I. Introduction

The set of ideas that has come to be known as the Coase theorem has been part of the economics literature for some five decades, having first appeared in Ronald Coase's classic essay, “The Problem of Social Cost” (1960). During this time, it has permeated the scholarly literatures in economics and law and has been the subject of a debate over its correctness and relevance that continues to this day. While the Coase theorem has been surveyed and analyzed from nearly every conceivable angle, one aspect of its diffusion that has not been examined is that in the teaching of economics. The present paper attempts to treat this topic through the textbook literature, and, in particular, the intermediate microeconomics textbooks.

One of the several unique aspects of the Coase theorem is that its origins lie, at least in part, in the textbook literature. While the underlying idea first appeared in two of Coase's articles, “The Federal Communications Commission (1959) and “The Problem of Social Cost,” and was taken up in the scholarly literature relatively quickly, the Coase theorem first appeared in defined form in the economics literature in 1966, named and stated by George Stigler in the third edition of his textbook, The Theory of Price.\(^1\)

The import of the Coase theorem lies in its ostensible demonstration that problems of externality need not be dealt with via Pigovian remedies—taxes, subsidies, and regulations. The theorem's demonstration that private action can be used to internalize externalities stood on its head many decades of received theory, showing both that private action and the market mechanism can deal with situations in which markets had been historically thought to fail and that the failure of the market could be conceived

\(^*\) Contact: Department of Economics, CB 181, University of Colorado Denver, Denver, CO 80217-3364, USA. Email: steven.medema@ucdenver.edu.

\(^1\) See Medema (1994) and Medema and Zerbe (2000) for a discussion.

of as a failure of the state to assign rights over resources relevant to the externality problem.

The traditional approach to examining the history of ideas is via the scholarly literature, and little attention has been paid by historians of economics to the diffusion of ideas in the textbooks. There is an important case to be made, though, for focusing some attention on the textbooks and, in particular, on the diffusion and treatment of “new ideas” within their pages. For example, those ideas that do make their way into the textbooks can often be considered “normal science” in the profession. Moreover, the textbook literature provides a useful proxy for the dissemination of ideas to students and thus for what is considered important for the training both of those who go on to become economists and of those who become part of the educated public.

There are several textbook literatures that could be examined in the context of the Coase theorem: principles of microeconomics, intermediate microeconomics, graduate microeconomics, public economics, environmental economics, and law and economics. I have chosen to exclude all but intermediate microeconomics texts here for several reasons. First, the sheer volume of a of this material is simply enormous, and some selection principle is necessary to make the topic manageable. Second, the incorporation of new ideas into the textbook literatures generally begins with more advanced treatments and only later moves down to the principles level.³ We see this with the Coase theorem, which came into the principles textbook literature in a significant way roughly a decade after its incorporation into the intermediate theory literature. In the case of environmental economics and law and economics, these textbook literatures did not begin to significantly develop until the 1980s and 1990s, well after the theorem became an established part of the intermediate theory literature. An additional consideration here is that many students choose not to take courses in these fields (or others, such as public economics) as part of their undergraduate education, while all students majoring in economics (and many of those minoring in the subject or taking a major in a related field, such as business) enroll in a course in intermediate microeconomics. As such, the intermediate microeconomics textbook literature seems to be a good entry point for the

---

³ This might be taken to suggest that it would be useful to start with the graduate textbook literature. However, the smallness of the market (including the number of published texts) and the narrowness of the material covered in graduate microeconomics texts pushes us in other directions in this case.
analysis of the textbook treatment of the Coase theorem.

Even this degree of narrowing, however, is not sufficient to make the subject manageable within the confines of a single paper. Because of this, we make one additional concession to the massive breadth of the relevant literature by confining our analysis to the period 1960-1979, or, the two decades following the publication of “The Problem of Social Cost,” leaving the discussion of the subsequent literature to another paper.

It is now a commonplace to include a discussion of the Coase theorem in intermediate microeconomics textbooks, generally in a chapter devoted to externalities or externalities and public goods, but this was not always the case. As we shall see, it took nearly two decades after the publication of “The Problem of Social Cost” for the theorem to become a well-established part of the textbook literature in intermediate microeconomics. The introduction of the Coase theorem into this textbook literature raises a host of issues for examination: When did the theorem first appear? How was it stated? Are there variations in the statements of the theorem and its attendant assumptions across authors? When did treatment of it become commonplace? How long did it take the authors of textbooks that did not initially include it to bring the theorem into the discussion? What are the backgrounds (e.g., graduate training, faculty affiliations, research fields, etc.) of authors who incorporated the theorem early on? How was the theorem treated: As a surprising result? A useful one? Negatively? As we shall see, a host of issues and contrasts emerge from the textbook treatments of the theorem, many of which appear to go to problems entailed in presenting a new and controversial idea, one with a number of nuances that were being teased out in the scholarly literature over the same period—nuances that could be helpful or harmful for the presentation of the theorem to a student audience.

II. Coase's Discussion in “The Problem of Social Cost”
Because the Coase theorem literature has its genesis in Coase's writings and involves the subsequent interpretation of and elaboration on Coase's arguments, it seems useful to begin our discussion with an overview of Coase's own treatment of the subject. The idea that came to be known as the Coase theorem has its genesis in Coase's 1959 article on
“The Federal Communications Commission.” However, as the literature on the Coase theorem draws exclusively on Coase's 1960 treatment, we will confine our discussion here to that article.

Coase begins his analysis of social cost issues—what now go by the name of externalities—by examining the case where the damaging business is fully liable for harm caused “and the pricing system works smoothly (strictly this means that the operation of a pricing system is without cost),” opining that this is “a case in which most economists would presumably agree that the problem would be solved in a completely satisfactory manner” (1960, p. 2). Utilizing his now-famous example of the rancher whose cattle destroy crops on the land of an adjacent farmer and indirectly assuming perfect competition in the relevant output markets (pp. 3, 5), Coase shows that this liability rule would generate the efficient level of both cattle and crops, whether through damage payments from the rancher to the farmer or the rancher bribing the farmer to take his land out of cultivation (if that is the least-cost solution), with the actual level of damage payments (division of the surplus) depending on “the shrewdness of the farmer and the cattle-raises as bargainers” (p. 5). External costs, then, are fully internalized through the assignment of liability to the rancher.

Coase next turns to the situation where the rancher is not liable for the damage caused by his cattle to show that this, too, results in efficient production of both cattle and crops. Here, the farmer has an interest in bribing the rancher to reduce his herd size and is willing to make such payments so long as the payment level is less than the benefit from reduced crop damage. Likewise, the farmer is willing to reduce herd size so long as the payment offered is at least as great as the foregone benefit from herd-size reduction. And, says Coase, the result is that both cattle and crop outputs are the same as when the rancher was assigned liability for damages.

Given this, Coase reaches the following conclusion:

It is necessary to know whether the damaging business is liable or not for damage caused since without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them. But the ultimate result (which maximises the value of production) is independent of the legal position if the pricing system is assumed to work without cost. (p. 8)
This is as close as Coase comes in “The Problem of Social Cost” to stating what has become known as the Coase theorem, and he then proceeded to illustrate how this process might work out with reference to several British Common Law cases, before turning to mechanisms for dealing with social cost issues when the costs of transactions preclude bargaining.

This result has several aspects that are worth noting for our purposes here. First, the outcome will be efficient, in the sense of maximizing the value of output. Second, the result is invariant across alternative assignments of rights; that is, the same efficient levels of output will result no matter how rights are initially assigned. Third, Coase is explicitly assuming that the costs of transacting are zero. While the assumption of zero transaction costs has been given a wide range of interpretations in the subsequent scholarly literature, the idea that emerges from Coase's discussion in “The Problem of Social Cost” is that there are no costs that prevent the realization of mutually beneficial agreements.

Coase does allow that negotiation is possible if transaction costs are non-zero. Having noted that the assumption of zero transaction costs is “very unrealistic” (p. 15), he goes on to say that,

Once the costs of carrying out market transactions are taken into account it is clear that such a rearrangement [of rights through the negotiation process] will only be undertaken when the increase in the value of production consequent upon the rearrangement is greater than the costs which would be involved in bringing it about (pp. 15-16).

This means, of course, that when transaction costs outweigh the gains from negotiation, the initial assignment of rights will impact the final result, and this result may or may not be efficient.

It bears mentioning at this point that the idea that became known as the Coase theorem was only one point within a much larger discussion, the focus of which was on the costs entailed in the various mechanisms for dealing with externalities. The negotiation result simply demonstrated that Pigovian remedies were not necessary within the costless framework contemplated by neoclassical economics, which, for Coase, suggested a problem with the underlying framework, not the general applicability of the bargaining result. Yet is was the negotiated solution that captured the professional
imagination (both positively and negatively), and this is as true of the textbooks as it is of the scholarly literature.

III. The Textbooks Before Stigler
While Coase's analysis was taken up in the scholarly literature shortly after the publication of “The Problem of Social Cost,” there was no discussion of Coase's negotiation result in the textbook literature prior to the publication of the 1966 edition of Stigler's price theory text. Discussions of divergences between private and social costs and benefits resulting from, e.g., pollution, congestion, and education were somewhat commonplace but by no means universal, and when they did occur, the discussion was limited to how these phenomena cause private and social costs to diverge—thereby precluding the attainment of efficiency under perfect competition, and, in some instances, a discussion of how governmental actions, in the form of taxes, subsidies, or regulations, might be able to move the market toward the optimum.6

One of the most frequently adopted texts of the period, C.E. Ferguson's Microeconomic Theory (1966), may be taken as emblematic. Ferguson gave rather extensive (for the time) play to the impact of externalities, devoting approximately five pages to the topic. Defining externalities as instances where marginal social cost is not equal to marginal social benefit, he says that “perfect competition does not lead to maximum social welfare if external economies or diseconomies are present” (1966, p. 392). Ferguson consciously grounded his discussion of the impact of externalities in Francis Bator's “The Anatomy of Market Failure” (1958) and takes the examples of air pollution and, following James Meade (1952), beekeepers and the apple orchard owners as illustrations of externalities leading to market failure. These, says Ferguson, are instances of “ownership externalities,” where the scarce resource, whether that be clean air or apple nectar, are not owned by anyone and so have a zero market price. As a result,

4 There are roughly thirty citations to “The Problem of Social Cost” in the literature through 1966. Examples include Buchanan and Stubblebine (1962), Turvey (1963), Demsetz (1964), Calabresi (1965), and Mishan (1965). It is perhaps not surprising that the majority of these treatments are by scholars associated with the Chicago and Virginia schools.

5 For example, Weintraub (1964) does briefly mention such divergences, while Davsson and Ranlett (1965) includes no discussion of externalities.

6 Texas A&M University.
“even a perfectly competitive market fails to impute the correct value” to these resources and “Profit-maximizing decisions therefore fail properly to allocate resources at the margin because scarcity is divorced from ownership” (p. 393). Because of this, says Ferguson, “public ownership or public control is sometimes necessary” (1969, p. 464).

The one reference that we find to Coase in this earlier literature is in Donald S. Watson's *Price Theory and Its Uses* (1963). Watson presents a standard discussion of divergences between private and social costs and benefits, drawing on Pigou and noting that these divergences give rise to a “prima facie” case for government intervention—though “only a prima facie case,” because the divergences involved are “often probably small” and the detection and measurement of these divergences “pose formidable and sometimes insuperable obstacles” (pp. 267, 268). While Watson makes no reference to Coase's analysis in the body of the text, he does list “The Problem of Social Cost” in his “Selected References” that are provided for further reading, pointing the reader to Coase's article, and only to Coase's article, as one “On private vs social cost” (p. 271). This appears to be the first reference to “The Problem of Social Cost” in the textbook literature.

**IV. George Stigler and the Creation of “the Coase Theorem”**

Coase's analysis makes its first appearance in the textbook literature in 1966, with the publication of the third edition of George Stigler's *The Theory of Price* (1966). Given that Stigler's treatment involves both the first appearance of this idea in the textbook literature and occasion of the attachment of the “Coase theorem” moniker to it, it seems worthwhile to discuss Stigler's treatment at some length.

