacking Lead to Systematically Excessive Royalties?*, 4 J. COMPETITION L. & ECON. 535, 543 (2008).
- 81 See *Id.* at 545; Elhauge, 123 HARV. L. REV. at 440-41.
- 82 Elhauge, 123 HARV. L. REV. at 434.
- 83 *Id.* at 412, 435.
- 84 *Id.* at 406-07, 434-35.
- 85 *Id.* at 433-34, 479-481.
- 86 *Id.* at 432-34, 479-81.
- 87 Daniel A. Crane & Joshua D. Wright, *Can Bundled Discounting Increase Consumer Prices Without Excluding Rivals?*, 5(2) COMPETITION POL'Y INT'L 209, 210 (Autumn 2009).
- 88 David S. Evans & Michael Salinger, *Why Do Firms Bundle and Tie? Evidence from Competitive Markets and Implications for Tying Law*, 22 YALE J. REG. 37, 40-41, 52 (2005) (acknowledging that it relies only on "casual empiricism" and that "there has been essentially no empirical research into efficiencies from bundling and tying products together"); Kobayashi, *Does Economics Provide a Reliable Guide to Regulating Commodity Bundling by Firms? A Survey of the Economic Literature*, 1 J. COMPETITION L. & ECON. 707, 708 (2005).
- 89 Elhauge, 123 HARV. L. REV. at 462.
- 90 Evans & Salinger, *supra* note 88, at 38-41, 43-44, 65-84; Kobayashi, *supra* note 88, at 741-43.
- 91 See AREEDA, ELHAUGE, & HOVENKAMP, *supra* note 27, ¶ 1744-45.
- 92 Evans & Salinger, *supra* note 88, at 41-42, 52-65; Kobayashi, *supra* note 88, at 708, 742-43.
- 93 Kobayashi, *supra* note 88, at 744.
- 94 Crane & Wright, *supra* note 87, at 209-210.
- 95 *Id.*
- 96 Evans & Salinger, *supra* note 88, at 42, 44, 83-84, 85-86.
- 97 *Id.* at 83-84.
- 98 *Id.* at 42, 44, 86.
- 99 Crane & Wright, *supra* note 87, at 218 n.4.
- 100 Elhauge, 123 HARV. L. REV. at 439 n.112. Likewise, under EC law, it could not be an exclusionary abuse of dominance, but could be an exploitative abuse.
- 101 Crane & Wright, *supra* note 87, at 209.

- 102 *Id.* at 210, 212-13.
- 103 See Daniel A. Crane, *Mixed Bundling, Profit Sacrifice, and Consumer Welfare*, 55 EMORY L.J. 423, 461-462 (2006).
- 104 Elhauge, 123 HARV. L. REV. at 407-413.
- 105 *Id.* at 451-454.
- 106 See Barry Nalebuff, *Exclusionary Bundling*, 50 ANTITRUST BULL. 321, 326 (2005) ("Although the a la carte price of A is above the monopoly price, there is no loss to the firm, as it does not expect to make any sales at the inflated price. In equilibrium, all customers buy their B from the firm and thus are able to buy A at the profit-maximizing price of m.")
- 107 Crane & Wright, *supra* note 87, at 213-215.
- 108 Elhauge, 123 HARV. L. REV. at 412-13.
- 109 *Id.* at 455 (collecting literature).
- 110 *Id.* at 454.
- 111 Crane & Wright, *supra* note 87, at 215-17.
- 112 Elhauge, 123 HARV. L. REV. at 456 (summarizing literature); Einer Elhauge & Abraham L. Wickelgren, *Robust Exclusion Through Loyalty Discounts* (2010), available at <http://ssrn.com/abstract=1544008>; Elhauge, *Defining Better Monopolization Standards*, 56 STAN. L. REV. 253, 284-288 (2003).
- 113 Elhauge, 123 HARV. L. REV. at 456 (summarizing literature); Elhauge, *Defining Better*, *supra* note 112, at 288-292.
- 114 Elhauge, 123 HARV. L. REV. at 457; Elhauge, *Defining Better*, *supra* note 112, at 340.
- 115 Crane & Wright, *supra* note 87, at 217.
- 116 *Id.*
- 117 See Elhauge, *The Exclusion of Competition for Hospital Sales*, *supra* note 41, at 30.
- 118 Department of Justice and Federal Trade Commission Statements of Antitrust Enforcement Policy in Health Care Statement 7 (1996).
- 119 Crane & Wright, *supra* note 87, at 209, 217. In a footnote, Crane and Wright also assert that even below-cost bundled discounts will rarely be exclusionary because of Judge Easterbrook's argument that excluded rivals can always organize buyers to defeat it. *Id.* at 220 n.38. However, this argument fails for a number of reasons. First, for reasons that were discussed above, if the buyers are intermediaries who pass on most or all of the price increase onto downstream consumers, they can affirmatively profit from creating *supra*-competitive profits that they split with the seller, in which case the buyers would have little incentive to enter into such an agreement with the rival. Second, for reasons noted in the text following this footnote, if the loyalty agreement can raise market prices by reducing rival incentives to engage in price competition, then it can increase rival profits and eliminate any incentive for it to try to undo the loyalty agreements. Third, even when both rivals and buyers have the right incentives, the buyers will have collective action problems in joining a rival scheme to undo market exclusion because, while the buyers collectively benefit from that scheme,

