

The End of the Externality Revolution

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1. Introduction

The process of arriving at a useful concept of analysis is not only slow and painful, but may also go astray and attain nothing useful. Someone begins with one example or observation, followed by a theory which is intuitively plausible. A theoretical term associated with a vague concept is coined. Examples of a seemingly different type emerge, which call for another theory. The process goes on. As examples and theories continue to accumulate, the different categories under the same heading of analysis serve only to confuse and each associated theory becomes *ad hoc*. Such has been the fate of the concept of ‘externality.’ (Cheung 1970)

Steven Cheung’s observation about externality seems as accurate today as when it was written over three decades ago at the height of the externalities revolution, that period when economists, including these two authors, became enamored with the latest tool that rolled into the workshop. Despite the large volume of literature dealing with externalities, or perhaps because of it, we believe the understanding of the concept of external effects held by informed policy makers, and perhaps some members of the academy, and the political economy for dealing with them at times remain fractured and confusing. This confusion has been partly responsible for the use of externalities as rationale for government intervention into a very wide array of markets. Indeed, it seems that by making externality arguments in an institutional vacuum, economists unwittingly developed a weapon of mass destruction that, in the hands of journalists and popular policy analysts corroded almost to the point of uselessness the beneficial theory of markets and competition. The rise of externality thinking formed a veritable revolution in the way economists identified and addressed problems in the marketplace.

As the revolution unfolded, economists overlooked the importance of evolved legal and other institutions that formally and informally establish property and liability rules that cause decision makers to face the cost of their actions, including what otherwise could be externalized costs. With rare exception, the lessons of 400 years of evolved common law were completely neglected. Overlooked as well, were the tortuous workings of legislative bodies happily called to the task of internalizing external costs. While markets seemed to always fail, political institutions were seen systematically as without blemish, or so it seemed. It was this two-pronged failure, 1) a failure to consider and state assumptions about background institutional arrangements and 2) a disregard for special interest politics that became the Achilles Heel of the otherwise elegant externality arguments. At the end of the day, it was the modern institutionalists that attempted to close the lid and drive the nails on the externality coffin. By their efforts, the institutionalists brought an end to the externalities revolution. But like Lazarus,

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and even though the revolution may have ended, externalities seem destined to rattle forth from the grave.

How did this confused state of affairs occur? Or was it all that confused? How did development of externality theory have such a detrimental effect on the received theory of markets? Is it possible to provide a sensible resting place for externality theory, one that integrates the theory of externalities into a viable theory of markets?

This paper seeks to address these questions and by doing so prepare that resting place. The paper is the result of our effort to gain a better understanding of how externality theory first entered the economist's lexicon and how what at first appears as a relatively benign, if not arcane, concept became a foundation stone for prescribing government intervention in markets far and wide. There is also a turning point of sorts described in the paper, a point where modern institutionalists, led by Coase (1960) and Buchanan and Tullock (1965), undermine externality theory, and if not that, darken the prospects for remedying externality problems by political means.² We make no claim for providing a detailed history of economic thought on the topic. Instead, we claim to describe and offer what we consider to be some of the major insights on externality theory, recognizing that our identification of what is major may not accord with the selections others might make. Our paper is organized as follows.

The next part of the paper traces the development of externality theory, focusing first on the rise and fall of what became recognized as the pecuniary externality school of thought. Benign, in the sense that this debate had more to do with price theory than public policy, the identification of pecuniary externalities opened the door to an examination of other external effects. Technological externalities and the problem of social cost enter the open door, and they become the focus of the paper's third section. At this point in the story, we focus on the dominance of Pigou's interpretation of technological externalities. Here, we explain how, overlooking common law remedies and concerned about transaction costs in the market, Pigou (1920) argued for political solutions to the externalities he found to be so pervasive. We call this Pigou I. Later, we note that, when faced with criticism, Pigou modified his arguments but stayed with his principal argument about an abundance of externalities. The externality story to this point is couched in the language of efficiency and welfare economics. Externalities are seen as interfering with the efficiency-enhancing operation of markets. They should therefore be reduced or eliminated.

How property rights connect to externalities is the topic of section four. Since all externality problems can be considered as property rights problems, failure or inability to specify property rights to an asset leads to over-use. A lack of clear-cut ownership also limits the ability of interested parties to bargain or to bring suit. The result may be unwanted smoke in the air, or not enough smoke. The discussion here lays a brief foundation for two axioms about the existence of relevant externalities, which is to say externalities that offer the potential for gains through trade. Efficiency considerations reenter. It is here that we see Coase setting aside the problem of social cost in favor of a market-based model that rests on the rule of property found in common law. Coase, in contrast to Pigou, assumes a Lockean system of property rights where rights evolve from and are enforced by private action and private law (Raymond 2003). Property rights are endogenous to the market process. Like Pigou, Coase focuses on transaction costs, but because of his recognition of actions taken at common law, Coase sees far fewer instances of unaddressed external costs. Coase provides profoundly important insights as to how markets

² Buchanan's contributions to this debate are enormous in number and include his work with Gordon Tullock (1965) and William C. Stubblebine (1962).

operating within a rule of law minimize all forms of cost, including those termed externality. Coase does not, however, focus on the political prospects of remedying external costs where private transaction costs deny bargaining activity. In a few words, he does not deal with the Public Choice problem first recognized by Pigou himself.

