Environmentalism and Antitrust

Albert H. Choi[†] **& Daniel A. Crane**[††]

In recent years, there has been a proliferation of interest concerning environmental issues and the application of the antitrust laws. Numerous commentators, for instance, have argued that antitrust enforcement should be adjusted to account for the environmental harm (or benefit) that is generated from a competitive condition. In this paper, we take a step back and argue that analysis of the intersection between antitrust and environmentalism should begin with more mundane questions of economics. More specifically, we argue that environmental regulations can inform antitrust analysis by considering (at least) three issues: (1) the impact of environmental regulation on firms' production cost; (2) how consumers' preferences are affected by environmental regulation; and (3) those environmental considerations that do not readily manifest through either cost or demand structures. We use the electric vehicle market as an example to illustrate how these different factors can impact the antitrust calculus.

† Paul G. Kauper Professor of Law, University of Michigan, and research member, European Corporate Governance Institute (ECGI).

†† Richard W. Pogue Professor of Law, University of Michigan, respectively. We would like to thank conference participants at the Law and Markets: A Conference on Themes on the Work of George Priest at Yale Law School in 2024. Comments are welcome to alchoi@umich.edu and dancrane@umich.edu.

Introduction

In recent years, there has been a proliferation of interest concerning environmental issues and the application of the antitrust laws. On the one hand, some commentators argue that antitrust law should show special solicitude for environmental concerns, perhaps permitting commercial actors to do things that might otherwise be considered violations of the antitrust laws.[1] For instance, commentators have argued that antitrust law should be more lenient when competitors get together to reduce output of a product that is deemed environmentally harmful or collaborate on developing new environmental technology or setting new environmental standards.[2] On the other hand, various state attorneys general and members of Congress have asserted that investment companies that pursue ESG (environmental, social, and governance) objectives in collaboration may be violating the antitrust laws.[3] In other words, antitrust law is now caught up in political and legal contestation over environmental policy, raising interesting questions about how, and to what extent, antitrust law should take environmentalism (broadly construed) into consideration.

In this paper, we take a step back and argue that analysis of the intersection between antitrust and environmentalism should begin with more mundane questions of economics pertaining to the ordinary building blocks of antitrust analysis such as market definition, market power, and anticompetitive effects. Only once those fundamental questions are well understood does it make sense to address the more complex and vexing policy questions at the intersection of antitrust and environmental regulation.

More specifically, we argue that changing environmental regulations or facts on the ground can be relevant to antitrust analysis in (at least) three ways.[4] First, environmental regulations can change a firm's cost structure,

1. *See generally* Peter Brigham, Comment, *The Case for Green Product Fixing: Reconciling Antitrust Law with Self-Regulation to Combat Climate Change*, 73 EMORY L.J. 241 (2023); Dailey C. Koga, Comment, *Teamwork or Collusion? Changing Antitrust Law to Permit Corporate Action on Climate Change*, 95 WASH. L. REV. 1989 (2020).

2. Earlier scholars have examined how allowing companies to exercise market power and reduce output can be beneficial when consumers under-estimate the potential dangers of a product. *See generally* A. Mitchell Polinsky & William P. Rogerson, *Products Liability, Consumer Misperceptions, and Market Power*, 14 BELL J. ECON. 581 (1983). The arguments explored in this article are in a somewhat similar vein in the sense that changes in consumers' preferences due to concerns over the environment can have different implications about the market power.

3. *See* Letter from Jonathan Skrmetti, Att'y Gen. of Tenn., and 21 Other State Att'ys Gen., to Financial Service Providers (Sept. 13, 2023), https://files.constantcontact.com/d3e83e11901/1f62a5e3-3375-4ac0-9d62-f42d6c95e5dd.pdf?rdr=true [https://perma.cc/4MNG-7GBN]; Press Release, House Judiciary Committee, New Report Reveals Evidence of ESG Collusion Among Left-Wing Activists and Major Financial Institutions (June 11, 2024), https://judiciary.house.gov/media/press-releases/new-report-reveals-evidence-esg-collusion-among-left-wing-activists-and-major [https://perma.cc/99MR-4GFW].

4. Although the primary focus of the article is to examine the impact of environmental (or non-competition) regulation on antitrust policy, we do not mean to suggest that the

with important implications for questions of market definition and market power. For instance, a unit tax (or subsidy) on production can alter the firm's cost structure and this can, in turn, affect the potential market power of the firms.[5] Second, taxes and subsidies on consumption, along with changing consumer attitudes toward the environmental impact of the products and services they purchase, are relevant to determining reasonable substitutability from the perspective of the consumer. And, as consumer preferences with respect to environmentalism shift, so do the boundaries of markets, firm power, and the potential for anticompetitive conduct to cause social harm. Here, we argue that while estimating the impact of consumption tax or subsidy on the demand structure may be relatively "straightforward," there lies a difficult task of estimating how consumers' perception of the environmental regulation and their concerns regarding the environment would affect the overall demand. Finally, environmental concerns can sometimes show up in antitrust analysis in ways that reflect neither changing firm cost structures nor shifting consumer demand. It is in this final bucket of cases that the most challenging questions of policy are presented.

