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Economic Calculation in the Environmentalist Commonwealth

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ABSTRACT: Non-monetary calculation of the environmental effects of action runs into the same problems of *in natura* calculation and commonly owned means of production. The information needed for rational economizing does not exist when we forsake the price mechanism. A legal regime based on strict private property rights solves environmental problems and minimizes conflict in the coordination of plans. Relaxed restrictions on property rights can move many currently political decisions into the realm of market exchange and improve economic coordination. Reducing restrictions on housing markets provides one example.

KEYWORDS: environment, Austrian economics, prices, profits and losses

JEL CLASSIFICATION: P1, P2, P4, B53, Q58

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INTRODUCTION

Do government services and even private proposals like carbon accounting, "triple bottom line" accounting, and measurement of "food miles" provide viable alternatives to monetary calculation based on profit and loss? Are they alternative ways to evaluate production and allocation, or might they merely serve the same function as advertising and image-improving or trust-enhancing charity? The necessity of monetary calculation for rational economic decision-making suggests that alternative measures of environmental impact do not provide reliable guides to policy. Even proposals that take at least some advantage of the price mechanism, like Pigovian taxes or formal markets for permits to emit substances like carbon dioxide, encounter calculation and knowledge problems. Coordination improves, and unintended negative consequences are minimized when people are able to trade voluntarily.

As Cordato (2004, p. 3) writes, environmental problems "are not about the environment *per se*, but about the resolution of human conflict" and the coordination of individual plans. In this light, Cordato (2004, p. 4) proposes an approach to efficiency that focuses on the processes by which goals are achieved, errors are eliminated, conflicts are reduced, and transgressions are rectified. He notes that

> [e]fficiency is a "praxeological," i.e., individual goal seeking problem, not a value maximization problem. From a policy perspective, then, social efficiency is assessed in terms of the extent to which legal institutions facilitate consistency between the ends that actors are pursuing and the means that they are choosing to accomplish those ends. (Cordato, 2004, p. 4)

Environmental problems are coordination problems. Specifically, they are problems of reconciling mutually exclusive plans by identifying and correcting individual encroachments on others' rights: "[g]enerally formulated, a pollution or environmental problem arises when individual or group A and individual or group B are simultaneously attempting or planning to use resource X for conflicting purposes." (Cordato, 2004, p. 7) Cordato's approach has implications for how we understand non-market environmental planning.

PRICES, CALCULATION, AND DISCOVERY

Regulation substitutes power for market, to rephrase the title of Rothbard (1970 [1977]). In a contribution that ignited the socialist calculation debate, Mises (1920 [1990]) demonstrated that rational economic calculation is impossible when the means of production are commonly owned.[1] Hayek (1945) argued that the economic problem is not the complex optimization problem implied by the thesis that a socialist economy can calculate; rather, it is a problem of assembling, evaluating, and updating dispersed knowledge. Therefore, even if a socialist economy could engage in rational economic calculation in some abstract sense, the institutions of private property are prerequisites for the creation of the necessary information.[2]

Prices economize on the knowledge necessary for rational calculation (Hayek, 1945, p. 525), and Hayek (2002) argued that competition is "a discovery procedure" whereby information that cannot be known by a single mind is used and revealed. The market is "a procedure for discovering facts which, if the procedure did not exist, would remain unknown or at least not used" (Hayek, 2002, p. 9). Private property and unfettered exchange are necessary for rational economic calculation. Hülsmann (1997), Mahoney (2002), and Cordato (2004) augment these original contributions and lay the groundwork for a praxeological approach to environmental concerns.[3]

Among other things, monetary calculation reduces the cognitive overload associated with a complex reality and allows us to order and interpret the world around us. Specifically, monetary calculation

> …affords us a guide through the oppressive plenitude of economic potentialities. It enables us to extend to all goods of a higher order the judgment of value, which is bound up with and clearly evident in, the case of goods ready for consumption, or at best of production goods of the lowest order. It renders their value capable of computation and thereby gives us the primary basis for all economic operations with goods of a higher order. Without it, all production involving processes stretching

[1] Some of the implications of Mises's thesis are explored by Salerno (1990).

[2] See Lavoie (1985) for a survey of the socialist calculation debate. See also Hoppe (1996, especially pp. 143–144) for a critique of Hayek.

[3] Hülsmann (1997), like Hoppe (1996), is critical of Hayek's characterization of the economic problem as a problem of knowledge and coordination.

> well back in time and all the longer roundabout processes of capitalist production would be gropings in the dark (Mises, 1920 [1990], p. 11).

