Chapter 6

Coase and the Lighthouse in Economics

I think we should try to develop generalisations which would give us guidance as to how various activities should best be organised and financed. But such generalisations are not likely to be helpful unless they are derived from studies of how such activities are actually carried out within different institutional frameworks… by showing us the richness of the social alternatives between which we can choose.

—Coase (1974), p. 375

Since the 19th century economists have routinely posed the lighthouse as an example of a *public good*. Ships coming in to port benefit from lighthouse services. Ships cannot individually be excluded from using the lighthouse if they have not paid for it, so the public good argument suggests that ships will free-ride on the payments of others for the provision of the lighthouse. If the free-rider problem is extreme, then there won't be enough lighthouses, or any at all. For that reason, economists starting with John Stuart Mill in 1848 and most notably Paul Samuelson, who formalized public good theory in 1954, concluded that public goods should be supplied by governments and paid for through taxation. Coase was dissatisfied with this treatment of public goods, and in "The Lighthouse in Economics" (1974) he laid out his critique and an alternative analysis.

In economics, "public goods" has a precise technical definition—a public good is both non-excludable and non-rival. Non-excludable means that a person cannot be prevented from consuming the good if they don't pay, and non-rival means that adding more consumers does not reduce the amount of the good available for others. National defence is the closest thing to a pure public good because national defence protects everyone in a country, not just taxpayers, and adding more people to the country does not diminish the amount of defence available to others to consume (the marginal cost of serving an additional consumer is zero). National defence is clearly provided by the state and paid for through taxation, and public good theory suggests that doing so avoids the free-rider problem that arises with a decentralized pricing system.

Another economic good that interested Coase—the use of radio spectrum for broadcasting—also has the public good features of non-excludabiilty (anyone can listen to radio broadcasts) and non-rivalry (the signal does not degrade even when more people listen). Yet broadcast radio is a private industry (even public radio in the US is supported almost entirely by individual memberships and corporate sponsorships), paid for by advertising, with little evidence of a free-rider problem. How is this private provision of a public good possible?

The private provision of a public good

In his analysis Coase does two things that are common in his work: he points out relevant aspects of the question that other scholars are overlooking, and he emphasizes the essential role of institutional detail and knowing that detail to be able to produce sound economic theory. Coase uses Mill and Samuelson as analytical foils. He notes that Mill's argument supports government taxation to pay (private or public) lighthouse owners for their services while Samuelson makes a different argument, that zero marginal cost for an additional ship means that the lighthouses should be provided to everyone, and therefore through government ownership. Both Mill and Samuelson engage in a casual observation of reality, pointing out that in their day the provision of lighthouses was a government function and then deducing that private lighthouses were not sustainable due to the free-rider problem.

Coase challenges that claim, and through it the theory they developed, with his empirical investigation of the history of the British lighthouse system. England was the dominant maritime power in Europe in the 18th and 19th centuries, and its shipping industry was expanding quickly. Lighthouses initially emerged as private commercial entities, but in 1836 were nationalized and operated by governments (Candela and Geloso, 2019). Using the centuries-old piloting organization Trinity House, the British government first nationalized the lighthouses–and then supervised the collection of light dues to create a General Lighthouse Fund. Different types of vessels paid different dues, some by journey and some as an annual fee, so price discrimination was reflected in their monopoly grants (foreign ships always paid more than domestic ones). Between the 16th and early 19th centuries, though, Britain had private lighthouses, the owners of which overcame free riding by collecting port fees and bundling lighting services with other maritime safety services such as pilotage and ballastage. There were also other substitute means of providing light and guidance along the coast, particularly in the 16th and 17th centuries. For instance, as Rosolino Candela and Vincent Geloso have analyzed, entrepreneurs provided floating lighthouses or lightships along the English coast, with construction funded by voluntary contributions, subscriptions, and user fees that differed for different types of vessels (price discrimination) (Candela and Geloso, 2018).

Coase's examination of this rich history was detailed and showed the diversity of institutional arrangements that existed in maritime safety. For example, in a shallow port with shifting sands, having a local pilot bring the ship into port had substantial value as a private good to the ship's captain, and the lighthouse service was a complement to such pilotage. A lighthouse owner could charge a fee for pilotage that bundled the light service with it (Candela and Geloso, 2019). Such arrangements were common in Britain and elsewhere. The more important way of thinking about the situation was to characterize it as a market for maritime safety services, which involved a variety of services that could be provided in a variety of ways by different private parties. Lighthouses were but one part of that broader market.

Public good theory that focused only on one service often overlooked alternative institutional arrangements and, from Coase's perspective, missed the important economic theory that would help us understand why and how such institutional arrangements emerged and were beneficial to both producer and consumer (in constrast, see Bertrand (2006) for a critique of Coase's argument). If we theorize without understanding the actual markets and institutional frameworks about which we theorize, our theories have little meaning and are no more than "blackboard economics" likely to be derided as irrelevant when economics can and does provide valuable insights.