PERSONALIZING PRICES TO REDISTRIBUTE WEALTH IN ANTITRUST AND PUBLIC UTILITY RATE REGULATION

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The information age is enabling firms with even small amounts of market power to personalize the prices they charge to each consumer in the market. Left to their own devices, firms will use this new power to increase profits by charging prices personalized to the maximum that each consumer is willing to pay. But government can also use the new power to personalize prices to equalize wealth—by insisting that firms personalize high prices to the rich and low prices to the poor—and most of the legal rules needed to do so are already in place. Both the antitrust laws and state and federal rate regulatory regimes already require enforcers to take the distribution of wealth into account in condemning anticompetitive practices or approving prices. Before the information age made personalized pricing possible, enforcers hesitated aggressively to use their powers to achieve wealth-equalizing prices because they worried that doing so would harm efficiency. But personalized prices are always efficient, whether set high by firms to maximize profits or adjusted by regulators to equalize wealth, creating an unprecedented opportunity for government to do distributive justice.

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INTRODUCTION

To personalize a price is to tailor it to the willingness to pay of a particular consumer, often through the application of machine learning techniques to consumer data.[1] Virtually all firms today claim not to

1. To be more precise, to personalize a price is to tailor it to be at or below the maximum that a particular consumer is willing to pay for a product but at or above the cost of producing the product. As we shall see in Part I, it follows that personalized pricing is always efficient: it always produces a price that the buyer is willing to pay (because it is no higher than the buyer's maximum willingness to pay) and that the seller is willing accept (because it is no lower than the seller's costs of production, including a reasonable return on investment). *See infra* Part I. By including prices that are below a consumer's maximum willingness to pay in the definition of personalized pricing, I define personalized pricing differently here from the way I defined it in an earlier work. *See* Ramsi A. Woodcock, *Personalized Pricing as Monopolization*, 51 CONN. L. REV. 311, 313 n.1 (2019). In that work, I followed the definition of perfect, or first-degree, price discrimination in economics in limiting the definition of personalized pricing to prices that equal maximum willingness to pay. *See id.* at 315. But to use personalized pricing to redistribute wealth, personalized prices must vary between the maximum that consumers are willing to pay for products and the production costs that represent the minimum that firms are willing to charge for their products. Hence, a more capacious definition is appropriate.

I also mean this definition to be broad enough to include not only prices chosen based upon data on individual consumers—such as, to choose a rather stylized example, a price chosen by a coffee house manager after reading a consumer's private email to a friend

personalize prices, and so far there is evidence only that firms are tailoring prices on a group, rather than an individual, basis. Uber admits to charging higher prices to Manhattan riders than to Queens riders, for example, but not to differentiating further between customers riding particular routes.[2] But firms across the economy have been working to bring machine learning to pricing, and the profit-making potential of personalized pricing—which in theory should enable firms to charge the highest possible prices for every unit sold—suggests that firms will roll it out soon, if they have not already secretly done so.[3]

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disclosing that the consumer is willing to pay as much as $10 for an espresso—but also prices generated automatically through auction processes designed to cause consumers to reveal how much they are willing to pay. Thus, an art auctioneer personalizes prices because the auction method ensures that the price at which the art sells is equal to or below the buyer's maximum willingness to pay but at or above the production cost of the seller. This counts as personalized pricing even if the auctioneer does not consciously understand himself to be eliciting information on willingness to pay or choosing prices with that information. The auction procedure ensures that prices achieved through the auction incorporate the information, and that is enough for the prices to count as personalized prices.

One counterintuitive implication of this definition is that the sort of uniform pricing at marginal cost that one finds in the perfectly competitive markets of general equilibrium theory is an example of personalized pricing. The Walrasian auction required to achieve marginal cost pricing in perfectly competitive markets causes market participants to reveal their production costs or willingness to pay to a sufficient extent to ensure that price is above cost but below maximum willingness to pay for each market participant with respect to each unit produced and sold in the market. *See* Frank Ackerman, *Still Dead After All These Years: Interpreting the Failure of General Equilibrium Theory*, 9 J. ECON. METHODOLOGY 119, 122–23 (2002) (discussing *tâtonnement*).

2. *See* COUNCIL OF ECON. ADVISORS, EXEC. OFF. OF THE PRESIDENT, BIG DATA AND DIFFERENTIAL PRICING 12–13 (2015), https://obamawhitehouse.archives.gov/sites/default/files/whitehouse_files/docs/Big_Data_Report_Nonembargo_v2.pdf [https://perma.cc/K7N2-RJHH] ("[C]ompanies have not yet embraced personalized pricing . . . ."); Eric Newcomer, *Uber Starts Charging What It Thinks You're Willing to Pay*, BLOOMBERG (May 19, 2017, 2:19 PM), https://www.bloomberg.com/news/articles/2017-05-19/uber-s-future-may-rely-on-predicting-how-much-you-re-willing-to-pay (discussing Uber's announcement that it will engage in route-based pricing); Aaron Mak, *Is Uber Really Charging Frequent Users Higher Fares?*, SLATE (Mar. 30, 2018, 2:40 PM), https://slate.com/technology/2018/03/is-uber-really-charging-frequent-users-more.html [https://perma.cc/2KWK-VNTS] (discussing evidence that Uber charges higher prices to frequent users and Uber's claim not to do so).

3. *See* Stephan M. Liozu, *Penetration of the Pricing Function Among Global Fortune 500 Firms*, 18 J. REVENUE & PRICING MGMT. 421, 425–26 (2019) (finding that the number of global Fortune 500 firms having a dedicated pricing department had "grown significantly" since 2010, to twenty-two percent); WILLIAM J. NIEJADLIK, A SPOTLIGHT ON TOTAL OFFER OPTIMIZATION: FAST FORWARD TO CUSTOMER CENTRIC REVENUE MANAGEMENT 17 (2017), https://amadeus.com/documents/en/airlines/research-report/a-spotlight-on-total-offer-optimization-web.pdf [https://perma.cc/5TJT-D8UD] (advertising "revenue management" services to airlines that will "create offers with the right mix of products at the right price to each customer individually"). It is sometimes suggested that perfect price discrimination—and, by extension, personalized pricing (for the distinction

Personalized pricing harms consumers because profits are zero-sum: all else equal, if personalized pricing generates more profits from a given transaction, that can only be because consumers are paying those additional profits out to the firm in the form of higher prices and so they are made poorer.[4] Because consumers are generally less wealthy than the managers and shareholders who enjoy firm profits, the result is a regressive redistribution of wealth.[5] But it does not have to be that way. Existing law provides antitrust enforcers and public utility rate regulators with the authority to direct firms to charge the lowest possible prices to consumers consistent with earning a reasonable return on investment, resulting in a progressive redistribution of wealth.[6] Rate regulation statutes require regulated firms to charge "just and reasonable" prices, a standard that the courts have long interpreted to mean prices that distribute as much of the surplus generated by any business transaction as possible to the consuming public.[7] Antitrust's consumer welfare standard gives enforcers similar authority to force prices down to costs.[8] A few tweaks in the law would allow them to redistribute wealth even more carefully by personalizing higher prices for well-off consumers and charging lower, at-cost prices to less-well-off consumers.

In the mid-twentieth century, antitrust enforcers and rate regulators in fact used their powers to coax big firms into engaging in redistributive

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between perfect price discrimination and personalized pricing, *see supra* note 1)—is possible only if arbitrage can be prevented, meaning that low-price buyers can be denied the ability to resell to high-price buyers. *See* Lars A. Stole, *Price Discrimination and Competition*, *in* 3 HANDBOOK OF INDUSTRIAL ORGANIZATION 2221, 2226 (M. Armstrong & R. Porter eds., 2007) (observing that, in general, price discrimination is possible only if "arbitrage across differently priced goods is infeasible"). But a firm that can perfectly price-discriminate knows the value that each buyer places on each unit of the good and therefore must know when a buyer places a higher value on a unit because the buyer plans on reselling the unit to a high-price buyer. That in turn means that the perfectly price-discriminating seller can raise price to arbitragers, eliminating the incentive of arbitragers to resell and thereby to undermine the price discrimination scheme. Arbitrage is, therefore, not an obstacle to perfect price discrimination, but only to other forms of price discrimination, such as third-degree price discrimination, that do not presuppose perfect information about buyer willingness to pay. *See* Ramsi A. Woodcock, *Big Data, Price Discrimination, and Antitrust*, 68 HASTINGS L.J. 1371, 1386–87 (2017) [hereinafter Woodcock, *Big Data, Price Discrimination, and Antitrust*] ("It is not as well appreciated as it should be that big data will also permit firms to eliminate the arbitrage problem because it will allow them to identify, and cut off, low-price buyers who resell the product."); Woodcock, *supra* note 1, at 317–18.

4. *See* Woodcock, *supra* note 1, at 321–26.

5. *See* Woodcock, *Big Data, Price Discrimination, and Antitrust*, *supra* note 3, at 1390–91; Einer Elhauge, *Horizontal Shareholding*, 129 HARV. L. REV. 1267, 1291–1301 (2016) (arguing that when firms are able to charge higher prices economic inequality results).

6. *See infra* Part I.

7. *See infra* Parts I, V.

8. *See infra* Part V.

pricing.[9] AT&T, for example, famously responded to the threat of antitrust action by charging high prices for long-distance calling and "pizza prices"—monthly fees designed to equal the price of a medium pizza with two toppings—for local calling.[10] That placated enforcers because it redistributed wealth from the well-heeled, who tended to place more long-distance calls, to the average American, who tended to place mostly local calls.[11] By the end of the twentieth century, this kind of redistributive pricing had disappeared, however, because economists warned that it was inefficient.[12] Charging high prices to richer consumers may drive some of them from the market, even thought they could afford to pay a price high enough to cover production costs, including a reasonable return on investment.[13] That is an inefficient result because it drives output below potential.[14]

The remarkable thing about personalized pricing is that it makes this efficiency concern go away, allowing regulators to get back into the business of insisting that firms price their products with social justice in mind.[15] When a company *personalizes* higher prices to well-off consumers for each unit of the product the consumers purchase, rather than, as in the days of AT&T's pizza pricing, charging higher *uniform* prices to particular *groups* of consumers regardless how many units they buy, the danger that the firm will price consumers out of the market is slight.[16] The firm uses data on each consumer to guess the maximum price that he is willing to pay for each unit and then charges a price designed not to exceed that maximum, ensuring that the consumer is not priced out of the market.[17]

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9. *See* RICHARD H.K. VIETOR, CONTRIVED COMPETITION: REGULATION AND DEREGULATION IN AMERICA 170–72 (1994).

10. *See* RICHARD R. JOHN, NETWORK NATION: INVENTING AMERICAN TELECOMMUNICATIONS 408 (2015); GERALD F. DAVIS, MANAGED BY THE MARKETS: HOW FINANCE RESHAPED AMERICA 70–71 (2009).

11. *See* VIETOR, *supra* note 9, at 182–83, 215; JOHN, *supra* note 10, at 408–09; W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR. & JOHN M. VERNON, ECONOMICS OF REGULATION AND ANTITRUST 389 (4th ed. 2005).

12. *See infra* Part III.

13. *See* Woodcock, *Big Data, Price Discrimination, and Antitrust*, *supra* note 3, at 1380–81.

14. *See id.*

15. *See id.* at 1388–90.

16. *See id.* Firms will sometimes fail accurately to identify the maximum price that a consumer is willing to pay, and as a result they may inadvertently price consumers out of the market. But as machine learning techniques improve, the danger will lessen, especially relative to legacy pricing schemes that do not take data on individual willingness to pay into account. In this Article, I assume that firms do a good job of identifying the maximum prices that consumers are willing to pay. *See* Woodcock, *supra* note 1, at 319–20 (discussing the implications of imperfection in personalized pricing).

17. *See* Woodcock, *Big Data, Price Discrimination, and Antitrust*, *supra* note 3, at 1388–90. Personalized prices must not, however, fall below the firm's production costs, including a reasonable return on investment, otherwise personalized pricing would require

Where midcentury AT&T no doubt discouraged millions of Americans from placing long-distance calls by charging uniform, indiscriminately high long-distance prices, AT&T would not discourage any long-distance calling today were it to personalize high long-distance prices, because the company would be able to guess, with reasonable accuracy, what each user would be willing to pay for service.[18] Thanks to personalized pricing, regulators will soon have a free hand to mandate redistributive pricing in individual markets without needing to worry that distributive justice is inconsistent with efficiency.[19]

Indeed, in racing to amass the data and algorithmic infrastructure they need to allow them to personalize prices for purposes of maximizing profit, firms are unwittingly also racing to create an infrastructure that government can harness in order to redistribute wealth.[20] Once this infrastructure is in place, the additional expenditure required by government to mandate that the infrastructure be used to achieve pricing levels consistent with the government's redistributive goals, and to monitor compliance, will be small.[21]

The best way for government to do that would be by creating a dedicated regulator of personalized prices. Absent that, however, the preexisting government authorities that are in the best position to mandate redistributive pricing are antitrust enforcers and legacy price regulators,

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that firms suffer losses—and firms will not tolerate that. If a consumer's willingness to pay for a unit falls below the cost of producing that unit, the firm will set its price equal to the cost of production and the consumer will not purchase the unit.

18. *See* W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR. & DAVID E.M. SAPPINGTON, ECONOMICS OF REGULATION AND ANTITRUST 525–26 (5th ed. 2018) (pointing out that AT&T's high midcentury long-distance charges were inefficient).

19. *See infra* Part IV. I touched upon this thesis in an earlier work; the present Article develops it more fully. *See* Woodcock, *supra* note 3, *Big Data, Price Discrimination, and Antitrust*, at 1406–13.

20. In a similar vein, socialists a century ago often opposed antitrust legislation on the ground that market concentration was a first step toward central planning. *See* DAVID J. GERBER, LAW AND COMPETITION IN TWENTIETH CENTURY EUROPE: PROTECTING PROMETHEUS 61 (2001) (identifying this view as a source of opposition to antitrust policy in the Austro-Hungarian Empire); TONY FREYER, REGULATING BIG BUSINESS: ANTITRUST IN GREAT BRITAIN AND AMERICA, 1880–1990, at 57, 59 (1992) (identifying this view among British socialists and American economist Richard T. Ely). For a contemporary example, see LEIGH PHILLIPS & MICHAL ROZWORSKI, THE PEOPLE'S REPUBLIC OF WALMART: HOW THE WORLD'S BIGGEST CORPORATIONS ARE LAYING THE FOUNDATION FOR SOCIALISM (2019).

21. *Cf.* GERBER, *supra* note 20, at 61 (noting that "social liberals" opposed interference with cartels because interference "could disrupt economic and social development"); *id.* at 92 ("In simplest terms, Amazon is a giant planned machine for distributing goods. . . . It is a collection of thousands of interlocking optimization systems that work together to carry out the deceptively simple task of moving objects from producers to consumers. Rather than the anarchy of the market, once we enter the Amazon, we are entering a sophisticated planning device—one that offers . . . clues for how we could manage demand and supply of consumer goods in a society not built on profit . . . .").

such as regulators of public utility rates. The steps required to enable them to carry out this function are the focus of this Article. In order for antitrust enforcers and price regulators to leverage the emerging personalized pricing infrastructure to redistribute wealth, the courts must recognize that antitrust enforcers and price regulators have the authority to pursue distributive goals, something that remains somewhat contested today. Some scholars argue that the purpose of antitrust and rate regulatory regimes is only to achieve efficient pricing—by promoting competition in the case of antitrust and by implementing marginal cost pricing in the case of rate regulation.[22] And other scholars argue that even if antitrust and rate regulators are permitted to pursue redistributive goals as a matter of law, antitrust enforcers and rate regulators should not do so as a matter of policy because tax and transfer is a more efficient way to redistribute wealth.[23]

Part I explains the well-known result that personalized pricing is efficient. Part II considers whether the law permits antitrust enforcers and rate regulators to redistribute. We shall see that not only can they redistribute, but both antitrust law and rate regulatory regimes have redistribution of wealth in favor of consumers as a core aim. Part III considers the objection that income taxation combined with government transfers is a more efficient way to redistribute wealth than is the sort of price regulation in which antitrust enforcers and rate regulators can engage. Part IV shows that the efficiency of personalized pricing puts to rest some, but not all, of the reasons that once counseled in favor of pursuing redistribution exclusively through the tax system. Finally, Part V considers just how far existing antitrust and rate regulatory doctrine will permit antitrust enforcers and rate regulators to go in dictating prices that not only redistribute wealth from firms to consumers but also among different groups of consumers. Part V also identifies changes to the interpretation of existing antitrust and rate regulatory doctrine that would be needed to enable antitrust enforcers and rate regulators fully to carry out these functions.

I. PERSONALIZED PRICING AS AN EFFICIENT MEANS OF REDISTRIBUTING WEALTH

A firm's pricing distributes wealth in two ways: (1) between the firm and consumers; and (2) among consumers. This is evident, for example, in AT&T's pizza pricing, which both redistributed wealth from AT&T to

22. *See* Alan J. Meese, *Debunking the Purchaser Welfare Account of Section 2 of the Sherman Act: How Harvard Brought Us a Total Welfare Standard and Why We Should Keep It*, 85 N.Y.U. L. REV. 659, 660–67 (2010); VISCUSI, HARRINGTON & SAPPINGTON, *supra* note 18, at 525–26.

23. *See* Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667, 669 (1994); LOUIS KAPLOW, THE THEORY OF TAXATION AND PUBLIC ECONOMICS 123–24 (2008).

consumers and determined a particular distribution of wealth between different groups of telephone customers—namely, long-distance subscribers and local-calling subscribers. As we shall see in Section II.A, the rate regulators who controlled AT&T's long-distance and local-calling rates were bound to impose "just and reasonable" prices that could not be in excess of those necessary to cover a firm's costs, understood to include a reasonable return to investors.[24] For AT&T, that meant that prices for local and long distance had to be no higher than necessary to cover the cost of AT&T's network infrastructure, plus the sum of the marginal costs of connecting calls and the minimum amount needed to compensate investors for use of their funds in building and maintaining the system.[25] By enforcing such cost-based pricing, regulators effectively redistributed wealth from AT&T to consumers. As the monopoly provider of telephone service to Americans, AT&T could presumably have charged higher prices and earned more than a reasonable return for investors.[26] Regulation prevented that.

As we have seen, AT&T redistributed between long-distance and local-calling subscribers through pizza pricing—charging local callers a price for a month of local-calling service that was equal to the cost of a medium pizza with two toppings and, at the same time, charging long-distance callers much higher prices.[27] The requirement that AT&T charge prices equal to costs did not prevent it from charging higher prices for long distance than for local calling, and so redistributing between rich long-distance callers and poor local callers. For AT&T, as for many companies, a large portion of production costs are not marginal, but fixed, meaning that they must be incurred to set up the business, and those costs are not attributable to any particular unit of output.[28] That gave AT&T the freedom to decide how to allocate those costs between consumers. In deciding to allocate more costs to long-distance callers through higher prices, AT&T could redistribute wealth between two different groups of consumers at the same time that AT&T redistributed wealth from itself to consumers as a group.

Both kinds of redistribution—from firms to consumers and among consumers—can be inefficient in the sense that they reduce consumption

24. *See* VIETOR, *supra* note 9, at 171, 182–83 (discussing price regulation of AT&T); J. STEPHEN HENDERSON & ROBERT E. BURNS, AN ECONOMIC AND LEGAL ANALYSIS OF UNDUE PRICE DISCRIMINATION 43–46 (1989) (discussing the requirement of "just and reasonable" pricing).

25. *See* HAL R. VARIAN, INTERMEDIATE MICROECONOMICS: A MODERN APPROACH 334–35, 339 (7th ed. 2006) (discussing the types of costs borne by a firm).

26. *See id.* at 424–25 (discussing monopoly pricing); VIETOR, *supra* note 9, at 174–78 (discussing AT&T's monopoly status).