Public Choice considerations, cost and choice, are the focal point of the last part of our paper. Here, we see how, because of his recognition of special interest politics, Pigou recants on the notion that his theory could become a basis for political action.³ We label this Pigou II. This section also emphasizes the fundamental contribution made by James Buchanan and Gordon Tullock. For these two, property rights, whether defined by markets or by politicians, are endogenous to a larger constitutional political economy that is itself constrained by constitutional limits. This consideration closes the circle of our effort to position the externality controversy in the context of markets and prevailing institutions. In closing the circle, we move from 1) a discussion of external effects analyzed in an institutional vacuum to 2) a discussion of external costs that may be reduced by contract and bargaining, and then finally to 3) a discussion of constitutionally determined rules that either enable or limit the ability of the larger political economy to resolve externality problems. As we conclude the paper, we focus on markets and politics as two competing institutions for resolving externality problems. In doing so, we offer summary statements as to the relative merits of the two institutions in different externality settings. At the very end of the piece, we find the externality problem has disappeared, but it has been replaced by the public goods problem.

2. The Externalities Story Begins with Empty Boxes

A review of the pre-Coase literature on externalities leaves a number of strong impressions. First, the literature is large and confusing. Many of the best minds in the profession contributed. Starting with Marshall and Pigou, the topic attracted the attention of the likes of Knight, Young, Staaf, Clapman, Graham, Hicks, Lange, Viner, and Joan Robinson, among many others. No doubt this literature made sense to writers at the time, but to the modern reader it is cryptic and obtuse in the extreme. There are, however, some useful nuggets in that literature that have been lost over the years. (Though pointing those out will be left to another paper.) One clear impression from reading this pre-Coase literature is that the concept of externality, and the rationale externality provides for government intervention, was about as confusing to economists then as it is now. In a very real sense, our understanding of the nature and importance of externality has advanced very little over the last 100 years.

Second, the concept of externality has been to microeconomics what Keynesian economics was to macroeconomics. Specifically, it provides a rationale for virtually unlimited government intervention into private transactions. When viewed through this lens, unintended (uncontracted) effects are pervasive. We find them in virtually every sphere of human activity. Each can be characterized as an externality, with a corresponding appeal for government action.

³ In spite of his recognizing the possibility of legislative anti-efficiency effects, Pigou apparently gave no consideration to the operation of private law in imposing cost on negligent producers of external cost. Pigou, it seems, embraced the system of property rights described by Hume. (Raymond 2003.) For him, property rights and their articulation were created and modified by government, not by market forces and private law. To Pigou, property rights are endogenous to the political process. We note that when politicians and government become endogenous to the story, the simple analytics of welfare economics get complicated.

Having said this, we hasten to add that from the perspective of market-based actions, most external effects are not worth the costs of “correction.” Our value statement here rests on the logic of Buchanan and Stubblebine’s (1962) notion of “irrelevant externalities.”

Judging from the frequency and breadth of instances in which social scientists use externality as a tool for rationalizing government intervention in markets, it appears that these protagonists have recognized this potential and leaped at the opportunity it provides. Indeed, from the perspective of some social scientists the concept is so powerful and so pervasive as to relegate neo-classical welfare analysis to the academic dust bin. Kapp (1969) appears to make this point in his article “On the Nature and Significance of Social Costs.” Speaking of arguments by some economists that many external effects can be internalized by private action, Kapp writes:

However, these analytical devices cannot satisfy those who disagree with traditional economic analysis. These dissenters, among whom socialists and institutionalists have played a major role, hold that social costs [negative externalities] are normal and typical phenomena, and are moreover of such a character as to put in question the whole theoretical equilibrium theory including its practical conclusions.

...

The existence of social costs is always an indication of precisely those cumulative dynamic interdependencies between economic units, which raise serious doubts as to the validity, and purpose of some of the most essential assumptions of economic theory. For if economic units with unequal power are able to shift part of their costs to others—and moreover are able to ply their sales and hence consumers’ demand through sales promotional activities—market costs and prices must be regarded as more or less arbitrary and indeed unreliable measures of economic rationality. Hence it becomes necessary not only for the purpose of evaluation and measuring social costs but also for the determination of priorities to elaborate a theory of social value in the sense of value to society based upon objective, i.e., empirically ascertained, criteria for what is necessary and essential for human life and survival. (p. 307)

Needless to say, modern social scientists have continued in that vain. Political scientists, sociologists, environmental scientists, and public policy analysts, as well as some economists, have adopted with a vengeance the externalities concept with its embodied interventionist rationale. To say that the concept of externality has become important in economics and public policy is a considerable understatement. But how did the concept arise? What are the origins of the externality argument?