individual buyers benefit even more if it occurs without their involvement. See Elhauge, *Why Above-Cost Price Cuts to Drive out Entrants Do Not Signal Predation or Even Market Power – and the Implications for Defining Costs*, 112 YALE L. J. 681, 760-61 (2003).

120 Elhauge, 123 HARV. L. REV. at 456-58, 461-464.

121 *Id.* at 414, 459-461, 463; Elhauge, *How Loyalty Discounts Can Perversely Discourage Discounting*, 5 J. COMPETITION LAW & ECON. 189 (2009); Elhauge & Wickelgren, *supra* note 112.

122 Crane & Wright, *supra* note 87, at 216-217.

123 Benjamin Klein & Kevin M. Murphy, *Exclusive Dealing Intensifies Competition for Distribution*, 75 ANTITRUST L.J. 433, 445-447 (2008).

124 *Id.* at 445-447.

125 Crane & Wright, *supra* note 87, at 216.

126 Klein & Murphy, *supra* note 123, at 447-448.

127 *Id.* at 448.

128 See Daniel Flores, *Exclusive Dealing Intensifies Competition for Distribution: Comment* at 4 (January 2010), available at <http://ssrn.com/abstract=1542695>. Murphy & Klein are also incorrect in asserting that in their model exclusive retail contracts make “all consumers on net better off.” Klein & Murphy, *supra* note 123, at 451-52. Instead, while all the consumers who preferred the brand that wins the exclusive contract will be better off, half the consumers who prefer the other brand will be better off and half will be worse off. Flores, *supra*, at 7-8.

129 Flores, *supra* note 128, at 5.

130 *Id.* at 8.

131 Elhauge, 123 HARV. L. REV. at 475-476.

132 *Id.* at 403, 451, 468, 478.

133 Nalebuff, *supra* note 50, at 221.

134 *Id.* at 221.

135 Elhauge, 123 HARV. L. REV. at 427 (emphasis added); see also *Id.* at 430, 432, 434 (repeating the point with the same caveat).

136 *Id.* at 433, 481.

137 *Id.* at 434.

138 *Id.* at 427 (“To the extent ties empirically have efficiencies that offset adverse power effects, the quasi-per se rule allows defendants to prove them. In contrast, eliminating the quasi-per se rule would make ties without substantial foreclosure shares per se legal, even when their adverse power effects exceed any efficiencies.”)

139 *Id.* at 427, 434-435.

- 140 *Id.* at 427, 433-39.
- 141 *Id.* at 427, 439-442.
- 142 Nalebuff, *supra* note 50, at 224.
- 143 *Id.* at 224.
- 144 *Id.* at 224. Throughout the body of his analysis, Nalebuff uses total welfare to refer to *ex post* total welfare. *Id.* at 239 n.2.
- 145 *Id.* at 224.
- 146 Elhauge, 123 HARV. L. REV. at 427, 430, 434.
- 147 *Id.* at 401, 426-427, 433-435.
- 148 Nalebuff, *supra* note 50, at 224.
- 149 *Id.* at 224-225.
- 150 Brief of Professors Barry Nalebuff, Ian Ayres, Lawrence Sullivan as Amici Curiae in Support of Respondent, *Illinois Tool Works v. Independent Ink*, 2005 WL 2427646, at *3, *19- 21.
- 151 Nalebuff, *supra* note 50, at 224.
- 152 *Id.* at 233.
- 153 Amicus Brief of Nalebuff, Ayres, & Sullivan, *supra* note 150, at 19.
- 154 Elhauge, 123 HARV. L. REV. at 440.
- 155 *Id.*
- 156 If all patent holders can engage in perfect price discrimination, then in theory the patent term could be shortened to provide the optimal fraction because consumers would enjoy some of the total surplus after the patent expires. But it is unrealistic to assume that all patent holders can perfectly price discriminate, and thus there is no reason to think patent terms have been set in this fashion. Further, market power often reflects other property rights that are not so term limited.
- 157 Nalebuff, *supra* note 50, at 222, 239 n.2.
- 158 *Id.* at 226.
- 159 Elhauge, 123 HARV. L. REV. at 433, 481.
- 160 Although Nalebuff states these percentage with rounding as negative 18.7%, positive 4.9%, positive 40%, and negative 2%, see Nalebuff, *supra* note 50, at 226-227, his proofs indicate that the figures to two decimal places are negative 18.75%, positive 4.88%, positive 39.66%, and negative 2.29%, *Id.* at 235-236.
- 161 *Id.* at 229.