27. *See supra* note 10 and accompanying text.

28. *See* VARIAN, *supra* note 25, at 339.

of the firm's output.[29] Redistribution from firms to consumers is inefficient if lower prices prevent the firm from covering fixed costs, driving the firm out of business and depriving all consumers in the market of access to the firm's product, greatly reducing consumption.[30] Even if prices are not so low as to fail to cover fixed costs, they may nevertheless be so low as to prevent the firm from covering marginal costs for some units for which consumers are willing to pay, preventing the firm from producing and selling those units and driving those consumers from the market, reducing consumption.[31] Redistribution among consumers is inefficient if some consumers abandon the product when charged higher prices. While wealthier AT&T subscribers were willing to pay AT&T's high long-distance rates, those of more modest means simply made fewer long-distance calls.[32]

Personalized pricing eliminates the potential inefficiency of both kinds of redistribution by allowing firms to raise or lower prices charged to inframarginal buyers while still charging a price equal to marginal cost to the marginal buyer.[33] With the position of the marginal buyer in the market preserved, price changes cannot drive consumers from markets or discourage firms from producing. Consider an example—Case 1—in which personalized pricing allows a firm to raise prices without reducing consumption. Suppose that there are four buyers in a long-distance telephone market, each willing to pay at most $5.00, $4.00, $3.00, and $2.00 for a unit of long-distance calling access, respectively. If the $2.00 buyer is the marginal buyer, a firm that charges a uniform price must charge no more than $2.00 to all four buyers in order to keep the $2.00 buyer in the market. Raising the price to $3.00 to soak long-distance buyers would drive the $2.00 buyer from the market. Assuming that the cost of providing access to that buyer is under the $2.00 that the buyer is willing to pay, this would be an inefficient result. At a lower price, both the buyer and the phone company would be willing to transact, so at a price of $3.00 output would be below potential. Under personalized pricing, the problem disappears. The firm can charge $5.00 to the $5.00 buyer, $4.00 to the $4.00 buyer, $3.00 to the $3.00 buyer, and $2.00 to the $2.00 buyer, thereby soaking the long-distance subscribers to the maximum possible extent while ensuring that each continues to buy.

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29. *See* Woodcock, *Big Data, Price Discrimination, and Antitrust*, *supra* note 3, at 1380–81.

30. *See* VARIAN, *supra* note 25, at 435–36.

31. Such excessively low pricing is equivalent to monopsony pricing and the resulting inefficiency is equivalent to the deadweight loss of monopsony, but here the price is chosen by the seller (the firm) itself or imposed by the government instead of by a monopsony buyer. *See, e.g.*, *id.* at 471–73.

32. *See* VISCUSI, HARRINGTON & VERNON, *supra* note 11, at 415–17 (discussing the efficiency advantages of "Ramsey pricing").

33. *See* VARIAN, *supra* note 25, at 445–46.

Now consider an example—Case 2—in which personalized pricing enables a firm that has low fixed costs to lower its prices without reducing consumption. Suppose that the marginal cost of adding an additional unit of local calling access is $0.00 for the first unit, $0.50 for the second, $1.00 for the third, and $1.50 for the fourth, and that, to keep matters simple, fixed costs are zero. In this case, if the fourth unit is the marginal unit, a phone company that charges a uniform price must charge no less than $1.50 to all four buyers in order for the phone company to be willing to produce the fourth unit. If the phone company were to lower the price to $1.00 to reduce profits, the phone company would make a loss on the sale of the fourth unit and therefore choose not to produce it. Assuming that demand is the same as in Case 1, the fourth buyer is willing to pay $2.00 for the fourth unit, which is enough to cover the phone company's $1.50 cost of producing the unit, so a failure to produce and sell the fourth unit would be an inefficient result. At a higher price, both the buyer and the phone company would be willing to transact, so at a price of $1.00 output would be below potential. Under personalized pricing, the problem disappears. The phone company can charge $0.00 for the first unit, $0.50 for the second, $1.00 for the third, and $1.50 for the fourth, thereby enabling the phone company to produce and sell the fourth unit while still lowering prices and profits on all other units. Indeed, in this example, personalized pricing enables the phone company to charge the lowest possible prices (at-cost prices) on all units sold, eliminating all profits.[34]

Finally, consider an example—Case 3—in which personalized pricing enables a firm that has *high* fixed costs to lower its prices without reducing consumption. Suppose that the phone company cannot allocate any more fixed costs to long-distance subscribers, because long-distance prices are already as high as possible but fixed costs have not fully been covered, and so the phone company must allocate $5.00 of fixed costs to local-calling subscribers, for whom the marginal cost of providing service is as in Case 2. If the phone company charges a uniform price for all four

34. *See* Woodcock, *Big Data, Price Discrimination, and Antitrust*, *supra* note 3, at 1408. A price schedule of this kind, in which the price of each unit would equal the marginal cost of its production, would ensure that sellers receive compensation equal in value to their marginal effort for every additional unit of output that they produce. Such a price schedule would, therefore, achieve what John Bates Clark famously and mistakenly thought that uniform competitive prices would achieve. *See* BARBARA H. FRIED, THE PROGRESSIVE ASSAULT ON LAISSEZ FAIRE: ROBERT HALE AND THE FIRST LAW AND ECONOMICS MOVEMENT 114–15 (1998) (discussing "classical theories of distribution" that associated fair distribution with payment to each factor of production of a price equal to cost). Uniform competitive prices do not achieve this because a uniform competitive price equals the cost of the unit with the highest marginal cost—the marginal unit. When marginal costs increase in output, the uniform competitive price will therefore exceed the marginal cost of producing all the inframarginal units, providing sellers with compensation in excess of their effort for these units. *See id.* at 133–34. This analysis follows Clark in setting aside the problem of fixed costs.

units of local calling access, price will need to be $2.50 in order to cover all costs, including fixed costs. At a price of $2.50 per unit, the phone company nets, after deduction of marginal costs, ($2.50 minus $0.00 equals) $2.50 on the first unit, ($2.50 minus $0.50 equals) $2.00 on the second unit, and ($2.50 minus $1.00 equals) $1.50 on the third unit, for a total of $6.00, which more than covers fixed costs of $5.00. But, assuming that demand is the same as in Case 1, a price of $2.50 will drive the fourth buyer—the $2.00 buyer—from the market, reducing output. Under personalized pricing, the problem disappears. The phone company can charge $3.00 to the first two buyers and $2.00 to the second two, thereby enabling the phone company to cover costs, including fixed costs. Net returns are $3.00 on the first unit, $2.50 on the second, $1.00 on the third, and $0.50 on the fourth, for a total of $7.00, which exceeds fixed costs of $5.00. And the $2.00 buyer is able to purchase service, so there is no inefficiency.

As these examples show, personalized pricing gives firms the power to vary prices without preventing marginal consumers from buying their products and so without reducing output or harming efficiency. It follows that personalized pricing allows firms efficiently to pick low prices that redistribute from themselves to consumers (Cases 2 and 3), or to pick different prices for different consumers that redistribute between those consumers (by charging the rich consumers high prices, as in Case 1, and the poor consumers low prices, as in Cases 2 and 3). However, firms will not engage in such progressively redistributive pricing unless they are forced to do so. Instead, firms will use personalized pricing to extract every last cent of value from consumers by tailoring prices to each consumer's maximum willingness to pay (a property that is incidentally illustrated by Case 1 above).[35] As we shall see, antitrust enforcers and rate regulators can prevent this from happening and compel firms to redistribute wealth in a progressive fashion instead.[36]

35. *See id.* at 445–46.

36. It is a loose assumption of this Article that the thing we wish to equalize in "redistributing wealth" is income. But that assumption is by no means essential to the arguments for redistributive personalized pricing advanced here. All of the redistributive methods discussed here, including the income tax, personalized pricing, and "bubble pricing," *see infra* Section IV.A.3, can be used to redistribute endowments (*e.g.*, bank accounts, homes, the value of personal talents, and so on), cardinal utility (*i.e.*, pleasure), or most any other quantity one might wish to call "wealth."

II. THE EXPLICITLY REDISTRIBUTIVE CHARACTER OF RATE REGULATION AND ANTITRUST

A. The Distributive Origins of Antitrust and Rate Regulation

Antitrust enforcers and rate regulators can leverage the power of personalized pricing to compel firms efficiently to redistribute wealth only if the antitrust laws and the statutes governing rate regulatory regimes permit antitrust enforcers and rate regulators to make the redistribution of wealth a goal. Some scholars have suggested, by contrast, that both antitrust and rate regulatory regimes permit only enforcement actions that promote efficiency.[37] They are mistaken. Both antitrust and rate regulation were originally conceived as wealth-redistributive tools, and, to this day, antitrust enforcers and rate regulators retain the authority to redistribute wealth.

Indeed, the origins of both antitrust and rate regulation lie in nineteenth-century attempts by Americans to address distributive justice. In the early nineteenth century, legislatures organized businesses primarily by granting corporate charters on a one-off basis and coupling charters with grants of monopoly rights in the corporation's legislatively mandated business line.[38] Legislatures intended the monopoly rights as enticements to investment, but they limited the rights' scope by regulating the prices that firms could charge.[39] In the mid-nineteenth century, however, legislatures changed course. They passed general incorporation statutes that allowed anyone to access the business advantages offered by the corporate form, but also did away with both the monopoly rights and the price regulation that once came with it.[40] This embrace of economic

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37. *See* Meese, *supra* note 22, at 660–67; VISCUSI, HARRINGTON & SAPPINGTON, *supra* note 18, at 525–26.

38. *See* MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW, 1780-1860, at 111 (1977).

39. *See id.* (discussing grants of monopoly rights for business development purposes). A hint of the prerevolutionary roots of this practice of regulated monopoly grant making is found in the following account of how Daniel Boone's father went about opening a tavern on the North Carolina frontier in 1754:

> Squire presented his fellow justices with a petition that he be allowed to operate a "Publick House at his own Plantation" . . . . They issued the license and set his rates at one shilling for a "Dinner of Roasted or Boiled Flesh," six shillings for a gallon of rum, whiskey, or other spirits, and two pence per night for lodging "in a good bed."

JOHN MACK FARAGHER, DANIEL BOONE: THE LIFE AND LEGEND OF AN AMERICAN PIONEER 40 (1992).

40. *See* DAVID A. MOSS, WHEN ALL ELSE FAILS: GOVERNMENT AS THE ULTIMATE RISK MANAGER 56, 68–69 (2002) (discussing the spread of general incorporation laws, which permitted firms to incorporate without a specific act of a legislature); HORWITZ, *supra* note 38, at 134 (observing that privately organized manufacturing firms came to

liberalism was accompanied by rapid industrialization but also rising concentration of markets.[41] The increase in concentration seemed to signal a return to the old preliberal world of monopoly markets, with the important difference that now the monopolies were not government-created and price-regulated but private in inception and unregulated.[42]

Antitrust and public utility rate regulation were two ways in which Americans sought to address the inequalities that flowed from the new problem of private corporate power.[43] Antitrust promised to help by enabling new firms to enter markets, thereby undermining the bargaining power of the large firms and cartels already there and preventing them from dictating prices.[44] As will become clear shortly, this focus on influencing prices through the competitive process accounts for antitrust's lack of attention to outcomes until the Chicago School revolution in the field in the 1970s: advocates thought that once the bargaining power of firms had been reduced, the "Invisible Hand" would ensure a just and efficient distribution of wealth.[45] Antitrust appealed to those who feared

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exceed in size publicly chartered firms that had been granted monopoly privileges in order to encourage investment, and this led to the view that monopoly privileges were no longer needed).

41. *See* ALFRED D. CHANDLER, JR., SCALE AND SCOPE: THE DYNAMICS OF INDUSTRIAL CAPITALISM 52 (1990); GERBER, *supra* note 20, at 22–26 (discussing concentration and cartelization as general features of industrialization).

42. *See* RICHARD HOFSTADTER, THE AGE OF REFORM: FROM BRYAN TO F.D.R. 231 (Vintage Books 1960) (1955) ("The Progressives were . . . haunted by the specter of a private power far greater than the public power of the state.").

43. *See* William J. Novak, *Law and the Social Control of American Capitalism*, 60 EMORY L.J. 377, 399–400 (2010); FRIED, *supra* note 34, at 5–6.

44. *See* John B. Kirkwood & Robert H. Lande, *The Fundamental Goal of Antitrust: Protecting Consumers, Not Increasing Efficiency*, 84 NOTRE DAME L. REV. 191, 202–03 (2008). Advocates of distributive justice recognized, of course, that all markets, even those that are competitive, distribute wealth, and that the particular distribution achieved by competitive markets need not be equal or just. *See* Ramsi A. Woodcock, Antimonopolism as a Symptom of American Political Dysfunction 8–33 (Aug. 12, 2022) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3864585; Warren J. Samuels, *The Economy as a System of Power and Its Legal Bases: The Legal Economics of Robert Lee Hale*, 27 U. MIA. L. REV. 261, 317 (1973) ("Competition is important in taking the edge off market power, but it cannot overcome the structure of advantage and disadvantage originating in . . . the unequal distribution of property and wealth . . . .").

45. *See* James May, *Antitrust Practice and Procedure in the Formative Era: The Constitutional and Conceptual Reach of State Antitrust Law, 1880-1918*, 135 U. PA. L. REV. 495, 573 (1987); FRANCIS WAYLAND, THE ELEMENTS OF POLITICAL ECONOMY 14–15 (Aaron L. Chapin ed., 1886) ("When left free from artificial interference, demand and supply rush towards an *equilibrium*; and the condition of stable equilibrium is that things exchange for each other according to the cost of production, or as some express it, according to their *natural value*."). For a definition of "invisible hand," see ANDREU MAS-COLELL, MICHAEL D. WHINSTON & JERRY R. GREEN, MICROECONOMIC THEORY 549 (1995) (discussing "Adam Smith's asserted 'invisible hand' property of the market"). For more on the Chicago School of antitrust, see *infra* Section II.B.

government overreach as much as they feared corporate overreach.[46] Antitrust appeared to them to count as the minimum amount of government intervention required to make liberalism possible.[47]

Rate regulation promised to help with inequality more directly by restoring the pricing restrictions that had once gone hand in hand with monopoly power.[48] Like antitrust advocates, rate regulation advocates had a commitment to market-based outcomes, but rate regulation advocates lacked antitrust advocates' faith in the Invisible Hand. In a view that was similar to that taken by the Chicago School a century later, early advocates of rate regulation believed that competitive markets could often drive prices too low for firms to survive.[49] But, unlike the Chicago School, rate regulation advocates feared this outcome because it would hurt workers and consumers, not because it would hurt the capitalists with whose interests the Chicago School was primarily concerned.[50] And, also unlike Chicago, rate regulation advocates worried that, even if competitive prices did not run firms out of business, they would not necessarily distribute wealth equitably.[51] For advocates of rate regulation, the solution to

46. *See* Morton J. Horwitz, *Progressive Legal Historiography*, 63 OR. L. REV. 679, 684–85 (1984).

47. *See* May, *supra* note 45, at 574–75; *cf.* GERBER, *supra* note 20, at 37–38 (making this point in the European context). In this regard, antitrust had much in common with property rights in the liberal imagination. *See* Robert L. Hale, *Coercion and Distribution in a Supposedly Non-Coercive State*, 38 POL. SCI. Q. 470, 474–75 (1923). Government guarantee of property rights was a precondition for freedom, because the guarantee protects the weak from the strong, ensuring that small producers can demand compensation for their labors, and that consumers can insist on a product in exchange for parting with their cash. *See id.* at 474. Competition in turn ensures that inequality in property rights—the power of the big owner over the small—would not reproduce the conditions of oppression that property rights were supposed to solve. *See* May, *supra* note 45, at 574–75; Robert L. Hale, *The "Physical Value" Fallacy in Rate Cases*, 30 YALE L.J. 710, 724 (1921); Ramsi A. Woodcock, A Critique of the Chicago School of Antitrust from the Perspective of the History of Life on Earth 47–59 (Aug. 9, 2021) (unpublished manuscript), https://ssrn.com/abstract=3661971.

48. *See* HORWITZ, *supra* note 38, at 111.

49. *See, e.g.*, Harold Hotelling, *The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates*, 6 ECONOMETRICA 262, 260–63 (1938); Herbert Hovenkamp, *United States Competition Policy in Crisis: 1890–1955*, 94 MINN. L. REV. 311, 324–30 (2009); 2 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS 173–76 (Mass. Inst. Tech. 1988) (1971); ELLIS W. HAWLEY, THE NEW DEAL AND THE PROBLEM OF MONOPOLY: A STUDY IN ECONOMIC AMBIVALENCE 10–11 (Fordham Univ. Press 1995) (1966).

50. *See* Hovenkamp, *supra* note 49, at 327–28 (discussing concerns regarding workers); Hotelling, *supra* note 49, at 260–63 (discussing harm to consumers); Horwitz, *supra* note 46, at 681 (arguing that the "dominant aim" of "new conservatives" is "to legitimate corporate America by demonstrating the virtues of cooperation instead of competition and of efficiencies of large concentrated industrial enterprise").

51. *See* ROBERT L. HALE, FREEDOM THROUGH LAW: PUBLIC CONTROL OF PRIVATE GOVERNING POWER 25–26 (1952) ("Even the classical economists realized . . . competition would not keep the price at a level with the cost of all the output . . . but would

inequality therefore could not be the promotion of competition.[52] The solution had to be to limit the power of firms to choose their own prices.[53]

The redistributive character of rate regulation was evident in the way rate regulators interpreted their statutory mandate to charge "just and reasonable" prices.[54] Regulators understood a "just and reasonable" price to be a price high enough to cover a firm's variable and fixed costs, including a reasonable return to investors, but no higher.[55] That is, "just and reasonable" meant that price should equal cost in the economic sense but not a penny more.[56] Because a price equal to cost in the economic sense leaves all of the surplus generated by production to consumers, "just and reasonable" meant that rate regulators should redistribute wealth from firms to consumers whenever possible—what today in antitrust is called the "consumer welfare standard."[57] Rate regulators chose to favor consumers because no other group could be identified as broadly with the public at large.[58] Low prices redistributed wealth from the few, in the form of a firm's shareholders, to the many, in the form of consumers.

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result in a price equal to the cost of the marginal portion of the output. Those who produce at lower costs because they own superior [capital] would reap a differential advantage which Ricardo, in his well-known analysis, designated 'economic rent.'"); Samuels, *supra* note 44, at 317.

52. *See, e.g.*, Samuels, *supra* note 44, at 317.

53. *See* Herbert Hovenkamp, *Regulatory Conflict in the Gilded Age: Federalism and the Railroad Problem*, 97 YALE L.J. 1017, 1056–57 (1988).

54. *See* Joseph D. Kearney & Thomas W. Merrill, *The Great Transformation of Regulated Industries Law*, 98 COLUM. L. REV. 1323, 1333–34 (1998); CHARLES F. PHILLIPS, JR., THE REGULATION OF PUBLIC UTILITIES: THEORY AND PRACTICE 171–74, 180–82 (1993).

55. *See* PHILLIPS, *supra* note 54, 340 ("[P]ublic utilities are entitled to recover 'prudent' investments . . . ."). It was left to unions to ensure that the cost of labor would be high enough to ensure that workers enjoyed a reasonable standard of living. *See id.* at 262 ("Commissions do not attempt to control wage rates, since they are subject to usual labor-management collective bargaining agreements."); Robert L. Hale, *The Supreme Court's Ambiguous Use of "Value" in Rate Cases*, 18 COLUM. L. REV. 208, 208 (1918) ("There are cases, however, where the receipt of an excessive income may not be a good reason for lowering rates—where it may be considered preferable to divert the surplus to the public in some other manner, as by taxation or by a compulsory wage increase.").