While getting a definitive answer on the impact of environmentalism on antitrust policy may be difficult, the goal of this paper is to at least sketch out some of the economic considerations, rooted in the traditional antitrust analysis, to provide a framework for more sophisticated analysis in the future. The paper is organized as follows. Part I provides a brief legal framework that describes how the two seemingly unrelated areas of antitrust and environmentalism can intersect from a legal perspective. In Part II, we offer a rudimentary economics-based reasoning on how environmental regulation can affect the competitive conditions of a market. As mentioned earlier, we approach this issue from three perspectives: (1) the impact of environmental regulation on the firms' production cost; (2) how consumers' preferences are affected by environmental regulation; and (3) those environmental considerations that do not readily manifest through either cost or demand structures. In Part III, we offer an illustration of how these effects can manifest using the electric vehicle market as an example. We conclude with some thoughts for future research.

relationship is only one directional. It is easy to imagine that a competition policy can have an impact on other areas, including the environment. For instance, if a stronger antitrust policy would lead to more innovation in environmental technology, this would have an implication on the environmental regulation.

5. In a recent guidance to the Federal agencies, the Office of Management and Budget (OMB) directed the heads of federal agencies to take into consideration their proposed regulation's impact on market power. *See* OFF. OF MGMT. & BUDGET, CIRCULAR NO. A-4 (Nov. 9, 2023) (stating, for instance, that the agency "generally should account for the presence of market power—and changes in market power induced by [agency's] regulation—when it is relevant to the effects of the regulation under consideration").

I. Environmentalism and Antitrust: Legal Framework

Environmental concerns may implicate antitrust law in a number of ways. For one, firms may seek to respond to social, business, or political pressures to lessen environmental harms by collaborating in various ways that may resemble collusion or other forms of agreement policed by the antitrust laws. Specifically, efforts to combat climate change could include activities like standard-setting and patent pooling that have traditionally been regulated by antitrust law.[6] Firms producing environmentally fraught products might agree with one another to shift toward less damaging products or modes of production in order to appease shareholders, customers, or politicians. While firms sometimes undertake such steps unilaterally—which generally would not raise antitrust concerns—a firm that engaged in such behavior on its own might find itself at a competitive disadvantage. Hence, the need for coordination, and the raising of antitrust risks.

In other cases, firms may not seek to ameliorate environmental concerns through coordinated behavior but do just the opposite—collude or engage in exclusionary behavior to *worsen* environmental harms. Firms might have the incentive to engage in this kind of behavior in order to prevent defection from environmentally damaging practices in ways that would call attention to, or lead to more mandates for, more costly but environmentally friendly alternatives. For example, in the 1990s, the big tobacco companies were accused of colluding to suppress accurate information about the harms of tobacco consumption, information which could have induced earlier regulatory action against smoking.[7] Similarly, energy companies might have an incentive to collude to suppress information about climate change or prevent members of an energy cartel from defecting in the direction of renewable energy sources, since the defection by any member could put pressure on the others to move in the same direction.

Other cases involving the intersection of environmental issues and antitrust law may be more mundane. Firms that produce environmentally sensitive products may engage in anticompetitive conduct that is not particularly motivated by environmental concerns, in either direction. For example, pending lawsuits allege that shale oil producers who extract oil through fracking have colluded to suppress oil output in recent years.[8]

---

6. Michael A. Carrier, *An Antitrust Framework for Climate Change*, 9 NW. J. TECH. & INTELL. PROP. 513, 532 (2011). *See also* Jonathan H. Adler, *Conservation Through Collusion: Antitrust as an Obstacle to Marine Resource Conservation*, 61 WASH. & LEE L. REV. 3 (2004).

7. *See generally* W. KIP VISCUSI, SMOKE-FILLED ROOMS: A POSTMORTEM ON THE TOBACCO DEAL (2002).

8. Amanda Bronstad, *Big Law Steps in for Shale Oil Producers Hit with Antitrust Allegations*, ALM LAW.COM (Feb. 8, 2024, 2:38 PM), https://www.law.com/2024/02/08/big-law-steps-in-for-shale-oil-producers-hit-with-antitrust-allegations/?slreturn=20240719101540 [https://perma.cc/W4P7-3WF2].

Given the contested environmental effects of fracking, one might ask whether a cartel that reduced output of oil produced through fracking should count as a social loss or social gain. Again, analogies to the tobacco industry come to mind.[9] Antitrust law is ordinarily concerned with maximizing social welfare by preventing output reductions that cause deadweight losses. When a particular product arguably causes more social harm than good, however, one may wonder whether ordinary antitrust principles should apply without modification. Should an antitrust policy that led to more tobacco consumption, more fracking, more deforestation, or more global warming count as a success on the ground that output increased?[10]

One response to the interaction between environmental and antitrust concerns is that protecting the environment is not antitrust's job. The Areeda treatise has taken issue with courts that applied rule of reason analysis to tobacco cartel agreements that would have otherwise been illegal per se, arguing that "[w]hether more or less cigarette smoking is healthy or unhealthy is an important policy concern, but it is not one that is properly effected through the device of an unsupervised cartel agreement."[11] The problem is one of expertise, institutional capacity, and political legitimacy, and is of a kind with efforts to use the antitrust laws to address social evils—such as racism, gender inequality, or threats to democracy—other than competition questions. Are antitrust institutions well positioned to determine the optimal trade-offs between energy production, market power, and the environment?[12] Many in the antitrust community would say that they are not. On the other hand, when antitrust officials (enforcers or courts) decide cases involving environmentally sensitive products, they necessarily make environmental policy, whether they mean to or not.