Stigler introduces the problem of a divergence between private and social costs already in *The Theory of Competitive Price* (1942), in his chapter on “The Nature of Costs and the Production Function.” Having demonstrated that “in competitive equilibrium the allocation of productive services is ideal,” he allows for “two possible exceptions, one illusory and the second real” (1942, p. 105). The first is the presence of increasing or decreasing costs, which Stigler dismisses as not valid and unimportant, and this will not concern us here. He then turns to a brief examination of activities the costs to

7 George Washington University.
society associated with which are either greater or less than the costs to the individuals undertaking those activities—phenomena that now go by the names negative and positive externalities, respectively. Stigler's brief, two-paragraph treatment does not get into the analytics of the problem. Rather, he contents himself with noting that “An impressive list of such disharmonies between individual and social cost can easily be assembled” (1942, p. 107), and that these problems “are eliminated largely by ad hoc policies” (1942, p. 107). He notes that:

Such policies include not only private activity (for example, cooperation) but also state interference by the use of the police power (zoning), taxes (automobiles, liquor), subsidies (conservation), dissemination of information (food, drugs, securities), and numerous other devices. (1942, p. 107)

Of particular interest here is Stigler's reference to the elimination of externalities through private activity, such as cooperation. Though he provides no explanation of how private activity might function in such contexts, a clue can be found from the one reference that he provides to this discussion—Part II, chapter 9—of Pigou's Economics of Welfare. Here, Pigou notes that divergences between private and social net product arising in landlord-tenant relationships can sometimes be mitigated by negotiation between the parties involved a point that Coase had either overlooked or ignored in his criticism of Pigou in “The Problem of Social Cost.”

The first edition of Stigler's The Theory of Price (1946) reprints his 1942 discussion verbatim. But when we come to the second edition, published in 1952, we begin to see some evolution in Stigler's treatment of this subject. While his discussion remains confined to two paragraphs in his chapter on “The Nature of Costs and the Production Function,” he introduces a brief numerical example of divergence between private and social products. He also changes his language from the 1942 focus on “costs” to (net) product. Perhaps most interesting, though, is the change in his discussion of mechanisms for dealing with these divergences. When we come to the above-quoted

---

8 See Pigou (1932, pp. 177-82) as well as the discussion in Aslanbeigui and Medema (1998) and Medema (2009, chapters 3 and 5).
9 The first edition of The Theory of Price reprints the chapters from The Theory of Competitive Price along with several new chapters on imperfect competition, the theory of multiple products, and capital and interest. Stigler says that the chapters from The Theory of Competitive Price “have been subjected to only trivial revision” (1946, p. v), a claim that is not necessarily accurate, as we shall see below.
passage on disharmonies between private and social interests and policies for dealing with them, Stigler now writes,

Some disharmonies between private and social products are large and important, and they are dealt with by a variety of techniques such as taxes and subsidies, dissemination of information, and the police power (for example, zoning). (1952, p. 105)

The “impressive list of disharmonies” has been replaced by a claim that “Some disharmonies … are large and important,” a statement that some might consider a bit more weak. Gone are the mention of private agreements and the examples of taxes, subsidies, and information dissemination undertaken by the state.

When Stigler penned the third edition of *The Theory of Price* (1966) nearly fifteen years later, the influence of Coase's analysis in “The Problem of Social Cost” was apparent. This should come as no surprise given the tone of Stigler's later commentary on Coase's article. The analysis of the divergence between private and social interests was given its own section within this chapter, running to four pages, and Stigler returned to a grounding of the issue in costs, as Coase had done, rather than net products, as in Pigou.

Stigler began his analysis with a standard two-paragraph overview of what it means for private and social costs to diverge, but rather than concluding that this results in the non-optimal outputs and prices, as he had in his earlier treatments, the matter is now converted into a question:

One of the most tendenctious questions in economics has been: when social and private costs diverge appreciably, will competition lead to correct amounts (and prices) of goods? (1966, p. 110)

Such a question was nowhere in evidence in the 1952 edition of the book; rather, the matter was taken as a settled result which essentially assumed that such divergences exist and that government policy instruments were necessary to resolve them. Stigler's discussion in his 1952 edition followed the standard practice of neoclassical economics in

---


11 Note that Stigler is also referencing only situations where social and private costs diverge “appreciably.” It is not clear what Stigler thinks about situations where the divergence is not appreciable or the magnitude of the divergence necessary to meet the standard of “appreciably.”
considering the matter settled: When private and social net products (now costs) diverge, competition leads to inefficient output levels and prices, and government remedies are necessary to move the market toward efficiency. The deep-seated nature of this view of the externality problem was reflected in the fact that even Chicago's best and brightest did not believe Coase's result when first confronted with it.

Stigler attempts to answer this question by invoking Coase's illustration of the farmer and the cattle rancher, noting that “The discussion to follow is based upon the profound article of Ronald Coase, 'The Problem of Social Cost' …” (p. 111n.8, emphasis added). Stigler demonstrates how wandering cattle impose costs on the farmer through crop destruction, thereby creating a divergence between the private and social costs associated with raising cattle. He notes that if the rancher does not bear full responsibility for—that is, the full social cost of—his wandering cattle, too much meat will be produced and not enough grain (1966, p. 111). More generally, says Stigler, “consumers will be best off … when the relative prices of goods are equal to their relative (marginal) social costs” (p. 111). But, he continues, “When private costs differ from social costs, obviously [the] optimum will not be reached, because producers will gear output to their private costs” (p. 111). So far, then, Stigler's treatment of the problem is completely in keeping with the received view.

Stigler goes on to point out, however, that the assignment of legal responsibility for damages alters the situation, and that it does not matter whether this law imposes responsibility on the cattle rancher or the farmer. He illustrates this with a numerical example akin to that used by Coase, but with different numbers, showing how if the rancher is made responsible for the damage costs, he will only increase his herd size so long as the additional benefit from the marginal animal is at least as great as the combination of his private and the costs imposed on the grain farmers, and that if the grain farmer is responsible for damages, he will bribe the rancher in an amount equal to marginal damages to reduce herd size. The result will be the same no matter which party is responsible for the damages. From this, Stigler concludes that:

The manner in which the law assigns liability will not affect the relative private

---

12 See Medema (2009, chapter 3) for a discussion.
13 Again, see Kitch (1983) and Stigler (1988, chapter 5).
marginal costs of cattle and grain. (p. 113)

Furthermore,

this procedure obviously leads to the correct social results—the results which would arise if the cattle and grain farms were owned by the same man. (p. 113)

It is at this point that Stigler lays out the profound import of this result, and, in doing so, gives this idea its name:

The Coase theorem thus asserts that under perfect competition private and social costs will be equal (p. 113).

He notes the new and surprising nature of this idea for his student audience by claiming that “It is a more remarkable proposition to us older economists who have believed the opposite for a generation, than it will appear to the young reader who was never wrong here” (p. 113). He goes on to say that this result “seems astonishing,” but he argues that “it should not be,” that it reflects basic economic analysis widely accepted within the profession, comparing the Coase theorem's symmetry result to a sales tax, the effects of which on price and output are identical whether the tax is levied on the buyers or the sellers (p. 113).

While Stigler is clearly enamored of this result, he is not so enthralled that he believes it applicable to all externality situations. Citing the example of air pollution, he suggests that when large numbers of parties are affected by an activity, the costs of working out an agreement “may be prohibitive.” As a result, “only statutory intervention may be feasible” (p. 114). There is a bit of an oddity in this statement, since the perfectly competitive environment in which the Coase theorem is said by Stigler to hold contemplates exactly the sort of large numbers situation in which Stigler says that the theorem may well not hold. It would seem that Stigler is referring to a small numbers externality, where the parties involved are operating within perfectly competitive markets for the goods that they produce and sell.

This leads us to the question of what Stigler means by perfect competition. He takes up this subject in chapter 5 of The Theory of Price, where he notes that,

A competitive market is easily defined only for a perfect market: it is then a

14 Stigler (1966, p. 114) also points to the difficulty of achieving the socially optimal level of pollution reduction through statutory remedies, owing to changes over time in the technology of abatement and the number of people being impacted by the pollution.
market in which the individual buyer or seller does not influence the price by his purchases or sales. Alternatively stated, the elasticity of supply facing any buyer is infinite, and the elasticity of demand facing any seller is infinite. (1966, p. 87)

He goes on to list four conditions under which a perfectly competitive market “will normally arise”: perfect knowledge, large numbers, product homogeneity, and divisibility of the product (pp. 87-88). Regarding perfect knowledge, he says:

If there is not perfect knowledge, there will be an array of prices at which transactions will take place, and almost all real markets display such an array. There will often be scope for higgling, and to this extent a situation termed bilateral monopoly arises. But if the scope for higgling is small, the departure from competition is small. (p. 88)

Thus, under Stigler's version of perfect competition, perfect knowledge precludes the sort of bilateral monopoly situation that could interfere with the bargaining process contemplated by the Coase theorem.

Stigler's decision to state the Coase theorem in terms of perfect competition is interesting, given that he acknowledges the rather unrealistic nature of the strict assumptions underlying it. Though he does not elaborate on the applicability of the theorem to the real world, the limitation of his critique to situations in which the externalities involves large numbers of parties seems to suggest that he finds the theorem at least somewhat applicable to externalities involving small numbers of parties. In light of the strict nature of the assumptions underlying his definition of perfect competition, it makes sense to ask why Stigler grants some domain of applicability to a theorem grounded in perfect competition. He does not touch on this issue in his presentation of the theorem, but a clue can be found in his discussion of perfect competition and the assumptions underlying it. In elaborating on the conditions for perfect competition, Stigler says:

If the reader bristles at the acceptance of assumptions such as perfect knowledge and complete product homogeneity, he is both wrong and right. He is wrong in denying the helpfulness of the use of pure, clean concepts in theoretical analysis: they confer clarity and efficiency without depriving the analysis of empirical relevance. He is right if he believes these extreme assumptions are not necessary
to the existence of competition: it is sufficient, for example, if each trader in a market knows a fair number of buyers and sellers, if all traders together have a comprehensive knowledge so only one price rules. The reason for not stating the weakest assumptions (necessary conditions) for competition is that they are difficult to formulate, and in fact not known precisely. Again, more work for the next generation. (p. 89)

That is, one could argue that, for Stigler, the Coase theorem combined “clarity and efficiency” with “empirical relevance,” the latter because it gives rise to empirically testable propositions. Moreover, given his claim that the existence of a competitive environment does not necessitate strict satisfaction of the four criteria elaborated above, Stigler likely believed that he was on solid footing in presenting a theorem that could be used to explain real-world outcomes.\textsuperscript{15}

As for his comment about “more work for the next generation,” Stigler could not have been more prescient.\textsuperscript{16}

V. The 1960s After Stigler

While Coase's negotiation result continued to be discussed in the economics literature following Stigler's statement of the theorem in 1966, with two of the articles mentioning the theorem by name (Haveman 1967, Nutter 1968), the intermediate microeconomics texts published during the rest of the 1960s paid no attention to the Coase theorem—with one exception. Some contained no discussion of externalities at all,\textsuperscript{17} and those that did discuss the topic confined the analysis to the demonstration of the inefficiencies that result when private and social costs diverge and the possibility of using governmental remedies to resolve this issues.

For example, the second edition of C.E. Ferguson's \textit{Microeconomic Theory} (1969) reprints verbatim the discussion from the 1966 edition, while Micha Gisser's (U of New

\textsuperscript{15} Stigler's statement of the theorem makes no mention of transaction costs, presumably because he assumes that transaction costs are zero under perfect competition. It is also worth noting that Stigler's examples go a bit further than those of Coase. While Coase considered only producer-producer externalities, Stigler adds producer-consumer externalities to the mix—here, in the context of air pollution. Neither Stigler nor Coase consider the case of externalities between consumers (e.g., playing one's music too loud and annoying the neighbors).

\textsuperscript{16} Interestingly, Stigler makes no reference to the Coase theorem in his other scholarly writings until 1972.