56. *See* PHILLIPS, *supra* note 54, at 382 ("There is a range of reasonableness within which earnings may properly fluctuate and still be deemed just and reasonable and not excessive or extortionate. It is bounded at one level by investor interest against confiscation and the need for averting any threat to the security for the capital embarked upon the enterprise. At the other level it is bounded by consumer interest against excessive and unreasonable charges for service.") (cleaned up).

57. *See Pennell v. City of San Jose*, 485 U.S. 1, 13 (1988) ("[W]e have long recognized that a legitimate and rational goal of price or rate regulation is the protection of consumer welfare."). For antitrust's consumer welfare standard, see *infra* Section II.B.

58. *See* HENDERSON & BURNS, *supra* note 24, at 58 (observing, in the context of the prohibition on undue discrimination in regulated rates, that the "public interest" trumps statutory limits on the authority of the regulator).

Antitrust and rate regulation started making their way into law in the late nineteenth century.[59] Many states sought to regulate competition through corporate chartering rules, and when that failed, Congress passed the Sherman Act[60] in 1890, which remains the foundation of federal antitrust law today.[61] In the late nineteenth century, state legislatures also imposed rate regulation on railroads and the telephone, and Congress created the Interstate Commerce Commission (ICC) in 1887, giving it rate regulatory authority over railroads in 1906.[62] Both antitrust and rate-regulation expanded throughout the first half of the twentieth century, with antitrust acquiring substantial new powers in 1914's Clayton Act, as well as a dedicated enforcer via the Federal Trade Commission Act.[63] Antitrust acquired even greater power over mergers as late as 1950, with the passage of the Celler-Kefauver Act.[64] The New Deal saw the imposition of rate regulation at the federal level on a collection of industries accounting for a quarter of the nation's GDP, stretching from airlines and securities brokerage to interstate trucking and natural gas.[65] Virtually every market in America had become subject to a legal regime that had distributive justice as a goal, either antitrust's process-oriented approach of doing justice through the promotion of competition or rate regulation's explicit guarantee of "just and reasonable" prices.[66]

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59. *See* Robert L. Rabin, *Federal Regulation in Historical Perspective*, 38 STAN. L. REV. 1189, 1194–95, 1197–1229 (1986) (discussing state-level railroad regulation and the ICC).

60. 15 U.S.C. §§ 1–7.

61. *See* 1 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW: AN ANALYSIS OF ANTITRUST PRINCIPLES AND THEIR APPLICATION (3d ed. 2006); MORTON J. HORWITZ, THE TRANSFORMATION OF AMERICAN LAW 1870–1960, at 80–90 (1992).

62. *See* Rabin, *supra* note 59, at 1194–95, 1200–01 (discussing state-level railroad regulation and the ICC); Kearney & Merrill, *supra* note 54, at 1334 n.30 (listing sources on state-level railroad regulation); Hovenkamp, *supra* note 53, at 1067–70 (discussing the ratemaking powers of the ICC); JOHN, *supra* note 10 (discussing telephone regulation); William Boyd, *Just Price, Public Utility, and the Long History of Economic Regulation in America*, 35 YALE J. ON REGUL. 721, 755–56 (2018) (discussing the spread of state public utility regulation between 1907 and 1930).

63. *See* Rabin, *supra* note 59, at 1223–24.

64. *See id.* at 1223; Charles J. Steele, *A Decade of the Celler-Kefauver Anti-Merger Act*, 14 VAND. L. REV. 1049, 1050–51 (1961).

65. *See* VIETOR, *supra* note 9, at 16–17; Kearney & Merrill, *supra* note 54, at 1333–34.

66. *See* VIETOR, *supra* note 9, at 16–17; Kearney & Merrill, *supra* note 54, at 1333–34; HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE 964–75, 1012 (5th ed. 2016) (stating that "the Sherman Act reach[es] almost any market . . . with more than a trivial impact on interstate commerce" and listing business areas explicitly exempted in whole or part from the antitrust laws, including agricultural production, amateur sports, labor organizing, and insurance).

B. How Antitrust's Focus Shifted from the Competitive Process to Distributive Outcomes

Despite some concern regarding outcomes before World War Two, antitrust entered the postwar years focused on the competitive process.[67] Enforcers paid little attention to whether the competition that they promoted actually produced distributively just or efficient outcomes.[68] This was reflected in antitrust's embrace, during that era, of many per se rules, which direct courts to ban particular kinds of anticompetitive conduct without taking the effects of the conduct in the case at hand into account. If antitrust had stayed this way, enforcers would not be able to leverage personalized pricing to redistribute wealth today, because antitrust would remain focused on promoting the competitive process rather than particular market prices.

But antitrust's enthusiasm for the competitive process peaked in the two decades following World War Two.[69] Starting in the 1970s, antitrust jettisoned its faith in the Invisible Hand and refocused on market outcomes. In particular, antitrust committed to using competition to achieve the same distributive outcome—the maximization of consumer welfare—as rate regulation has been committed to achieving since the end of the nineteenth century.[70]

This new "consumer welfare" standard for antitrust was the inadvertent product of an attempt by the Chicago School of antitrust analysis to reform the field. Originating with Aaron Director's work in the 1950s, the Chicago School of antitrust set out to push antitrust to go easy on big firms, but ended up steering antitrust toward explicit concern for the wealth of consumers.[71] Although the Chicago School used a grab bag

67. *See* Ramsi A. Woodcock, *The Hidden Rules of a Modest Antitrust*, 105 MINN. L. REV. 2095, 2142–43 (2021) (discussing the prewar origins of outcome-oriented rule of reason analysis in antitrust).

68. *See* May, *supra* note 45, at 572–73; FRIED, *supra* note 34, at 131–32 (discussing John Bates Clark's defense of competitive markets on distributive grounds).

69. *See* FREYER, *supra* note 20, at 277–78.

70. *See id.* at 279; Kirkwood & Lande, *supra* note 44, at 213–30 (characterizing the prevention of "wealth transfers" from consumers as the goal of antitrust); Robert H. Lande, *Wealth Transfers as the Original and Primary Concern of Antitrust: The Efficiency Interpretation Challenged*, 34 HASTINGS L.J. 65, 68 (1982) (same); Steven C. Salop, *Question: What Is the Real and Proper Antitrust Welfare Standard? Answer: The* True *Consumer Welfare Standard*, 22 LOY. CONSUMER L. REV. 336, 348, 350–51 (2010) (claiming that antitrust is not redistributive, but at the same time arguing that "anticompetitive conduct is not permitted [by the antitrust laws] to redistribute wealth away from consumers").

71. *See* George L. Priest, *Bork's Strategy and the Influence of the Chicago School on Modern Antitrust Law*, 57 J.L. & ECON. S1, S2–S4, S7 (2014) (discussing the early history of the Chicago School of antitrust); ANGUS BURGIN, THE GREAT PERSUASION: REINVENTING FREE MARKETS SINCE THE DEPRESSION 171–72 (2012) (situating the Chicago School of antitrust in the broader landscape of postwar conservative economics).

of arguments to try to tear antitrust away from its postwar focus on the competitive process, a common theme was the argument that by seeking systematically to create markets of atomistic sellers, antitrust was denying firms either the higher prices or higher sales volumes they needed to attract the best managerial talent, invest in the most productive (meaning lowest-production-cost) machinery, develop the most innovative products, and best manage unanticipated shocks.[72] In other words, antitrust's indiscriminate promotion of competition was driving prices too low relative to those required for investment. In a move that created what has become the most enduring form of this critique of the competitive process approach to antitrust, the Chicago School borrowed heavily from the economic justification for patent protection.[73] Firms do not innovate, argued the Chicago School, unless they can expect to charge prices that are above those earned in a perfectly competitive market, prices high enough to cover the up-front, fixed costs of investing in development of the innovative product.[74] It followed that too much competition, resulting in too low prices, could destroy the innovativeness of the American economy.

Chicago's call for antitrust to withdraw from the vigorous and indiscriminate promotion of competition of the postwar period, for the specific purpose of allowing firms to charge higher prices, posed the question: what prices should antitrust strive to achieve? The question could no longer be resolved indirectly by making markets competitive and then leaving it to the Invisible Hand to decide what prices the competitive process would produce. It seems clear in retrospect that most Chicago authors thought firms should be allowed to charge whatever above-cost prices they wished.[75] But in a move that seemed to concede that the public would not accept a return to laissez-faire, even if it would accept

72. *See* Harold Demsetz, *Industry Structure, Market Rivalry, and Public Policy*, 16 J.L. & ECON. 1, 2–3 (1973); John S. McGee, *Why Not "Deregulation" for Antitrust?*, 46 ANTITRUST L.J. 777, 777–79 (1977); WARD S. BOWMAN, JR., PATENT AND ANTITRUST LAW: A LEGAL AND ECONOMIC APPRAISAL 8–9 (1973).

73. *See* BOWMAN, *supra* note 72, at 8–9; DENNIS W. CARLTON & JEFFREY M. PERLOFF, MODERN INDUSTRIAL ORGANIZATION 99 (4th ed. 2005) ("[T]he prospect of receiving monopoly profits may motivate firms to develop new products, improve products, or find lower-cost methods of manufacturing. Were it not for the quest to obtain monopoly profits, firms might innovate less. The benefit of monopoly is most clearly recognized in research and development . . . .").

74. *See* BOWMAN, *supra* note 72, at 8–9; J. Gregory Sidak & David J. Teece, *Dynamic Competition in Antitrust Law*, 5 J. COMPETITION L. & ECON. 581, 581–82, 602–05 (2009).

75. *See* Meese, *supra* note 22, at 680–81, 736 (arguing that antitrust should follow a total welfare standard that would permit an efficient monopolist to charge high prices to consumers); ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF 90 (Free Press 1993) (1978) (arguing that antitrust should not be concerned with wealth transfers).

deregulation, Robert Bork, perhaps the most prominent legal scholar of the Chicago School, chose to call the position that any above-cost price is acceptable the "consumer welfare" standard.[76] Writing in the 1970s, when the consumer movement had not yet obviously peaked, this must have seemed like good marketing.[77] But it was also misleading.[78] Consumer welfare in the economic sense is the difference between the value of the product to the consumer and the price the consumer pays.[79] If antitrust's goal is to protect consumer welfare, as Bork argued, then antitrust must desist from prohibiting anticompetitive conduct that would raise prices up to the level required to cover costs, including the cost of innovation, as Bork wanted, but antitrust must also prohibit anticompetitive conduct that would drive prices above costs, something Bork opposed.[80] The embattled postwar antitrust establishment latched onto the consumer welfare concept as a compromise between the competition-oriented enforcement of the postwar years and the antitrust repeal that seemed to be the ultimate trajectory of the Chicago revolution.[81] A durable post-Chicago consensus was born.[82]

Under this new consensus, antitrust enforcers became hypersensitive to the possibility that enforcement would drive prices below levels

76. *See* BORK, *supra* note 75, at 90–93; Priest, *supra* note 71, at S2–S3 (discussing Bork's position in the Chicago School of antitrust thought).

77. *See* Daniel A. Crane, *The Tempting of Antitrust: Robert Bork and the Goals of Antitrust Policy*, 79 ANTITRUST L.J. 835, 835 (2014).

78. *Cf.* Salop, *supra* note 70, at 347–48; HERBERT HOVENKAMP, ECONOMICS AND FEDERAL ANTITRUST LAW 48–49 (1985) ("There is more than a little chicanery in such terminology . . . ."); Robert H. Lande, *Chicago's False Foundation: Wealth Transfers (Not Just Efficiency) Should Guide Antitrust Analysis*, 58 ANTITRUST L.J. 631, 638 (1989) (discussing "Bork's brilliant but deceptive choice of the term 'consumer welfare' as his talisman, instead of a more honest term like 'total welfare,' 'total utility,' or just plain 'total economic efficiency'"); Kirkwood & Lande, *supra* note 44, at 206 n.3 (describing the "consumer welfare" label as "deceptive" and "brilliant . . . market[ing]"). *But see* Meese, *supra* note 22, at 691 (arguing that Bork meant to include consumers in their capacity as business owners when he referred to consumer welfare).

79. *See* VARIAN, *supra* note 25, at 249–51.

80. *See* BORK, *supra* note 75; Meese, *supra* note 22, at 681 (recognizing that the consumer welfare standard militates in favor of a no-fault monopolization offense).

81. *See* Lande, *supra* note 70, at 68 ("The prevailing view is that Congress intended the antitrust laws only to increase economic efficiency. Others, however, contend that Congress was largely motivated by a number of social, moral, and political concerns. This Article presents a third view . . . .").

82. *See, e.g.*, Kirkwood & Lande, *supra* note 44, at 196 (arguing that the courts apply a consumer welfare standard); Salop, *supra* note 70, at 338–47 (same); Carl Shapiro, *Antitrust Limits to Patent Settlements*, 34 RAND J. ECON. 391, 396 (2003) ("Antitrust enforcement (such as merger review) often uses a consumer-welfare standard rather than a total-surplus standard."); Meese, *supra* note 22, at 670 (describing the consumer welfare standard as having "gained ground in recent years").

required to ensure that defendants could cover their costs.[83] This was reflected in antitrust doctrine by the repudiation of the many per se rules that had dominated the postwar period.[84] Nearly all the old per se rules were replaced by rules of reason, which require painstaking, case-by-case analysis to ensure that the challenged conduct is unnecessary to allow defendants to cover production costs inclusive of innovation costs.[85] But the consensus continued to require that there be an antitrust, and that enforcers act to condemn anticompetitive conduct whenever that painstaking, case-specific analysis shows that condemnation of the conduct would not drive prices below costs.[86] Thus, the consumer welfare standard protects consumers from higher prices associated with anticompetitive conduct whenever there is no danger that intervention, and the increased competition that would result, would drive prices too low.[87] This is precisely what the "just and reasonable" standard used in rate regulation requires.[88]

Chicago's reorientation of antitrust to price effects and embrace of an explicitly redistributive pricing policy that favors consumers has driven antitrust in the direction of rate regulation, but differences between the approaches of the two regimes remain, as will be discussed more fully in

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83. *See* Jonathan B. Baker, *Taking the Error Out of "Error Cost" Analysis: What's Wrong with Antitrust's Right*, 80 ANTITRUST L.J. 1, 2–4 (2015).

84. *See* Woodcock, *supra* note 67, at 2125–37; Sandeep Vaheesan, *The Evolving Populisms of Antitrust*, 93 NEB. L. REV. 370, 395–403 (2014).

85. *See* Maurice E. Stucke, *Does the Rule of Reason Violate the Rule of Law?*, 42 U.C. DAVIS L. REV. 1375, 1384–86 (2009) (discussing the costly and painstaking character of rule-of-reason analysis); Timothy J. Muris, *The New Rule of Reason*, 57 ANTITRUST L.J. 859, 859 (1988) (remarking upon the transformation of per se rules into rules of reason); *Broad. Music, Inc. v. Columbia Broad. Sys., Inc.*, 441 U.S. 1, 24–25 (1979) (introducing rule-of-reason analysis into some forms of price fixing); *Jefferson Par. Hosp. Dist. No. 2 v. Hyde*, 466 U.S. 2, 33–35 (1984) (O'Connor, J., concurring) (arguing for rule-of-reason treatment for tying and exclusive dealing in an influential concurrence); *United States v. Baker Hughes Inc.*, 908 F.2d 981, 983, 991–92 (D.C. Cir. 1990) (rejecting, in an influential opinion, a narrow standard for rebutting the presumption of anticompetitive merger effects); *Verizon Commc'ns Inc. v. Law Offs. of Curtis V. Trinko, LLP*, 540 U.S. 398, 410–11 (2004) (casting doubt on the vitality of the essential facilities doctrine); *Leegin Creative Leather Prods., Inc. v. PSKS, Inc.*, 551 U.S. 877, 907 (2007) (applying the rule of reason to minimum resale price maintenance); *State Oil Co. v. Khan*, 522 U.S. 3, 22 (1997) (applying the rule of reason to maximum resale price maintenance); *Cont'l T.V., Inc. v. GTE Sylvania, Inc.*, 433 U.S. 36, 52–54, 59 (1977) (applying the rule of reason to non-price intrabrand vertical restraints). The only per se rules to survive were those for horizontal agreements that do no more than fix prices and tying practices by firms with large market shares. *See* Woodcock, *supra* note 67, at 2106–07, 2131.

86. *See* Jonathan B. Baker, *Economics and Politics: Perspectives on the Goals and Future of Antitrust*, 81 FORDHAM L. REV. 2175, 2185 (2013) (describing the new rules not as eliminating antitrust but rather as accepting more "false acquittals" to avoid "chill[ing] cost reductions and other efficiency-enhancing conduct").

87. *See id.* at 2180–86.

88. *See supra* Section II.A.

Part V.[89] Antitrust must still rely on the promotion of competition to influence prices, for example, so antitrust's ability to target specific prices remains limited, whereas rate regulators can dictate specific prices to firms.[90] Antitrust enforcers must also abide by the "conduct requirement," meaning that they can act only if a firm has engaged in anticompetitive conduct, whereas rate regulators can dictate prices to regulated firms regardless whether the firms have engaged in anticompetitive conduct.[91] Rate regulators' broader powers are limited, however, by the powers' lack of generality: rate regulators govern prices only in that shrinking set of industries in which state or federal legislatures have chosen to authorize rate regulation, rather than in all markets generally. Antitrust, by contrast, applies to almost all markets.[92]

III. INCOME TAX PRIMACY

A. Rise

Even as antitrust and rate regulation grew and peaked in the early and middle twentieth century, they fell out of favor with many progressives, who came instead to favor a different tool for redistribution: the income tax.[93] Just as Chicago School efforts to reduce antitrust enforcement were gaining traction in the 1970s, and deregulation was reducing the number of industries subject to rate regulation, progressives were putting forth an increasingly sophisticated case for the superiority of redistribution in the income-generating markets touched by income taxation—the labor markets that create wage income and the capital markets that create investment income—relative to redistribution in all the other, non-income-generating markets touched by the antitrust laws and rate regulation regimes.[94] The arguments that progressives developed during this period—what I call arguments for "income tax primacy"—present a

89. *See* PHILLIPS, *supra* note 54, at 172–80.

90. *See id.* at 176–80.

91. *See id.*; *Verizon Commc'ns Inc.*, 540 U.S. at 407–08 (stating that anticompetitive conduct is a prerequisite for antitrust liability).

92. *See* Kearney & Merrill, *supra* note 54, at 1335–40 (surveying deregulation); VIETOR, *supra* note 9, at 16–19 (same). President Theodore Roosevelt pushed hard for passage of the "Hepburn bill" in 1908, which would have created "a vast centralized planning and administering agency" with authority to set the "prices of goods and services" throughout the economy, "institutionalizing . . . state-directed corporate capitalism." MARTIN J. SKLAR, THE CORPORATE RECONSTRUCTION OF AMERICAN CAPITALISM, 1890–1916: THE MARKET, THE LAW, AND POLITICS 228–47 (1988). But the bill failed. *See id.* at 284.

93. *See* Woodcock, *supra* note 44, at 37–48.

94. *See id.*

potential problem for antitrust enforcers' and rate regulators' use of personalized pricing to redistribute wealth today.

Even if leveraging personalized pricing to redistribute wealth is consistent with the spirit of both the antitrust laws and rate regulatory regimes, as Part II suggested, it would not be good policy if the best way to redistribute wealth is by taxing the income of the rich and transferring the proceeds to the poor, rather than by manipulating prices in non-income-generating markets, as antitrust enforcers and rate regulators would do.[95] This Part tells the story of the rise of income tax primacy, its limitations, and the challenges it poses for contemporary progressives. Part IV shows that personalized pricing allows progressives to overcome these challenges.