The study of externality began with what has come to be known as the “empty boxes” debate. This debate involved a number of issues, including the meaning of social cost, the role of marginal versus average cost in firm supply decisions, the derivation of competitive supply functions, and economic rents. However, the central issue can be, and was, addressed in the context of externality.

The literary outpouring that constituted the empty boxes debate was initiated by Marshall’s conclusion, elaborated in detail by Pigou, that increasing and decreasing cost competitive industries can produce non-optimal investment and output. Specifically,

Marshall and Pigou argued that firms entering an increasing cost competitive industry can, for several reasons, cause input prices for existing firms to rise (increasing cost industries) or fall (decreasing cost industries). These input price changes are externally imposed by some firms on others. In short, some firms impose externalities on others.

As Pigou (1932) put the case, social efficiency requires that

. . . the values of the marginal private net product and of the marginal social net product of investment are both equal to one another and also stand at a sort of central level representative of industries in general. . . . investment and output must be carried to a point at which the value of the marginal private net product of investment there conforms to this central value. (p. 218)

Pigou further reasoned that the entry of new firms “externally” lowers (decreasing costs industries) or raises (increasing cost industries) the costs of existing firms causing a divergence between the marginal private net product and marginal social net product of investment.

Hence, while, with rare exceptions, simple competition always causes too little investment to be made in industries of decreasing supply price (*simpliciter*) [decreasing cost industries], it does not always, or even generally, cause too much to be made in industries of increasing supply price (*simpliciter*) [increasing cost industries]. On the contrary, in a number of those industries it may cause too little investment to be made. (p. 223)

To remedy this inefficiency, Pigou advocated “bounties” for firms entering decreasing cost industries and taxes for those entering increasing cost industries.

Pigou’s observation set in motion work by academic economists in two general areas. First, some set to work attempting to categorize industries as increasing, decreasing or constant cost, presumably with the goal of identifying those that should be taxed and those that should be subsidized. Clapman (1922) characterized economists, “well educated in the dominant British school,” as having mental boxes “labelled Diminishing Return Industries, Constant Return Industries, Increasing Return Industries.” In giving a name to the discussion of the Marshall/Pigou hypothesis, Clapman complains

“I think a good deal of harm has been done through emission to make it quite clear that the Laws of Returns have never been attached to specific industries; that **the boxes are, in fact, empty**; that we do not, for instance at this moment know under what conditions of returns coal or boots are being produced. . . . I hold grave danger to an essentially practical science such as Economics in the elaboration of hypothetical conclusions about, say, human welfare and taxes in relations to industries, which cannot be specified.” (p. 312) (emphasis added)

Second, a number of economists, notably Young and Knight, took issue with Pigou's observation that increasing and decreasing cost industries cause market failure. While there were several points of attack, the final nail in the coffin of the Marshall/Pigou hypothesis was the observation that the external effects in question were pecuniary, and, hence, did not represent any divergence between social and private costs. The only thing of conceptual value that survives from the empty boxes debate is the textbook distinction between pecuniary and technological externalities. In the end, both the boxes and the concept proved empty.⁴

Despite the great amount of academic energy that went into the empty boxes debate, the issues involved and the related literature have been relegated to a minor footnote in the history of economic theory. Our contention is that much of the current literature on externalities will (or should) follow the same path, at least in economics. In brief, modern interest in externalities stems from two main factors: (1) a great deal of confusion about the nature and theory of externalities and (2) the convenient rationale externality can provide to justify intervention in private markets. The second issue is a topic worth pursuing but one we will only briefly pursue here. Instead we will offer some observations on the economic theory of externality, along with observations that seem to us to imply that externality is, at best, misused in economic analysis and, at worst, adds little to our understanding of efficient resource utilization. More specifically, we will argue that the current view of externality contributes to confusion about the nature and importance of externalities problems, and leads to gross overemphasis on externalities as sources of "market failure."

3. From Empty to Boxes Loaded with a Rationale for Government Intervention

As noted in section 2, the concept of externality, though not the term, appears to have originated with the assertion by Marshall (1922) that increasing (decreasing) cost competitive industries are inefficient because the entry of new firms into an industry imposes external harm (benefits) on existing firms. In Marshall's terms, entering firms produce costs (benefits) that are "external to the firm but internal to the industry."

The Rise of Pigou I

Marshall's discussion of external effects attracted little attention. Externalities became an important topic of debate only after Pigou developed Marshall's idea and greatly broadened the application of the externality concept to cover a large variety of supposed "divergence between private and social net product."⁵ Pigou's discussion of externalities generated debate on two fronts. The first was the "empty boxes debate." The second debate, though far more important

⁴ See Ellis and Fellner (1943) for a detailed discussion of the conceptual issues involved.