\textsuperscript{17} See, for example, Bilas (1967).
Mexico) *Introduction to Price Theory* (2nd edn, 1968) includes only a single paragraph on externalities and argues that “the government should impose an excise tax” on the externality generating activity to move the market to the social optimum (p. 328). Kelvin Lancaster’s introduction to Modern Microeconomics* (1969) is perhaps the most advanced of the texts of this period, but his extensive treatment of the conditions for optimality contains only a passing reference to externalities, noting that their presence causes the conditions for optimality to be violated and that “We can deal with problems involving externalities (which are certainly present in fact), but at the expense of considerable complication” (1969, p. 262).

Yet, we do see a couple of hints that Coase's argument is beginning to make its way into the textbook literature during this period. Harvard University economist Robert Dorfman mentions the possibility of market solutions briefly, albeit without reference to Coase, in his *Prices and Markets* (1967), noting that externality problems arise because of the absence of markets and that, in the context of a negative externality:

> sometimes we should be willing to pay other individuals to desist from actions that diminish our well-being, and they would be willing to accept. There is a loss of over-all welfare if, as is usually the case, there is not market for carrying out the transaction. (p. 142)

Dorfman goes on to note that if a polluter were forced to bear the cost of the harm it caused, “the situation would be corrected.” However, he continues, “there is no market to impose this charge,” and even government charges are difficult to impose properly because “the correct charge is exceedingly difficult to determine without the aid of a market” (pp. 142-43). Dorfman makes no mention of Coase in this brief discussion, and it is not clear whether Coase's article had any impact on his thinking.

Donald Watson (1968) continues his standard treatment of divergences between private and social costs in his second edition, but when it comes to implications, he reworks his 1963 discussion of the prima facie case for intervention, saying now that, the quantitative importance of externalities is hard to gauge. Some economists, who can see them almost everywhere, propose systems of hypothetical taxes and

---

18 Columbia University; Ph.D., University of London, 1958.
subsidies to firms and industries to bring about closer conformance of prices and marginal costs.

He calls this a “subject on which there is still some disagreement,” though he does not give us any insights into the nature of that disagreement (p. 292). But given that he had included Coase in his further reading references in his 1963 edition, and continued this in his 1968 edition (though without additional references to the larger literature discussing Coase's ideas), it may be that his change of perspective here was influenced by Coase's analysis and the subsequent supporting discussion of it in the literature.

The one significant engagement with Coase's ideas in the 1960s texts comes from Allan J. Braff in his *Microeconomic Analysis* (1969). Braff introduces the concepts of external diseconomies in consumption and production and points out that these will cause a perfectly competitive market outcome to diverge from the optimum, noting in the case of external diseconomies in production that the imposition of standards regarding things like automobile safety and water pollution emissions are community responses to these divergences between the private and social costs of production (1969, pp. 120-121). He then says,

> It has been argued [Braff footnotes “The Problem of Social Cost” at this point] that private costs and social costs will be equalized in perfectly competitive markets (and the optimum output produced where price is equal to marginal cost), as long as someone sees to it that producers must recognize any discrepancy between marginal private and social costs (by taxing, penalizing, or bribing) so that firms will adjust their output to social costs. If firms attend only to that part of (total) social cost that is private, there will very likely be overproduction (in terms of net social benefit). (Braff 1969, p. 121, emphasis added)

Braff makes no mention of the assumption of zero transaction costs here, but perhaps he considers it implicit in the assumption of perfect competition—which Stigler seemed to do, but later writers clearly did not. Unlike Stigler, however, Braff does not mention the potential complications introduced by the presence of transaction costs. Braff also gives

---

20 University of New Hampshire; M.B.A. Columbia, 1953; Ph.D. Wisconsin, 1959. Braff's research focused on income distribution and labor economics. Unless otherwise noted, the information on degrees granted and research fields presented in this paper comes from the American Economic Association membership directories of the period.
us no sense for the means by which the efficient outcome would be reached; he simply states the result that penalties (presumably, though Braff does not say so, the assignment of liability for damages) or bribery may remove the discrepancy between private and social costs.

The one other place where the Coase theorem appears in this literature in the 1960s is in William Breit and Harold Hochman's *Readings in Microeconomics* (1968). While not a textbook, the volume was aimed at students, with the individual articles “chosen on the basis of their ability to enable the student to learn and to apply the basic logic” of price theory (p. xi). Breit and Hochman reprint “The Problem of Social Cost” in this collection and note in the introduction that,

Coase's paper, a classic work on the nature of social cost, comes to the rather surprising conclusion that private and social costs are equal under perfect competition. Since the manner in which our legal system assigns liability for damage does not affect private marginal costs of production, it has no effect on the composition of output. (1968, p. xiv, emphasis added)

This is the extent of their commentary on Coase's article. But given that there were only 40 references to “The Problem of Social Cost” in the economics journal literature by 1968, the label “classic” may have been a bit premature. Indeed, the books of readings in microeconomics published by David Kamerschen (1969) and Donald Watson (1969) do not include Coase's article.

Given the rather lengthy time that it often takes for new ideas from the journal literature to make their way into the undergraduate textbooks, it should come as no surprise that Coase's argument did not achieve significant currency in the intermediate microeconomics textbook literature in the 1960s, in spite of Breit and Hochman's reference to it as a “classic work.” When one adds to this the limited nature of the discussion of externality issues in the intermediate textbooks during this period and the

---

21 Breit: Virginia; Ph.D. Michigan State, 1961; research on antitrust; Hochman: Virginia; Ph.D. Yale, 1965; research on income distribution and social choice.

22 A few lines later, after introducing Buchanan and Stubblebine's article, they suggest that this article makes “clear the conclusions of Coase … must be modified,” showing that “his analysis is only applicable for inter-firm externality relationships” (1968, p. xiv).

23 Source: JSTOR. There are 55 references to “The Problem of Social Cost” during this period if one expands the JSTOR search to include journals in all disciplines.
entrenched nature of the Pigovian approach to externalities, it is just that much less surprising that Coase's argument was not taken up, either positively or negatively, with any degree of frequency.

The 1970s
The 1970s witnessed an increase in the attention paid to the Coase theorem in the discussion of externalities in the intermediate microeconomics texts, paralleling the increased discussion of the theorem in the journal literature.24 Indeed, it would be reasonable to say that an acknowledgment of the possibility of bargaining solutions to externality problems was beginning to become standard by the end of the decade. But the introduction was quite slow, and the treatments rather heterogeneous.

The dominant intermediate microeconomics text of the 1970s and 1980s was Edwin Mansfield's Microeconomics: Theory and Applications, the first edition of which was published in 1970. Mansfield introduces the reader to the notions of external economies and diseconomies in production and consumption in his chapter on “Welfare Economics” and provides a host of illustrations of each, noting that while “At first glance these cases might not seem very important … when all of these types of external economies and diseconomies are considered, their aggregate significance can be substantial” (p. 428), with perfect competition yielding outputs of the relevant goods that are diverge from the socially optimal amounts.

Though his brief (two page) discussion of externalities in the body of the text alludes to neither governmental nor Coase-theorem-type mechanisms for dealing with them, he ends his discussion with the following footnote:

It should be noted that private costs and benefits can in many instances be made to equal social costs and benefits by legal requirements that assign liabilities for damages and compensates for benefits. However, such systems are often impractical or too costly to be useful. (1970, p. 429n.10)

Mansfield, like Braff, gives the reader no sense for how these legal rules would equate

24 According to JSTOR, there were 93 mentions of the term “Coase theorem” in the economics journal literature in the 1970s, as opposed to only 2 in the 1960s. The references to “The Problem of Social Cost” during these periods were 164 and 49, respectively.
25 University of Pennsylvania; Ph.D., Duke (1955); research on technological change.
private and social costs, but he cites Stigler's *The Theory of Price* (first!) and “The Problem of Social Cost” in support of this statement. He also considered Coase's article of sufficient import to include it in the book of readings published to accompany his text (Mansfield 1971). Mansfield also does not tell us whether the result would be invariant, though we might infer that it would be from his cite to Coase.

However, there was little additional movement to incorporate the Coase theorem into these texts in the early 1970s. Robert Clower and John Due\(^\text{26}\) do not even discuss externalities in their *Microeconomics* (1972), while Ferguson (1972) and Watson (1972) simply reprint the discussions from their late 1960s editions. Though the second edition of Lancaster's *Introduction to Microeconomics*, published in 1974, contains an expanded treatment of the problem of external effects, he includes nothing about the Coase theorem or about the possibility of negotiated/market solutions. Rather, he contents himself with the standard Pigovian discussion, noting that, in the presence of externalities, the “attainment of optimality may require the deliberate distortion of competitive prices by taxes and subsidies” (p. 318).

Come the middle third of the 1970s, however, we witness something of a sea-change, with a number of textbooks devoting extensive attention to the theorem, sometimes by name and sometimes not. Lloyd Reynolds\(^\text{27}\) introduces the issue of negotiation over externalities in his *Microeconomics: Analysis and Policy*, published in 1973. In what is the most dismissive textbook mention of Coase's ideas to this point, Reynolds, after discussing the possibility of taxing the externality-generating activity, notes that

A variety of other approaches have been suggested, *some perhaps more fanciful than feasible*. For example, it has been suggested that where those injured by a polluting activity are clearly identifiable, they might get together and bribe the polluter to cease and desist. A chemical plant dumps wastes into a river which kill the fish in a lake located downstream, thereby depriving the fishermen on the lake of a pleasant recreation. The fishermen could form a club and pay the company to reduce its waste discharges sufficiently to allow the fish to survive. (p. 214,


\(^{27}\) Yale; Ph.D. Harvard, 1936; research on labor economics and development.
Needless to say, Reynolds is not enamored of this idea, nor does he probe it on its own terms to any great extent. For example, he says nothing about the efficiency of this result, nor how such an outcome would compare with a situation in which the chemical plant was not allowed to pollute without compensating the fishermen.

In fact, rather than looking at efficiency issues, Reynolds immediately moves to the question of fairness, saying: “But on second thought, this does not seem very fair. Why shouldn't the company pay the fishermen for damage inflicted on them, instead of the other way round?” (p. 214) Here, then, we see what appears to be the first textbook invocation of the notion of fairness in the context of the Coase theorem. For Reynolds, the idea that the victim of pollution should have to compensate the polluter is unfair, not an uncommon view, and one that is not infrequently mentioned in textbook and other discussions of Pigovian subsidies. This, of course, is not an argument against the Coase theorem, nor against the assignment of property rights and the use of negotiation to resolve externality problems. The theorem says nothing about how rights should be assigned—only that efficiency will result no matter how the rights are initially assigned. In fact, if Reynolds' standard of fairness is adopted, the theorem suggests that there is no efficiency concern with assigning rights to the victims, as efficiency will result in this case, just as when rights are assigned to the polluters.

Having made his brief challenge on the fairness front, Reynolds then turns to more practical issues of application, arguing that,

such private contracts would be hard to arrange, partly because of organizational difficulties, partly because of lack of any legal foundation. Rights to clean water, clean air, freedom from excessive noise, and so on are not recognized as rights under our legal system. Effective action, then, normally involves using the coercive powers of government. (1973, p. 214, emphasis added)

This conclusion about rights seem at odds with Coase's discussion and his examples from the British Common Law cases, which dealt with the very issues that Reynolds mentions here. Reynolds contends that negotiated solutions are not possible because of the lack of rights in water, clean air, and freedom from noise, but this is exactly Coase's point. It is

only when rights have been assigned, said Coase, that negotiation will take place. What Reynolds seems not to realize is that these rights are not recognized until they have been established by the courts (through the litigation process) or by statute. But once rights have been established, the negotiation contemplated by the Coase theorem can take place. In any event, his sense for the infeasibility of Coase theorem-like mechanisms is reflected in his subsequent examination of water quality issues, where he suggests that the three possible methods for dealing with water pollution are taxes, subsidies, and direct regulation—making no reference to negotiated solutions (pp. 215-18).