Harold Hotelling was one of the first scholars to propose the income tax system—which redistributes wealth by manipulating prices in labor and capital markets and providing government with the funds needed to make transfer payments—as a superior alternative to redistribution through the manipulation of prices in all other, non-income-generating markets. Hotelling was concerned with the problem of how to price products, such as telephone service, that have high fixed costs.[96] Writing in 1938, he observed that in this situation firms must charge a price above marginal cost in order to cover the high fixed costs.[97] That means inefficiency, because consumers who would be willing to pay marginal cost for a product, but little more, will be priced out of the market (Case 3, in Part I, above, illustrates this problem).[98] To take the example used by Hotelling, the marginal cost of letting another car cross a bridge is near zero, making any bridge toll that is not near zero and is charged in order to cover the cost of building the bridge inefficient. The toll will discourage some drivers from using the bridge even though the low marginal cost of bridge access implies that all drivers—at least all those who place a value on access higher than the low marginal cost—should be allowed to use the bridge.[99] By the same token, the near-zero cost of connecting calls implies that both local and long-distance phone service should be free, or nearly so.[100]

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95. The antitrust laws apply to capital markets and, with some exceptions, to labor markets. *See* HOVENKAMP, *supra* note 66, at 965–69, 1012. So, in principle, they could be used as a substitute for the income tax. The focus in this Article is on their use as an alternative that varies prices in all markets other than the labor and capital markets touched by the income tax.

96. *See* Hotelling, *supra* note 50, at 242–43.

97. *See id.* at 260.

98. *See id.* at 260–62.

99. *Id.*

100. *See* ANDREW I. GAVIL, WILLIAM E. KOVACIC, JONATHAN B. BAKER & JOSHUA D. WRIGHT, ANTITRUST LAW IN PERSPECTIVE: CASES, CONCEPTS AND PROBLEMS IN COMPETITION POLICY 1096–97 (3d ed. 2017).

Hotelling proposed that instead of charging above-marginal-cost fees for the use of products with high fixed costs and low marginal costs, the government should force prices down to marginal cost, either by promoting competition in those industries or via rate regulation.[101] According to Hotelling, the government should then use the income tax system to raise revenue in labor and capital markets in order to cover the product's fixed costs, and transfer that revenue directly to the firm.[102] Although Hotelling limited his remarks to the problem of covering costs in high-fixed-cost industries, the generalizability of his observations to any attempt to manipulate prices in non-income-generating markets was obvious to observers.[103] Hotelling's argument implied that pricing in non-income-generating markets should always be determined by marginal cost, as efficiency requires, and all other problems, including both the problem of raising revenue to cover fixed costs and the problem of manipulating prices to redistribute wealth should be handled through the income tax system.[104] Anything less would drive some willing buyers from the market and so would be inefficient.

Observers soon pointed out, however, that confining redistribution to labor and capital markets does not eliminate inefficiency from the economy as a whole so much as shift it from non-income-generating markets to income-generating markets, because taxing income is itself inefficient.[105] The after-tax wage will be too low for some workers who would have been willing to work at the pre-tax wage to accept, causing them to leave the labor market.[106] And the after-tax investment return will be too low for some investors who would have been willing to forego present consumption for future consumption by investing their wealth to do so, causing them to leave the capital market.[107] The income tax avoids the problem of inefficient pricing in non-income-generating markets only

101. *See* Hotelling, *supra* note 50, at 252, 262.

102. *See id.* at 249, 257–60.

103. *See* J.R. HICKS, VALUE AND CAPITAL: AN INQUIRY INTO SOME FUNDAMENTAL PRINCIPLES OF ECONOMIC THEORY 40–41 (1939); A.B. Atkinson, *Optimal Taxation and the Direct Versus Indirect Tax Controversy*, 10 CAN. J. ECON. / REVUE CANADIENNE D'ECONOMIQUE 590, 595 (1977); David Walker, *The Direct-Indirect Tax Problem: Fifteen Years of Controversy*, 10 PUB. FIN. / FINANCES PUBLIQUES 153, 156 (1955).

104. *See* Hotelling, *supra* note 50, at 242, 251–52; Walker, *supra* note 103, at 156; Atkinson, *supra* note 103, at 595–96.

105. *See* Atkinson, *supra* note 103, at 596, 601; Walker, *supra* note 103, at 157 ("[I]t is assumed that the supply of work is completely inelastic with respect to changes in the rates of income or outlay taxes. When this assumption is removed the simplicity and the correctness and the certainty of the so-called proof disappears."). These commentators discussed only the inefficiency of taxation of wage income, but the argument applies with equal force to the taxation of investment income. For ease of exposition, I introduce the critique in this broader form here.

106. *See* Atkinson, *supra* note 103, at 596; Walker, *supra* note 103, at 158–59.

107. *See* KAPLOW, *supra* note 23, at 222–25.

at the cost of inefficient pricing in income-generating markets.[108] Thus, argued these observers, there is no reason to view redistribution in non-income-generating markets as any less efficient than the income tax.[109]

This did not, however, deter a second wave of scholars from springing to the defense of income tax primacy.[110] They pointed out that redistribution in non-income-generating markets itself must affect income-generating markets, by altering the power of a given wage to purchase products in markets in which redistribution takes place.[111] Charging a bridge toll not only dissuades some drivers from crossing the bridge, but also reduces the purchasing power of the incomes of those who do cross the bridge, because now they have less cash to spend on other products. That in turn might induce some drivers to work less or invest less, causing the number of hours worked or the amount invested to diverge from the presumably efficient levels that would exist in the absence of the tax.[112] It followed, according to these scholars, that the income tax is still better than redistribution in non-income-generating markets, because redistribution in non-income-generating markets affects labor and investment decisions in labor and capital markets in addition to drawing prices away from marginal costs in non-income-generating markets, whereas income taxation only affects labor and investment decisions in labor and capital markets.[113] As one commentator put it, redistribution in non-income-generating markets "distorts consumer

108. *See* Atkinson, *supra* note 103, at 596; Walker, *supra* note 103, at 157–59, 162–63.

109. *See* Atkinson, *supra* note 103, at 596; Walker, *supra* note 103, at 157.

110. *See* A.B. Atkinson & J.E. Stiglitz, *The Design of Tax Structure: Direct Versus Indirect Taxation*, 6 J. PUB. ECON. 55, 68 (1976); Kaplow & Shavell, *supra* note 23, at 669; KAPLOW, *supra* note 23, at 123–24.

111. *See* Kaplow & Shavell, *supra* note 23, at 667–68 (arguing that "using legal rules to redistribute income [in commodity markets] distorts work incentives fully as much as the income tax system—because the distortion is caused by the redistribution itself—and also creates inefficiencies in the activities regulated by the legal rules"); KAPLOW, *supra* note 23, at 123 (arguing that commodity taxation "will reduce the utility benefit of incremental earnings just as would a higher marginal income tax rate that directly reduced disposable income by the same amount"). These commentators argued that redistribution in non-income-generating markets distorts labor markets in particular, but it appears that they meant to argue that it distorts capital markets as well. *See* Richard S. Markovits, *Why Kaplow and Shavell's Double-Distortion Argument Articles Are Wrong*, 13 GEO. MASON L. REV. 511, 550–55 (2005) (arguing that Kaplow and Shavell meant the "double-distortion argument" to apply to capital markets and so the argument is best described as an "extra-distortion argument" rather than a "double-distortion argument").

112. *See* KAPLOW, *supra* note 23, at 123.

113. *See id.* at 123–24. If the distortions would tend to offset each other, as happens in the archetypical case described by the theory of the second best, then having two distortions rather than one would be a feature of redistribution via non-income-generating markets, rather than a bug. *See id.* For then two distortions would lead to less inefficiency than one.

behavior in two ways, whereas an income tax does so in only one."[114] A key part of the argument was that the distortions created by redistribution in non-income-generating markets would not tend to cancel each other out but instead would magnify the overall distortion of the economy. Less labor or investment would not tend to offset the effects of having fewer people cross bridges; instead, they would mean fewer bridges and so even fewer people crossing them.[115]

This rejoinder is often treated as stating the entirety of the contemporary case for income tax primacy. If it were the entire case, then income tax primacy could be rejected as a preliminary matter because the rejoinder has an important flaw: the argument that the income tax affects only labor and capital markets rests on the strong assumption that a worker's non-income-generating-market preferences do not change when his work levels change and that an investor's non-income-generating-market preferences do not change when his investment levels change.[116]

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114. WILLIAM J. BAUMOL, ECONOMIC THEORY AND OPERATIONS ANALYSIS 525 (4th ed. 1977) (writing about the sales tax in particular, which is a method of redistributing wealth in non-income-generating markets). Chris William Sanchirico dubbed this the "double-distortion argument." *See* Chris William Sanchirico, *Taxes Versus Legal Rules as Instruments for Equity: A More Equitable View*, 29 J. LEGAL STUD. 797, 799 (2000). Richard Markovits has pointed out that "double distortion" is a misnomer if one counts the distortion in the labor market and the distortion in the capital market as two separate distortions. *See* Markovits, *supra* note 111, at 550–55. In that case, the argument is more appropriately characterized as a "triple-distortion argument:" there is one distortion in the non-income-generating market in which redistribution is undertaken and one distortion each in the labor and capital markets in which the value of income is reduced as a result. Markovits suggest the alternative name, "extra-distortion argument," because, regardless how one counts up distortions, the heart of the argument is that redistribution through income-generating markets distorts only income-generating markets whereas redistribution through non-income-generating markets distorts income-generating markets plus extra non-income generating markets. *See id.*

115. *See* KAPLOW, *supra* note 23, 123–24.

116. *See* Atkinson & Stiglitz, *supra* note 110, at 68 ("If the utility function is weakly separable between labor and all consumption goods (taken together), then no commodity taxation need be employed . . . ."); KAPLOW, *supra* note 23, at 137 (discussing the "separability" assumption). Those who employ the separability assumption use it exclusively to make the case for the efficiency of the taxation of labor income relative to redistribution via nonlabor markets; they argue that investment income should not be taxed. *See, e.g.*, KAPLOW, *supra* note 23, at 222–25. Perhaps their view is that minimizing the inefficiency associated with income taxation requires that the taxation of income be avoided whenever there are more efficient alternative approaches to redistribution that are available. In principle, one can eliminate the inequality associated with differences in investment income by redistributing endowments—zeroing out bank accounts, engaging in land reform, redistributing financial assets, and so on—whereas one cannot eliminate the inequality associated with wage differences by redistributing endowments of talent. It follows that redistribution of labor income must be carried out through inefficient income taxation whereas redistribution of investment income need not, and so the income tax should be limited to labor markets. If redistribution of endowments of any kind is not an option, as this Article assumes, then taxation of investment income is required to equalize wealth, because some people generate only investment income and no labor income, and

But people who have more leisure tend to spend more money on some goods and less on others.[117] They may consume more alcohol but less coffee, for example, because they do not need to be alert to enjoy their leisure. Similarly, those who consume more today rather than investing their money in order to consume more tomorrow tend to spend more money on some goods and less on others.[118] They may again consume more alcohol and less coffee, for example, now because they may plan on skipping tomorrow entirely. Thus, while redistribution through non-income-generating markets changes behavior in income-generating markets, redistribution through income-generating markets also changes behavior in non-income-generating markets, leaving both approaches even in terms of number of distortive effects.[119]

The flimsiness of the argument for the separability of income-generating and non-income-generating markets should have long ago put an end to the double-distortion argument for income tax primacy. But it does not put an end to income tax primacy itself, because there remains an additional, more convincing argument for income tax primacy—one founded on administrability. The argument is that the income tax is more effective than redistribution through non-income-generating markets because the income tax is individualized.[120] To redistribute $10 from a rich person to a poor person, all a policymaker must do is raise the rich person's income tax by that amount and reduce the poor person's income tax by the same amount. Redistributing $10 in non-income-generating markets is, by contrast, far messier, because the rich and the poor do not always buy different things or stand on opposing sides of a transaction.[121] Increasing long-distance rates by $10 and reducing local-calling rates by $10 will

so bringing them into equality with others requires taxation of their investment income. *See* Markovits, *supra* note 111, at 550–55. It is for this reason that I have characterized separability as part of the argument for the efficiency of taxing both labor and investment income even though the original sources use it only to argue for the efficiency of taxing labor income.

117. KAPLOW, *supra* note 23, at 137.

118. *Cf. id.*

119. *See* Walker, *supra* note 103, at 162; I.M.D. Little, *Direct* Versus *Indirect Taxes*, 61 ECON. J. 577, 584 (1951) ("The purely theoretical 'case against indirect taxation' is an illusion."); KAPLOW, *supra* note 23, at 137 (conceding that "[w]ithout separability," the relative efficiency of income taxation "will not generally" hold). The separability assumption is not the only flaw in the double-distortion argument. Another is that the argument only works if one starts with an efficient economy. If, instead, the economy is already inefficient before either income taxation or redistribution through non-income-generating markets is applied, then the Theory of the Second Best teaches that the additional distortions created by redistribution through non-income-generating markets might offset the preexisting distortions, rendering the economy more efficient than before. *See* Markovits, *supra* note 111, at 555.

120. *See* KAPLOW, *supra* note 23, at 3, 125–29.

121. *See* Daniel A. Crane, *Antitrust and Wealth Inequality*, 101 CORNELL L. REV. 1171, 1204–07 (2016).

certainly redistribute $10 from some rich people to some poor people. But it will also redistribute $10 from the odd poor person who uses only long distance to the odd rich person who uses only local calling, and effect no redistribution at all from the rich person who uses both long-distance and local calling in the same amounts.[122] By the same token, lowering the toll on a private bridge might redistribute from rich to poor on average, because bridge owners are likely richer as a group than consumers. But small investors in the bridge who are not rich will end up worse off as a result, most likely even if they themselves use the bridge.[123] Ensuring that redistribution in non-income-generating markets has only its intended effects is next to impossible within any particular market. The problem becomes even more difficult if uncoordinated attempts at non-income-generating-market redistribution take place in many markets across the economy.[124] Raising prices on a rich man in one market might look like distributive justice, but if regulators in every market pursue the same line, unaware of what the others are doing, then the rich man may end up a pauper, which is hardly a distributively just result. The income tax may not cause fewer, or less severe, market distortions than redistribution through non-income-generating markets, but it does permit policymakers to redistribute with greater accuracy.

B. Boomerang

Many of the major pioneers of income tax primacy were progressives who favored redistribution of wealth.[125] But just as income tax primacy

122. *See id.*

123. *See id.*

124. *See id.*

125. Harold Hotelling was a follower of Henry George. Thomas Michael Mueller, *Rescuing Henry George: Optimization, Welfare, and the Monopoly Game in Harold Hotelling's Economic Thought*, 53 HIST. POL. ECON. 925, 925, 927–31 (2021). Anthony Atkinson and Joseph Stiglitz, who raised the double-distortion argument to its highest form, were or are prominent progressives. *See* JOSEPH E. STIGLITZ, THE PRICE OF INEQUALITY 1–4 (2012) (discussing "America's 1 Percent Problem"); ANTHONY B. ATKINSON, INEQUALITY: WHAT CAN BE DONE? 1 (2015) ("In this book, I set out concrete policy proposals that could . . . bring about a genuine shift in the distribution of income towards less inequality."); Atkinson & Stiglitz, *supra* note 110, at 74. Louis Kaplow, who is the main expositor of the administrability argument for income tax primacy, is hardly a member of the Chicago School. *See* KAPLOW, *supra* note 23, at 3, 125–29.

Many other progressive legal scholars espoused income tax primacy during this period. *See, e.g.*, GUIDO CALABRESI, THE COST OF ACCIDENTS: A LEGAL AND ECONOMIC ANALYSIS 80 (1970) ("We must not, however, give too much importance to the notion that poor income distribution might be redressed through accident law. In most instances, the best income distribution is still likely to be obtained directly through taxation. As a result, the significance of the fact that income redistribution is an aim ignored by resource allocation theory is likely to be a negative one. It means that any system of handling

gained general acceptance in the 1970s, consistent with the rolling back of antitrust enforcement and rate regulatory regimes across the economy, the public mood toward income tax policy was changing. The Reagan tax cuts inaugurated a period of public rejection of redistribution via the income tax system that continues to this day.[126] Some progressives ignored the political infeasibility of redistribution via the income tax. Louis Kaplow developed the administrability argument for income tax primacy after the tax revolt first appeared.[127] But many other progressives were unwilling to wait for the tax revolt to end and sought instead to bring about redistribution on a piecemeal basis through non-income-generating markets.[128] At which point the income tax primacy arguments developed by progressives boomeranged.[129] Progressives seeking to redistribute in non-income-generating markets came face to face with their very own Frankenstein, the dismissive argument that they should pursue their distributive projects through the tax system, leveled now not by optimistic warriors for distributive justice assaulting the economy's commanding heights of tax policy, but by forces opposed to redistribution, in the form of the Chicago School, confidently in control of those heights.[130] Antitrust

accident costs which tends to *aggravate* bad distributions of income is likely to be unacceptable, even if it is very effective from a resource allocation point of view.").

126. *See* W. ELLIOT BROWNLEE, FEDERAL TAXATION IN AMERICA: A HISTORY 185–86, 204 (3d ed. 2016) (describing tax cuts that brought the top marginal rate on income down from seventy percent to twenty-eight percent). For the rolling back of rate regulatory regimes, see Thomas Piketty & Emmanuel Saez, *How Progressive Is the U.S. Federal Tax System? A Historical and International Perspective*, 21 J. ECON. PERSPS. 3, 11–16 (2007).

127. *See* KAPLOW, *supra* note 23, at 1–3 (advocating income tax primacy in part on administrability grounds).

128. *See* Lee Anne Fennell & Richard H. McAdams, *The Distributive Deficit in Law and Economics*, 100 MINN. L. REV. 1051, 1052–53 (2016) (arguing that political barriers to redistribution through the income tax system justify taking distribution into account in the analysis of legal rules governing non-income-generating markets); Erin C. Fuse Brown, *Resurrecting Health Care Rate Regulation*, 67 HASTINGS L.J. 85, 89 (2015) (calling for "rate regulation [of health care] in the form of all-payer rate setting, price caps, or global budgets"); Jonathan B. Baker & Steven C. Salop, *Antitrust, Competition Policy, and Inequality*, 104 GEO. L.J. ONLINE 1, 21–22 (2015) (calling for greater antitrust enforcement to address wealth inequality). The forcing of advocates of redistribution back from the income tax system to the market level is well illustrated by the shift in Guido Calabresi's views. *Compare* Guido Calabresi, *The Pointlessness of Pareto: Carrying Coase Further*, 100 YALE L.J. 1211, 1224 n.36 (1991) ("[I]t is far from obvious that, as a general matter, tax and welfare programs *are* more efficient than a mixture of these and of other rules . . . ."), *with* CALABRESI, *supra* note 125, at 80 ("We must not . . . give too much importance to the notion that poor income distribution might be redressed through accident law. In most instances, the best income distribution is still likely to be obtained directly through taxation."). For the decline in antitrust enforcement, see Ramsi A. Woodcock, *supra* note 68, at 2125–37.

129. *See* Woodcock, *supra* note 44, at 42.

130. *Compare* Morton J. Horwitz, *Law and Economics: Science or Politics*, 8 HOFSTRA L. REV. 905, 910 (1980) ("Only on the question of Distribution did the economic analysts get on their high horses and plead the sanctity of Separation of Powers. Political

enforcement fell to all-time lows, and deregulation eliminated consumer-facing rate regulation from all markets save water, power, and insurance.[131]

The boomeranging of income tax primacy back on advocates of redistribution is reflected in the battle within antitrust over whether to jettison the consumer welfare standard and replace it with a "total welfare standard."[132] Under a total welfare standard, anticompetitive conduct that redistributes wealth from consumers to firms by driving up prices would not violate the antitrust laws so long as the conduct does not reduce output and therefore does not harm efficiency.[133] Thus, a drugmaker would be permitted to engage in anticompetitive conduct that raises drug prices so long as desperate patients could find the money to pay the higher prices, regardless whether paying them would mean financial ruin.[134] To the objection that this would impoverish consumers, the response of proponents of this standard is that any distributive consequences should be addressed through the income tax system.[135] While antitrust enforcers

questions like the Distribution of Wealth were for the legislature to decide, they maintained. Judges can only decide 'objective' and supposedly nonpolitical questions like allocational efficiency. All of a sudden, we were treated to exceedingly formalistic analyses of the legitimate roles of courts and legislatures."), *with* ROBERT COOTER & THOMAS ULEN, LAW & ECONOMICS 8 (6th ed. 2016) ("Many economists believe that progressive taxation and social welfare programs—the 'tax-and-transfer system,' as it is usually called—can accomplish redistributive goals in modern states more efficiently than can be done through modifying or reshuffling private legal rights.").