Consumers might value information about the carbon emissions needed to produce a particular good, the number of miles traveled by a head of lettuce, or a firm's record on minority hiring, but the degree to which they value these attributes will be reflected in prices, profits, and losses.

This is apparent in at least some environmental initiatives. *In natura* calculation is plainly impossible, but proposals for markets in tradable emissions permits do take advantage of the price mechanism to a degree. As McGee and Block (1994) argue, however, they run into the same problems associated with proposals to implement "market socialism." Tradable permits and Pigovian taxes are market-like, but they still rest on a planner's conceit that the optimal amount of a particular activity can be known independent of what is revealed by trade (or more generally, by consent). Cordato (2004, p. 11) criticizes the "polluter pays" principle:

> Most specifically, a central authority must know in advance what the efficient outcome is. In the case of the tax, a central authority must know in advance the exact amount of the externality costs being imposed by the polluter, and the correct price and output, not only for the good in question but, since efficiency only makes sense in a general equilibrium context, for all other affected goods and services. In the case of tradable permits, the knowledge requirements are essentially the same.

Nye (2008) goes further within the confines of conventional neoclassical economics: the effects of other taxes in general equilibrium, possible monopoly power, and the possibility of Coasean side bargains mean that even the ability to observe and measure the precise size of the externality is not a reliable guide to policy. Borrowing from Coase, he writes:

> Even in a world of positive transaction costs, some Coasian transfers may take place that partly mitigate the harm of an externality. Unless the Pigovian tax collector can fully account for all those transfers, any estimate of an appropriate tax based solely on the size of the externality will clearly overstate the optimally efficient tax level. (Nye 2008, p. 32)

As Nye notes, even if we can calculate an externality of gasoline consumption of $1 per gallon, for example, regulations like Corporate Average Fuel Economy standards (which economists generally dislike), possible market power for organizations like OPEC, the impact of taxes in other sectors of the economy, and a host of other considerations will move the number of gallons consumed closer to the social optimum even though we still observe $1 per gallon in external effects. Nye cites Bovenberg and Goulder (1996), who argue that the general equilibrium optimal Pigovian tax is likely to be lower than the partial equilibrium optimum (and possibly negative) when there is general taxation. Block (2003) discusses possible privatization of the roads; this could mitigate some of the external costs of fossil fuel consumption if firms with some market power control the roads (*cf*. Buchanan 1969).

PROPERTY AND CALCULATION

Establishing clear private property rights over previously unowned resources makes them tradable. This allows people to calculate, or to evaluate the relative costs and benefits of different courses of action. As Cordato (2004) reminds us, environmental conflicts are always conflicts of ownership: some people wish to use a resource to achieve one set of goals. Others wish to use the same resource to satisfy a different set of goals. Property owners' use of property and the negotiations between people bidding for property establish prices. The establishment of cardinal, money prices creates a common standard of comparison (Mises, 1920 [1990]).

Profits and losses allow entrepreneurs to appraise the results of their actions and determine whether what they have produced allows people to satisfy more urgently felt wants, or whether it causes people to satisfy less urgently felt wants. In the first case, the entrepreneur earns a profit. In the second case, the entrepreneur earns a loss. Mahoney (2002, p. 48) makes a crucial point with respect to private ownership that is directly relevant to environmental questions: while we can know physical quantities, we cannot appraise economic scarcity—or more generally, praxeological scarcity—without private ownership and the prices produced by market exchange.

Property is necessary for even the clear identification of environmental trouble and also for the solution of such troubles. Hülsmann (1997) criticizes the thesis that economics is concerned primarily with coordination and the use of knowledge and argues instead that "(i)t is property, rather than knowledge, that coordinates the separate actions of different people" (Hülsmann, 1997, pp. 28–29). Property is a prerequisite for the application of knowledge to the creation of value. Technological knowledge, even knowledge of the full range of technological combinations that might produce all possible arrays of physical output, is neither necessary nor sufficient for rational economic calculation. As Hülsmann (1997, p. 44) notes,

> [W]ithout reference to our property we could not possibly select knowledge in terms of importance. Moreover, once we own property we then know which kind of knowledge could be useful. It is this property that directs our learning toward useful channels.