Reynolds' claim (and Coase's) about the infeasibility of negotiated solutions in the absence of property rights is called into question in the much more extensive and affirmative treatment of the theorem found in Charles Cole's Microeconomics: A Contemporary Approach (1973), where he discusses externalities in a chapter on “The Theory of Economic Welfare.” After laying out a standard treatment of the nature of externalities, Cole proceeds to elaborate an economic theory of pollution. He begins by pointing to the essential nature of property rights within a market system, invoking Adam Smith, who, he says, “pointed out that even the most ideally free market does not operate in a legal vacuum” (p. 471). In modern economics, Cole notes, “The several theories of market structure, from perfect competition to monopoly, presuppose the existence of property rights, the exercise of which is critical to the outcome of an economic situation” (1973, p. 471).

Cole examines the effect of property rights on the externality front through the example of the emission of industrial wastes into a stream over which no property rights have been assigned, the result of which is harm to non-industrial users of the stream. Line AW* in Figure 1 shoes the industrial users' net marginal benefit from pollution, which leads to an emissions level of W*, where the net marginal benefit of additional pollution is 0. Cole notes that the non-industrial users “could have in mind a schedule of payments that they would be willing to make to clean up the stream” (p. 472), represented by line OB, and, because the stream is valuable to the industrial users as a place to emit their waste, they “can calculate what they would have to be paid to reduce, or to cease

---

29 Which is not to say that it will. And, as we shall see below, others have argued that negotiation can take place in the absence of property rights assignments.

30 Cal. State, Long Beach; Ph.D., USC; research on income distribution and the social welfare function.
altogether, the pollution of the stream” (p. 472), represented by line AW*. If the amount that the non-industrial users are willing to pay for waste reduction exceeds the amount that the industrial users are willing to accept in payment, as it does in Figure 1, a bargain will be struck that leads to a reduction in or elimination of the waste discharge into the stream. The outcome will involve the non-industrial users paying the polluting firms up to the point where “the nonindustrial users' marginal valuation of the worth of pollution removal is equal to the firms' marginal valuation of what they must be paid to remove the … waste from the stream each day” (p. 473)—here W₁, at the intersection of 0B and AW*—and the division of the resulting welfare gain would be determined through the bargaining process (p. 473n.17). Interestingly, Cole reaches this result absent any assignment of property rights over use of the stream, in contrast to the claims made by Reynolds and Coase.

[Insert Cole Diagram About Here]

Cole then turns to an examination of the case in which rights over the use of the stream are assigned to the nonindustrial users. This would allow these users to force an end to pollution, as Cole notes, but at the same time, he says, the value to the industrial users of using the stream for waste disposal means that “it may be worthwhile for the owners of the plants to pay the owners of the stream some amount for being allowed to use the stream as a waste disposer” (p. 473).

Cole assumes that the industrial users' willingness to pay to use the stream for waste disposal is represented by A'W', which lies below AW*, “since the former curve reflects the evaluation of the firms when they have an unqualified right to use the stream in any way” (p. 473). Cole defends this asymmetry by claiming that, “If the title to the stream is vested in the nonindustrial users, the firms must pay for the privilege of being allowed to pollute the water, and they are willing to pay less for any given amount of pollution than the sum they would charge not to pollute an asset to which they have equal rights of access along with the others” (p. 473). Likewise, the minimum amount that the nonindustrial users would demand in payment (OB') is higher than the amount that they would be willing to pay to reduce the pollution damage (OB). The result, assuming
gains are available (which they are in this example), will be that the industrial firms will offer payments to the nonindustrial users, leading to an efficient equilibrium outcome at \( W_2 \), where the gain to the polluters from additional emissions is exactly equal to the marginal damage to the nonindustrial users.

There are at least three oddities in Cole's treatment. First, he never considers the case in which rights are assigned to the polluters—only no rights (for which he assumes a bargaining process akin to the case of rights being assigned to the polluters) and rights to victims. Second, Cole makes no specific assumption about the nature of transaction costs. All that we have at this point is a warning to the students: “At this point, a word of caution: before you conclude that we have found an easy economic solution to environmentally destructive conduct, be sure to read the section entitled 'Transaction Costs’” (p. 473). We shall take up this matter further, below.

Third, what is particularly interesting about Cole's discussion is the asymmetry of the equilibrium outputs in the two situations and thus (although Cole does not play up this point) the apparent invalidation of Coase's invariance result. Cole concludes that we get a different equilibrium level of pollution when the stream is not owned than when the stream is owned by the non-industrial users, a result that is an artifact of his assumption that when the non-industrial users have rights over the stream, the amount that they are willing to pay in order to secure use of the stream is less than the amount that they would be willing to accept in payment to reduce emissions (the value to the polluter of being able to dump waste into the stream), and likewise for the non-industrial users. This is clearly incorrect—certainly in the case of the polluter and also in the case of non-industrial users if they are producing agents. If the value of being able to discharge pollution is \( 0AW^* \), as Cole has assumed, then the industrial users would be willing to pay up to \( OAW^* \) in total to maintain their ability to discharge waste. Cole's assumption that willingness to pay and willingness to accept payment are a function of the assignment of property rights involves an implicit assumption of endowment effects—that ownership rights bring with them a psychological propensity to demand in payment an amount greater than what one would be willing to pay for that same resource. And while this came to be recognized two decades later as something that could render the Coase
Theorem inapplicable, endowment effects apply only to consumers, not to producers. And Cole certainly provides no justification that would support his assumption here.

Cole uses these results to draw conclusions not unlike those drawn by Stigler, and certainly the most theorem-affirmative conclusions since the publication of Stigler's text. But in doing so, he goes even further than Stigler by suggesting that assignments of property rights may be inferior to simply allowing the negotiation process to work in the absence of such rights, where as Stigler explicitly assumed the need for an assignment of rights to achieve equality between private and social costs. Cole's conclusions are worth quoting at length:

First, … the free market can yield a solution in the absence of government regulation and control. Government regulation might be satisfactory, but the government, in the absence of economic signals, may be unable to discover enough information on which to base sound decisions. Opening the problem to the market generates price information about the uses of the stream. This concrete information is helpful in making allocative decisions.

Second, we observe that government-established property rights do affect the free market solution. Property rights can bias the outcome. When the stream is open to public use, the amount of agreed upon pollution is greater than if the ownership of the stream were vested in the nonindustrial users. Therefore, if the government wishes to move in the direction of reducing pollution in a given area, or by some given industry, but is willing to allow the parties directly concerned to make their own agreements, the conferring of property rights on the polluted resource to those aggrieved by pollution will accomplish this end. (p. 474)

Cole goes on to note that while some may wish to see pollution eliminated entirely, the cessation of production (which he equates with the cessation of pollution) removes something valuable from society. As a result, “the market solution generally allows many competing voices to be heard and ends in a settlement not perfectly acceptable to any one person but not grossly unsatisfactory to a large majority of concerned individuals” (p. 475).

---

31 For a discussion of this in the context of the Coase theorem, see Kahneman, Knetsch, and Thaler (1990).
After all of this, and having ignored the issue of the possible role played by transaction costs to this point, Cole then moves to an examination of a situation where transaction costs, which he defines to include information costs, contractual costs, and policing costs, are positive. But here, too, Cole's discussion is unusual, in that he does not situate the analysis in a traditional context. Cole posits a situation where automobile traffic on a freeway generates noise pollution affecting those who live near the freeway. He suggests that one solution is for the community to agree to set up a system of tolls for use of the freeway, with the revenues generated used to compensate those affected by the noise pollution. Cole notes that if transaction costs associated with reaching an agreement about and then carrying out such a system are lower than the gains, then the program is beneficial and, in theory, could meet with unanimous approval, whereas that if transaction costs are greater than the gains, the program will not be worthwhile and would likely not garner unanimous approval (pp. 475-77).

It seems quite clear, though Cole does not mention this, that the transaction costs associated with agreeing to and implementing such a program are massive—sufficiently large to preclude any possibility of a unanimous agreement being reached. The lesson that the reader can take from this analysis seems to be that beneficial agreements will be consummated when the gains outweigh the associated transaction costs, but not otherwise. However, we are left with no sense for what role transaction costs might play in cases less extreme than the one presented here, such as the small numbers bargaining case that Cole had treated in is initial presentation of the negotiation result.

One final surprising feature of Cole's treatment, particularly given its extensive nature, is that he makes no reference to Coase, the Coase theorem, or “The Problem of Social Cost”—only to E.J. Mishan's wide-ranging survey paper, “The Post-War Literature on Externalities” (1971). This would explain Cole's concern with income/endowment effects, as Mishan gives extensive treatment to the impact of income effects and compensating and equivalent variations in his discussion of Coase's negotiation result. Unlike Cole, however, Mishan confines their domain to the consumer realm.

Nor do we find reference to Coase in David Laidler's quasi-Coasean discussion

---

32 Mishan, though, does not make the mistake of ascribing income effects to producers.
33 University of Manchester; Ph.D., Chicago; research on macroeconomics and monetary economics.
in his *Introduction to Microeconomics* (1974), where treats this subject in a chapter on “Further Analysis of the Interdependence of Allocative Efficiency and Distribution.” After sketching the problems caused by divergences between private and social cost in a situation where polluting firms damage fishing prospects in a river, Laidler says that there are two methods for internalizing the external cost. First, one could charge the manufacturers for the damage caused and compensate the fishermen out of these revenues. Second, “one could think of instituting a scheme whereby fishermen paid the manufacturer a certain sum for each fish taken from the river, thereby compensating the manufacturer for not polluting the water,” the effect of which would be to internalize the cost of waste emissions because fishing yields, and thus compensation payments would fall as waste disposal rates increased (p. 242). Laidler says that the choice among these options does not have efficiency implications: “The point here is that, as long as the cost of manufacturing operations, in terms of fish, or the cost of fish, in terms of manufactured goods, are reflected in the cash revenues and outlays of firms involved in these activities, then correct (from a Pareto point of view) decisions about resource allocation will be made” (p. 243). The only differential impact is on the distributional side (p. 243).

What seems to be absent from Laidler's discussion is any sense for the negotiation processes contemplated by the Coase theorem. Each of the methods Laidler examines seems to assume that the government determines the direction and level of payments. In the former case, the government effectively taxes the manufacturers and uses the revenues to compensate fishermen for their losses. In the latter case, the government appears to be required to specify a level of direct payment from the fishermen to the manufacturers. However, Laidler's commentary on this a bit further on in his discussion is, in fact, suggestive of Coase's influence: “In the first case we are essentially suggesting that the fishermen become owners of the river and rent out its waste disposal services to manufacturers, while in the second case that manufacturers become the owners of the river who may then sell fishing rights” (p. 243). However, Laidler does nothing to further develop this point—a fact that some might consider surprising, given that Laidler did his graduate work at Chicago.

But Laidler was not the only Chicago-trained economist to give a narrow treatment to Coase's ideas early on. When C.E. Ferguson passed away in the early 1970s,
Professor J.P Gould34 of the University of Chicago Graduate School of Business was brought in to undertake the 1975 revision of Ferguson's very popular text. The result was a mention of Coase's ideas in a footnote to the discussion of ownership externalities. This footnote states, simply, that “Coase has shown that in some cases external effects can be properly taken into account by profit maximizing behavior on the part of individuals,” along with a citation to “The Problem of Social Cost” (1975, p. 474n.16). That this note was added only after Gould became involved with the book may reasonably be ascribed to Gould's graduate training and place on the faculty at Chicago.

While the discussions of the Coase theorem's negotiated solution were relatively spartan in Laidler and in Ferguson and Gould, the same cannot be said for that of Charles W. Baird35 in his Prices and Markets: Microeconomics (1975)—a treatment of externalities heavily influenced by Coase. Though Baird lacks a direct Chicago connection, the term “fellow traveler” is certainly applicable here. Baird spend five years post-Ph.D. on the faculty at UCLA, where he was greatly influenced by Armen Alchian, whose career was closely connected with the Chicago school, with which the UCLA economics department had important intellectual ties during this period.36

Baird's discussion is illustrative of several of the tensions that affect the textbook discussions of the Coase theorem during this period, including the roles played by property rights and transaction costs and the unsettled nature of the definition or specification of the theorem itself. Baird lays great emphasis on the important role played by property rights in the context of externalities, noting early on in his discussion that “Private property rights are a way of forcing transactors to internalize their effects on others” and that they “naturally emerged in history whenever it became beneficial to cope with the problem of externalities” (p. 219, citing Demsetz (1967) and presenting historical examples). Having made the case for the importance of property rights here, Baird then moves to a new section on “The Coase Theorem,” which he leads off by stating that:

34 Ph.D., Chicago, 1966; research on stochastic problems in economic theory and the economics of information.
35 Cal-State, Hayward; Ph.D., Berkeley, 1968; research on regulation.
36 Baird was also a member of the Mont Pelerin Society, where he held the position of Vice President and served on the Board of Directors. See http://www.sbe.csuhayward.edu/~sbesc/baird.html.
In certainly one of the most important articles ever written about the problem of externalities, Ronald H. Coase demonstrated that with private property rights the only time that externalities can result in “market failure” (the inability of voluntary exchange to result in an optimal allocation of resources) is when exchange costs are high (p. 220).