⁵ Interestingly, given the Pigouvian tax tradition, Pigou did not limit acceptable government intervention for equating social and private net product to taxes and subsidies. He also speaks very favorably of a wide variety of regulations and legal constraints.

in retrospect, involved fewer participants and generated far less attention.⁶ This debate launched a position we call Pigou I and concerned Pigou's assertion that a divergence between private and social net product cannot be corrected by private contractual arrangements. Pigou was very clear in his expressed view that government intervention was necessary to resolve external effects. Indeed, he went so far as to suggest that private contracting activity would make things worse.

In his famous 1924 article Knight took issue with that view. In his first edition of *The Economics of Welfare* (1920) Pigou used road congestion, where drivers impose external costs on other drivers by entering a congested road, as an example of an externality that could not be removed by private contracting. Using Pigou's example of two roads, one shorter but with congestion and one longer but without congestion, Knight demonstrated that if the "faster" road were privately owned, the owner of that road would have incentive to impose prices on road use that would optimally resolve the alleged divergence between social and private net product. In short, Knight demonstrated that, contrary to Pigou's assertion, it was possible to structure property rights and private contractual arrangements so that private contracts resolve the inefficiency. Pigou removed the "offending" example from later editions of *The Economics of Welfare* but did not explicitly concede the point. From all indications, Knight won the intellectual battle but few acknowledged the victory, or even noticed that there had been a battle.

While perhaps conceding on the example of the two roads, Pigou did not retreat from the view that the private market fails to achieve efficiency for a large number of other cases. In his 4th (and final) edition of *The Economics of Welfare*, Pigou (1932) cited a number of examples of both positive and negative external effects (what he termed "incidental services" and "incidental disservices") that are, by implication, both Pareto relevant and that seem, from Pigou's perspective, to call for government intervention. His examples of Pareto relevant positive externalities included lighthouses⁷ (pp. 183-184), constructing roads and tramways that increase the value of adjacent property (p. 184), planting forests that produce beneficial climatic changes (p. 184), lamps erected at doors of private houses that throw light on streets (p. 184), private pollution abatement expenditures (p. 184), and scientific research (p. 184-185).

Pigou's examples of negative externalities include uncompensated harm done to surrounding woods by the sparks emitted by railway engines (p. 134), game preserving activities by a land owner that cause rabbits to invade neighboring property (p. 186), building factories that "destroys a great part of the amenities of neighbouring sites," building in "a way as to spoil the lighting of the houses opposite,"⁸ running motor cars that wear out the surface of roads (p. 186), the sale of intoxicants that make necessary additional expenditures on law enforcement and prisons (p. 186), "certain types of foreign investment" in which investors accept foreign "promises" that adversely impact exchange rates (p. 186), foreign investments and the "diplomatic manoeuvres employed in securing the concession for it" that may facilitate preparations for war (page 186-187), competitive advertising (pp 196-200), bargaining over prices and wages (pp 201-203), and "Perhaps the crowning illustration of . . . the work done by

⁶ We take some liberties in characterizing this as a debate, for there were few protagonists before Coase, chiefly Pigou and Knight, and Pigou appears either to have conceded (though not explicitly) the point without much debate or he simply ignored the issue raised by Knight.

⁷ This example Pigou attributes to Sidgwick.

⁸ On this point, Pigou (1932) laments in a footnote (p. 186) that "In Germany the town-planning schemes of most cities render anti-social action of this kind impossible; but in America individual site-owners appear to be entirely free, and in England to be largely free, to do what they will with their land." Pigou's view that the freedom of site-owners as the source of "anti-social action," may offer some insight into his mindset regarding external effects.]

women in factories . . . for it carries with it, besides the earnings of women themselves, grave injury to the health of their children.”(page 187)

It is here that we find one of the most interesting elements of Pigou’s argument for government action. The clear implication of his discussion is that Pigou considers bargaining itself wasteful. The clear implication of his discussion is that positive transactions costs can be a sufficient justification for government intervention in markets. This seems very telling about his mindset. Of course, if we knew how bargains would be resolved, imposing that solution and avoiding using resources in bargaining would increase welfare. But that seems a bit like taking Pareto optimality to the lunatic fringe.