The property regime determines the kinds of knowledge that are sought and deployed. People generally seek and deploy knowledge that helps them better achieve their goals. With secure private property rights, such knowledge will be value-productive; i.e., the property owner will generally deploy knowledge that helps him achieve his goals without interfering with another's ability to do the same. Errors will be weeded out through losses, and uses of property that interfere with others' property rights will be corrected by appropriate legal institutions (Hülsmann, 1997, pp. 44–45). Hülsmann describes how the introduction of coercion and the abrogation of private property rights alters the process:

> The case is different in a system featuring a coercive agency. Here, by definition, a knowledge different from value-productive knowledge is, at least sometimes, more important. (The extent of "sometimes" depends on the range of activities and on the permanence of the coercive agency). There is, for example, the knowledge of how to reap the fruits of other persons' labor without provoking their resistance. There is also the knowledge of how to acquire control and ownership of the coercive agency. And there is the knowledge of how to persuade one's neighbors about the utility of this system, too. One can add an infinite number of items to this list. The result, in general terms, remains the same: a violent agency necessarily affects the knowledge structure of the society upon which it is imposed. (1997, p. 45)

ENVIRONMENTAL POLICY

What are the implications of violence's effect on the "knowledge structure" for environmental policy? Environmentalists identify an important problem: one's actions interfere with the property rights of another. Some gains from trade are unrealized because some of the valuable attributes of some goods and services are unowned and therefore not priced. Proposals for planning based on carbon footprint measurement replace this problem with one that is even worse: specifically, forsaking the price mechanism introduces arbitrariness into production and consumption decisions. There are ways to mitigate these problems by strengthening private property rights and thereby making more potential conflicts subject to resolution through trade or tort law (*cf*. Rothbard, 1982). Disharmony between individuals' plans arises from conflicts over the use of resources; this disharmony can be eliminated or substantially reduced by, for example, eliminating building restrictions and privatizing what has been socialized.

Consider the examples of building restrictions and socialized garbage collection. Glaeser and Kahn (2008) argue for relaxing housing restrictions in California. Per capita emissions are lowest on the west coast and highest in the South, and in cities like Boston and New York per capita emissions are lower in the city whereas in Los Angeles they are lower in the suburbs (Glaeser and Kahn, 2008, p. 1). They estimate that, for example, the annual additional cost of carbon dioxide emissions from a home in metropolitan Houston is approximately $500 more than it would be in metropolitan San Francisco. They attribute this mostly to the better climate in the San Francisco Bay area. Even for all of their careful work, their knowledge is of a meager and unsatisfactory kind: they note that they do not include the carbon emissions associated with work. Land use restrictions precisely invert the practices consistent with wise environmental stewardship. Land in California and New York that would be more valuable for housing is used to grow crops, while land in Texas that would be more valuable for crops is used to build housing.[4]

[4] See Sowell (2008, pp. 23–36; 2010) for a more detailed exploration of the economics of housing in California.

Further, Glaeser (2006), Glaeser and Gyourko (2003), Glaeser and Ward (2006), and Glaeser *et al*. (2005) argue that land use restrictions have artificially inflated housing prices in places like California, Boston, and New York. "Affordable housing" mandates do not work, as Powell and Stringham (2004) show; indeed, Means and Stringham (2009) estimate that affordable housing mandates have higher housing prices and smaller housing stocks in the California cities that have adopted them. Relaxing these restrictions helps us save multiple birds with a single stone: we get cheaper housing that is cheaper to operate, and we eliminate restrictions that interfere with market plan coordination.

Pollution externalities emerge from socialized garbage collection (Block, 1998, p. 1894), which means the prices for garbage collection do not reflect their costs and benefits. In many places, one can throw away a garbage can filled with toxin-laden cell phone batteries for the same price as a garbage can filled with biodegradable vegetable matter. Pricing garbage disposal might lead to more illegal dumping, but the solution in this case would be stronger enforcement of private property rights, not socialized garbage collection. Bringing garbage collection into the cash nexus of market exchange would bring them under the discipline of the process by which costs and benefits are revealed.

Cordato (2004, p. 4) describes the institutional character of the Austrian-praxeological approach to efficiency: "…social efficiency is assessed in terms of the extent to which legal institutions facilitate consistency between the ends that actors are pursuing and the means that they are choosing to accomplish those ends." The policy problem with regard to efficiency concerns "efficient intra- and inter-personal plan formulation and execution, i.e., the internal consistency between the means that people use and the ends they desire to achieve" (Cordato, 2004, p. 7). Such efficient coordination is impossible without secure private property rights. Brätland (2006, p. 15) is explicit, pointing out that "*without private property and monetary exchange, there can be no capital calculation and no rational means of maintaining either capital or income for current or future generations*" (emphasis in original).