Note that already in 1975, Baird was referring to this as “one of the most important articles” in the externality literature, in spite of the fact that it was dealt with in only about half of the textbook treatments of externalities to this point.

Baird then illustrates Coase's point using the farmer-cattle rancher example, assuming that there is a strip of land between the cattle rancher's property and the farmer's property over which rights have not been assigned. Baird further posits that the farmer is growing crops on this strip of land, and that the rancher feels free to allow his cattle to graze there, since no property rights have been assigned over that land. Baird shows via this example that no matter how rights are subsequently assigned, this strip of land will end up in its highest-valued use, whether that be grazing cattle or growing crops, and, from this, concludes: “As soon as the rights are assigned to some transactor they can be exchanged. If exchange costs are not too high the rights will ultimately reside with the transactor who places the highest value on them” (p. 221). Furthermore, he says, “the way the land is used is independent of the initial assignment of rights to the land” (p. 221). And, in contrast to Cole, Baird argues that the assignment of property rights here is essential, since “Conflict over the use of the land existed only when the rights to its use were unassigned.” But “[a]s soon as the rights are assigned the conflict is resolved through voluntary exchange” (p. 221), and the result is both efficient and invariant across alternative rights assignments.

Baird's treatment of transaction costs deserves some mention here. In the passage quoted above, Baird says that efficiency and invariance obtain “if exchange costs are not too high.” Elsewhere, though, he says that we get this result “if exchange costs are sufficiently low” (p. 222) and on another occasion that market failure will occur “only … when exchange costs are high” (p. 220). But what does he mean mean by “high,” “not too high,” and “sufficiently low”?

---

37 He does allow, however, that while ultimate land use is invariant, “the wealth [of each party is] affected by the initial assignment of rights” (p. 221).
high,” and “sufficiently low”? There is one point at which he makes his meaning explicit, doing so in the context of another example, this one dealing with a factory that emits pollution that damages the surrounding neighborhood:

“If exchange costs are not greater than the difference between the value of the air as a waste disposal system and the value of clean air, the outcome will be the same no matter how the rights are assigned” (p. 221).

For Baird, then, both efficiency and invariance are assured so long as the gains from exchange exceed the level of transaction costs.

But this statement is incorrect and different from what Coase said in “The Problem of Social Cost.” Coase said:

It is necessary to know whether the damaging business is liable or not for damage caused since without the establishment of this initial delimitation of rights there can be no market transactions to transfer and recombine them. But the ultimate result (which maximises the value of production) is independent of the legal position if the pricing system is assumed to work without cost. (1960, p. 8, emphasis added)

While Coase does allow for the possibility of negotiation in the presence of transaction costs when he takes up the role of transaction costs later in his article (1960, pp. 15-16), that is not where he puts his emphasis, and he makes no mention of the issue of invariance in this context. Thus, Baird's position is consistent with Coase (and opposed to Cole) on the property rights issue, but departs from this when it comes to the influence of transaction costs, as is clear when he finally presents the reader with an explicit statement of the Coase theorem:

In sum, the Coase theorem states the following: if the property rights to any resource are assigned rather than unassigned, and if exchange costs are sufficiently low, the ultimate use of the resource is independent of the initial assignment of the rights to the resource (although the initial assignment of rights does affect the wealth of the transactors involved) (1975, p. 222).

Baird then moves on to two additional applications of the Coase theorem—one affirmative and one potentially problematic. The first takes the insights of the Coase theorem beyond the problem of externalities and into the realm of employment law, using
the example of the National Football League player draft, where Baird points out that “the Coase theorem indicates that the distribution of talent among the teams is independent of which team gets the draft rights to any player” (p. 222) since players will be exchanged so that each one ends up with the team that values him the most (pp. 222-23). 38

Baird's second application is the case of air pollution, where large numbers of agents are impacted by the externality. Baird notes that assigning rights to things like air, along with the presence of large numbers of parties to the externality, render problematic the Coase theorem's applicability to things like air pollution. But here we meet further inconsistency and confusion in Baird's attempts to grapple with the effect of transaction costs. Having already claimed at multiple points that the Coase theorem is operative in the presence of transaction costs, Baird now says that “The Coase theorem tells us that if … exchange costs were zero” optimality would result, but that transaction costs may well outweigh the gains from exchange in situations such as large numbers air pollution (p. 223). Why Baird suddenly reverts to the zero transaction costs assumption is a mystery. Interestingly, though, he does not completely write off the market mechanism, even for large numbers externalities; rather, he suggests that marketable pollution permits offer the prospect of placing pollution rights in the hands of those who value them most highly (p. 224)—the first instance of a linking of marketable permits to the Coase theorem in this textbook literature.

Oddly enough, there is not a single reference to the Pigovian approach and the attendant tax, subsidy, and regulatory remedies in Baird's entire discussion of externalities. While some might consider this a natural consquence of Baird's connection with UCLA, Alchian, and Mont Pelerin, George Stigler travelled in these same circles but gave the Pigovian approach significant and positive play in his text—both in the 1966 edition that introduced the Coase theorem and in his 1987 revision.

A similarly positive treatment of the Coase theorem is provided by Donald Dewey, 39 in his Microeconomics: The Analysis of Prices and Markets (1975), where Dewey discusses Coasean bargaining in a chapter on welfare economics. Dewey begins

38 Simon Rottenberg (1956) makes a similar point with respect to the market for Major League Baseball players.
39 Columbia University; M.A., Chicago, 1943; Ph.D., Iowa, 1947; research on industrial organization.
his discussion of externalities by defining them as follows: “An externality exists when some activity of party A imposes a cost or confers a benefit on party B for which party A is not charged or compensated by (through) the price system.” (1975, p. 221) But then he urges the student to “Read this definition carefully,” as “We shall presently see that an externality can be charged or compensated for through 'side-bargains' outside the price system, i.e. through a private deal between beneficiaries and victims of the externality” (p. 221).

After introducing the readers to the Pigovian tradition (pp. 221-22), Dewey asks them to suspend judgment on the question of whether the equation of social and private cost increases economic welfare and whether welfare can be increased by forcing producers to bear the full costs of their actions and turns to what he calls “Coase's problem.” Here, Dewey reproduces Coase's example of the farmer and the cattle rancher to show that changes in assignment of liability for damages as between the rancher and the farmer do not affect the output of cattle and crops, saying that “The implication of Coase's analysis is that, under some rather extreme assumptions, the distinction between private cost and social cost is entirely without significance for economic welfare” (p. 225, emphasis added). Yet, in spite of his claim about the “extreme” nature of the assumptions, Dewey is quick to credit the feasibility of this result in small numbers cases. He notes that Coase's example includes only two parties, so “it is reasonable to suppose that the contract cost of arranging a deal between the two is negligible.” Given this, he says, “we can assume that a deal will be made because it is in the interest of both parties” (p. 225). However, he continues, when there are many parties to the externality, “the contract costs of negotiating a deal may be so great that it cannot be arranged” (p. 225).

We are getting a sense, in some of these mid-1970s treatments, that the mechanisms contemplated by the Coase theorem have a sort of naturalness to them—natural in the sense that if there are gains from exchange available in the presence of externalities, the affected parties will naturally attempt to exploit them. This perspective is made explicit in Walter Nicholson's presentation of the theorem in the first edition of his Intermediate Microeconomics and Its Application (1975), where he includes a chapter on “Externalities and Property Rights.” After showing how externalities generate

---

40 Amherst College; Ph.D. MIT, 1970; research in labor market policy.
inefficiencies in perfectly competitive markets and how taxes and mergers can be used to establish efficient levels of production (1975, pp. 528-31), Nicholson asks,

if firm $Y$'s actions [polluting a shared river] impose a cost on firm $X$ [a downstream user of the river], why does firm $X$ not bribe firm $Y$ to cut back its output? Presumably the gain of such a cutback to firm $X$ would exceed the loss of profits to firm $Y$, and some bargaining arrangement might be worked out which would monetarily benefit both parties. Both firms would be irrational not to recognize such a possibility, and it would seem that the benefits of internalization could be obtained without the necessity of a merger (p. 531)

Nicholson makes this “Why not bribes?” question seem completely natural, yet until 1959 the mere possibility had not been contemplated in the externalities literature.

However, though Nicholson presents the negotiation-bribery process as both natural and logical, his subsequent discussion also suggests that it may be slightly counter-intuitive.

Suppose, he says, that property rights in the above-mentioned river are assigned to one of the parties. Nicholson suggests that if property rights are assigned to the polluter, it might seem as though pollution would persist, whereas if the victims were assigned the property rights, there would be no pollution at all. But this ignores the fact that the two parties might bargain to an outcome different from that suggested by these initial property rights assignments (p. 531). “Indeed,” he says, “several authors have argued that if bargaining is costless, the two parties left on their own will arrive at the efficient output …, and this result will be independent of who 'owns' the river” (pp. 531-32).  

Nicholson then proceeds to show how the efficiency and invariance results will come about through bargaining, though he never attaches the “Coase theorem” moniker to this idea. Commenting on this result, Nicholson echoes Stigler's (1966) reaction when he says that

*The effect of this demonstration is startling.* Traditional arguments, at least within this simple model, have been show to be wrong in their assertions that free markets cannot accommodate externalities. When a broad enough view of the possibility for free exchange is taken, the allocation difficulties raised by the

---

41 In spite of his claim that “several authors” have made this argument, Nicholson references only Coase (1960) in his accompanying footnote.
externality are readily handled by bargaining between the individuals involved. Even more interesting is the fact that the free market allocation of the use of the river is independent of the actual ownership of the river. The description of the allocation process is completely symmetrical, and the results are identical to those that would prevail if an “ideal” merger were to take place. (pp. 532-33, emphasis added).

Nicholson goes on to point out that the assignment of rights, like all other allocation questions, does have distributional effects, but without making reference to any one outcome being more “fair” than the other. He also notes that the analysis “hinges crucially on the assumption of zero transaction costs,” that the presence of transaction costs may be a barrier to achieving efficiency, and that the allocation of resources “would probably not be independent of the way in which property rights are assigned” (pp. 533-34).

Nicholson's subsequent discussion of environmental externalities, which involve large numbers of parties, picks up on this last point, illustrating how high costs of transacting can impact, and even preclude, the bargaining arrangements contemplated in his previous discussion (pp. 534-37). However, he considers the zero transaction costs discussion sufficiently powerful that he leads off his discussion of bargaining costs here by saying, “In view of the analysis of the previous two sections a natural first question to ask would be why markets for disposal [of waste, i.e., pollution] have not developed” (p. 536). For Nicholson, then, the standard question concerning externalities is stood on its head: It is not, “Externalities cause market failure; what should be done about it?” Rather, it is, “Why does a market not exist to efficiently deal with this issue, given that it should?” The answer that he gives is high costs of bargaining. Lacking these, a negotiated solution would emerge naturally.