There are three important features of Pigou’s examples of market failure. First, they cut across a large range of human activity. Like many modern writers, Pigou obviously saw market failure everywhere. Second, he argues that transaction costs can and should be avoided by moving decisions to the political arena. And third, and most troubling from the standpoint of Public Choice thinking, he saw each of the externality instances as one in which government could, and presumably should, intervene to constrain individual action. To use Pigou’s words:

Over and above these, there are many obstacles that prevent a community’s resources from being distributed among different uses or occupations in the most effective way. The study involves some difficult analysis. But its purpose is essentially practical. It seeks to bring into clearer light some of the ways in which it now is, or eventually may become, feasible for governments to control the play of economic forces in such wise as to promote the economic welfare, and, through that, the total welfare of their citizens as a whole. (pp. 129-30)

Not only did Pigou I find externalities behind every bush and under every rock, he, despite Knight’s contrary illustration, continued to assert that private arrangements were incapable of resolving externalities problems. On this issue he states,

It is plain that divergences between private and social net product of the kinds we have so far been considering cannot, like divergences due to tenancy laws, be mitigated by a modification of the contractual relation between any two contracting parties, because the divergence arises out of a service or disservice rendered to persons other than the contracting parties. It is, however, possible for the State, if it so chooses, to remove the divergence in any field by ‘extraordinary encouragements’ or ‘extraordinary restraints’ upon investments in that field. The most obvious forms which these encouragements and restraints may assume are, of course, those of bounties and taxes. (p 192)

Pigou I Writ Large

Here we have Pigou I writ large. Negative externalities are ubiquitous. In the name of efficiency, government should take action to put the market on a property footing. The literature following Pigou and preceding Coase is large but unfocused. As Coase notes, the treatment of externalities, and particularly the Pigouvian approach to externalities, is fragmentary, “often involving little more than a reference to Pigou plus some explanatory comment.”(*Coase 1960, p. 35*) Further, the few additional insights in this literature went largely unnoticed. Indeed, it generally appears that the authors themselves did not understand the full importance of their

observation for a clearer understanding of the range of policy mechanisms available for efficient resolution of externalities.

Arguably, one of the more important cases of lack of understanding (perhaps including by the author himself) of a fundamental insight into external effect is Meade's analysis of "two types of external economy and diseconomy."⁹ Meade terms his two types of externality "unpaid factors of production" and "creation of atmosphere." Unfortunately, the insight contained in this distinction is obscured by the way in which Meade characterizes that distinction. Specifically, Meade states

The essential difference between these two types of external economy or diseconomy is that in the first case there are still constant returns to scale for society as a whole, though not for the individual industry, whereas in the second case there are still constant returns to scale for each individual industry but not for society as a whole. [p. 187]

His example of unpriced factor was a depletable (private) asset, the nectar in apple blossoms that was consumed by beekeepers without payment to apple farmers. His example of creation of atmosphere was an undepletable (public) asset, the broadly dispersed micro-climatic benefits that occur when forests are planted. This is remarkably similar to the later categorization of externalities offered by Baumol and Oates (1975).¹⁰

The important implication of the distinction between externalities that arise with the use of depletable assets versus non-depletable assets is that with this distinction it becomes clear that any inefficiency that arises from the former is simply attributable to the fact that the asset is "unpriced." All that is required is that property rights be assigned so that a market in the asset can evolve. Indeed this is precisely what has happened in beekeeper/apple farmer case. Interpreted in this way, Meade's insight has a decidedly Coasian ring.

Of course, one could argue that property rights could be assigned, and market prices evolve, for the case of "creation of atmosphere" externalities that arises with the use of non-depletable assets. The obvious difference is that the "public" nature of non-depletable assets may give rise to free-rider problems that make private contracting prohibitively costly. However, there is strong evidence that privately-inspired and organized actions to protect or provide public goods can be successful in the face of the potential free rider problem (Yandle, forthcoming).

4. Property Rights and Market Failure

As noted by Cheung in the opening quotation on page 1, the concept of externality has evolved through a process of accumulated examples, ad hoc generalizations, and categorizations of external effects. The resulting literature is large and (unnecessarily) complex. Those who contribute to that literature have separated into several loosely defined camps with competing views. Some advocate a Pigouvian view. Inspired by the concept of "market failure," these

⁹ It is telling that the Meade article is remembered almost exclusively for one of his examples, the famous bee keeping and apple farmer example, rather than for a basic insight contained in the distinction he makes.

¹⁰ Meade's discussion, however, had one advantage over the later discussion by Baumol and Oates. Specifically, Meade implies that it is the depletability of the asset for which use gives rise to external effects, not the depletability of the externality itself, which is significant. This is a subtle but potentially important distinction.

authors focus on appropriate government mechanisms for control (e.g., taxes, subsidies, regulations, or marketable permits).

Other authors (e.g., Anderson and Donald R. Leal 2001, and Yandle 1998) promote the view that inappropriately defined property rights are the source of most externalities problems. Work by these individual is often substantially anecdotal, focusing on examples in which property rights have resolved externalities problems.

At times these camps appear to merge, while at other times strong lines are drawn between competing views. Among many other issues, disagreements have arisen over bilateral versus unilateral tax subsidy mechanisms (e.g., Coase 1960, Buchanan and Stubblebine 1962, Turvey 1963 and Baumol 1975), the efficacy of liability rules versus government regulations or marketable permits (e.g., Meinert and Yandle 1999), the measurement of external benefits and costs (e.g., Coase 1960 and Browning 1977), and the proper criterion for social decision making.