Calculation problems have further implications for how we understand the concept of "sustainable development." Sustainable development requires praxeological, calculation-based

microfoundations. Taylor (2002, p. 4) notes that what is being "sustained" may be of little value to those yet born; to adopt an example from Steven Landsburg (1996), who are we to say that our children would prefer a forest to the income generated by a parking lot? Further, as Landsburg and others have noted, since future generations will almost certainly be far wealthier than we are, conservation for future generations' sake is an intergenerational redistribution from the relatively poor of today to our relatively rich descendants.

Non-price calculation instruments do not provide a basis for rational analysis, rational calculation, and rational action because they forsake the market (Brätland, 2006, p. 21). Private property owners have a direct interest in maintaining and increasing the value of their property. Further, the entrepreneurial process ensures that at any point in time, the best answer to Landsburg's question about how we know whether future generations prefer a forest to a parking lot will be capitalized into the prices of the land and other resources. At every point in time, the price of an asset reflects market participants' best estimates of the discounted present value of the income that will be generated by that asset. When private property rights are secure, anyone who values green space *as such* or who believes that people are making a short-sighted mistake by paving green space is free to act on these preferences and beliefs.

Should we treat future generations' utilities as if they were our own and not discount the future? A simple *reductio ad absurdum* shows that this is untenable.[5] If we truly should not discount the future, then the relevant environmental problem is not that we may someday exhaust the Earth's resources but that someday the sun will die out, explode, and destroy everything in our solar system. This leads us to conclude that we should increase rather than decrease the rate at which we extract resources as we look for ways to get off of this doomed rock.

Science can measure some aspects of a production process, but even these measurements produce knowledge that is of a very meager and unsatisfactory kind. Following Garrison (2000), we can simplify the discussion by dividing the structure of production into five stages

[5] I first heard this example from Walter Block.

of mining, refining, manufacturing, distributing, and retailing. It is possible to measure the energy inputs and carbon outputs of certain parts of certain processes in the structure of production—the carbon output of a diesel truck moving cans of Pepsi from a warehouse to a grocery store is reasonably easy to measure, for example. However, what we can measure easily represents only a fraction of what really goes into the production process.

Consider the production process that gets a can of Pepsi into our refrigerators.[6] One could probably measure the carbon dioxide produced in the production and operation of the machines in the soda bottling facility. But what about the carbon dioxide emitted by workers commuting to the factory? Or the carbon dioxide emitted to brew their morning coffee? Or the carbon dioxide emitted to produce that coffee, get it to the grocery store, and then to the worker's home? Any attempt to identify a non-price metric by which people can decide whether value is or is not being created runs into the same problem a central planning board runs into when it attempts to allocate scarce and unowned factors of production. The problem cannot be solved because the relevant information has been destroyed.

Public choice considerations are relevant, as well. Hasnas (2009, pp. 121–122) recounts the well-known case of environmental regulation in which Senator Robert Byrd intervened on behalf of coal mining interests. The regulations were not written to allow certain levels of pollution; rather, they were written to require that smokestacks at coal-burning power plants be fitted with air scrubbers "even though requiring scrubbers had greater costs and left the air dirtier" (Hasnas, 2009, pp. 121–122). Here is Hasnas (2009, p. 122): "Requiring the air to be cleaned *after* the coal was burned neutralized the economic advantages of the cleaner-burning coal mined in the western United States over the dirty-burning coal mined in West Virginia." Politics also has a bias toward action, prudent and otherwise. Hasnas (2009, pp. 118–119) offers an analogy from soccer in which he says that a defender who appears to be "doing nothing" is often in fact containing the attacker while the defense gets into formation.

[6] This is adapted from an example given by Roberts (2001).

While the market socialism of tradable permits enables better economic calculation than command-and-control regulations, secure private property rights allow for the generation of knowledge that is essential to the solution of environmental problems. Block (1990, p. 91), for example, suggests scaling back interventions that create conflicting plans over the uses of water and air. The same problem of market socialism remains: a "bureaucratic command structure" regulates the permit-trading market (McGee and Block, 1994, p. 56).