James P. Quirk's treatment of the theorem in his *Intermediate Microeconomics* (1976) is distinctive for several reasons. His chapter on “Externalities and Public Goods” presents the basic theory of externalities and the mechanisms for dealing with them, and, having noted possible government solutions and the informational difficulties that attend them, he suggests that “One alternative is direct negotiation between the firms or

---
42 Cal Tech.
consumers affected by the externalities and the producers of them” (p. 323). But then Quirk proceeds to situate the discussion in a market context rather than in small numbers negotiation: “Clearly,” he says, “if pollution were a product that was bought and sold in competitive markets just like other products, then again a Pareto optimum would be achieved ...” (p. 323). To illustrate this, Quirk lays out a market for pollution tickets, sold by the polluter, that entitle the holder to force the polluter to reduce his output/pollution by one unit, and, with nice mathematical flourishes, shows that the price of pollution-generating good will be equal to its marginal social cost, meaning that the output of that good will be Pareto optimal. Given this, he is able to conclude that “Establishing a competitive market in pollution tickets enables the economy to attain a Pareto optimum through decentralized decision making, which is informationally more efficient than centralized direction” (p. 324).

Quirk then moves to a new sub-section titled, “The Coase Theorem,” which he begins by noting that “In a world with zero transaction costs, all externalities will be internalized through direct negotiations between the consumers or firms producing externalities and the consumers or firms whose decisions are affected by them” (p. 324). The case of pollution tickets is one example of this result, but Quirk then notes that legally enforceable property rights would also generate this result. If the harmed party has the right to be free from harm, the polluter will bribe the victim to allow it to pollute. Quirk uses some elementary mathematics to demonstrate that this will result in the same Pareto optimality conditions that obtained when the polluter was selling the pollution tickets (i.e., when the polluter had the property right). This marks the first mathematical demonstration of the Coase theorem result in the intermediate textbook literature the authors of which—like most commentators in the scholarly literature—had to this point contented themselves with intuitive, numerical, and graphical demonstrations. And where previous commentators had focused on property rights and negotiation as the domain of the theorem, Qirk sees things somewhat differently, contending that:

This result is a special case of what is known as the Coase theorem. The Coase theorem, due to Ronald Coase, a leading economist in the field of law and economics, asserts that the output mix for the economy is identical, whatever is the assignment of property rights to the X and Y firms, so long a there are zero
But Quirk apparently considers this as only the professionally-accepted statement of the theorem, and slightly less than accurate. He immediately qualifies this statement with the assertion that income effects associated with different assignments of rights lead to different price-output combinations, based upon which he suggests that “a restatement of the Coase theorem is in order, namely”:

*Ignoring income effects, the output mix for the economy is identical, whatever is the assignment of property rights to the X and Y firms, so long as there are zero transaction costs.*

This is the first explicit mention of the income effects qualifier in a textbook statement of the theorem (apart from Cole's somewhat confused assumption that producer behavior is influenced by income or endowment effects that attend the assignment of rights), though this argument had been present in the journal literature since the latter part of the 1960s.43

Based on this, Quirk concludes (reverting to his example of a market for pollution tickets) that “when transaction costs are zero and when there is no market power in the market for 'pollution tickets,' then externalities cease to pose a special problem for the economy,” from an efficiency point of view (p. 325). However, he continues, both of these conditions are frequently violated, which means that other solutions will be necessary. But having said this, Quirk does not entirely close the door on the Coase theorem's applicability: “This is not to say that private agreements between affected consumers or firms and the producers of externalities cannot play a role in the internalization of externalities, but rather that for many forms of externalities, some alternative to markets for pollution tickets is required” (p. 326).


43 See note X, above.
44 UCLA; Ph.D., Harvard, 1950; research on economics of information, though he had done some widely cited work on the economics of water supply earlier in his career (Hirshleifer, DeHaven, and Milliman 1960).
of economic agents—in production, consumption, or exchange—affect the interests of other economic agents in a way not setting up legally recognized rights of compensation or redress” (1976, p. 449). Hirshleifer then brings Smith's invisible hand notion into the discussion—its first (but certainly not last) appearance here—noting that these externalities, “whether beneficial or harmful, lead the Invisible Hand astray,” representing “sources of social gain or loss that do not get translated into the market signals that constitute the Invisible Hand,” and thereby causing agents to engage in activities in amounts greater or less than would be dictated by efficiency (p. 449).

Hirshleifer points to three mechanisms for dealing with externalities: taxes and subsidies, single ownership of the externality emitting and receiving activities (i.e., merger), and “property reassignment,” and it is the last of these that leads him to take up “Coase's Theorem.” Hirshleifer contends that “The fundamental source of the externality phenomenon is an inappropriate assignment of property rights,” and that “If the span of actual effect always coincided with the span of legally-recognized control, externalities would not occur” (p. 450). To illustrate this, Hirshleifer considers the example of the pollution of river water, arguing that,

the downstream user should ideally be assigned a property right to receive water of some specified quality from the hands of the upstream user. If the first user degrades the quality below this level, he should be liable for the damages suffered by later users. Conversely, if the upstream user leaves the water in a better condition than legally required, he should in principle be entitled to compensation from later users. (p. 450)

While Hirshleifer's contention that rights “should ideally” be assigned to the downstream users might raise an eyebrow, we should not be overly concerned with this as a distributional or equity statement, since he is making reference here to both positive and negative externalities, which means that the downstream users would be receiving compensation in the one case and paying it in the other.

Like Nicholson, Hirshleifer warns the student away from the view that the establishment of property rights here fixes the result:

Such a definite assignment of property rights in water quality would not, as might first be thought, simply freeze the pattern of uses in accordance with the legally
defined rights. Should some other arrangement be mutually preferred, the parties concerned could negotiate an exchange of property rights. If the downstream user was initially entitled to absolutely pure water, for example, the upstream producer could nevertheless buy from him the right to pollute the river to some specified degree. (pp. 450-51)

Hirshleifer says that “This last concept has been generalized into what is known as Coase's Theorem” (p. 451, with reference to “The Problem of Social Cost” in footnote) and then explicitly links “Coase's Theorem” to Smith's invisible hand proposition:

The thrust of Coase's Theorem is that the Invisible Hand is really much more effective than the argument about externalities at first suggests. For there are natural market forces at work tending to bring the “external” effects into the calculations of the responsible parties. If a producer initially owns the right to generate a harmful externality, those adversely affected can offer him a financial reward for not exercising that right. Or if the other parties are initially entitled to be safe from the externality, it is up to the producer to offer terms of compensation at which they will accept a degree of harm. (In the case of a beneficial externality, of course, the argument applies in reverse.) So long as the legal rights are well-defined and marketable, the Invisible Hand will tend to lead the parties to an efficient outcome, i.e., to a result that exhausts all possibilities for future mutual gain. (p. 451)

To this point, Hirshleifer makes no reference at all to transaction costs, including to the necessity of a low or zero transaction cost assumption for the Coase theorem to hold. Nor does he take up the question of invariance. For Hirshleifer, the Coase theorem seems to be about Pareto-improving bargains, without reference to a unique optimal result.

Hirshleifer clearly considers the Coase theorem result applicable to the real world, for he references Cheung's (1973) discussion of contracting between beekeepers and apple orchard owners in claiming that, contrary to the standard story, “the Invisible Hand [is] alive and well!” on the externality front (p. 451). But he then goes on to consider the theorem's further implications. Where Cole had suggested that the negotiations contemplated by the theorem would eliminate potential inefficiencies in employment in a draft of professional sports players, Hirshleifer contends that in another realm, that of a
monopoly supplier, the theorem predicts badly:

So far so good. But, Coase's Theorem proves too much! Consider the case of simple monopoly, which (by the standard analysis) leads to an inefficient outcome—underproduction of the monopolized good. But wherever there is inefficiency there must be a mutual advantage of trade. Then, according to Coase's Theorem, the Invisible Hand should lead the monopolist and his customers to get together in some efficient arrangement; the monopolist can be made at least as well off as before, while the customers will do better. So monopoly should disappear, along with externalities! (pp. 452-53)

Of course, monopolies do not disappear via Coase theorem-like mechanisms, which, for Hirshleifer, points up a key problem with the application of the Coase theorem:

The problem with the application of Coase's Theorem to “solve” the problem of monopoly, as in its application to “solve” the problem of externalities, is that the negotiations required may be impracticable. Where large numbers are involved, it may be unfeasible to secure a sufficient degree of unanimity. (p. 453)

Hirshleifer points to hold-out problems in large numbers situations as a factor that makes unanimity “almost impossible” (p. 453).

But the problems here, for Hirshleifer, are not confined to large numbers situations: strategic behavior in small numbers bargaining may also prevent efficiency-enhancing negotiated settlements, meaning that even with a small number of affected parties, “the mere possibility of a mutually advantageous agreement does not guarantee that such an agreement will be reached” (p. 453). The possibility that strategic behavior may invalidate or impact the applicability of the Coase theorem had been present in the journal literature for some time, but Hirshleifer was the first to raise this issue in the intermediate microeconomics textbook literature. Given the paucity of treatments of game theory in the undergraduate textbooks at this stage, it is not surprising that this argument had not been raised previously. But it is also no surprise that it should have been raised, and raised first, by Hirshleifer, given his interest in conflict and strategy.

Even with these potential complications, however, Hirshleifer is led to conclude

---

45 See Medema and Zerbe (2000) for a discussion.
46 See Rangil (2009) for a discussion of Hirshleifer's work in this vein.
that “Coase's Theorem does clarify our ideas as to the fundamental meaning of so-called 'externalities'.” But the import of the theorem, for Hirshleifer, goes beyond theory per se: “From a policy point of view, it suggests *that the unambiguous assignment of exchangeable property rights*, whatever the specific nature of the assignment may be, might be an important step in promoting the achievement of efficiency” (p. 453).

While it may be tempting to conclude at this stage that the treatment of the Coase theorem was becoming a standard, if not completely settled, component of the intermediate microeconomics textbooks, such a conclusion would be premature, as there were a number of books published in the second half of the 1970s that ignored the Coase theorem. Leftwich's\(^{47}\) *The Price System and Resource Allocation* (1976), now in its sixth edition, continues to ignore Coase's ideas. Robert Meyer's\(^{48}\) *Microeconomic Decisions* (1976) includes a very brief discussion of externalities but also makes no reference to the theorem. He does, however, note the bees-orchards example of an externality and says, “Under existing definitions of property rights, it is not possible for the orchard owner to collect for the services provided by the trees, since no market or market price for the service exists” (1976, p. 368)—this some three years after Cheung (1973) had published his article showing that such arrangements do indeed take place. Likewise, David Kamerschen\(^{49}\) and Lloyd Valentine do not discuss the Coase theorem in their *Intermediate Microeconomic Theory* (1977), though, interestingly, they do cite Gary Becker's work on human capital in their discussion of externalities (here, from education) as imperfections in competitive markets (p. 278). Meanwhile, Robert Dorfman provides an even more brief treatment of externalities in the second edition of his *Prices and Markets* (1978) than he did in the first, one that is more pessimistic about market solutions than was that in the 1967 edition. Here, Dorfman was clearly swimming against the tide, given that that treatments of externalities were expanding in the intermediate micro texts and the Coase theorem was now being rather widely discussed in both the scholarly and textbook literatures.\(^{50}\)

\(^{47}\) Oklahoma State; Ph.D., Chicago, 1950; research on economics of higher education.

\(^{48}\) Berkeley; Ph.D., Stanford, 1968; research on technological change, though he also has a 1971 paper on externalities.

\(^{49}\) Kamerschen: Georgia; Ph.D, Michigan State, 1964, research on industrial organization and antitrust; Valentine: Cincinnati; M.A., UCLA, 1959.

\(^{50}\) Dorfman lists environmental economics as his research area in the 1978 AEA Directory, which makes
assignment of property rights can internalize costs, Dorfman contends that “There is no way in which individuals can be confronted with the alternatives in a realistic context and thereby be induced to disclose their preferences with any precision. Those decisions have to be made by political processes (p. 174, emphasis added). Whether this implies a lack of familiarity with the Coase theorem or simply a dismissal of it, we cannot tell. Finally, Athanasios Asimakopoulos' treatment of externalities in his An Introduction to Economic Theory: Microeconomics (1978) mentions Coase and “The Problem of Social Cost,” but only to note that “Ronald H. Coase has argued that divergences between private and social products are not sufficient to justify governmental measures to counteract them—citing Coase's statement about the need to examine the costs of various mechanisms for dealing with the social cost problem (p. 436). While this gets much closer to the main message of Coase's article than do those treatments that focus on the Coase theorem, it reflects a far different view than we see in other textbooks that treat Coase's ideas.