In some measure, these disagreements stem from philosophical differences. However, the differences are facilitated by failure to fully appreciate certain fundamental principles related to external effects. Our goal here is to draw attention to these fundamental principles that taken together can add insight in the study of externalities. In doing so, we do not claim that our observations are original. All that we address is easily found in the literature. At best, we add some structure to the discussion by drawing attention to several fundamental axioms regarding external effects.

Externalities and Gains from Trade

Consider two fundamental axioms regarding inefficiencies.

Axiom #1: All inefficiencies, including Pareto relevant externalities, represent unexploited gains from trade.

Axiom #2: When free exchange is allowed and transactions are costless, all Pareto relevant inefficiencies will be negotiated away.

Both propositions are obvious and entirely non controversial. Indeed, they capture the bargaining essence of the Coase Theorem and of Buchanan and Stubblebine's (1962) "Externality" analysis. Where Pigou saw politics beckoning, Coase saw a market opportunity. Of course, property rights and rules of liability were central to Coase's solution.

The two axioms call attention to several important issues that are often overlooked. The Coase Theorem is clear enough, but why are the potential gains from trade unexploited? What prevents people from negotiating an efficient solution? There are two obvious answers to this question. First, as pointed out by Baumol and Oates (1975), the costs of negotiating private solutions may exceed potential gains from trade. This might occur, for example, when both (i) large numbers of persons are involved and (ii) the asset for which use gives rise to external effects is a public good. In this case, free-rider problems make it costly for private parties to define property rights such that all impacted parties are included in (Pareto relevant) bargains. This complication may make transactions cost sufficiently high that they swamp even large potential gains from trade. Examples where this is the case are surprisingly difficult to find. Air quality, ozone depletion and climate change are possible examples. Cases like traffic congestion

are not such examples, because it is feasible for private road owners to assign and collect a price, and exclude non-payers from road access.

A second reason that private negotiated solutions may not occur is that some socially constructed impediment exists, typically imposed by government, which prevents or limits private transactions. This is the case with so called common-access property resources. Common grazing lands, public parks and forests, fisheries and traffic congestion are possible examples. In other words, when government action is held constant, which is to say government and its rules are deemed to be exogenous to the market process and are assumed to be unchanging, we can make Pareto pronouncements about the efficiency of private action in the market. Then, all else equal, whatever may be seen as market failure is either a case of irrelevant costs where actions to correct them are more costly than the gain obtained or a case of politically induced barriers that limit private action. This said, we recognize that what may be described as an irrelevant cost to an economist can be seen as an opportunity to curry special interest by a politician. Put another way, *ceteris paribus* does not necessarily hold when congress is in session.

Assets, Transaction Costs and Persistent Externalities

Externalities do not differ in any substantive way from any other kind of inefficiency. Externalities, like any inefficiency, can occur in a wide variety of circumstances, but those that persist do so only because something prevents contracting. Obviously, those that are transitory are not an issue. Only those that persist warrant attention.

As noted above, two things can prevent bargaining and produce persistent externalities: (1) government constraints that prevent marketable rights from evolving or that prevent market transactions in existing rights, or (2) transactions cost that exceed gains from trade. Little needs to be said about the first case. It includes private goods, like common property resources, public parks, and traffic congestion. The second case includes public goods where free-rider problems produce transactions costs that exceed gains from trade. This can occur even when gains from trade are high. As previously noted, it is difficult to find clear examples of such cases.

A key here is the very simple observation that external effects do not arise in a vacuum. They occur when an asset is used in mutually incompatible ways. This observation, though non controversial and certainly not new, is at the root of much disagreement and is essential to understanding the nature of the externalities problem. Authors often categorize externalities without clear reference to the assets for which use gives rise to the external effect. For example, Baumol and Oates (1975) divide externalities into those that are depletable and those that are undepletable. Others talk about separable versus non-separable, reciprocal versus non-reciprocal, or consumption versus production externalities.

While these distinctions may have virtue in the context of a particular analysis, such distinctions lose sight of the fact that it is not the externality *per se* that is depletable or undepletable, but the asset for which use gives rise to external effects. Recognition that it is the characteristics of the asset that matters focuses attention on problems in exchange of the asset, and hence on transactions costs, rather than on devices for correcting external effects. That in turn focuses attention on ways to reduce transactions costs. This is opposed to focusing on imposed solutions that by-pass or attempt to mimic the market, e.g., taxes and subsidies. More specifically, we would expect high transactions costs when assets have public goods characteristics and numbers of markets participants is large, and we would expect lower

transactions costs when the asset has private goods characteristics. Hence, we would expect externalities to persist only when (i) the asset being used has public goods characteristics or (ii) when governments constrain private exchange in the asset in question. (In saying this, we see ironically that actions taken by government because of alleged public goods problems can indeed become a barrier to transacting away the difficulties that led to the government's public goods undertaking.)