What do we do about the well-known problems of externalities and public goods? There are several answers. First, private property rights combined with the common law of torts brings these considerations into the sphere of economic calculation (Rothbard, 1982 [1997]; Hasnas, 1996, 2009). Legal decisions in the early nineteenth century held that it was in the public interest to encourage manufacturing; therefore, pollution forensics and the abilities of people to sue polluters were sharply curtailed (Block, 1990, p. 91; 1998, p. 1890). McGee and Block (1994, pp. 61–62) discuss "reasonable" conduct and "live and let live" principles in English and American law, and indeed custom is likely to emerge in ways that encourage efficiency. Second, as Elinor Ostrom's research shows, people are remarkably adept and managing common-pool resources without heavy-handed central planning.[7]

Extending Caplan's (2007) argument about the inefficiency of policies chosen by democracies, Carden and Hammock (2010) suggest that environmental policies are also likely to be flawed. Respondents to a 2007 Washington Post/ABC News Poll, for example, opposed higher gas taxes but supported stronger efficiency standards for cars, which Carden and Hammock characterize as "stick-it-to-the-man bias." Since voters' preferences are systematically biased they are likely not to support environmental policies that have plausible economic rationales but policies that are positively destructive (Carden and Hammock, 2010, pp. 73–74). Those who assume that regulators can fix it often commit what Otteson (2010) called "the great mind fallacy," which assumes that someone, somewhere is possessed of sufficient moral and intellectual fiber to engineer a Great Society. Without private property, exchange, and money prices

[7] See Ostrom (2010) for a comprehensive summary.

as guides, no mind—no matter how great—can begin to articulate the social problem, much less solve it.

THE "TRIPLE BOTTOM LINE:" NORMAN AND MACDONALD'S CRITIQUE

In addition to attempts to measure social and environmental issues at a national level, some activists have pushed firms to adopt "corporate social responsibility" practices like the adoption of a "triple bottom line." The triple bottom line receives a devastating critique from Norman and MacDonald (2004), who devote most of their criticisms to the social component of a triple bottom line but note that the same criticisms also apply to the environmental component. Advocates of a triple bottom line suggest "that a corporation's ultimate success or health can and should be measured not just by the traditional financial bottom line, but also by its social/ethical and environmental performance" (Norman and MacDonald, 2004, p. 243).

It is important to note that emphases on environmental and social prerogatives can be important elements of brand management (Norman and MacDonald, 2004), but the idea that firms should seek to let a "triple bottom line" guide their actions runs into a number of obvious problems. The most obvious problem is that there is no way to construct a social or an environmental bottom line. One can know, for example, the percentage of office paper that gets recycled, the amount of energy used by company buildings, and the percentage of company employees who drive hybrid cars. Laying aside for a moment the question of whether these represent unambiguously good environmental stewardship, there is no way to transform this information into a coherent index that represents a real environmental bottom line.

As areas of focus for a firm engaged in careful brand management, these individual pieces of information can be combined to provide a broad overview of a company. They cannot, however, be reduced to a common unit independent of monetary calculation that tells a company whether, say, recycling less office paper is wise if it means being able to use less energy in its buildings. Attempts to add up the components of an environmental bottom line are attempts to add apples to oranges. The

problem of *in natura* calculation that formed part of the Misesian critique of socialism appears again here.

The same problem arises when we consider tradeoffs between financial, social, and environmental goals. Even if we assume that firms can construct coherent indices of their social and environmental bottom lines, there is no way to tell whether a one-unit reduction in the firm's social bottom line is an acceptable price to pay for a two-unit improvement in the firm's environmental bottom line, or whether the firm should sacrifice one million dollars in profits to improve its social and environmental bottom lines by one unit each. It is true that a firm could use market prices for recycled paper and energy to estimate the costs of reducing its recycling efforts in order to conserve energy, but this information goes straight to the financial bottom line. As Norman and MacDonald (2004, p. 243) summarize their conclusions, "what is sound about the idea of a Triple Bottom Line is not novel, and… what is novel about the idea is not sound." Reporting data on corporate environmental and social citizenship might be a good way to attract customers, employees, and some shareholders, but the only coherent measure of a firm's performance is its financial bottom line. Quite apart from whether the social and environmental indicators have the right arguments, there is no way to articulate the tradeoffs between dollars, social units, and environmental units.

CONCLUSION

Environmental issues have been pushed to the front of policy debates, and people have proposed a number of interventions, programs, and ideas that are supposed to provide alternatives to monetary calculation. However, monetary calculation solves these problems when property rights are clearly defined. The absence of private property rights means that we cannot have the information we would need to make production and allocation decisions that coordinate producers' plans with consumers' wants.

The calculation problem is fundamental to the environmentalist commonwealth just as it is fundamental to the socialist commonwealth. Mises (1990 [1920], p. 13) argues that "(e)very step that takes us away from private ownership of the means of production

and from the use of money also takes us away from rational economics." In the environmental context we can rephrase this as follows: every step that takes us away from private ownership of the means of production and monetary calculation also takes us away from rational and responsible environmental stewardship.

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