Before addressing these complex institutional, legal, and political questions, we argue that more fundamental economic questions need to be addressed. Environmental regulations and concerns over the environment, more generally, may have significant effects on conventional antitrust

9. *See* Daniel A. Crane, *Harmful Output in the Antitrust Domain: Lessons from the Tobacco Industry*, 39 GA. L. REV. 321 (2005) (discussing historical instances of antitrust enforcement in the tobacco industry and paradox of antitrust efforts to increase tobacco output at the same time that the government was attempting to decrease tobacco consumption).

10. *See Freedom Holdings, Inc. v. Cuomo*, 624 F.3d 38, 47 n.10 (2d Cir. 2010) (acknowledging the tensions between antitrust enforcement to maximize output and the harms of tobacco consumption, and declining to decide "whether a state's beneficent purpose can ever save an otherwise illegal restraint of trade from Sherman Act preemption").

11. 1 PHILLIP E. AREEDA & HERBERT HOVENKAMP, ANTITRUST LAW ¶ 217b4, at 411 (5th ed. 2020).

12. Similar questions can also be raised against other regulatory agencies. When, for instance, the Environmental Protection Agency or the Securities and Exchange Commission propose to regulate certain firm behavior, to what extent should they take into consideration their proposed rule's impact on the competition structure? A recent guidance from the Office of Management and Budget takes the position that the agencies should take such impact of competition into account when engaged in rulemaking. *See supra* note 5.

analysis through its impact on the competitive structure. For instance, to the extent that an environmental regulation affects the production cost of the firms operating in a market or consumers' willingness to pay for a product, the regulation can affect the size of the market and the potential for monopoly profit. A regulation capping factory emissions and thereby limiting industry output may create market power in the producers, and relaxation of those caps (or a more liberal cap-and-trade regime) may spur competition. Regulations and environmental concerns can also affect the sensitivity of demand to changes in price ("demand elasticity") or consumers' willingness to substitute away from a product ("substitution elasticity").

In principle, antitrust law considers the implications of regulations for market structure and market power. Regulatory hurdles are a classic example of a barrier to entry or expansion. But, as we argue here, environmental regulation can have a variety of effects on market competition beyond simply making entry harder. Once we get a better handle of how environmentalism affects the market structure, we can have a better understanding of how antitrust regulation should adjust in response to environmentalism.

II. Environmentalism and Antitrust: An Economic Approach

The relationship between environmental regulation and the market structure is rather complex and there are many ways a regulation can affect the potential market power (and consumer welfare) in a given market.[13] For instance, as consumers become more or less willing to purchase a certain product (traditional gasoline-powered vehicles versus electric or hybrid vehicles or solar panels), this could affect the demand conditions in the (automobile or oil and gas) market. Presumably, whether and how much consumers become more or less willing to purchase a certain product, in turn, depends on the degree of environmental regulation and the consumers' perception as to whether they believe the imposed regulation is adequate (or insufficient). As the demand conditions change, this will affect the pricing (market) power of the firms operating in the market (vehicle manufacturers and oil and gas companies). To further complicate the matter, affecting the market conditions through changing consumer preferences is only one way an environmental regulation can affect the competitive conditions in a market.

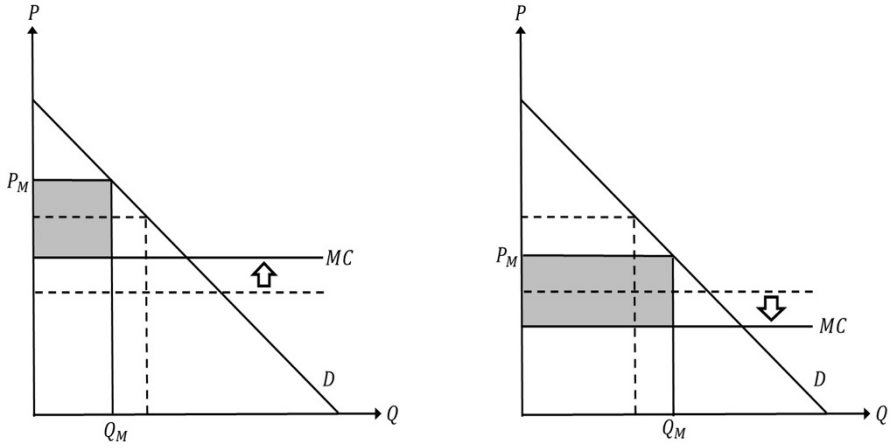
13. Few academic studies have examined the interaction between consumers' preferences over environmentalism and competition structure. *See* Maarten Pieter Schinkel & Yossi Spiegel, *Can Collusion Promote Sustainable Consumption and Production?*, 53 INT'L J. INDUS. ORG. 371 (2017) and Maarten Pieter Schinkel & Leonard Treuren, *Corporate Social Responsibility by Joint Agreement*, 123 J. ENV'T ECON. & MGMT. 1, 1 (2024). Although the principal focus of the paper is on the impact that an environmental regulation can have on a market structure, the story can be expanded to many other types of regulation. Any regulation on product safety or different regime of products liability, for instance, can affect the market structure.