131. *See* Kearney & Merrill, *supra* note 54, at 1329–49 (discussing deregulation); VIETOR, *supra* note 9, at 14–17 (same); Baker, *supra* note 83, at 3–4 (discussing declines in enforcement); Woodcock, *supra* note 85, at 2125–37 (same).

132. *See* Meese, *supra* note 22, at 714–15 (arguing that the law already countenances anticompetitive conduct that reduces consumer welfare but increases total welfare); RICHARD A. POSNER, ANTITRUST LAW 23 (2d ed. 2001) (arguing that the maximization of total welfare is "probably the only [goal] that the antitrust laws can do much to promote").

133. *See* Meese, *supra* note 22, at 714–15. If higher prices do lead to a reduction in output, then the total welfare standard would justify antitrust intervention to reduce prices through increases in competition. The lower prices would benefit consumers and potentially redistribute wealth from rich to poor. *See, e.g.*, Rory Van Loo, *Broadening Consumer Law: Competition, Protection, and Distribution*, 95 NOTRE DAME L. REV. 211, 212–13, 242 (2020). Thus, in this case, traditional efficiency arguments support distributive justice.

134. *See* Meese, *supra* note 22, at 714–15.

135. *See* Charles F. Rule & David L. Meyer, *An Antitrust Enforcement Policy to Maximize the Economic Wealth of All Consumers*, 33 ANTITRUST BULL. 677, 698 (1988) ("The tax laws and state welfare programs can be used to redistribute income, small business and other set-asides may be used to benefit discrete classes of businesses, and other laws can be specifically devised to deal with the myriad other legitimate social concerns. Antitrust can then focus on the task to which it is best suited—promoting and protecting [the wealth of all consumers, understood here to mean efficiency]."); Daniel A. Crane, *Antitrust and Wealth Inequality*, 101 CORNELL L. REV. 1171, 1225 (2016) ("As a matter of comparative institutional advantage, the antitrust system is far inferior to other

and those rate regulators who have avoided the deregulatory ax have so far retained their mandates to redistribute wealth, they have soldiered on despite having had their intellectual foundations pulled from under them by income tax primacy.

IV. THE DECLINE OF INCOME TAX PRIMACY IN THE INFORMATION AGE

A. Personalized Pricing as an Income Tax Alternative

To this day, progressives remain boxed into a corner. They are politically unable to implement redistribution through the tax system, and their former embrace of that system as an intellectual matter has undermined their ability to use antitrust, rate regulation, or other forms of intervention in non-income-generating markets to ramp up redistribution by other means.[136] Unable to defend these approaches on distributive grounds thanks to the success of their earlier arguments for income tax primacy, advocates of redistribution instead find themselves arguing that more redistribution in non-income-generating markets would be good for efficiency—a strategy that has gotten them nowhere.[137] The coming of personalized pricing will offer them a way out because the efficiency of personalized pricing puts to rest most of the arguments for income tax primacy.[138]

1. PERSONALIZED PRICING ELIMINATES BOTH DISTORTIONS IN THE DOUBLE-DISTORTION ARGUMENT

Personalized pricing puts the double-distortion argument to rest, assuming that zombie still needs to be slain. As we saw in Part I, personalized pricing alters the prices of inframarginal units of

branches of law and governmental authority in addressing wealth equality."); Herbert Hovenkamp, *Antitrust Policy and Inequality of Wealth*, CPI ANTITRUST CHRON., Oct. 2017, at 7, 8 ("Why would someone want to use the antitrust laws as a wealth distribution device when far more explicit statutory tools are available for that purpose, including tax law . . . ?"); Herbert Hovenkamp, *Implementing Antitrust's Welfare Goals*, 81 FORDHAM L. REV. 2471, 2492–96 (2013).

136. *See* BROWNLEE, *supra* note 126, at 240 (observing that during the Clinton administration, the Reagan tax cuts "proved to be quite durable").

137. *See* Baker, *supra* note 86, at 2185 (arguing for more antitrust enforcement because current levels create "a greater risk of false acquittals"); Fuse Brown, *supra* note 128, at 89, 93 (arguing for rate regulation of medical care in part on the ground that current pricing schemes are inefficient). Indeed, frustration with this approach may explain why the contemporary law and political economy movement sometimes appears tempted to reject economics entirely. *See, e.g.*, Jedediah Britton-Purdy, David Singh Grewal, Amy Kapczynski & K. Sabeel Rahman, *Building a Law-and-Political-Economy Framework: Beyond the Twentieth-Century Synthesis*, 129 YALE L.J. 1784, 1818–23 (2020).

138. *See supra* Part III.

production—the prices that determine the distribution of wealth between buyers and sellers and also among buyers—without altering the price of the marginal unit, ensuring that the marginal buyer is not cast out of the market and consumption is not, therefore, reduced. It follows that antitrust enforcers' or rate regulators' use of personalized pricing for redistributive purposes in non-income-generating markets would create no distortion in those markets. If we accept the view of the double-distortion argument that changes in purchasing power in non-income-generating markets distort income-generating markets, the efficiency of personalized pricing can be said to eliminate one of the two distortions associated with redistribution in non-income-generating markets. From this perspective, redistributive personalized pricing in non-income-generating markets is, therefore, no more distortionary than the income tax: personalized pricing in non-income-generating markets distorts only income-generating markets, and the income tax distorts only those markets too.

In fact, personalized pricing in non-income-generating markets creates *fewer* distortions than the income tax—which is to say: zero distortions. Redistributive personalized pricing is entirely efficient. That is because, in addition to creating no distortions in the markets to which it is applied, personalized pricing imposes no restrictions on prices in the income-generating markets to which it is not applied, leaving prices free to adjust to efficient levels in those markets. If prices are already at efficient levels in non-income-generating markets, and prices are free to adjust to efficient levels in the remaining markets, prices must achieve efficient levels in all markets. There will be no distortions in the economy.

To be sure, personalized pricing in non-income-generating markets affects behavior in income-generating markets, because it changes the buying power of income in the markets in which it is implemented. If you can buy less with your paycheck, because firms are personalizing higher prices to you, then you may decide to work less or invest less.[139] But this effect does not create a distortion in income-generating markets because prices in income-generating markets remain free to adjust in response to what are effectively changes in the supply of labor or investment dollars brought on by the change in purchasing power. As a result, prices can adjust to ensure that the marginal worker associated with the new level of labor supply is willing to work and the marginal investor associated with the new level of investment supply is willing to invest. So long as labor and capital markets are competitive, the changes in prices, when combined with the efficiency of personalized pricing in non-income-generating markets, will take the economy to an efficient outcome, albeit a different (and hopefully more distributively just) outcome from the one that would exist absent the redistributive personalized pricing in non-income-

139. KAPLOW, *supra* note 23, at 123.

generating markets.[140] This is not true when redistribution in non-income-generating markets is carried out without the aid of personalized pricing. In that case, the non-income-generating markets are distorted and, per the double-distortion argument, this creates a reinforcing distortion in income-generating markets.[141] But it is the case when personalized pricing eliminates the distortion in non-income-generating markets.

By contrast, changes imposed on labor and capital markets by the income tax, which fixes after-tax wages and investment returns, prevent prices in those markets from adjusting to ensure that the marginal worker is able to work and the marginal investor is able to invest.[142] As a result,

140. *See* EUGENE SILBERBERG, THE STRUCTURE OF ECONOMICS: A MATHEMATICAL ANALYSIS 579 fig.17-1 (2d ed. 1990) (explaining the result, known as the Second Fundamental Theorem of Welfare Economics, that in a general equilibrium model there will be a multiplicity of efficient allocations of resources, each reflecting a different distribution of wealth).

141. Another way to think about the distinction between the two cases is to reflect that when you lift a cup up off of a table, it will no longer appear to touch the table whether you look at it from the front of the table or the side of the table. If the cup *should* look like it is touching the table in a normative sense, then its removal from the table "distorts" its image away from that goal in both the front and side dimensions. But if the cup appears to be resting on the table when viewed from one side then you can be sure that it will appear to be resting on the table from the other, so long as no artificial restriction, such as a doorstop, has been used to lift it up in one direction while keeping it in contact with the table along the other. If a cup rests on a table, it must do so from all sides at the same time (except, perhaps, the top) and if it does not rest on a table, it must fail to do so from all sides at the same time.

Similarly, redistribution in non-income-generating markets, when carried out *without* the aid of personalized pricing, distorts along multiple dimensions (*i.e.*, in multiple markets), because to move an economy away from an efficient position along one dimension is to move it away from its efficient position along all dimensions. But redistribution in non-income-generating markets, when carried out *with* the aid of personalized pricing, does not distort in any dimension (*i.e.*, in any market), because to keep an economy at its efficient position in one dimension is to keep it at its efficient position in all dimensions, so long as no restriction is applied to the other dimensions to prevent them from adjusting accordingly.

To round out the analogy, the case of income taxation ought to be identical to the case of redistribution through non-income-generating markets without the aid of personalized pricing, because once the cup is off the table along one dimension (in the case of income taxation, the income-generating markets; in the case of redistribution in non-income-generating markets, the non-income-generating markets) it is off the table along them all. But the double-distortion argument uses separability simply to assume this equivalence away. The argument assumes, in effect, that the cup cannot be lifted entirely off of the table, but is instead stuck to the table along one side, so that lifting it off along the other merely tilts the cup, making it appear to be disengaging from the table along that side but not along the first side, from which it appears merely to tilt back. Thus, the desired image of a cup touching the table is distorted along one dimension (the income tax distorts income-generating markets) but not along the other (the income tax is assumed not to distort non-income-generating markets thanks to separability).

142. *See, e.g.*, Shannon Mok, *How Taxes and Transfers Affect the Work Incentives of People with Low and Moderate Income*, CONG. BUDGET OFF. (Mar. 17, 2017), https://www.cbo.gov/publication/52472 [https://perma.cc/6W78-QNTN].

even though income taxation does not distort non-income generating markets, prices in income-generating markets cannot adjust to eliminate all distortions from the economy, as happens in the case of personalized pricing. Thus, redistribution in non-income-generating markets creates zero distortions whereas redistribution in income-generating markets creates a distortion.

As we saw in Part III, the flimsiness of the separability assumption already calls contemporary income tax primacy into question. The efficiency of personalized pricing should dispel any remaining doubts regarding the failure of the double-distortion argument, at least for those pursuing redistribution via personalized pricing.

2. ADMINISTRABILITY

a. The Difficulty of Targeting Shareholders

Personalized pricing also partially undermines the administrability argument in support of income tax primacy, at least with respect to redistribution between consumers as opposed to redistribution between firms and consumers. The information that firms need to personalize high prices likely includes information on income, for those who earn more are generally willing to pay more.[143] As a result, when an antitrust enforcer or rate regulator orders a firm to use personalized pricing to redistribute between consumer groups—to charge low prices to the poor and high prices to the rich—the firm will know exactly how to respond. If AT&T had been able to personalize the highest possible prices to everyone, then it likely would have known its customers' incomes, and could therefore have personalized higher long-distance prices to the rich and lower long-distance prices to the poor. AT&T would not have needed to employ an imperfect proxy, such as use of long-distance calling services, to distinguish rich from poor, and so no poor person would have been charged a high long-distance rate and no rich person would have been charged a low long-distance rate.[144] Personalized pricing will permit firms to redistribute wealth between consumers on a person-by-person, income-by-income basis, just as the income tax is able to do, undermining the argument that the income tax is a more administrable method of redistributing wealth.

Personalized pricing does not, however, undermine the administrability argument with respect to redistribution between firms and

143. *See* Cam Donaldson, *Valuing the Benefits of Publicly-Provided Health Care: Does 'Ability to Pay' Preclude the Use of 'Willingness to Pay'?*, SOC. SCI. 551, 561 (1999).

144. *See* JOHN, *supra* note 10, at 307–09, 408–09; VISCUSI, HARRINGTON & SAPPINGTON, *supra* note 18, at 525–26.

consumers, because firms cannot personalize the profits that they pay out to shareholders.[145] Personalized pricing allows a firm to redistribute all of its profits to consumers, but it does not allow a firm to redistribute to consumers the profits of rich shareholders alone.[146] Corporate law, rather than the firm's pricing department, determines how profits and losses are distributed, according to the rule of pro rata per share unless the firm's charter stipulates otherwise.[147] If, for example, a firm were to reduce its prices down to costs, redistributing $10 of profits to consumers, a two-thirds owner of the firm would experience a reduction in total dividends earned of $6.67 and a one-third owner would experience a reduction in total dividends earned of $3.33.[148] This would be true even if the two-thirds owner were a pension fund investing the savings of union workers whereas the one-third owner were a hedge fund generating returns for the wealthiest Americans.[149] It might be the case that, to nudge the incomes of the union members toward equality with those of the wealthiest Americans, the hedge fund should suffer the entire loss from the reduction in the firm's prices and the pension fund should suffer no loss. But, under the rule of pro rata per share, most of the loss would be suffered by the union workers instead. It follows that personalized pricing will not enable antitrust enforcers accurately to target rich shareholders for redistribution of wealth. The income tax has no such problem because it taxes the income earned by individual shareholders on their shares along with all other income earned on investments.[150]

Overall, then, personalized pricing in non-income-generating markets is administrable—and a good substitute for the income tax—only when personalized pricing is deployed to redistribute wealth between different groups of consumers. Using it to redistribute wealth between firms and consumers—that is, to lower a firm's overall profits—will, by contrast, have less precise distributive results, as doing so may impoverish the poor shareholder, something that a properly implemented income tax,

145. *See* Alexander Hamilton Frey, *Distribution of Corporate Dividends*, 89 U. PA. L. REV. 735, 735–39 (1941).

146. *See* Ramsi A. Woodcock, *The Antitrust Case for Consumer Primacy in Corporate Governance*, 10 U.C. IRVINE L. REV. 1395, 1412–26 (2020).

147. *See* Victor Brudney, *Dividends, Discretion, and Disclosure*, 66 VA. L. REV. 85, 104–05 (1980).

148. *See id.*

149. *See id.*

150. Antitrust enforcers or rate regulators could get around this limitation of personalized pricing by insisting that firms make changes to their share structure to enable personalization of the allocation of profits to shareholders. But doing that on an economy-wide basis to the end of redistributing wealth would be equivalent to taxing income invested in firms, which is what the income tax already does. Whether a tax on income from share ownership combined with consumer-facing personalized pricing in non-income-generating markets would be an administrable substitute for a full income tax touching all labor and capital income is beyond the scope of this Article.

which can tax the rich shareholder's investment income without taxing the poor shareholders', need not do.

b. The Additional Problems of Scope and Coordination

There are, however, two important prerequisites for the ability of personalized pricing in non-income-generating markets to redistribute with the same accuracy as the income tax, even when firms deploy it only to redistribute between consumers rather than between shareholders and consumers. These prerequisites are difficult to meet. The first is a matter of scope: that personalized pricing must operate in all non-income-generating markets at the same time. A redistributive personalized pricing regime that applies only to a limited set of markets will not be able to reach rich people who transact only in other markets—and rich people will have an incentive to avoid the markets in which prices are personalized in order to protect their wealth. Even when a redistributive personalized pricing regime that applies only to a limited set of markets is able to reach a particular rich person, the regime may not be able to redistribute as much wealth away from that person as would be necessary to reach distributive goals because there is a limit to the amount of wealth a rich person is willing to expend in any particular market. There is, for example, a limit to what a rich person is willing to pay for long-distance telephone service without giving up on the telephone entirely, and that limit is likely to be reached long before the rich man is fully deprived of his income by the long-distance bills that he pays. If his income is $10 million per year, for example, he may well shift to letter-writing once his long-distance calling bill surpasses $1 million per year, in which case he will retain the other $9 million of his income. A redistributive regime that applies only to the telephone market would, therefore, be unable fully to redistribute from rich to poor.[151] But because virtually everyone participates in the labor or capital markets touched by the income tax, the income tax would be able to reach everyone. And because the money we have to spend in any non-income-generating market comes from what we earn in labor or capital markets, a tax on what we earn will always be able fully to redistribute from rich to poor.[152] The income tax authorities could tax away as much of those $10 million as Congress authorizes them to do and tax them away from any rich person regardless in which markets he spends his money.

The second prerequisite is coordination. Redistribution in different non-income-generating markets may work at cross purposes if the firms implementing it—or the antitrust enforcers and rate regulators compelling them to implement it—do not take all markets in which they collectively

151. *Cf. supra* text accompanying notes 15–19.

152. *See* KAPLOW, *supra* note 23, at 126 (discussing conditions for the equivalence of a tax on earnings and a tax on expenditures).

engage in redistribution into account in setting prices.[153] An antitrust enforcer, for example, might compel a firm to impose a pricing scheme in a particular market that would so affect a particular rich man that his purchasing power would become average. Simultaneously, a rate regulator, unaware of the antitrust enforcement action, might compel a different firm to charge the same rich man higher prices in a second market, driving him now from an average purchasing power into poverty. The only way to avoid this problem is for firms—or the antitrust enforcers and rate regulators commanding them—to coordinate prices across all markets in which they redistribute. By contrast, the income tax does not require coordination because it applies directly to a person's total earnings, which in turn determine what he can buy in all non-income-generating markets. The tax authority can observe the rich man's total income and impose a tax rate that reduces the man's after-tax income to the average level in one fell swoop.

c. Making Redistribution Through Personalized Pricing More Administrable

All three of personalized pricing's shortcomings as a redistributive tool—the prerequisites of scope and coordination, and the inability of personalized pricing to touch shareholder returns—can, in principle, be overcome. Personalized pricing is likely eventually to spread to all non-income-generating markets—and, as Part V will explain, a few changes to the antitrust laws and rate regulation regimes would enable antitrust enforcers and rate regulators to exploit personalized pricing in all those markets, solving the scope problem. Antitrust enforcers and rate regulators could also collaborate to impose prices that produce consistent distributive results across all the markets in which they operate, solving the coordination problem. A particular rate regulator might, for example, fund a clearinghouse of information on the personalized prices charged by the firms with which antitrust enforcers and rate regulators deal. Antitrust enforcers and rate regulators could, then, order the firms to use the clearinghouse to choose prices that, after taking into account all the prices in the clearinghouse, render each of their customers no richer or poorer than anyone else.[154] Or antitrust enforcers and rate regulators could insist that all firms under their jurisdiction adopt a standardized application programming interface (API) for their pricing systems that would enable antitrust enforcers and rate regulators to control the prices of firms directly

153. *See id.* at 18 (arguing that "an incomplete, unintegrated" view of the effects of a tax "can be highly misleading").

154. Antitrust enforcers would here be facilitating collusion, but the collusion would advance antitrust's redistributive mission. For more on what might be required for antitrust enforcers to impose such a broadly redistributive remedy, see *infra* Part V.

from the enforcers' and regulators' own computer systems.[155] Antitrust enforcers and rate regulators could, then, coordinate prices on their own systems and then dictate the coordinated prices to firms via the API.[156]

Eventually, coordination might not even be necessary, because private industry is itself already consolidating.[157] By waiting for this consolidation to run its course, antitrust enforcers[158] and rate regulators could let the private sector bear the cost of creating a coordinated system.[159] Amazon, in particular, may one day afford antitrust enforcers and rate regulators just such an opportunity. Amazon already controls about fifty percent of online retail, effectively coordinating the pricing of an important chunk of all consumer spending.[160] To the extent that Amazon is able to maintain its online dominance as brick-and-mortar retail atrophies and consumer spending moves online, Amazon will one day end up pricing most or all of American consumption.[161] Redistribution through

155. The notion that this could be accomplished with an API is due to Paul Heald in private conversation.

156. *See* Woodcock, *supra* note 3, at 1411–13.