But for those inclined to introduce students to the Coase theorem in their texts, we do begin to see some measure of stabilization in the treatment of the theorem as we near the end of the 1970s. While there remain some divergences in the views about the real-world applicability of the negotiation result, the theorem is consistently referred to by name and is increasingly treated as an integral part of the theory of externalities, with less in the way of reference to the “surprising” nature of this result, particularly among those who were publishing revised editions of their texts. Four of the books published in 1978 and 1979, one new and three in revision, give us a good sense for how the treatment of the theorem was beginning to stabilize a bit on certain fronts and for the tensions that remained.

Roger Leroy Miller, a professor in the Law and Economics Center at the University of Miami, was the first scholar working in the field of law and economics to pen an intermediate microeconomics text (Intermediate Microeconomics, 1978), and, not surprisingly, he devotes ample attention to the Coase theorem in his chapter on “Externalities, Public Goods, and Market Failure.” Miller, like so many others ascribes

---

51 McGill; Ph.D., Cambridge, 1959.
52 Ph.D. Chicago, 1968; professor in the Law and Economics Center at the University of Miami.
the externality problem to an absence of property rights over the relevant resources, arguing that “the crux of the externality problem” is that “Whenever property rights are indefinite or non-existent, social costs will differ from private costs” (p. 461). After noting how property rights facilitate efficiency-enhancing contracting, Miller links this to transaction costs:

We can predict that whenever contracting and/or enforcement of such agreements becomes exceedingly expensive or difficult, social and private costs will diverge. Whenever contracting and enforcement of property rights are relatively costless, social costs and private costs will tend to be one an the same. (1978, p. 461)

To this point, Miller has not explicitly introduced Coase. But once again, we see an attempt to normalize this result: Miller contends that because “almost all” economic activity involves contracting and the transfer of property rights, and because this process internalizes all relevant costs, divergences between private and social costs are not a matter of concern for most economic activity (p. 461).

Miller then goes on to examine what happens “When property rights do not exist,” devoting an entire section to this question. Here, he joins Cole in suggesting that, Surprisingly enough, even when property rights do not exist, private costs can equal social costs; and this is particularly true when transaction costs are minimal. In such situations, there is no misallocation of resources. (p. 461)

Instancing the case of a landowner who plants a tree that blocks the lake view of the owner of an adjoining parcel of land, Miller claims that though no rights exist over such views, the landowner whose view is blocked by the tree can bribe the other landowner to trim the tree so that it does not obstruct his view of the lake, and that a mutually beneficial bargain will be struck if the bribe is at least as great as the value placed on the tree by its owner. If, on the other hand, landowners had the right to a lake view, then the tree grower would have to bribe the other landowner for permission to block his view. But regardless of whether or not such rights over views exist, the same resource allocation obtains (p. 462).

Miller continues by examining a third case—where the tree grower has the property right in the view of the adjacent landowner. This case, he says, parallels the “no property rights” case, meaning that the adjoining landowner will attempt to bribe the tree
grower to trim the tree, and a bargain will be struck if the bribe is at least as great as the diminished property value from the trimmed tree, with the outcome being identical to that in the first two cases (p. 462).

Here, then, Miller takes us a step beyond Cole. Where Cole had asserted the identical nature of the no rights and rights to the victims cases, Miller says that this also extends to the case where the damaging party is assigned the relevant rights. Why do these three cases give rise to identical allocations of resources? Miller argues that it is because,

In each and every situation, opportunity costs exist and will be taken into account. The contracting involved is relatively simple. Only two parties are concerned, and verbal agreements could be made relatively easily. This particular example leads us to a strange, but nonetheless valid, conclusion. (p. 463)

And, indeed, a conclusion at odds with Coase's assertion regarding the essential nature of property rights assignments.

But then Miller begins to confuse us. Having just noted that no property rights are necessary to get an efficient and invariant outcome, he goes on to say that,

When transaction costs are minimal, it does not matter who has the property rights in the resource under study, as long as somebody does. The resource will be used in exactly the same way regardless of the property right structure. Otherwise stated, if transaction costs are small, the allocation of resources does not depend on who has property rights in those resources. (p. 463, emphasis added)

It is not at all clear why Miller suddenly insists that someone must have the property rights, given that he has already gone to great lengths to show the reader that no property rights assignment is necessary to achieve the efficient outcome. And, of course, while Miller asserts invariance here, this is not guaranteed in the presence of non-zero transaction costs.

But the issue of property rights is not the only instance in which Miller's analysis becomes contradictory and confusing, as we can see from his subsequent attempt to link his result to Coase:

The above statement is generally called the Coase theorem, named after Ronald R. [sic] Coase. He demonstrated that in a world of zero transaction costs, the wealth-
maximizing behavior of individuals takes account of external effects. (p. 463)

The problem here is that the “above statement” of the Coase theorem to which Miller refers explicitly allows for non-zero transaction costs. The situation gets even more confusing when we come to Miller's statement in his end-of-chapter “Glossary,” where he states that the allocation of resources will be unaffected by the assignment of rights “When transactions costs are zero” (p. 469, emphasis added). Miller, then, seems to be of two minds regarding what Coase and the Coase theorem posit in the way of property rights and transaction costs.

Having addressed the issue of negotiation over externalities when transaction costs are low or zero, Miller next considers the case where these costs are “high,” noting both that this results when there are large numbers of parties to the externality and that, because of this, “we cannot predict that private costs will be equal to social costs” in such situations (p. 463). Thus, he says, while “indefinite property rights in and of themselves are not always a problem if contracting can be done cheaply,” the possibility of high transaction costs does pose a problem (p. 463). Yet, he says, large numbers are not necessarily a barrier here, as the advent of class action lawsuits has “substantially lowered” the transaction costs associated with litigating environmental claims involving large numbers of parties (p. 463).

Miller also takes up the issue of fairness here, but does so with a very different take on the issue than we have seen thus far. He argues that any precise definition of property rights is “not really 'fair'” (p. 464), instancing a situation where a polluting factory is made liable for damages caused. Miller points out that this liability assignment puts the cost of the pollution on the “Customers, and employees of and the stockholders in that factory.” But since, in fact, the air is common property, he contends that such a decision is “arbitrary,” and thus unfair (p. 464). While not going so far as to say that assigning rights to polluters is fair and assigning them to victims is not, the mere

53 Look closely at what Miller says here—that Coase assumed zero transaction costs but that the Coase theorem assumes only that transaction costs are small. Oddly, in his statement of the theorem in his end-of-chapter “Glossary,” Miller indicates that the theorem assumes that transaction costs are zero (p. 469).
54 Miller also points out that the assignment of rights affects the distribution of wealth and notes that this analysis “ignore[s] income effects on the demand curves for” the resources in question (p. 463n.4).
55 Miller also points out that the advent of class action lawsuits has “substantially lowered” the transaction costs associated with litigating environmental claims involving large numbers of parties (1978, p. 463).
introduction by Miller of the idea that assigning rights to victims can be considered unfair marks a significant departure from previous treatments.

Miller is also among the increasing number of textbook authors who discuss Steven Cheung's (1973) analysis of beekeepers and apple orchard owners as an illustration of the Coase theorem's applicability, one that overturns a classic example of a case where ostensible market failure necessitates government intervention (pp. 466-67). Like Hirshleifer, Miller draws a very broad conclusion from Cheung's results, claiming that:

Whenever there are expected gains to be made from contracting among different parties in an economic system, and as long as the cost of making and enforcing the contract is less than the expected gains, we generally observe the making of written or oral contracts. (p. 469, emphasis added)

Now Miller allows that this does not apply to all externality situations, since “in the cases of automobile pollution, destruction of scenic beauty, and over fishing, the costs of negotiating and enforcing contracts clearly exceed the potential gains” (p. 469). However, he does not seem to believe that this is necessarily the end of the story. We have already noted Miller's contention that the advent of class action suits reduces transaction costs in large numbers situations and so can facilitate Coasean bargaining. Here, he generalizes this point, suggesting that while transaction costs may preclude certain efficiency-enhancing bargains at present, this is “because we do not yet have any cheap (efficient) way to define, measure, and enforce property rights to the clean air, scenic beauty, and the fish swimming in the ocean” (p. 469, emphasis added). The implication, of course, is that the passage of time may yield mechanisms for reducing transaction costs on these fronts as well.

While Miller's text reflects the perspective of an author enamored of the Coase theorem, Mansfield's 1979 edition offers us a useful illustration of the case of an earlier minimalist treatment being developed in a way that reflects the increasing professional acceptance of the theorem as a subject worthy of consideration. Mansfield's second edition, published in 1975, had reprinted exactly the discussion from the first edition (which mentioned Coase's result only in a footnote), but he greatly expands his treatment of externalities in the third edition (1979), introducing a new chapter on “Public Goods,
Externalities, and the Role of Government,” which includes a section on “Property Rights and Coase's Theorem.” Having laid out the mechanics of the externality problem and the use of taxes and regulations to deal with externalities, Mansfield begins this new section by noting that “Under certain circumstances, a perfectly competitive economy will allocate resources optimally, even in the face of seemingly important external benefits or costs” (1979, p. 481). This result, says Mansfield, derives from the fact that,

If the costs of negotiating are not too large, the parties responsible for an external benefit or cost can negotiate with the parties affected by this externality. For example, if the downstream water users are entitled to water of a particular quality, a firm may purchase from them the right to pollute the stream to a certain extent. Or the downstream users may purchase form the firm the right to water of better quality than they would otherwise be entitled to. In this way, the externality is brought into the calculations of the interested parties. Thus there is no divergence between social and private costs because a firm or individual that harms others must pay for this right, and a firm or individual that benefits other receives compensation. (p. 483)

He continues:

According to Ronald Coase of the University of Chicago, a competitive economy will allocate resources efficiently, even in the face of seemingly important external effects, if it is possible to carry out such negotiations at little or no cost. … Moreover, Coase has shown that, regardless of which party is endowed with the relevant property rights, the outcome will be the same. (p. 483)

This result has assumed far more import for Mansfield in 1979 than it had in his 1970 and 1975 editions. Far from being merely a footnote, he argues that “This theorem, often referred to as Coase's theorem, is of considerable interest and importance” (p. 483).

Mansfield goes on to point out, though, that “it is important to recognize that [the Coase theorem] assumes that the costs of negotiating and contracting by the interested parties are relatively small” (p. 483). He fleshes this out by noting that moderate transaction costs may make negotiations impractical, as when the number of involved parties is large, but even in small numbers situations “the fact that mutually advantageous deals are possible does not mean that they will necessarily be consummated” (pp. 483-
84). In the end, Mansfield adopts a rather middle-of-the-road position, arguing that, in spite of the problems introduced by transaction costs, “Coase's theorem suggests that the assignment of well-defined property rights might help to promote economic efficiency,” since this offers the possibility of efficiency-enhancing negotiated solutions in small numbers situations (p. 484).

By the time that he published the third edition of his text in 1979, Reynolds, too, seems to have changed his view about the status to be accorded to these ideas. This is particularly true of the use of property rights assignments and negotiation to deal with externality problems—an approach that he had called “more fanciful than feasible” in his 1973 discussion (1973, p. 214). Where Reynolds had previously claimed that “Rights to clean water, clean air, freedom from excessive noise, and so on are not recognized by our legal system” (1973, p. 214), he now acknowledges that “A common legal arrangement for taking care of neighborhood effects is through private damage suits by injured parties” (1979, p. 303) and proceeds to show how the property rights so established can lead to a negotiation process that induces the polluters to emit only the efficient amount of pollution (1979, pp. 303-304).

Though Reynolds gives more credence to the property rights cum negotiation solution than he had in his 1973 edition, he clearly is not enthralled by the prospect of using property rights assignments as a basis for externality policy, noting that this approach is not without its own set of problems. Interestingly, though, it is not the transaction costs associated with the negotiation process that bothers Reynolds; indeed, he never mentions them. Rather, it is other costs related to the attempt to establish property rights that concern him:

The apparent advantage of this system is that it avoids the need for a large regulatory bureaucracy. But if the burden on executive agencies is reduced, the burden on the courts would be increased. The difficulty that individuals may be timid, uninformed, and reluctant to sue could be met by permitting “class actions” on behalf of a whole population of injured residents. A more serious difficulty is...