Although a comprehensive analysis of how environmental regulation (or environmentalism more broadly) affects the competitive landscape in a market is beyond the scope of this paper, in this section, we sketch out at least three ways an environmental regulation (and concerns over the environment more broadly) can affect the competitive conditions in a market. The first is by affecting the cost structure. For instance, a conventional (and often-cited) method of dealing with (negative or positive) externalities is by imposing a Pigouvian tax or providing a subsidy. In a given market, either a tax or a subsidy will affect the cost structure for the producers operating in that market, and this will, in turn, change the calculus on the potential monopoly profit (along with the consumer surplus and the potential deadweight loss). The second is by affecting the consumer preferences. As the consumers change their preferences to purchase or not purchase a certain type of product, this will again change the market conditions. What makes the analysis complicated is perhaps the possibility that the consumers' preferences can be shaped by an environmental regulation. Finally, there may be certain effects on the environment that are not fully captured by either the cost or the demand conditions. This may be the most difficult challenge for the antitrust authorities, since such effects are not readily visible from the changes in the market conditions (changes in cost and demand equations).

A. Environmental Regulation's Impact on the Cost Structure

One of the widely used tools in curbing negative externalities and promoting a shift to a more environmentally friendly product use is by imposing Pigouvian tax on products that are deemed to be environmentally harmful and, also, by providing a (production cost) subsidy to products that are deemed more environmentally desirable. A salient example might be imposing a tax on gasoline while providing cost subsidy on solar panels. While it has been widely recognized that such a tax and subsidy scheme can increase or decrease the overall consumption (and move towards the desired level of externality), what has been somewhat under-appreciated is the fact that the scheme can also affect the potential market power of the firms operating in the relevant market. Even if we were to assume that there is no impact on the demand side, an imposition of Pigouvian tax will generally increase the cost structure of the firms and this will, in turn, reduce not only the total size of the market but also the potential monopoly profit (a measure of potential market power) that the firms can capture (along with the consumer surplus and the deadweight loss). The opposite will happen to the market that is subject to a subsidy: a production cost subsidy can increase the potential monopoly profit (and market power) and consumer surplus, while reducing the possible deadweight loss. The following Figure 1 captures this impact in a parsimonious way.

Figure 1: The Impact of Production Tax and Subsidy



The figure represents a simplified market structure where the firms have an identical, constant marginal cost of production, represented by the MC horizontal (dotted and solid) lines. The downward sloping solid line (D) represents the inverse demand curve. The dotted horizontal line represents the firms' (identical) marginal cost (MC) curve before either a tax or a (production) subsidy scheme goes into effect. The assumption here is that the tax or the subsidy is being imposed on a per-unit basis.[14] Before the tax/subsidy scheme, that is, when the firms are operating on the marginal cost curve represented by the horizontal dotted line, the potential market power (potential monopoly profit) is represented by the rectangle surrounded by dotted lines.[15] If the firms are operating in a perfectly competitive environment, the market will clear with the quantity that is determined by the intersection of the dotted marginal cost line and the inverse demand line.

In Figure 1-A, an environmental regulation is imposing a per-unit Pigouvian tax, while in Figure 1-B, the product is subject to a per-unit subsidy on its production cost. Not surprisingly, with a per-unit tax, the firms' marginal cost increases and this will reduce the total "size" of the market (as represented by the point where the marginal cost curve intersects with the demand curve). The opposite happens with a per-unit subsidy. With respect to the potential monopoly profit (and the extent of market power), this can be seen by the size of the shaded rectangle. As the

14. A lump sum tax or subsidy would be ineffective affecting the total quantity produced.

15. Throughout the analysis, we are assuming that the firms are trying to maximize their profits. Whether the firms should also care about other non-economic, such as social and environmental, issues has been an important topic of debate in corporate law. Although such "stakeholderism" will also affect the market environment, we will abstain from such issues for expositional simplicity.

marginal cost line moves up, the size of the shaded rectangle decreases, and as the marginal cost line moves down, the size of the shaded rectangle increases.[16] A straightforward implication is that in a market that is subject to Pigouvian tax (or production cost subsidy), the potential social welfare loss from unlawful exercise of market power is smaller (or larger). It also produces a (simplistic) relationship that a production tax (subsidy) on a product will generally increase (decrease) the concerns over market power. Assuming that that relationship is true (the point that will be complicated later), one can deduce that the antitrust authority's vigilance should change in accordance.

B. Environmental Regulation's Impact on Consumer Preferences

Another way an environmental regulation can affect the competition structure of a market is by affecting the consumers' willingness to pay for the product and affecting the demand side of the market. While the possible impact on the product cost (through Pigouvian tax or subsidy) may have been relatively straightforward, the impact on the overall demand is, we argue, much more complex.[17] First, a possibly easier point to make, there is a direct consumption tax or subsidy, similar to that on the production side. For instance, the regulation could provide a tax subsidy for consumers who purchase electric vehicles or install solar panels. The regulation could also impose a tax on consumption of oil and gas. As the amount of tax or subsidy increases, holding everything else constant, this will push the demand curve either inward or outward. Similar to production cost subsidy, a consumption subsidy will increase the potential market (or monopoly) power of the producers in the market. Consumption tax, by contrast, will tend to diminish their market power. The examples are shown in Figure 2. In Figure 2-B, as the consumers get the benefit of (per-unit, constant) tax subsidy (on solar panels, for instance), this will generally shift out the demand curve and, along with it, the potential market power of the products. Figure 2-A depicts a scenario where the regulation is imposing a (per-unit, constant) consumption tax.