157. *See* Gustavo Grullon, Yelena Larkin & Roni Michaely, *Are US Industries Becoming More Concentrated?*, 23 REV. FIN. 697, 697–98 (2019) (finding an increase in concentration in U.S. industries over the past two decades); Germán Gutiérrez & Thomas Philippon, *How European Markets Became Free: A Study of Institutional Drift* 2 (Nat'l Bureau of Econ. Rsch., Working Paper No. 24700, 2018), https://www.nber.org/system/files/working_papers/w24700/w24700.pdf. [https://perma.cc/R8CZ-RWKG] (finding that differences in antitrust enforcement explain greater market concentration in the United States relative to the European Union).

158. The present consolidation appears to be driven by product improvement—firms driving competitors from the market by offering superior products—and so does not violate the antitrust laws in any case. *See* Ramsi A. Woodcock, *The Obsolescence of Advertising in the Information Age*, 127 YALE L.J. 2270, 2311 (2018). To the extent that this were to change, and consolidation were to continue because firms were suppressing the superior products of competitors rather than fielding their own, the consolidation would violate the antitrust laws and antitrust enforcers would be ill-advised to acquiesce in the consolidation, which would harm economic growth. *Id.* at 2310–11; *see also* Kenneth J. Arrow, *Workshop on the Economy as an Evolving Complex System: Summary*, *in* 5 THE ECONOMY AS AN EVOLVING COMPLEX SYSTEM 275, 281 (Philip W. Anderson, Kenneth J. Arrow & David Pines eds., 1988) ("Innovations . . . are one of the least analyzed parts of economics, in spite of the verifiable fact that they have contributed more to per capita economic growth than any other factor."). In this case, antitrust enforcers and rate regulators would need to pursue other approaches to price coordination.

159. *See supra* note 20 and accompanying text.

160. *See* Ingrid Lunden, *Amazon's Share of the US E-Commerce Market is Now 49%, or 5% of All Retail Spend*, TECHCRUNCH (July 13, 2018, 11:57 AM), https://techcrunch.com/2018/07/13/amazons-share-of-the-us-e-commerce-market-is-now-49-or-5-of-all-retail-spend [https://perma.cc/7SQ8-RVAY].

161. *See* Anick Jesdanun, *5 Reasons Amazon Is Experimenting with Physical Stores*, DENVER POST (Apr. 30, 2017, 12:37 PM), https://www.denverpost.com/2017/04/30/amazon-experimenting-physical-stores [https://perma.cc/SU2L-MXGY]; Ramsi Woodcock, *Amazon's Whole Foods Deal Could Still Be Reversed Thanks to Forgotten Antitrust Case*, THE CONVERSATION (Aug. 27, 2017,

personalized pricing may then require no more than an order from an antitrust enforcer or rate regulator to Amazon—which has been a pioneer in the personalization of prices—to alter its pricing algorithms to equalize wealth.[162]

If personalized pricing spreads to all non-income-generating markets, and antitrust enforcers and rate regulators find a way to coordinate prices across all of those markets, then the inability of personalized pricing to touch shareholder returns will also cease to be a problem. Shareholders must eventually spend their returns in non-income-generating markets.[163] So long as antitrust enforcers and rate regulators can influence prices in all of those markets in a coordinated fashion, they can ensure that all of the prices at which shareholders buy are higher than the prices at which others buy, thereby equalizing shareholders' purchasing power with that of the rest of the consuming public. Antitrust enforcers and rate regulators should be able accurately to carry out such redistribution between different groups of consumers, as we saw in Section IV.A.2.a.

d. The Usefulness of Personalized Pricing to Redistribute Wealth Notwithstanding These Limitations

While personalized pricing will not become as accurate at redistributing wealth as the income tax until personalized pricing has spread across the economy and antitrust enforcers and rate regulators have started to coordinate their efforts across markets, antitrust enforcers should not wait until personalized pricing is as accurate as the income tax in order to start experimenting with it. There is no danger that an experiment in redistributive personalized pricing in a limited number of markets will harm those markets, because personalized pricing is efficient.[164] The danger is only that personalized pricing will fail accurately to redistribute wealth—making the rich richer and the poor poorer instead of the other way around. But antitrust enforcers and rate regulators should accept this risk because, absent intervention, firms will use personalized pricing to make the rich richer and the poor poorer, as they will use it to maximize their profits, extracting every last penny of surplus from consumers.[165] If the current politics of redistribution through the income tax system persist, then the income tax is unlikely to adjust to offset this regressive effect on

10:45 PM), https://theconversation.com/amazons-whole-foods-deal-could-still-be-reversed-thanks-to-forgotten-antitrust-case-83063 [https://perma.cc/C7NY-TCF7].

162. *See* Woodcock, *supra* note 3, at 1408.

163. They may reinvest some of their returns. *See* Joseph Bankman & David A. Weisbach, *The Superiority of an Ideal Consumption Tax over an Ideal Income Tax*, 58 STAN. L. REV. 1413, 1418 (2006). But come the end of days they must consume them all.

164. *See supra* Part I.

165. *See* Woodcock, *supra* note 3, at 1389–90.

the overall distribution of wealth.[166] Attempts to counteract this by compelling firms to use personalized pricing to redistribute progressively in a limited number of markets will probably improve matters, even if the attempts sometimes misfire.[167]

3. THE PRICE BUBBLE ALTERNATIVE

What allows personalized pricing to make redistribution—and indeed markets[168]—efficient is information. Firms' information on consumer demand enables sellers to choose personalized prices that, as we saw in Part I, ensure that no buyer who can afford to pay the cost of production is prevented from acquiring goods or services in the market.[169] There is another kind of pricing that, if applied economy-wide, would enable redistribution of wealth with the same level of accuracy as the income tax system, but would not require any information about consumer demand to function. That is what I call "bubble pricing:" increasing or decreasing, by a fixed percentage, the prices faced by a particular consumer in all non-income-generating markets.[170] This creates a bubble around each consumer in which the consumer faces a price level that is either uniformly inflated or deflated relative to the true prices chosen by sellers. Like the holder of a credit card that offers 1% cash back on all purchases, the consumer might enjoy a 1% discount on everything—or a 15% markup. By choosing the discount or markup based on each consumer's wealth, a regulator can equalize the purchasing power of each.

This works because income is valuable only for what it can buy—it represents purchasing power.[171] But purchasing power is determined not

166. For the politics of redistribution, see *supra* text accompanying note 135.

167. *See* Woodcock, *supra* note 3, at 1406–13.

168. If a market is inefficient for reasons not related to pricing—because, for example, advertising causes consumers to buy products that they do not really prefer—the application of personalized pricing will not make the market efficient, although it will remove one potential source of inefficiency. *See* Woodcock, *supra* note 158, at 2278–80, 2314–16. I assume in this Article that pricing is the only source of inefficiency in markets.

169. *See* Kathleen Carroll & Dennis Coates, Teaching Price Discrimination: Some Clarification, 66 S. ECON. J. 466, 468–69, 469 n.4 (1999) ("[T]he seller must know or be able to learn very specific information about every consumer to be able to set the highest attainable price on every unit.").

170. Manoj Viswanathan calls this an "individual accounting progressive consumption tax." Manoj Viswanathan, *Implementing a (Modern) Progressive Consumption Tax*, 41 VA. TAX REV. 241 (2022) (manuscript at 16), https://papers.ssrn.com/abstract=3836844. Joseph Bankman and David Weisbach call it an "ideal, neutral, or uniform consumption tax." Bankman & Weisbach, *supra* note 163, at 1418.

171. *See* Daniel Shaviro, *Replacing the Income Tax With a Progressive Consumption Tax*, TAX NOTES 91, 105 (2004) ("Wealth is worth only what it can buy; otherwise, it might as well be play money from the board games Monopoly or Life."). *But*

only by income but also by the prices charged for goods in the non-income-generating markets in which income is spent.[172] In an economy in which the only non-income-generating market is the market for ice cream, a $1 million income has the same purchasing power as a $1 income if the price charged per pint to the millionaire is $1 million and the price charged per pint to the dollar-holder is $1. It follows that a regulator can equalize wealth either by equalizing incomes directly or by discounting the poor person's prices and marking up the rich person's prices until they both purchase the same bundle of goods that they would purchase were their incomes equal.

Bubble pricing is not only as accurate as the income tax but also creates the same number of distortions, because the equivalence of income and purchasing power makes bubble pricing functionally identical to the income tax.[173] The only difference between the two approaches to

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see Reuven Avi-Yonah, *Risk, Rents, and Regressivity: Why the United States Needs Both an Income Tax and a VAT*, 2004 TAX NOTES 1651, 1659.

172. Income can also be invested in capital markets, rather than spent in non-income-generating markets. But the value of investments is determined by the value of the returns that they generate and the value of returns is determined by what the returns can buy in non-income-generating markets. So varying the prices of what the returns can buy also determines the value of income that is invested. *See supra* note 163. For more on this, see *infra* note 173.

173. *See* KAPLOW, *supra* note 23, at 125–26 ("Introducing uniform commodity taxation is indeed equivalent to a uniform shift in the level of income taxation."). Following Kaplow, this can be expressed in algebraic terms by considering the consumer's budget constraint. The constraint is that income must equal expenditure: $I = pz$, where I is the consumer's income, p is a vector of prices in all non-income-generating markets, z is a vector of the amount of each non-income-generating market good purchased by the consumer, and pz is their dot product—the sum, over all non-income-generating markets, of price multiplied by quantity sold in each non-income-generating market—and gives total expenditure. If 20% of income is taxed away, leaving 80% of the original amount, then the consumer's new budget constraint is $(0.8)I = pz$, and pz must adjust to bring expenditures into equality with the new, lower amount of income available to the consumer. The amount of each good purchased, z, may shift, or prices, p, may shift, or both may shift to balance the budget. However these variables may shift, consider an alternative to such a reduction in income that nevertheless results in the consumer purchasing the same amount of each good as the consumer purchases under the 20% reduction in income. Dividing both sides of the budget constraint, $(0.8)I = pz$, by the discount factor 0.8, we obtain the budget constraint $I = (p/0.8)z$, which describes a world in which the consumer's income is not taxed but every non-income-generating market price faced by the consumer is inflated by the factor $1/0.8 = 1.25$, meaning that every non-income-generating market price is 25% higher for the consumer. Because, as a mathematical matter, $(0.8)I = pz$ and $I = (p/0.8)z$ are two different ways of expressing the exact same constraint, the solutions to the two equations are the same, which means that under both constraints the consumer purchases the exact same amount of goods, z. It follows that a consumer will buy the exact same set of things whether 20% of his income is taxed or the prices he faces in non-income-generating markets all increase by a factor of $(1/0.8 =)$ 1.25, which is to say, by 25%. More generally, taxing income at rate r imposes the exact same constraint on consumers as an across-the-board price increase of rate $r/(1 - r)$, and so both approaches affect the economy in the exact same way.

There is a counterargument that can be overcome only with some difficulty. It is well known that undifferentiated taxation of consumption—of which bubble pricing is an individuated form—treats income from labor and capital differently from the way the income tax treats income from labor and capital. *See, e.g.*, Bankman & Weisbach, *supra* note 163, at 1422–28. Consequently, the counterargument would go, undifferentiated consumption taxation is not actually equivalent to income taxation. In terms of the budget constraint above, the process that discounts I by 20% distributes the discount between income from labor and income from capital differently from the way the process that inflates prices by 25% reduces the purchasing power of income from labor and income from capital. Thus, although the two constraints are identical, the income tax will cause people to make different investment and labor choices from those that an undifferentiated tax on consumption would cause them to make, and so it cannot actually be inferred from the identity of the budget constraints that both approaches affect the economy in the exact same way and lead to the same number of distortions.

The heart of the problem is that an undifferentiated consumption tax is a tax on everything that a consumer spends in non-income-generating markets, which means that if a consumer spends his endowment in those markets in addition to his income, an undifferentiated consumption tax will tax both his endowment and his income, whereas an income tax applies only to the income and not to the endowment. This creates a problem because people can spend their investment endowments—the financial assets that they invest in order to generate investment income—in non-income generating markets but they cannot spend their labor endowments in non-income-generating markets. People cannot spend their labor endowments in non-income-generating markets because there is no way directly to transfer the talent that serves as a worker's endowment in such a way that one worker is able to generate income from another worker's talent. There is, for example, no way for a worker directly to transfer his talent for computer coding to another worker in exchange for consumption goods like ice cream and frisbees; the worker can only *use* his coding talent to generate a return through working and then spend that return on ice cream and frisbees. The only part of a person's wealth in labor markets that a person consumes is the income from his labor, not the talent that makes his labor valuable to employers. It follows that whereas the income tax is a tax on labor income and investment income, the undifferentiated consumption tax is a tax on labor income and investment *wealth*—understood to mean both the financial assets that an investor invests and eventually consumes and the income those assets produce and which the investor eventually consumes as well. The income tax's treatment of labor markets relative to investment markets must therefore differ from the way the undifferentiated consumption tax treats labor markets relative to investment markets, and so one cannot assume that the two approaches to taxation create the same number of distortions in the economy.

The solution to this problem is for tax authorities to tax endowments of financial assets in addition to investment income. That would make the treatment of investment market wealth under the income tax (which would now be more akin to a wealth tax) identical to the treatment of investment market wealth under undifferentiated consumption taxation, eliminating the divergence in treatment of labor and capital market wealth between income taxation and undifferentiated consumption taxation. (To implement this fix properly, tax authorities would need to defer taxation of labor income that is invested until the investment pays out. Such invested labor income is not really income but rather an endowment in capital markets—it serves as the basis for generating investment income—and so taxing it once when it is earned as labor income and a second time when it is invested as an endowment would result in double taxation of financial endowments. That would make taxation of financial endowments differ from their treatment under an undifferentiated consumption tax, which effectively taxes financial endowments once.) The result of this fix would be what is known as a "cash-flow consumption tax"—which gets its name because it faithfully reproduces the behavior of a genuine undifferentiated

redistribution is that the income tax adjusts income when it is paid out to its recipients whereas bubble pricing adjusts income when its recipients use it to buy things.[174] It follows that, whatever the number of distortions the income tax creates, bubble pricing must create the same number as well, neither more nor less.[175] For this to be true, however, it is essential that the price bubble accompanying each consumer apply to all non-income-generating markets and discount or mark up prices in each market by the same percentage.[176] If the discount or markup is not applied to some markets, or applied at a lower level, then the price bubble will make the goods in those markets either less desirable, in the case of a missed discount, or more desirable, in the case of a missed markup, relative to the goods to which the discount or markup is consistently applied. That will cause the consumer to buy less in missed-discount markets or more in missed-markup markets than he would have if his income had been altered directly by income taxation, because the income tax applies to income regardless how it is spent and therefore does not favor or disfavor any particular set of goods in non-income-generating markets relative to others. But if consumers buy different amounts of things under bubble pricing than they buy under income taxation, then bubble pricing may create more distortions than the income tax.

Price bubbles differ from personalized pricing. A price bubble is a constant percentage discount or markup applied to all prices a consumer faces, whether those prices have been chosen to maximize output—that is, to be efficient—or not.[177] By contrast, personalized prices are prices chosen to ensure that transactions that can be executed, because the buyer is willing to pay at least the minimum the seller is willing to accept (i.e., at least the cost of production), in fact take place.[178] They maximize output. If prices are uniform in the markets for ice cream, sandwiches, and movie tickets, at $5, $10, and $20 respectively, and a regulator wishes to reduce a consumer's purchasing power by twenty percent, the regulator drives those prices up to $6, $12, and $24 respectively. Suppose that the

consumption tax, even though it is not paid when goods are purchased in non-income-generating markets but instead when cash for use in those markets is generated. *See* John K. McNulty, *Flat Tax, Consumption Tax, Consumption-Type Income Tax Proposals in the United States: A Tax Policy Discussion of Fundamental Tax Reform Symposium of the Law in the Twentieth Century*, 88 CALIF. L. REV. 2095, 2104–10 & n.44 (2000).

The claim in this Article that bubble pricing—which is an undifferentiated consumption tax applied on an individualized basis—creates the same number of distortions as income taxation presupposes that the foregoing alteration to the application of the income tax (*i.e.*, making it a wealth tax with respect to capital markets) is carried out.

174. *See* KAPLOW, *supra* note 23, at 125–26.

175. *See id.*

176. *See id.*

177. *See id.*

178. *See* Carroll & Coates, *supra* note 169, at 468–69.

consumer places a $7 value on the first two units of ice cream that he purchases and a $5 value on the third. The markup on the ice cream to $6 would cause him to buy one unit fewer of ice cream than he would before the markup—he would not buy the unit that he values at $5, so ice cream output would fall. But the price bubble regulator would not care. A firm personalizing prices would care. Suppose that producing the third unit of ice cream, upon which the consumer places a $5 value, costs the firm $3. The firm would choose a price for that third unit of ice cream that would be less than or equal to $5, ensuring that the consumer would be willing to buy the ice cream. But the price the firm would choose would also be at least equal to $3, so that the firm would be able to produce the ice cream. The firm would continue to charge $6 for the other two units of ice cream that the consumer purchases, or indeed any price for those units that covers production costs for those units and is no higher than the $7 value the consumer places on those units.

Implementing the price bubble approach requires very little information relative to personalized pricing. The regulator only needs to know the income of each consumer.[179] Implementing personalized pricing requires much more information: both information on each consumer's willingness to pay for each unit of a good and information on the cost of production of each unit are necessary to ensure that price is set below willingness to pay and above cost.[180] It follows that to implement price bubbles there is no need for antitrust enforcers and rate regulators to wait for the private sector to develop information on willingness to pay, as antitrust enforcers and price regulators must do to compel the private sector to redistribute through personalized prices. As Manoj Viswanathan has suggested, the Internal Revenue Service (IRS), if authorized by Congress, could implement price bubbles today by dictating discount and markup rates to the credit and debit card networks, which would then apply them at the point of sale to the prices paid by consumers when they make electronic payments for goods and services.[181] But given Congress's

179. *Cf.* Viswanathan, *supra* note 170 (manuscript at 4) (arguing for taxation based on amount of consumption, using technology to facilitate ease of reporting).

180. *See* Carroll & Coates, *supra* note 169, at 468–71.

181. *See* Viswanathan, *supra* note 170 (manuscript at 4) ("Because consumer spending is increasingly reliant on electronic payment systems, a revised information reporting regime imposing obligations on these third-party payment processors would permit the IRS to receive, in real-time, taxpayers' consumption information. With this information, retailers would obtain and then apply the proper marginal tax rate on consumer transactions."). For price bubbles implemented through the credit card networks to follow consumers to all markets and all transactions, the use of paper money must cease—and paper money is on the decline. *See* KELSEY COYLE, LAURA KIM & SHAUN O'BRIEN, CASH PROD. OFF., FED. RSRV. SYS., 2021 FINDINGS FROM THE DIARY OF CONSUMER PAYMENT CHOICE 3 (2021). Even if cash does not die out completely, there are ways around it. *See* Viswanathan, *supra* note 170 (manuscript at 4) ("The [individual accounting progressive consumption tax (IAPCT)] could also easily accommodate cash

unwillingness in recent years to use the income tax more aggressively to redistribute wealth, it is unlikely that Congress will implement the price bubble approach, at least not to the end of redistributing more wealth than the income tax does at present.[182] Thus, there remains good reason for antitrust enforcers and rate regulators—who may be able to act even when Congress cannot—to pursue redistribution through personalized pricing and to seek to extend it to all markets.