This line of reasoning suggests a mindset (for lack of a better term) that is productive for analysis of externalities. Following this line of reasoning yields two conclusions. First, many previous attempts to produce a "theory of externalities" failed to fully integrate the nature of the good for which use gives rise to external effects. There is no conceptual difference between externalities and other kinds of inefficiency. Neoclassical theory tells us about public goods and, hence, tells us about the potential persistence of externalities that arise with the use of such goods. Neoclassical theory also tells us about the virtues of markets, and private bargaining, in allocating private goods. That theory translates exactly to the persistence of externalities that arise in the use of private goods.

Second, in our analysis of external effects more attention should be focused on institutional arrangements that can reduce transactions costs. In this case, as in many others, the conclusions reached can be influenced by the questions asked. When our mind set is "market failure," we tend to look for solutions that are substitutes for markets (particularly those that may mimic the market like marketable permits or pollution taxes). Directing attention instead to the observation that externalities can persist only when "artificial" impediments are placed on market transactions and on the magnitude of transactions costs relative to gains from trade should focus analysis on devices to remove the impediments or on ways to change institutional arrangements to reduce transactions costs.

Of course, if non-trivial externalities persist then there may be some scope of government action to remedy the problem. But government agencies are not perfect institutions and public decision makers are neither omnipotent nor pure public servants. Hence, even a clear instance of market failure may not justify a government attempt at remedy. Consideration of this issue is the task to which we now turn.

4. If it so Chooses

Pigou obviously reached across a chasm that separates private from public decision making when he argued that government can and should address and resolve the problems he cites "if it so chooses." For example, when addressing public goods aspects of environmental quality, Pigou senses that private contracting costs will be excessive. He argues that:

No "invisible hand" can be relied on to produce a good arrangement of the whole from a combination of separate treatments of the parts. It is therefore necessary that an authority of wider reach should intervene to tackle the collective problems of beauty, of air and light, as those other collective problems of gas and water have been tackled. (Pigou 1920, 195).

The Arrival of Pigou II

The authority appealed to here must confront the problems of collective choice. Were it not for Public Choice considerations, Pigou's neat solutions might indeed be worthy of serious consideration. Indeed, in the absence of political transaction costs, whereby political agents could contract to affect outcomes, Pigou's solution would converge with that of Coase's market-based model, which must also face transaction cost problems. In his argument for government action, Pigou was obviously not thinking about a world where rent-seeking behavior dominates the political process, where special interest competition tends to overwhelm public interest considerations, and where rational ignorance combines with expressive voting to yield what a Pigouvian might term an "unintended consequence." When confronted with the politics of the problem, Pigou II emerges:

[W]e cannot expect that any public authority will attain, or will even wholeheartedly seek, that ideal. Such authorities are liable alike to ignorance, to sectional pressure and to personal corruption by private interest. A loud-voice part of their constituents, if organized for votes, may easily outweigh the whole. (Pigou 1920, 332).

In short, it is clear that Pigou was mugged by the reality of the political market place. Even so, his name remains attached to the notion that negative externalities are ubiquitous and that government is systematically superior to markets in reducing the associated social costs. In this sense, the notion of Pigouvian thinking is an exaggerated caricature of Pigou himself. But while Pigou seems to sense the Public Choice problem, he does not analyze it. In an even stronger sense, Pigou's later followers, captured by the prospect of an efficiency-enhancing government were even less inclined to consider politics without romance.

In reflecting on the externality hay day, James M. Buchanan ?? describes the situation this way:

Again, it is necessary to appreciate the prevailing mind-set of social scientists and philosophers at mid-century. The socialist ideology was pervasive, and this ideology was supported by the allegedly neutral research program called *theoretical welfare economics*, which concentrated on the identification of the failures of observed markets to meet idealized standards. In sum, this branch of inquiry offered theories of market failure. But failure by comparison with what? The implicit presumption was always that politicized corrections for market failures would work perfectly. In other words, market failures were set against an idealized politics. (p. 25)

Public Choice and the End of the Externality Problem

What can now easily be called the Public Choice revolution emerged in economic thought when James B. Buchanan and Gordon Tullock published their seminal book, *The Calculus of Consent*. The Calculus is noted for discoveries that obtain when individualistic market logic is applied unrelentingly to political decision-making. And paradoxically, the lessons of Public Choice tell us that when government is called on to resolve externality problems, the action taken can result in a Pareto optimal outcome. Saying this, however, is not the same thing as saying that the politically obtained outcome will be superior to a resolution of the externality problem by means of private bargaining. As always, there is more to the story.

But before getting to the comparison of private versus public choice, let us first review one of the major lessons taught by Buchanan and Tullock.