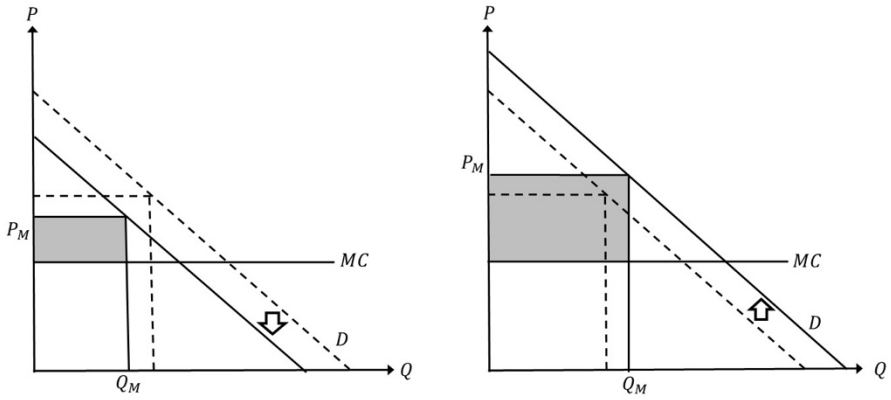
Imposing tax or subsidy on demand is one way an environmental regulation can affect the market conditions and the potential market power. Another, potentially more important, way an environmental regulation can affect the market conditions (on the demand side) is by affecting the consumers' preferences. While the size of a tax or a subsidy may be fairly straightforward to estimate, how consumer preferences would interact with an environmental regulation is much more challenging.

16. These points are easy to establish with a linear, downward sloping demand curve and a constant marginal cost curve.

17. The analysis in this section is taking the market definition as given. Obviously, when consumer preferences change in response to environmental regulation, we may also need to rethink the market boundaries. We will briefly discuss this issue in Part II-D.

One part of the challenge has to do with the consumers' perception of the regulation. For instance, if consumers are aware of the environmental regulation and perceive that the environmental regulation is sufficient to address the negative externality, it is possible that the consumers do not meaningfully change their consumption behavior (apart from the effects that manifest through a production or demand tax or subsidy). Another possibility may be that the consumers perceive the regulation to be inadequate or more than sufficient, in which case, they would respond by supplementing the impact of the environmental regulation.

Figure 2: Impact of Consumption Tax or Subsidy or General Demand Changes



A. Overall Demand Decrease B. Overall Demand Increase

In the oil and gas market, for instance, if the consumers believe that the existing regulation is insufficient to address their concerns for climate change, it is conceivable that, in addition to the reduced demand effect induced by the regulation, they would reduce their demand even further.[18] If we let Figure 2-A represent the oil and gas market, the total (overall) decrease in demand would be stemming both from the direct impact of the environmental regulation and the additional reduction imposed by the consumers. The opposite can also happen in the market that is subject to environmental subsidy. If we let Figure 2-B represent the market for solar panels, for example, the increase in demand would stem not just from the subsidy for the solar panels but also the additional demand increase that is produced by the consumers' perception (that the existing subsidy is insufficient to tackle climate change).

18. While the example is focusing on cases where the consumers perceive the regulation to be insufficient, the opposite is also possible, where the consumers believe that the regulation is imposing too much tax or too little subsidy and react in an opposite direction (by increasing their demand for oil and gas or reducing their demand for solar panels).

There also is the issue of salience and the visibility of regulation. In certain markets, even in the absence of any meaningful impact on demand (or production cost) induced by environmental tax or subsidy, the fact that the government is imposing a tax or a subsidy can generate informational value for the consumers to reduce or increase demand in accordance. For example, a report by NYU's Center for Policy Integrity finds that various market failures inhibit "consumers buying alternative fuel or more efficient vehicles" from making accurate "predictions about the future development of these critical networks in order to estimate their long-term savings" from more efficient vehicles.[19] The report's authors claim that governmental "[f]uel economy standards help resolve the coordination, first-mover, and informational problems facing the developers of this network infrastructure, thereby providing greater certainty that consumers can achieve long-term cost savings."[20] The government regulation can send a signal to the consumers about the importance of the issue and function as an informational channel. Whether the regulation affects the consumers' demand through a tax or subsidy or through the informational channel, the supplementary shifting out of the demand curve and the environmental regulation would act in a complementary manner. This double punch can magnify the potential monopoly power of the producers in the market.[21] The implication for the antitrust authority is straightforward: in the market where the environmental regulation and the supplementary consumer demand are affecting the market in a complementary way, the concerns for potential abuse of market power could be magnified.