4. ECONOMY-WIDE PERSONALIZED PRICING AND BUBBLE PRICING ARE NOT CENTRAL PLANNING

Coordinated, economy-wide personalized pricing sounds like central planning, but isn't. In a centrally planned economy, the planner chooses a set of prices, uniform in each market, that equilibrate supply and demand, and dictates those prices to markets.[183] To choose those prices, the planner must solve a set of equations defining the product preferences of each consumer and the costs of production of each good in the economy to find a set of prices at which no consumer who is willing to pay the cost of production is priced out of the market.[184] It has been remarked that solving such a problem in a genuine economy involving millions of economic agents would require an increase in computing power of 10^{21} times relative to current levels.[185]

Like central planning, coordinated, economy-wide personalized pricing involves the choosing of prices for every market in the economy (except, in the case of personalized pricing, the labor market). But, unlike central planning, the personalized prices that antitrust enforcers or rate regulators would coordinate would not be the solutions to equations defining consumer preferences and production costs.[186] Instead, they would be *identical* to the equations that define consumer preferences, to the equations that define production costs, or to some interpolation of the two.[187] To personalize a price means to choose a price that is no higher

transactions by incentivizing cash payors to self-report in order to obtain their true (and typically lower) marginal tax rate.").

182. *See* BROWNLEE, *supra* note 126, at 182–83, 273.

183. *See* Cosma Shalizi, *In Soviet Union, Optimization Problem Solves You*, CROOKED TIMBER (May 30, 2012), http://crookedtimber.org/2012/05/30/in-soviet-union-optimization-problem-solves-you/ [https://perma.cc/3Q56-J3TU].

184. *See id.*; BAUMOL, *supra* note 114, at 508, 512 (observing that optimal price levels are determined by the marginal utilities of consumers and that a central planner would need to identify optimal price levels and then impose them on firms).

185. Shalizi, *supra* note 183 (describing this as "a more-than-astronomical, rather a chemical, increase" in computing power relative to the computing power available today).

186. *See* SILBERBERG, *supra* note 140, at 583, 585 & fig.17-3.

187. *See* Thomas M. Humphrey, *The Early History of the Box Diagram*, 82 FED. RSRV. BANK RICH. ECON. Q. 37, 55–56, 56 fig.9 (1996). This formulation is an attempt to

than the maximum that a consumer is willing to pay for each unit the consumer wishes to purchase and no lower than the firm's production costs. A consumer's preferences are expressed in the maximum the consumer is willing to pay. If he likes one unit a great deal but the second unit bores, he might be willing to pay $10 for the first unit but only $2 for the second, whereas, if he cares little for any amount of the good, then he might be willing to pay only $1 for the first unit and only $1 again for the second. And so personalizing prices for a consumer means determining the consumer's preferences, reflected in the maximum prices that the consumer is willing to pay, along with firm's costs of production, and then charging prices that equal either the schedule of prices representing the consumer's maximum willingness to pay or the firm's production costs, or some compromise between the two.

Antitrust enforcers must, therefore, have some of the detailed information regarding consumer preferences and costs that central planners require.[188] But antitrust enforcers and rate regulators do not need to use that information actually to plan the economy in the sense of computing a set of uniform prices that maximize output. Antitrust enforcers and rate regulators dictate a schedule of personalized prices and allow consumers and firms to decide on their own what and how much to sell or buy.[189] Antitrust enforcers and rate regulators do not need to know how much consumers will buy at the prices they set; all they need to know is that, because the prices they set are consistent with consumer willingness to pay and firms' production costs, whatever amount of trade takes place at these prices will be the efficient amount.[190] Every consumer willing to pay the cost of production will get a price that enables him to buy because that price is chosen with his willingness to pay and the firm's production costs in mind. Markets remain free and continue to determine

express in the language of partial equilibrium economics—demand and cost curves—a concept that really only makes sense in general equilibrium terms. A more accurate statement, in general equilibrium terms, is that the personalized prices that antitrust enforcers and rate regulators would coordinate would be identical to the equations that define the preferences of economic agents—or, to be even more precise, to a set of indifference curves of buyers or sellers that fall within the exchange lens associated with the prevailing set of resource endowments. By changing the price of an initial unit of the good in discontinuous fashion, antitrust enforcers and rate regulators will be able to choose any indifference curve within the exchange lens as the price curve and thereby to target any set of final utility levels (*i.e.*, any distribution of the gains from trade) for buyer and seller that fall within that lens.

188. *See* Carroll & Coates, *supra* note 169, at 469 n.4; Humphrey, *supra* note 187, at 55–56 & fig.9.

189. *See* Humphrey, *supra* note 187, at 55–56 & fig.9.

190. *Id.* In general equilibrium terms, once a regulator has set prices equal to the indifference curve of buyer or seller, trade will be efficient because, barring edge cases, every indifference curve intersects the contract curve and so buyer and seller will exhaust the gains from trade in doing business with each other at those prices.

economic outcomes, but prices are chosen to channel these outcomes in an efficient direction.

By contrast, central planners always know exactly how much each consumer will buy at planned prices because buyers and sellers will not always transact their way to the efficient level of output when trading at uniform, as opposed to personalized, prices.[191] Central planners must choose the particular uniform prices that will cause buyers and sellers to trade to the efficient level of output. In order to do that, central planners must use their information on consumer preferences and production costs to solve for the efficient level of output and then find the set of uniform market prices that make buyers and sellers willing to transact their way to that level of output.[192] Thus, central planners must predict market outcomes in advance. Because buyers and sellers will always transact their way to an efficient level of output on their own if presented with personalized prices, antitrust enforcers and rate regulators do not need to determine what an efficient market outcome would be and, therefore, do not require the vast computational overhead needed for central planning.[193] The information requirements for personalized pricing—consumer preferences and firm costs—are admittedly vast, but such information requirements are merely the starting point for central planning whereas, for personalized pricing, they are the ending point.

Price bubbles are even less like central planning than is personalized pricing, for they do not even require the information on consumer preferences and firms' production costs that is required for the personalization of prices.[194] The prices charged in price bubbles are fixed discounts or markups over actual prices; those discounts or markups are determined with a view to redistributing wealth, not to ensuring that prices are between willingness to pay and production costs in every market. All that a regulator must know to implement price bubbles are the incomes of everyone in the economy, from which the regulator can calculate the rate by which to discount or mark up prices for each consumer in order to equalize his purchasing power with others'. The across-the-board

191. *See* SILBERBERG, *supra* note 140, at 583, 585 & fig.17-3.

192. *See id.*

193. *See* Shalizi, *supra* note 183; Humphrey, *supra* note 187, at 55–56 & fig.9. In general equilibrium terms, regulators personalizing prices only need to identify an indifference curve and set price equal to that curve in order to be sure that buyers and sellers will transact efficiently, because, barring edge cases, every indifference curve intersects the contract curve and so *any* price schedule chosen to equal an indifference curve is a price schedule that enables buyer and seller to trade their way to the efficient level of output. By contrast, because many uniform prices do not enable buyer and seller to trade their way to the efficient level of output, central planners choosing uniform prices must find the *particular* uniform prices that enable buyer and seller to trade their way to the efficient level of output. To find those prices central planners must solve for the efficient level of output.

194. *Cf.* Viswanathan, *supra* note 170 (manuscript at 4).

discounting or marking up of prices for each consumer aside, markets are untouched. Indeed, price bubbles leave firms with complete independence to charge whatever prices they wish. The regulator merely discounts or marks up those freely chosen prices. A regulator that requires firms to personalize prices, by contrast, effectively dictates the particular prices firms can charge, even if the regulator does not determine in advance how much consumers will buy at the dictated prices, as central planners would need to do in order to dictate efficient uniform prices.

B. Personalized Pricing Could Also Make Income Taxation More Efficient

This Article has focused on the use of personalized pricing to redistribute wealth in non-income-generating markets. But, in principle, there is no reason why tax authorities could not use personalized pricing to redistribute wealth in labor and capital markets—that is, to personalize income tax rates to the willingness of employers to pay, of workers to work, and of investors to substitute future for present consumption. The present income tax system is inefficient because in determining wages it takes no account either of the willingness of employers to pay for each additional hour of labor or the cost to workers of supplying each additional hour of labor. A man might be willing to work an extra hour for $21, and an employer might be willing to offer $25 for that hour of work, making this an efficient transaction. But if the IRS were to apply a tax of 20% to those $25 of income, the man's after-tax pay would be $20, and that would be too little to induce him to work that extra hour. To eliminate this inefficient result, the IRS would need to adjust the tax rate for that particular hour of work to leave the man with at least $21 in after-tax income. That is, the IRS would need to personalize tax rates on wages on an hour-by-hour basis. Similarly, a man might be willing to invest an additional dollar for a return of 10%, and a bank might be willing to pay up to a 15% return in exchange for his cash, but if the IRS were to tax that return down to 9%, the man would not make the investment. To eliminate this inefficient result, the IRS would need to adjust the tax rate on investment income for that particular dollar of investment. That is, the IRS would need to personalize tax rates on investment on a dollar-by-dollar basis. But the IRS today lacks the authority, data, and technology to personalize either taxes on labor income or taxes on investment income.[195]

As the information age advances, however, data on workers' opportunity costs of labor and investors' opportunity cost of investment may become available. And as firms apply technology better to manage their costs, they will come better to understand how much they are willing

195. Tax rates are fixed by statute. *See* I.R.C. § 1.

to pay for labor and for capital.[196] Armed with this information, and a new mandate from Congress, the IRS could personalize income tax rates for each hour worked and each dollar invested. The IRS would know that the employer is willing to pay $25 and that the worker has an opportunity cost equivalent to $21, and so the IRS would impose a tax of up to $4 on that hour of work, but no more. Similarly, the IRS would know that the bank is willing to pay up to a 15% return and that the investor is willing to accept as little as 10%, and so the IRS would impose a tax on returns no greater than 33%. Successful personalization of income tax rates would give the income tax system the same number of distortions as redistributive personalized pricing in non-income-generating markets: zero. Both approaches would become equally efficient.

Personalization of the income tax would also make the income tax system more efficient than bubble pricing because, as we have seen, bubble pricing is equivalent to the income tax system of today: both systems rely on income information alone to redistribute wealth and make no effort to ensure that the marginal hour of labor is worked or the marginal dollar of investment invested, rendering both bubble pricing and the income tax system of today inefficient. Once the income tax is personalized, this problem will disappear for the income tax, but not for bubble pricing, which will continue to use income information alone to set economy-wide price discounts or markups for each consumer and will not ensure that the marginal hour of labor is worked or that the marginal dollar of investment is invested.

V. HARNESSING THE POWER OF PERSONALIZED PRICING

We saw in Part II that the goal of both antitrust and rate regulation is to achieve redistribution from firms *to* consumers. But we saw in Section IV.A.2.c that in order for personalized pricing to be no less administrable than the income tax system as a redistributive tool, it must redistribute *between* consumers. Such a focus is not entirely consistent with antitrust's current mandate, posing an obstacle to the use of personalized prices to redistribute wealth. If, for example, consumers in a particular market are relatively poor, then equalizing their wealth with that of rich consumers in another market may require that the poor consumers all be charged very low prices, a result that would reduce the profits of firms in the market in which the poor consumers participate, effectively redistributing wealth from those firms to the poor consumers, as antitrust law and rate regulation statutes require.[197] But the rich consumers in the other market may all need to be charged very high prices in order to equalize their wealth with that

196. *See* DON R. HANSEN, MARYANNE M. MOWEN & DAN L. HEITGER, COST MANAGEMENT 10–11 (5th ed. 2022).

197. *See supra* Part II.

of the poor consumers, and those high prices might effectively redistribute wealth from the rich consumers to the firms that serve them in that other market, a result that is in conflict with the pro-consumer missions of antitrust and rate regulation.[198] It follows that unless the redistributive goals of antitrust and rate regulation can be broadened, antitrust enforcers and rate regulators will not be able fully to engage in the redistribution *between* consumers necessary for personalized pricing to serve as a substitute for the income tax. We shall see that, in the case of antitrust, one further change will need to be made fully to realize the project of redistribution of wealth through personalized pricing.[199]

A. Rate Regulation

As we saw in Part II, rate regulators understand their mandate to charge "just and reasonable" prices to require that they redistribute wealth from firms to consumers—firms are entitled to prices that cover their costs, including a reasonable return on investment, but not a penny more.[200] This requirement denies regulators the authority to charge rich consumers high prices where doing so would profit the firm. Fortunately, it is the only requirement to be found in rate regulation doctrine that would prevent redistribution between consumers.

Rate regulation statutes generally prohibit "undue discrimination" in pricing.[201] But commentators interpret this to apply only to the way the firm allocates costs among consumers: costs that are attributable to particular groups of consumers must actually be charged to them.[202] Thus, if the marginal cost of producing a particular unit is known to the firm, then the firm must charge the consumer who purchases that unit a price

198. Such incidental redistribution in favor of firms increases the incomes of shareholders, which in turn affects the prices that must be charged to them in consumer markets to ensure that their wealth continues to be equalized with that of nonshareholders. Firms engaged in personalized pricing should be able to make such adjustments because income is an important predictor of willingness to pay and firms must have access to income information, and the ability to adjust prices in light of it, in order to personalize prices to anyone, whether a shareholder or not. *See* Carroll & Coates, *supra* note 169, at 469 n.4.

199. *See infra* Section V.B.

200. *See* PHILLIPS, *supra* note 54, at 172, 176–79; HENDERSON & BURNS, *supra* note 24, at 25 ("The 'just and reasonable' requirement is an implicit limit on price discrimination because rates that are not cost-based typically are found to be unjust or unreasonable and, therefore, unlawful.").

201. *See* PHILLIPS, *supra* note 54, at 172, 179; HENDERSON & BURNS, *supra* note 24, at 29.

202. *See generally* PHILLIPS, *supra* note 54, at 177–80 (discussing the regulatory norm of cost-based discriminatory pricing); HENDERSON & BURNS, *supra* note 24, at iii, 29–30 ("The primary consideration in determining whether rate differentials among customer classes are unduly discriminatory [in violation of rate regulation statutes] was and remains the cost of service.").

that covers marginal cost.[203] If the firm were not to do that, then the firm would need to charge some other consumer a higher price than that associated with the marginal cost of the unit that the first consumer purchases, otherwise the firm would not be able to cover its marginal costs, and so one consumer would in effect be forced to subsidize production on behalf of another. The "undue discrimination" rule prohibits such a result.[204] But the rule would not prevent a rate regulator from charging wildly different prices to different groups of consumers so long as each consumer were charged a price that is at least high enough to cover costs of production that are attributable to him. And no redistributive personalized pricing scheme would attempt to do otherwise, because personalized pricing is efficient: it seeks to charge prices that enable people who place a value on a good that exceeds production cost to purchase the good. A below-marginal-cost price could attract a buyer who is not willing to pay the cost of production but only a lower, sub-marginal-cost price. If such a buyer purchases the good, resources are misallocated—either a buyer who was willing to pay the cost of production was precluded from buying the good, or the good should never have been produced, as it conferred value below the cost of producing it. Any personalized pricing scheme would avoid this result by charging prices that are at least high enough to cover marginal cost for each unit.

The "just and reasonable" requirement aside, there is also nothing in rate regulation statutes or practice that would prevent rate regulators from seeking to redistribute between different groups of consumers. This is evident in rate regulators' approval of AT&T's pizza pricing, which was designed to redistribute wealth between rich long-distance subscribers and poor local-calling subscribers.[205] While pizza pricing redistributed only between customers of one company, rate regulators should be at liberty to redistribute between different customers of different firms in different markets, as would be required of rate regulators coordinating their prices in order to redistribute wealth across the economy. It is hard to see why the principle that rate regulators may redistribute between different groups of consumers should be cabined to the single-firm context.

There is also nothing in rate regulation law or practice that would prevent a regulator from approving personalized rate schedules, such as

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203. *See* HENDERSON & BURNS, *supra* note 24, at 30 ("[A] customer must be charged at least the separable variable costs.").

204. *See* PHILLIPS, *supra* note 54, at 179; HENDERSON & BURNS, *supra* note 24, at 29–30.

205. *See* HENDERSON & BURNS, *supra* note 24, at 32 (observing that "income-distributive fairness" may be taken into account in the setting of rates); VIETOR, *supra* note 9, at 173–74, 181–83 (observing that regulators embraced discrimination against long-distance and business telephone users because doing so "gave the impression of fairness"); JOHN, *supra* note 10, at 408 (noting that AT&T sought to keep the monthly bill for local-calling services equal to the price of a pizza pie).

those required to use personalized pricing to redistribute between individual consumers. Prohibitions imposed by state insurance regulators on personalized pricing by auto insurers are not to the contrary.[206] The trouble with the prohibited auto-insurance pricing schemes, called "price optimization" by the insurance industry, was not that insurers personalized prices under the schemes, but that insurers could not show that the pricing was needed to cover costs—that is, it violated the "just and reasonable" requirement.[207]

AT&T was able to redistribute between different groups of consumers, notwithstanding the "just and reasonable" requirement, because pizza pricing did not generate profits for AT&T in the economic sense. Fixed costs associated with running a telephone network are high—a great deal must be invested in the network before any given user is likely to be able to use it to speak with a reasonable number of the people with whom he wishes to speak—and fixed costs are not attributable to any particular user. AT&T was, therefore, at liberty to allocate those costs to any particular group of consumers, and AT&T chose to allocate a large portion of them to rich long-distance subscribers by charging them higher prices. But AT&T did not charge them the even higher prices that would have generated profits for the firm in the economic sense and so would have violated the "just and reasonable" requirement that firms charge prices no higher than necessary to cover costs. Poor consumers gained from paying a smaller share of phone service costs at the expense of rich users, but AT&T did not further exploit rich users for its own benefit. But achieving equality of wealth will sometimes require that a firm go beyond allocation of fixed costs to charge high prices to the rich that would generate a profit for the firm.

In order for firms to be able to go this extra mile, the "just and reasonable" requirement must be reinterpreted. In particular, regulators and courts would need to reinterpret the requirement to mandate justice for the economically disadvantaged writ large—including those who do not participate in the specific set of markets controlled by the regulator—rather than justice specifically for consumers as a group in relation to firms

206. *See, e.g.*, DEP'T OF INS., STATE OF CAL., NOTICE REGARDING UNFAIR DISCRIMINATION IN RATING: PRICE OPTIMIZATION (2015); Daniel A. Cotter, *Status of the Price Optimization Debate*, 27 FED'N REGUL. COUNS. J. 1, at 1–3 (2016).

207. *See, e.g.*, OHIO DEP'T OF INS., BULL. NO. 2015-01, PRICE OPTIMIZATION 2 (2015), https://insurance.ohio.gov/static/Legal/Bulletins/Documents/2015-01.pdf [https://perma.cc/UU2D-Y2RH] ("The use of price optimization represents a departure from traditional cost-based rating and can result in two insureds with similar risk profiles being charged different premiums. Therefore, by its nature, price optimization involves 'discriminat[ing] between individuals of the same class and of essentially the same hazard' based on factors which do not have a demonstrable 'probable effect upon losses or expenses.'").

in the regulated market.[208] This might be achieved by observing that, absent detailed information regarding the wealth of consumers, imposing a rule of at-cost pricing is, in many markets, the most progressively redistributive action that a regulator can undertake. That is because regulators know that in general shareholders are wealthier than consumers, so action to shift surpluses from shareholders to consumers will likely reduce inequality, even if only by a small amount.[209] By contrast, absent information regarding the kinds of consumers who patronize a market, regulators know nothing about the effects on inequality of charging different consumers different prices. It follows that before the advent of personalized pricing and the availability of the large amounts of information on consumers needed to personalize prices, regulators could best do justice to a rule requiring that pricing close the wealth gap by requiring that prices be set no higher than necessary to cover costs. With the advent of personalized pricing and the detailed information regarding consumers that it presupposes, the argument would go, it is now possible for regulators to do more distributive justice by personalizing prices to consumers with a view to economy-wide redistribution than by adhering to a strict rule of at-cost pricing, and so that strict rule of at-cost pricing is no longer the best way of advancing the rule's demand that regulators choose distributively just prices.[210]

B. Antitrust

Without the aid of antitrust enforcers, rate regulators will not be able to carry out wealth redistribution in non-labor markets at the economy-wide scale required for it to be a viable alternative to the income tax because very few consumer markets remain subject to rate regulation.[211]

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208. I wish to emphasize that the language of rate regulation statutes itself would not prevent such a reinterpretation. For although caselaw suggests that regulated rates should protect consumers against firms, rather than protect consumers against each other, regulatory statutes themselves call only for "just and reasonable" rates, rather than specifically for rates that maximize consumer welfare vis-à-vis firms. *See Pennell v. City of San Jose*, 485 U.S. 1, 13 (1988) (describing the "protection of consumer welfare" as "a legitimate and rational goal of price" regulation); HENDERSON & BURNS, *supra* note 24, at 25 (discussing the requirement of "just and reasonable" rates).