Buchanan and Tullock carry the reader to the constitutional tent where rules of the game are to be devised by participants who are uncertain about their particular role when the game is played later. Under these conditions, the constitution builders avoid the prospects for assigning tasks to the collective that might be handled privately. In the absence of a unanimity-voting rule, there is a high risk that politics will yield harmful redistribution to the politically weak, and, of course, the constitution builders are uncertain about whether they will be among the blessed or the cursed. Pigou II might dominate.

In the post-constitution period when the game is being played, Buchanan and Tullock (1965, pp. 189-90) point out that even redistribution activity can yield Pareto optimal outcomes, provided that side payments can be made in the voting process. The votes are property rights used in determining outcomes. If the votes are for sale and can be traded, then all gains from trade associated with different political outcomes will be obtained. In applying this thinking to the problem of externality, Buchanan and Tullock argue that when government addresses an externality problem, just as when two parties bargain in a private setting, all Pareto relevant externalities will be bargained away in the political process so that at the end of the day, no relevant externalities remain and Pareto Optimality is obtained. Said differently, no moves can be made without making someone worse off. If we take to the legislature Pigou's problem of smoke imposing costs on the laundry next door and call for a tax or some other kind of remedy, Buchanan and Tullock remind us that political bargaining will develop. Smoke producers will organize and offer payments to politicians as will laundry operators. The side that bids the most will gain the deciding votes. No gains from trade will exist when the final vote is taken. The outcome, whatever it is, will be Pareto Optimal, and no one can predict *ex ante* which of the two parties will gain relief. Unexpected outcomes will rule the day when the legislature is in session. Even so, the externality problem will have disappeared.

Do the Two Solutions Converge?

Let us close this paper by inquiring about the relative merits of the two final solutions to the externality problem. We start by assuming that some relevant externality exists, and that some underlying system of property rights makes it possible for affected parties to bargain. We assume first that the number of affected parties is small. Under these ideal conditions, the parties will contract away the problem. If similar conditions occur in other locations, the bargaining parties may find alternate ways of writing contracts or affecting the real cost of the external effect. Market-driven creativity enters the solution. Uniform outcomes for similar external effects are not expected to obtain in each and every externality situation.

Consider now predicted outcomes when the small numbers case is taken to the legislature. Assume that side payments are allowed. Unlike privately contracted outcomes, which may vary across space and time, legislative solutions tend to apply throughout the polity. Uniformity is the predicted outcome. This raises the stakes for all affected parties. Rent-seeking possibilities enter the picture. Bargaining and voting ensues and a Pareto Optimal outcome obtains. Political creativity enters the solution. Rent seeking behavior is encouraged and the cost of transacting as well as the deadweight loss from rent seeking will take a toll on the net benefits obtained.

Where multiple small numbers externality problems emerge, logic suggests that private bargaining will generate a less costly Pareto Optimal outcome, provided there are enforceable property rights that can be exchanged.

Consider next a large numbers externality case, a case where property rights are available to bargaining parties, but where the cost of organizing the bargaining groups is high. Alternate institutions may emerge to deal with the externality. For example, liability and property insurance may emerge that imposes costs on policyholders who find it to their advantage to insure against the harms caused by the externality. The insurance firm bears the cost of organizing the market, and competition among insurance providers drives down cost. Compare this with a political solution. Turning to politics does not make the large number problem go away. One is still dealing with large numbers of affected parties. But turning to politics increases the large number problem. There are now more interested parties, since political bargaining provides logrolling as well as side payment opportunities. In short, rent-seeking activities rise with the size of the affected group. Rational ignorance affects informed participation. Again, the outcome will be Pareto Optimal, but it will be a different outcome from that obtained through private action.

Finally, consider the extreme public goods case. Stating the problem this way implies there is no private solution. In short, politics trumps markets for providing public goods. And what is the risk? The risk lies in defining what is a public good. Our original problem had to do with the definition of relevant externalities.

5. Conclusions

The externalities literature spans 100 years, thousands of journal articles and more than a few books, that collectively brought about a virtual revolution in views on market failure and the proper role of government. This literature includes a staggering array of instances in which authors find market failure, and a wide variety of proposed government mechanisms to be used in correcting the market's errant ways. The authors of this paper are as guilty as others. We have also analyzed externalities and proposed government imposed solutions, but now wish to repent for the sins of our youth.

Simply put, markets seldom fail because of externalities. Non-trivial externalities that arise in the use of private goods can persist only if governments prevent markets from working. In the absence of government impediments to market transactions, only public goods can yield externalities that can persist, and even this case is subject to qualification. Externality may be a term that is useful in categorizing resource allocation problems, but it adds little more.

More to the point, a great deal of public policy is inappropriately based on the externality rationale. Neoclassical welfare economists let this genie out of the conceptual bottle. It is time to do what we can to put it back.

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