When thinking about the effect on demand by environmental regulation, there is one complicating factor that deserves a further discussion. It may be unlikely that how consumers would respond to a certain environmental regulation would be uniform or homogeneous across consumers. Given potentially divergent views about the environment (and differing preferences over products), it is quite plausible that different consumers may react differently in response to an environmental regulation. In the previous example (Figure 2), the underlying assumption was that the consumers in a given market will react in a similar way, but this assumption may be unrealistic in certain markets. It is possible that, within the same market, certain consumer groups will react differently from others. To further complicate the issue, there could

19. Rachel Rothschild & Jason A. Schwartz, *Tune Up: Fixing Market Failures to Cut Fuel Costs and Pollution from Cars and Trucks*, NYU CENTER FOR POLICY INTEGRITY 14 (Apr. 2021), https://policyintegrity.org/files/publications/Tune_Up_Fixing_Market_Failures_to_Cut_Fuel_Costs.pdf [https://perma.cc/SZJ2-VTC9].

20. *Id.*

21. Earlier scholarship has noted and examined how a court judgment can deliver useful information to the consumers (and the market) who, in turn, can adjust their future behavior. *See* Scott Baker & Albert Choi, *Contract's Role in Relational Contract*, 101 VA. L. REV. 559 (2015); Scott Baker & Albert H. Choi, *Reputation and Litigation: Why Costly Legal Sanctions Can Work Better than Reputational Sanctions*, 47 J. LEGAL STUD. 45 (2018).

also be demand substitution, where certain consumers will leave the market altogether (i.e., substitute their demand with other products) or the regulation could induce previously non-existent consumers to also enter the market. The reason why this consideration could play an important role is that the previous relationship of more taxes (subsidies) leading to less (more) concerns over market power can no longer be true.

As a simplified example, suppose an environmental consumption tax will reduce the overall demand for oil and gas, but the regulation induces different responses from high-demand and low-demand consumers. Suppose, for instance, that the high-demand consumers will reduce their total consumption, while the low-demand consumers, perhaps believing that the tax has fully addressed the environmental issues or that their behavior does not affect the environment, would either not reduce or even increase their demand.[22] In addition, we can imagine that the environmental tax can induce other consumers to also enter the market. For instance, previous public transportation users could decide to purchase hybrid or electric vehicles when such products are introduced in the automobile market, further pushing out the demand for oil and gas at least on the low end. The end result would be a decrease in demand at the high-volume end but an increase in demand at the low-volume end.

Figure 3: Impact of Consumption Tax or Subsidy on Demand Elasticity

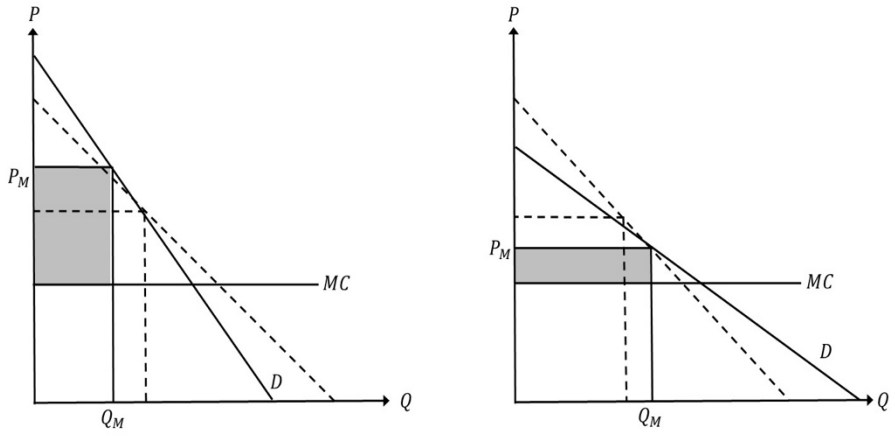


Figure 3-A graphically illustrates the situation where the demand functions pivots clockwise in response to a consumption tax. Note that, if the producers were to sell the product at price equal to the marginal cost,

22. Low-demand consumers do not necessarily need to increase their consumption in response to the imposition of tax. So long as the low-demand consumers reduce their demand less than the high-demand consumers, the demand curve will pivot clock-wise and the market will experience a decrease in demand elasticity.

the overall consumption will be lower (represented by the point where the solid demand line crosses the marginal cost curve). Also, while the total demand at a relatively low price is lower, the demand at a relatively high price is higher (possibly due to additional substitution away from other products or an increase in demand by low-volume users). When an environmental consumption tax elicits such heterogeneous response from the consumers, while it could act to suppress the overall demand (and the overall market size), it could actually increase the potential market power of the producers. This is done primarily by reducing the demand elasticity.

From the Figure, a lower demand elasticity increases the pricing power of the producers and this can increase the potential monopoly profit (the gray area) and the potential welfare loss. The opposite results are possible with an environmental subsidy. As depicted in Figure 3-B, a subsidy for solar panels could further push out the demand among the high-volume users while reducing the demand for the low-volume users. While the high-demand consumers, their demand being more sensitive to tax and subsidy, increase their consumption, the low-demand consumers, believing that the subsidy fully addresses the environmental concerns at the aggregate economy level, could reduce their consumption.[23] This can increase the demand elasticity and reduce the potential monopoly profit for the producers (exhibited by the shaded region), thereby lessening the concern over their market power. What the figures illustrate is that the previous, simplistic relationship of environmental tax (subsidy) leading to less (more) concerns over market power would no longer be true when we need to consider heterogeneous responses from the consumers (and the producers, for that matter).