209. *See* Baker & Salop, *supra* note 128, at 11–12.

210. For more on why altering the prices charged to consumers is a complete solution to inequality, see *supra* Part IV.

211. In 1975 consumer prices in the telecommunications, air travel, and rail travel markets were regulated at the federal level. *See* VIETOR, *supra* note 9, at 17 fig.1. Prices in these markets are not regulated today. *See* Kearney & Merrill, *supra* note 54, at 1335–39. Consumer-facing energy, insurance, and water rates remain regulated at the state-level. *See* William Boyd & Ann E. Carlson, *Accidents of Federalism: Ratemaking and Policy Innovation in Public Utility Law*, 63 UCLA L. REV. 810, 823–24 (2016) (discussing state level regulation of consumer electricity rates); Daniel Schwarcz, *Ending Public Utility Style Rate Regulation in Insurance*, 35 YALE J. ON REGUL. 941, 963–66 (2018) (discussing

Absent new legislation extending rate regulation to all markets, antitrust, which applies generally to all markets, must fill the gap.[212] For antitrust to extend redistributive personalized pricing to all markets, however, antitrust doctrine must change in two ways. The first is that courts must drop the requirement of proof of anticompetitive conduct as a precondition for antitrust liability, because redistributive personalized pricing can achieve sufficient scope only if all firms—not just those which have attained power through anticompetitive conduct—engage in it.[213] As we shall see, the concept of an antitrust law that requires no proof of anticompetitive conduct is not as strange as it might first appear. The second is that antitrust enforcers and the courts must reinterpret antitrust's distributive mission in the same way as rate regulators must reinterpret their distributive mission, to mandate justice for the economically disadvantaged writ large, rather than redistribution from firms to consumers in discrete markets. Absent such a reinterpretation, courts and enforcers may not be willing to enjoin the charging of redistributive personalized prices as an antitrust remedy, for the prices necessary to equalize wealth across the economy will rarely be the competitive or at-cost prices that are normally the indirect goal of antitrust remedies.

1. LIABILITY

In order for antitrust enforcers to enjoin firms across the economy to engage in redistributive personalized pricing, antitrust enforcers must be

insurance ratemaking); DAVID DENIG-CHAKROFF, THE WATER INDUSTRY AT A GLANCE 12–13 (2008) (stating that all forty-six state water regulatory commissions, which regulate private operators of public water systems that account for twenty percent of all public water systems, regulate rates). For example, the Arkansas Public Service Commission is empowered to regulate rates for "electric, gas, telephone, or sewer." ARK. CODE ANN. § 23-4-201 (2022). Consumer-facing rate regulation continues in a few other pockets, including legacy local-calling services and rent control. *See* SHERRY LICHTENBERG, EXAMINING THE ROLE OF STATE REGULATORS AS TELECOMMUNICATIONS OVERSIGHT IS REDUCED 75–98 (2015) (showing that only five states continue to regulate rates for basic local-calling services); Teresa Wiltz, *Rent Control Is Making a Comeback. But Is That a Good Idea?*, PEW: STATELINE (Nov. 28, 2018), https://pew.org/2KD8aeO [https://perma.cc/C6EG-TN3N] (discussing rent control legislation in Berkeley, Chicago, Washington, D.C., and New York City). But that is about it. The most recent edition of the leading public utility law treatise was published in 1993. *See* PHILLIPS, *supra* note 54; *cf.* SCOTT HEMPLING, REGULATING PUBLIC UTILITY PERFORMANCE: THE LAW OF MARKET STRUCTURE, PRICING AND JURISDICTION (2d ed. 2021).

212. *See* HERBERT HOVENKAMP, FEDERAL ANTITRUST POLICY: THE LAW OF COMPETITION AND ITS PRACTICE 913–25 (6th ed. 2020) (discussing the handful of exemptions to the federal antitrust laws, including for labor unions and some practices associated with the insurance business).

213. All firms have some power to personalize prices because virtually all products are differentiated, and so even highly competitive markets are in fact *monopolistically* competitive, enabling firms to retain some control over the prices they charge.

able to establish that all of these firms have violated the antitrust laws. The best way for enforcers to do that is to treat the personalization of high prices to consumers as an antitrust violation. That would allow enforcers to press every firm that has developed the ability to personalize prices into service in redistributing wealth. Antitrust liability for single-firm conduct generally requires three things: (1) monopoly power; (2) harm to consumers; and (3) anticompetitive conduct.[214]

Monopoly power is the power profitably to raise prices.[215] A firm that personalizes prices must have monopoly power because personalizing prices is the act of charging different prices to different consumers, and that implies raising prices to some consumers relative to others.[216] Whether the increase in price is profitable ought to depend on whether the firm employs personalized pricing to cover costs, including fixed costs, or to go beyond that to extract profits in the economic sense.[217] If the scheme is designed only to cover total costs, inclusive of fixed costs, then there is no profitable raising of prices.[218] But here the law diverges from the economics. As a matter of law only proof of the ability to generate returns in excess of marginal costs, rather than total costs, is required to establish the power profitably to raise prices.[219] But all personalized pricing must generate returns in excess of marginal costs because, as we have seen, personalized prices below marginal cost are not efficient and personalized prices equal to marginal cost cannot generate returns in excess of what a firm would earn in the absence of personalized pricing. So no firm would bother to personalize prices at the level of marginal costs. It follows that all personalized pricing meets the monopoly power standard.

One can think of antitrust's monopoly power requirement as being a requirement of proof of *static* harm to consumers, and the consumer harm requirement as being a requirement of proof of *dynamic* harm to consumers.[220] Static harms are those associated with an increase in

214. *See United States v. Grinnell Corp.*, 384 U.S. 563, 570–71 (1966); *see also* 15 U.S.C. § 2 (prohibiting certain single-firm conduct); HOVENKAMP, *supra* note 49, at 353–57 (discussing single-firm conduct liability under the antitrust laws).

215. *See* HOVENKAMP, *supra* note 212, at 103–04.

216. *See* Jonathan B. Baker, *Competitive Price Discrimination: The Exercise of Market Power Without Anticompetitive Effects*, 70 ANTITRUST L.J. 643, 650 (2003) ("The link between price discrimination and market power is well established in antitrust, both in the case law and in the writings of . . . 'a truly impressive list of scholars.'").

217. *See* VARIAN, *supra* note 25, at 409–10 (discussing profits).

218. *See id.* at 435–36 & fig.24.6 (showing that a firm with high fixed costs may need to charge a price above marginal costs in order to cover its total costs).

219. *See* John B. Kirkwood, *Market Power and Antitrust Enforcement*, 98 B.U. L. REV. 1169, 1181–83 (2018).

220. *See United States v. Microsoft Corp.*, 253 F.3d 34, 51, 58–59 (D.C. Cir. 2001) (discussing the monopoly power and consumer harm requirements); Sidak & Teece, *supra* note 74, at 600–07 (discussing the concepts of "static competition" and "dynamic competition").

prices.[221] Dynamic harms are those associated with the failure of a firm to innovate and improve its products.[222] The Chicago School proposed the consumer harm requirement to complement the preexisting monopoly power and anticompetitive conduct requirements because it wanted to protect productive activity.[223] The requirement in effect creates an exemption to antitrust liability for firms that acquire monopoly power and the ability to inflict static harms by fielding superior products. Such firms are assumed not to satisfy the consumer harm requirement because the benefits conferred upon consumers by their superior products are assumed always to outweigh the costs to consumers of the firms' exercise of their monopoly power.[224] All other monopolists are liable (so long as they have also engaged in anticompetitive conduct, to be discuss momentarily).

Personalized pricing always meets the consumer harm requirement because personalized pricing brings about no product improvement with which to offset the static harm it inflicts on consumers through the charging of higher prices to them.[225] Personalized pricing cannot improve the products to which it is applied because personalized pricing is directed not at changing product characteristics or production processes but rather at pricing itself.[226] And pricing's principal economic function is to divide the surplus generated by a product between the firm and its customers, making it primarily an instrument of wealth distribution, rather than of production.[227] We have seen that personalized pricing can increase efficiency by enabling firms to charge prices that the marginal consumer can afford to pay—by eliminating the "deadweight loss" of monopoly in antitrust parlance—but economists believe the gains from elimination of deadweight loss are small relative to the gains associated with product improvement.[228] But personalized pricing cannot improve products. It cannot greatly expand the economic pie, as product improvements do, only recarve the pie to favor one diner over another, or marginally increase the

221. *See* Sidak & Teece, *supra* note 74, at 602–03.

222. *See id.* at 603–07.

223. *See* Geoffrey A. Manne & Joshua D. Wright, *Innovation and the Limits of Antitrust*, 6 J. COMPETITION L. & ECON. 153, 166 (2010).

224. I call this assumption—that any product improvement offsets the static harms of monopoly—a rule of "innovation primacy." *See* Woodcock, *supra* note 158, at 2313–14.

225. *See* Woodcock, *supra* note 1, at 327–28, 330–31.

226. If price is properly considered a product characteristic, then one might say, more accurately, that the only product characteristic to which personalized pricing is directed is price.

227. *See* Woodcock, *supra* note 3, at 1380.

228. *See* Kenneth J. Arrow, *Workshop on the Economy as an Evolving Complex System: Summary*, *in* 5 THE ECONOMY AS AN EVOLVING COMPLEX SYSTEM 275, 281 (Philip W. Anderson, Kenneth J. Arrow & David Pines eds., 1988) ("Innovations . . . have contributed more to per capita economic growth than any other factor.").

pie's size through the elimination of deadweight loss.[229] It is for this reason that personalized pricing is an "extractive technology"—a technology that creates little apart from the extraction of profit from consumers—and satisfies antitrust's consumer harm requirement.[230]

Personalized pricing is impossible in perfectly competitive markets because in those markets firms have no power to choose their prices—any attempt to deviate from the market price results in loss of business to a competitor.[231] But this does not imply that all firms that do engage in personalized pricing have also engaged in anticompetitive conduct for purposes of the antitrust laws. No market is perfectly competitive because no two firms sell identical products, and that gives every firm at least some power to charge higher prices to customers who prefer the firm's product.[232] Product differentiation is not, however, considered anticompetitive conduct by courts, and so it follows that the basic power of all firms to engage in personalized pricing is not an antitrust violation—unless the anticompetitive conduct requirement can be removed.[233]

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229. *See* VARIAN, *supra* note 25, at 431–33 (discussing deadweight loss).

230. *See* Letter from Ramsi Woodcock, Assistant Professor of Law, Gatton Coll. Bus. & Econ., to Office of the Secretary Regarding the FTC's Hearings on Competition and Consumer Protection in the 21st Century, and Specifically, the Irrelevance of Concentration Levels to the Question Whether the FTC Should More Aggressively Enforce the Antitrust Laws (Oct. 14, 2018), https://www.ftc.gov/system/files/documents/public_comments/2018/10/ftc-2018-0074-d-0068-155993.pdf [https://perma.cc/5P3Q-XLUT] (introducing the concept of an "extractive technology"). Firms could respond to attempts by antitrust enforcers and rate regulators to dictate low personalized prices to them by refraining from engaging in personalized pricing, so as to avoid antitrust liability. But this is unlikely because firms still stand to gain from engaging in personalized pricing even if antitrust enforcers order them to charge personalized prices equal to the firms' own costs. Personalized pricing brings marginal consumers into the market, expanding firms' output, and, even under at-cost personalized prices, firms are permitted to earn a reasonable return on all sales that they make, because a reasonable return on investment is a cost of production in the economic sense of cost. Personalized pricing therefore brings additional reasonable returns to firms' coffers. *See* VARIAN, *supra* note 25, at 409–10 (observing that the absence of profits in the economic sense does "nothing to cause [firms] to leave" markets).

231. Personalized pricing can exist only if another kind of competition also fails—competition from resellers. *See* Hal R. Varian, *Price Discrimination*, *in* 1 HANDBOOK OF INDUSTRIAL ORGANIZATION 597, 599 (R. Schmalensee & R.D. Willig eds., 1989). If a consumer to whom the firm personalizes a low price can resell the good to a consumer to whom the firm wishes to personalize a high price, the personalization of prices is impossible, because reselling customers compete the high prices the firm wishes to personalize to some customers all the way down to the low prices that the firm wishes to personalize to others. Woodcock, *supra* note 1, at 317. Thus, competition from resellers must fail in order for personalized pricing to be viable. *See* DAVID M. KREPS, A COURSE IN MICROECONOMIC THEORY 306 (1990).

232. *See* EDWARD HASTINGS CHAMBERLIN, THE THEORY OF MONOPOLISTIC COMPETITION: A RE-ORIENTATION OF THE THEORY OF VALUE 56–57 (7th ed. 1956).

233. *See* F. M. Scherer, *The Federal Trade Commission, Oligopoly, and Shared Monopoly*, 46 REV. INDUS. ORG. 5, 15–22 (2015) (discussing the FTC's failed attempt to

Dropping the requirement of proof of anticompetitive conduct is not a new idea.[234] During most of the postwar period, leading antitrust scholars advocated such a "no-fault monopolization" regime, motivated not by a desire to regulate firms that personalize prices, but rather by a desire to deconcentrate large swaths of the economy.[235] A number of bills that would have accomplished this by amendment of the antitrust laws failed to pass.[236] But enforcers achieved this goal in part anyway by treating conduct that has not traditionally been treated as anticompetitive, such as increasing supply to meet demand, as anticompetitive.[237] For a time, the courts acquiesced to this approach.[238] Enforcers could take this approach—and the courts could again acquiesce—in order to put all personalized pricing in violation of the antitrust laws and therefore subject to the remedial action of enforcers.

2. REMEDY

Once liability is established, there are few limitations on the sort of remedy that courts will approve, but the limitations that do exist pose a problem for redistributive personalized pricing. Courts are usually willing

condemn product differentiation in the breakfast cereals market in the 1970s); *cf. United States v. E.I. du Pont de Nemours & Co.*, 351 U.S. 377, 392–93 (1956) ("[O]ne can theorize that we have monopolistic competition in every nonstandardized commodity with each manufacturer having power over the price and production of his own product. However, this power that, let us say, automobile or soft-drink manufacturers have over their trademarked products is not the power that makes an illegal monopoly."). Antitrust does condemn as anticompetitive some other forms of conduct that enhance a firm's power to raise prices, including some instances of tying, exclusive dealing, and refusals to supply inputs to competitors. *See* HOVENKAMP, *supra* note 66, at 387–88, 517–18, 563–64. But these forms of conduct are often not necessary for a firm to be able to engage in personalized pricing.

234. *See* William E. Kovacic, *Failed Expectations: The Troubled Past and Uncertain Future of the Sherman Act as a Tool for Deconcentration*, 74 IOWA L. REV. 1105, 1126–27, 1137–39 (1989).

235. *See, e.g.*, CARL KAYSEN & DONALD F. TURNER, ANTITRUST POLICY: AN ECONOMIC AND LEGAL ANALYSIS (1959).

236. *See* Kovacic, *supra* note 234, at 1126–27; *see also* Note, *The Industrial Reorganization Act: An Antitrust Proposal to Restructure the American Economy*, 73 COLUM. L. REV. 635, 635 (1973).

237. *See, e.g.*, *United States v. Aluminum Co. of Am.*, 148 F.2d 416, 430–31 (2d Cir. 1945) (sitting as the Supreme Court by special act of Congress and treating expansions of supply to meet demand, which today are considered benign, as illegal exclusionary conduct); Kovacic, *supra* note 234, at 1106–08, 1116–19 (discussing postwar deconcentration litigation); Oliver E. Williamson, *Dominant Firms and the Monopoly Problem: Market Failure Considerations*, 85 HARV. L. REV. 1512, 1513 & n.8 (1972) (arguing, during the postwar era, that enforcers interested principally in putting an end to persistent monopoly power were bringing monopolization cases based on "contrived" claims of anticompetitive conduct).

238. *See* GAVIL, KOVACIC, BAKER & WRIGHT, *supra* note 100, at 483–85, 488–89.

to take any steps necessary to restore competition to the market,[239] but competitive pricing is not consistent with either the practice of personalized pricing or personalized pricing's effects. The use of personalized pricing to redistribute wealth requires firms to charge prices that are not competitive prices. Competitive prices are uniform prices; in a competitive market, if a firm tries to charge different prices to different consumers, the consumer charged the higher price will buy from a competitor at the lower, competitive market price.[240] It follows that, to the extent that antitrust enforcers are required to pursue only remedies aimed at making markets competitive, enforcers cannot enjoin firms to engage in personalized pricing. Moreover, even if competitive prices could be personalized prices, antitrust enforcers' mandate to redistribute wealth from firms to consumers is inconsistent with redistributive personalized pricing's need to redistribute between different groups of consumers, sometimes in different markets. Just as a firm may sometimes need to charge above-cost prices in order to reduce the purchasing power of the very rich, so, too, must a firm sometimes charge a supracompetitive price in order to reduce the purchasing power of the very rich. But a supracompetitive price leaves consumers worse off than a competitive price and is not consistent with antitrust's mandate to redistribute wealth in favor of consumers as a group.[241] To the extent that the antitrust laws permit only remedies that promote competition, courts would not be willing to enjoin firms to charge personalized prices, whether redistributive or not.

The solution, as in the case of rate regulation, is to reinterpret antitrust's mission to be the redistribution of wealth across the economy as opposed to merely the redistribution of wealth from consumers to firms through the promotion of competition in individual markets. The justification for such a reinterpretation would also be similar. As we saw in Part II, antitrust, like rate regulation, was originally conceived to promote economic equality broadly defined. But until the advent of personalized pricing, the only means available to antitrust to do that was the promotion of competition, and competition operates only to drive prices down, redistributing wealth between firms and consumers as a group but not necessarily between different consumers. With the rise of personalized pricing, however, antitrust enforcers can use injunctive remedies to compel redistribution between consumers with a high degree of accuracy, and so antitrust is now liberated from the technical constraints that once forced it to redistribute between firms and consumers. Antitrust can therefore finally make good on its original promise to be an engine of

239. *See id.* at 1378–79.

240. *See* Woodcock, *supra* note 44, at 21.

241. For antitrust's mandate, see *supra* Section II.B.

general redistribution by jettisoning the consumer welfare standard in favor of a general distributive justice standard.

CONCLUSION

Redistribution through personalized pricing will become an efficient and administrable alternative to redistribution through income taxation once personalized pricing has spread across the economy. Antitrust enforcers and rate regulators can implement it if they coordinate their efforts across the economy, if antitrust enforcers treat personalized pricing as an antitrust violation without requiring proof of anticompetitive conduct, and if both antitrust enforcers and rate regulators reinterpret their missions to be the pursuit of redistribution of wealth between all consumers across the economy rather than between firms and consumers in individual markets—and the courts acquiesce in these changes. There is no reason to suppose that the political barriers encountered by advocates of redistribution in achieving their goals through the income tax system will fail to assert themselves against any attempt to procure similar results through redistributive personalized pricing. But the opening of a second front is usually a good way to win a war.

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