- 162 Elhauge, HARV. L. REV. at 433, 481.
- 163 Nalebuff, *supra* note 50, at 222, 226-227.
- 164 *Id.* at 230.
- 165 *Id.* at 231-232.
- 166 *Id.* at 231-232, 237-239.
- 167 *Id.* at 232.
- 168 Elhauge, 123 HARV. L. REV. at 434.
- 169 Harry First, *No Single Monopoly Profit, No Single Policy Prescription?*, 5 COMPETITION POL'Y INT'L 199, 201-204 (2009).
- 170 *Id.* at 199, 204-06.
- 171 *Id.* at 202.
- 172 Elhauge, 123 HARV. L. REV. at 436-437.
- 173 First, *supra* note 169, at 201.
- 174 Elhauge, 123 HARV. L. REV. at 436 n.104; Elhauge, 56 STAN. L. REV. at 255, 260, 265-266.
- 175 Compare First, *supra* note 169, at 199, 205, with Gregory J. Werden, *Next Steps in the Evolution of Antitrust Law: What to Expect from the Roberts Court*, 5 J. COMPETITION L. & ECON. 49, 49 (2009).
- 176 First, *supra* note 169, at 201-202.
- 177 Elhauge, 123 HARV. L. REV. at 437 n.104.
- 178 *Id.* at 437 n.104.
- 179 First, *supra* note 169, at 202.
- 180 Elhauge, 123 HARV. L. REV. at 437 n.104.
- 181 Neil W. Averitt & Robert H. Lande, *Using The "Consumer Choice" Approach To Antitrust Law*, 74 ANTITRUST L. J. 175, 176 (2007).
- 182 *Id.* at 262.
- 183 John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE DAME L. REV. 191 (2008).
- 184 First, *supra* note 169, at 205.
- 185 Innovation efficiencies also do not offer very useful guidance on whether to allow agreements or mergers that create market power because market power has mixed effects in that it: (1) decreases incentives to create innovations protected by intellectual property law but increases incentives to

create innovations that do not enjoy such protection, and (2) decreases incentives to create drastic innovations but increases incentives to create non-drastic innovations. Elhauge, 56 STAN. L. REV. at 298-299 & n.141; Elhauge, 112 YALE L. J. at 781 & n.266.

186 *Id.* at 205.

187 Crane & Wright, *supra* note 87, at 210; Dennis W. Carlton & Ken Heyer, *Extraction v. Extension: The Basis for Formulating Antitrust Policy Towards Single-Firm Conduct*, 4(2) COMPETITION POL'Y INT'L 285, 285, 290-92 (2008).

188 First, *supra* note 169, at 203.

189 See Kaplow & Shavell, *supra* note 56.

190 See *supra* Part I.

191 Elhauge, 123 HARV. L. REV. at 402.

192 First, *supra* note 169, at 205.

193 Elhauge, 123 HARV. L. REV. at 404

194 First, *supra* note 169, at 205.

195 Elhauge, 123 HARV. L. REV. at 417-419.

196 *Id.* at 402, 443, 469-470, 472.

197 *Id.* at 446-47.

198 First, *supra* note 169, at 205.

199 Elhauge, 123 HARV. L. REV. at 402, 409 (emphasis added); see also *Id.* at 416, 443 ("used or bundled in a fixed ratio").

200 *Id.* at 409; see also *id.* at 416.

201 *Id.* at 446.

202 First, *supra* note 169, at 205-206.