C. External Considerations

So far, we have examined scenarios in which an environmental regulation or consumers' concerns over the environment is reflected through the changes in either the cost or the demand structure. As the case of consumer heterogeneity and demand substitution has illustrated, while examining the impact of environmentalism through demand and cost equations can be challenging, at least those changes were more "direct" and possibly more measurable. Perhaps the more difficult challenge is to think about the impact of environmentalism that does not readily manifest through the changes in the cost-demand calculus. For instance, we can imagine a situation where the consumers' or the producers' response to an environmental regulation is simply inadequate: the demand or the cost function is not moving enough or even moving in the wrong direction.

23. Similar to the case of environmental tax, low-demand consumers do not necessarily need to reduce their consumption. What is important for the increase in demand elasticity is for the high-demand consumers to increase their consumption more than the low-demand consumers.

While ramping up the environmental regulation would be an obvious answer to the problem, assuming that such solution is not feasible, what can or should the antitrust authority do?

In addressing this question, we need to consider at least two difficult issues. The first is estimating any residual effect on consumer demand that is not reflected through the changes in the demand curve. Admittedly, estimating the changes in demand or marginal cost or its elasticity can be quite difficult. To be able to measure whether the demand or production response has been inadequate or over-reactive and its degree will require the antitrust authority to look outside the market, which will likely be beyond the scope of their expertise. The second issue raises concerns over comparative advantage and the trade-off. That is, even if the antitrust authority does identify that the demand change has been inadequate or over-reactive and the regulator can estimate its degree, it still leaves open the question of trade-off. For instance, if the antitrust regulation were to become more lax in response to the perception that the reduction in consumer demand has been inadequate even in light of a consumption or production tax, the lax regulation could advance the concerns over the environment, while at the same time, worsen the consumer welfare. To what extent should the antitrust authority be willing to trade-off one concern over the other? How the trade-off must be made is not entirely clear and this can pose one of the most difficult challenges for the antitrust regulator.

D. Other Considerations

The previous analysis also relied on two simplifying assumptions: the market boundaries have been assumed to be fixed and there was no consideration on the impact of regulation on market dynamics, particularly with respect to innovation, including innovation in environmental technology. Obviously, when consumer preferences change in response to environmental regulation, we may also need to rethink the market boundaries. For instance, stronger concerns about climate change or stronger environmental regulations to tackle climate change can lead the consumers (or at least a subset of them) to treat internal combustion engine cars very differently from electric vehicles. That is, more consumers may consider electric vehicles to be in a different market from vehicles with internal combustion engines, even though this was not the case previously. As the elasticity of substitution between electric vehicles and internal combustion engine vehicles decreases, it becomes more likely that those two products should be deemed to belong in separate markets. The opposite can happen, too, and as the market boundary changes, the level of competition and the potential monopoly profit will change as well.

Another issue is innovation. The earlier analysis was based implicitly on a static representation of a market. Firms can, of course, engage in

research and development and otherwise innovate to introduce better or more differentiated products, lower production cost, etc. As mentioned briefly in the introduction, commentators have argued that we should consider relaxing antitrust regulation to allow firms to collaborate on developing new environmental technology or setting new environmental standards. Unfortunately, however, it is not entirely clear adopting antitrust leniency would actually encourage more environmental innovation. What impact the market competition structure has on innovation has been one of the more perplexing questions within economics. While additional research seems necessary, the current consensus among economists seems to be that the relationship between the intensity of innovation (e.g., R&D) activity and the degree of market concentration is non-monotonic. While increasing the degree of competition at a low level of competition tends to lead to more innovation among firms, when the market is already at a high level of competition, introducing additional competition is likely to reduce innovation.[24] The implication is that when a market exhibits a relatively low level of competition, allowing potential collusion for innovation in environmental technology can potentially backfire.

III. An Illustration from Electric Vehicles

In this section, we briefly illustrate the implications of these economic principles with respect to the automobile market. We use for illustration a case currently pending in the U.S. District Court for the Northern District of California, where a class of Tesla owners have sued Tesla for allegedly tying the sale of Tesla electric vehicles (EVs) to parts and service for those vehicles.[25] The plaintiffs allege that EVs occupy a separate relevant market from internal combustion engine (ICE) vehicles because EVs and ICE vehicles "require separate manufacturing processes and production facilities" and "cost more than similarly equipped ICE vehicles," and because "EVs and ICE vehicles are used for different reasons."[26] The plaintiffs also allege that, at the time of the events relevant to the case (2020), Tesla had an EV market share of 80% in the United States and therefore had market power or monopoly power for antitrust purposes.[27]

---

24. *See* Philippe Aghion, Nick Bloom, Richard Blundell, Rachel Griffith & Peter Howitt, *Competition and Innovation: An Inverted-U Relationship*, 120 Q. J. ECON. 701 (2005) (showing that, from the UK data, the relationship between the level of competition and the amount of R&D exhibit an inverted-U relationship); and Philippe Aghion, Ufuk Akcigit & Peter Howitt, *The Schumpeterian Growth Paradigm*, 7 ANN. REV. ECON. 557 (2015) (arguing that in an industry with vigorous ("neck-and-neck") competition, increasing competition will lead to more innovation while in an industry with a leader and a laggard, introducing more competition will discourage the laggard from innovating more).