---

56 For example, says Reynolds, “legislation could be passed which forces polluters to compensate for damages caused” and this could be made “enforceable through damage suits,” which would have the effect of “creating a kind of property right in the environment, which could be defended in the same way as other property rights” (1979, p. 303).
that, where emissions from many sources contribute to lower air or water quality, the damage liability of each individual source would be hard to assess. (pp. 304-305)

So far, Reynolds has considered only the litigation process and the assignment of rights to victims of the externality. When it comes to outcomes where rights are assigned to polluter and the possibility of victims paying bribes to the polluters, however, Reynolds's attitude is only slightly more charitable in this edition than in the last: “This may not seem very fair,” he says, “but up to a point it would be to their advantage” (p. 305), a point that he illustrates (as he had not done in his 1973 edition, where no possible advantage is noted) using an externality diagram to show how the benefits from bribing the polluter (in the form of reduced pollution damage) will exceed the bribe that they have to pay up to the efficient level of pollution reduction. Though this result is efficient, Reynolds is clearly non-plussed by the distributional implications:

the optimal degree of abatement can be attained by this method as well; but the cost distribution is different from that in the compensation case. Here the cost of abatement is borne by the injured parties, while the company (and its customers) pay nothing. (p. 305)

Reynolds once again claims that “this approach may be fanciful,” but he no longer considers it infeasible, and he notes that there are similarities between it and a scenario under which the government subsidizes the polluter to reduce emissions (p. 305). When he subsequently moves on to a discussion of “effluent charges” (pollution taxes), Reynolds seems to come down in favor of these charges over other methods because they “have advantages of administrative simplicity and of encouraging private initiative to reduce pollution by the least costly methods” (p. 310).

Thus, while Reynolds has finally given in to the tide and allowed that there is something, if only a bit) to the idea of property rights assignments facilitating efficiency-enhancing negotiations over externalities, his treatment is clearly the most pessimistic among those who treat this possibility. A further sense for where Reynolds is coming from here can be found in the list of suggested further readings at the end of his chapter,

---

57 Reynolds' negative attitude toward victims paying bribes to polluters is also evidenced in his feelings about Pigovian subsidies, since they involve paying polluters to stop polluting.
where he makes no reference to Coase, or to “The Problem of Social Cost,” though he does continue to refer the reader to Pigou's *Economics of Welfare*.

An interesting contrast with Reynolds' approach can be found in the second edition of Nicholson's text, published in 1979. Nicholson's treatment here largely repeats his 1975 discussion, but with one notable alteration. After showing how efficiency results no matter whether property rights are assigned to the polluter or the victim, Nicholson, who had not even used the term in his first edition, now presents us with a new, one-paragraph subsection titled, “The Coase Theorem.” Here, Nicholson replaces his earlier discussion of the “startling” nature of this result with the following matter-of-fact treatment:

Hence we have shown that the two firms left on their own can arrive at the efficient output level … Assuming that bargaining costs are zero, both parties will recognize the advantages of striking a deal. Each will be led by the “invisible hand” to the same output level that would be achieved through an ideal merger. Interestingly, that solution will be reached no matter how property rights to river usage are assigned. The pollution-producing firm has exactly the same incentives to choose the efficient level of output as does the injured firm. The ability of the two firms to bargain freely causes the true social costs to be recognized by each. This result is sometimes referred to as the *Coase Theorem* after the economist, Ronald Coase, who first proposed it in this form. (1979, pp. 569-70)

No indication is given that this result is in any way startling. Indeed, it is presented as a natural extension of the invisible hand idea. Though Nicholson does not give the theorem any wider applicability here than he did in the middle-ground treatment of his first edition, this statement speaks to the more settled nature of the Coase theorem result as the 1970s drew to a close.

**Conclusion**

What, then, are we to make of this roughly two decades worth of textbook analysis of the Coase theorem and its impact on the analysis of externalities? There are at least three issues that merit some comment: (i) how, and by whom, the theorem was introduced into

---

58 Indeed, Reynolds makes no mention at all of Coase in his discussion.
the textbook discussions; (ii) the technical presentation of the theorem, including its
statement and underlying assumptions; and (iii) the range of applicability ascribed to the
theorem's efficiency-enhancing negotiation process.

As respects the first of these issues, it is clear that the theorem emanated from the
Chicago tradition via George Stigler, that economists working or trained in the Chicago
and UCLA traditions consistently included a presentation of the theorem in their texts,
and that the treatments tend to be more extensive and more positive than by those outside
this tradition. But beyond this, there is little in the way of identifiable common
characteristics when one looks at who did and did not treat the theorem at any particular
point in time.

The emergence of the Coase theorem in the textbooks parallels the more extensive
treatment given in these texts to externality issues. Over the period considered here, the
discussion of the externalities and of the theorem migrated from chapters dealing with
competitive equilibrium and its efficiency properties to specialized chapters treating
externalities (and, at times, public goods). The focus of most of the early textbook
treatments is on the properties of competitive equilibrium rather than on externalities per
se; externalities come into the discussion only because they impact the efficiency of
competitive equilibrium outcome, and the Coase theorem's result is presented as one of
the mechanisms for rendering competitive equilibrium efficient. This is in contrast to the
efficient resolution of externalities themselves, which the theorem's bargaining process
would bring about even if both parties were monopolists—though market equilibrium
output levels would not be efficient (owing to the effect of monopoly power). The later
treatments of the theorem in specialized chapters on externalities, in contrast, we find
concern for the efficiency both of market equilibrium and of the level the externality
itself, with the relative emphasis varying across authors. Some of this increased attention
to the analysis of externalities and, by extension, the Coase theorem, may be attributed to
two larger factors: the increased professional interest in environmental economics and
attention to environmental issues, and the increasing proliferation of textbook chapters
treating more specialized topics in applied microeconomics during this period.

When we come to the technical presentation of the theorem, we find that there is
significant heterogeneity in the statements of the theorem itself, and even in whether a
statement of the theorem is actually given. We see discussions of the negotiation result without the theorem's name attached, as well as uses of the term without specific statements of the content of the theorem, and even the same author presenting us with different (and conflicting) statements of the theorem. These same features can be found in the scholarly literature during this period, which speaks to the unsettled nature of the theorem's status at this time.

The most tangled aspect of these discussions is undoubtedly the treatment of transaction costs, which goes both to the specific content of the theorem and to its applicability. Where the scholarly literature consistently attaches to the theorem the assumption of zero transaction costs, the textbook authors show a strong propensity to allow the theorem to operate in a realm of positive—albeit low or negligible—transaction costs. And, as we have seen, some of the authors even made different assumptions about the magnitude of these costs within a single treatment. One problem here goes to the specific content given to “transaction costs” and their magnitude. These issues are seldom treated, and virtually never in any depth. When transaction costs are assumed be “zero,” “low,” “negligible,” or “not high,” we are given no sense for what these terms mean. Low in an absolute sense? Low relative to gains from exchange? Or simply smaller than the gains? Most authors are not at all explicit on this point, saying only that these costs need to be low/negligible, and citing by way of contrast the polar opposite case of large numbers air pollution, which affects enormous numbers of people and so is attended by extremely high—unworkable—levels of transaction costs.

What none of the authors who allow for non-zero transaction costs seem to recognize, however, is that departure from the zero transaction costs assumption invalidates the claim that we will have a unique, efficient resolution of the externality—the central result of the Coase theorem. If the externality is “binary” (either it exists, or it does not), then efficiency and invariance are assured if the gains from exchange exceed the transaction costs. But if the parties are bargaining over a level of externality ranging from 0 to \( n \), where the optimal level is some intermediate amount, \( x^* \), then transaction costs will exceed the gains from further negotiation at some point \( x < x^* \) or \( x > x^* \).

59 After Stigler, there are no formal statements of the theorem in the textbooks for nearly a decade.
depending on the assignment of property rights.\textsuperscript{60} In a Paretian context, this objection disappears, since the efficient point is simply that at which the gains from exchange (inclusive of transaction costs) are exhausted, but this is not the framework contemplated by most of the textbooks examined here. In short, many of these authors are guilty of discussing a “theorem” that is incorrect.

This raises the obvious question of why the textbook authors assume non-zero transaction costs in the first place. Here, we can only offer conjectures, but one possible answer lies in the theorem's applicability to the real world. Because transaction costs are always positive in reality, the theorem itself is little more than an exercise in pure theory, without direct applicability to the real world. It is only by loosening the zero transaction costs assumption that we can begin to talk about real-world negotiation processes, but we do so at the cost of losing the “theorem.” It may be that these authors felt compelled to loosen the zero transaction costs restriction in order to present the students with something that is applicable—that parties will bargain over externalities when it is in their interest to do so. This is indeed an important result, and one that was not contemplated in the literature prior to Coase. But it is not the Coase theorem, and in the presence of non-zero transaction costs, neither the efficiency nor the invariance claims made by the authors are necessarily accurate.\textsuperscript{61}

The most surprising aspect of these treatments of the theorem may be in the scope given to its applicability. With the exception of Reynolds, all of the authors appear to allow that property rights assignments over small numbers externalities may lead to efficient (and often invariant outcomes). Given the raging debate in the scholarly literature over the correctness (and, by extension, applicability) of the theorem—no hint of which is present in the texts—one might expect to see less scope given to the theorem's applicability. But further consideration of this suggests that those inclined to dismiss the theorem's correctness and/or applicability would be unlikely to treat it in a textbook, given that textbook presentations tend to treat only ideas considered to be “true”—or about which there is broad professional consensus. Otherwise put, the

\textsuperscript{60} See Medema and Samuels (2000) for a demonstration.
\textsuperscript{61} The struggles that we see in the textbooks with the whole transaction costs idea may reflect the fact that the literature on transaction costs was still in its infancy, as a result of which the textbook authors may have had difficulty grappling with the issues involved in describing them and assessing their impact.
appropriate question may be why the theorem was treated by so many authors, rather than why it was not treated in a number of the texts.

One of the most demonstrable impacts of the theorem is the change we observe in the treatment of the general nature of the externality problem. Nearly all of the authors discussed here locate the externality problem in the lack of property rights over the resource in question. This view of the origin of externalities can be tied back directly to Coase's analysis in “The Problem of Social Cost” and the further development of this idea by Harold Demsetz (1964, 1967) and others. While the textbook authors may differ on the possibility of negotiated solutions once property rights have been assigned, they are virtually uniform in linking the externality problem to the absence of property rights.

A number of more minor points and issues that may bear more detailed examination are worth noting here:

- There is some propensity to associate the Coase theorem with the invisible hand, but this happens in only a couple of instances.
- No one notes that this “theorem” has never been proven.
- Only one author mentions the central message of “The Problem of Social Cost,” and this author did not treat the Coase theorem, either explicitly or implicitly.
- Several authors refer to the theorem as “Coase's theorem,” in spite of the fact that it is more properly called, “Stigler's theorem.”
- There is almost nothing in the way of citations to the Coase theorem literature in the texts—only to “The Problem of Social Cost,” and, in a couple of instances, to Stigler's text.
- It is ironic how often the authors of the late 1960s and the 1970s refer to Coase's article as a classic or as extremely important, given the fact that so many texts to not treat Coase's argument.
- Many authors note distributional implications associated with alternative rights assignments, but few go into the possible fairness-related implications.
- It seems to be those most enamored of or opposed to the theorem (e.g., Cole, Baird, Miller, and Reynolds) that get into the most trouble with the particulars.
- The persistence in many of the texts of the presentation of the Pigovian approach
without reference to Coase and of the example of externalities between beekeepers and apple orchard owners without reference to Cheung speaks to the difficulty of getting established new ideas that conflict with the received view.

Dr. Pangloss has told us that “all is for the best in the best of all possible worlds.” But as the history of the Coase theorem debate and the present paper shows us, coming to grips with the nature and content of such worlds presents significant challenges to scholarly contributor and textbook author alike.

References

Scholarly Literature


*Intermediate Microeconomics Textbooks*


Figure 1