25. Lambrix v. Tesla, Inc., No. 23-CV-01145-TLT, 2023 WL 8265916, at *2 (N.D. Cal. Nov. 17, 2023).

26. *Id.*

27. *Id.*

But did Tesla actually ever have a monopoly? Are EVs and ICE vehicles not sufficiently substitutable from the perspective of consumers that they belong in the same relevant market? And, to what degree, if any, should the environmental benefits of EVs affect antitrust analysis with respect to these or similar claims? While we do not purport to answer these questions, the economic framework we sketched out above can be useful to analyzing them.

First, assessing the extent of competition between EVs and ICE vehicles requires assessing the effects of shifting environmental regulations and taxes subsidies on the production and sale of automobiles. As we noted earlier, both taxes and subsidies affect the cost structure for the producers operating in that market, and this will, in turn, change the calculus on the potential monopoly price. Federal tax credits of up to $7,500 for EV purchases, as well as various other federal and state incentives, act as subsidies to EV manufacturers. To the extent that the federal tax credit (consumption subsidy) and various cost subsidies are likely to shift out the demand curve while reducing the production cost for the EV manufacturers, one could conjecture that the potential market power that the EV manufacturers can wield (and the potential deadweight loss that is generated from the exercise of market power) can be substantial. At the same time, various regulatory burdens, such as gasoline taxes emissions standards, may effectively act as Pigouvian taxes on ICE manufacturers. As a mirror image of the tax credit and cost subsidy given to EV manufacturers, the Pigouvian tax on gasoline (a consumption tax) will generally decrease the potential harm from abuse of market power by the ICE manufacturers. In combination, and when thinking about how these markets are separated or conjoined, the subsidization of EVs and the penalization of ICE vehicles may have created a cost gap between EV and ICE manufacturers that could imply a degree of economic differentiation between EVs and ICE vehicles on the supply side. However, as political winds on environmental and EV policy shift and the subsidies and Pigouvian taxes with them, there could be significant implications for assessing the competition between EVs and ICE vehicles.

Second, shifting consumer preferences regarding the environmental impacts of ICE vehicles and EVs could also affect the calculus of whether there is one wide automobile market, or instead separate markets for ICE and EVs. As we noted previously, governmental regulations or policies can inform and motivate consumers with respect to an environmental issue, potentially shifting their preferences and hence demand curves. The Biden Administration strongly supported EV adoption on environmental and energy independence grounds, which may have pushed consumer demand in the direction of EVs. Conversely, Donald Trump and other Republicans have derided government promotion of EVs. Political changes at the federal or state level may affect the demand for EVs and their substitutability with ICE vehicles. Many early EV adopters may have been

hard-core environmentalists who would not have considered ICE vehicles as good substitutes, but as the availability of EVs grows, more consumers who do not have strong environmentalist preferences in their choice of vehicles may begin choosing between EVs and ICE vehicles based on their performance and price characteristics, possibly without much regard to environmental effects. If so, this could mean that what was an EV-specific market in early years would shift into head-to-head competition with ICE vehicles, hence reducing the market power of EV manufacturers. Further, as noted in the previous section, shifting environmental regulations or perspectives may be asymmetrically distributed among consumers, with some consumers continuing to insist that only an EV will do, while others are willing to substitute between EVs and ICE vehicles. From an antitrust perspective, that could lead to complex questions about market definition, submarkets, price discrimination, and arbitrage.[28]

Finally, application of antitrust analysis to ICE vehicles may involve environmental questions that are not fully captured by regulatory costs and subsidies or shifting consumer preferences. Should antitrust courts or regulators take into account the environmental benefits of EVs (or the corresponding environmental costs of ICE vehicles) in addition to the way in which those effects show up in firm costs or consumer demand? If so, how would such external considerations be addressed? Should EV manufacturers get a light touch from antitrust regulators in order to incentivize their enormous capital investments in a new technology? Or, to the contrary, should antitrust law take an especially stern line with respect to emerging pro-environmental technologies, on the theory that the exercise of monopoly power could reduce output or innovation in areas where it is sorely needed? We do not purport to answer these questions here. Rather, we suggest that beginning an analysis with the question of costs and demand will often bring the question of external considerations into clearer focus.

Conclusion

While numerous commentators have argued that antitrust enforcement should take into consideration the potential impact on the environment that the resulting competitive landscape will have, how the concerns over the environment (or the environmental regulation, more directly) would affect the competitive structure within a market may be quite difficult to assess. As a starting point, we have argued that we should analyze some of the more mundane considerations in thinking about this issue: how environmental regulation (or environmentalism, more broadly)

28. *See* U.S. Dep't of Justice & F. T. C. Merger Guidelines, U.S. DEP'T OF JUSTICE & FTC § 4.3.D.1 (2023), https://www.ftc.gov/system/files/ftc_gov/pdf/2023_merger_guidelines_final_12.18.2023.pdf [https://perma.cc/A24R-6AK7] (explaining concerns around price discrimination to "targeted trading partners").

would affect the cost and demand structures in a given market. Once we have a better idea on these direct impacts, using the basic tools of economics, we can obtain a better understanding of how environmentalism intertwines with the concerns over abuse of market power and potential inefficiencies, the core concerns of antitrust. With that understanding, we can provide a better prescription for how and to what extent antitrust law should change in response to environmentalism.