

The Harberger Triangle Re-Visited

Elaine Ryan and Carol O' Sullivan

This essay details the welfare costs that result from the presence of monopolies in society. As a basis for this discussion, the outcomes of competition and non-competition are first contrasted. In section two, the social costs of monopoly as first estimated in the pioneering work of Harberger (1954) are examined. It will be argued that Harberger's triangle is an inaccurate tool for measuring the full social costs of non-competition.

Competition versus non-competition

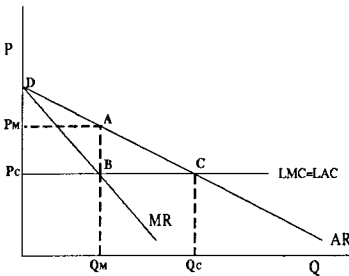


Figure I

In the above diagram, the situation in which a monopolist and a perfect competitor face identical and constant costs in the long run is depicted. In order to maximize profits the perfect competitor, with no power to influence the market price, sets $AR = MR$ and thus produces Q_c at a price P_c . No supernormal profits accrue, and consumer surplus of DP_cC obtains. This is the optimal outcome for consumers. In contrast, the monopolist sets $MR = MC$ resulting in Q_m being produced at a price P_m . Monopoly power enables price to be

kept above marginal cost, yielding supernormal profits of $P_m P_c BA$. Under these circumstances, the consumers lose out as their surplus is reduced to $DP_m A$. The remainder of the original consumer surplus becomes a deadweight loss to society. This area, ABC , is known as the Harberger triangle.

The Harberger Triangle

In 1954 Harberger attempted to measure the deadweight loss resulting from monopoly. He argued that ABC :

$$\begin{aligned}
 &= -0.5\Delta P\Delta Q \\
 &= -0.5\Delta P \cdot dQ/dP \cdot \Delta P \\
 &= -0.5[(\Delta P)^2/P] \cdot [dQ/dP \cdot P/Q] \cdot Q \\
 &= -0.5[(\Delta P)^2/P] \cdot \epsilon \cdot PQ/P \\
 &= -0.5(\Delta P/P)^2 \cdot \epsilon \cdot PQ
 \end{aligned}$$

where ϵ is the price elasticity of demand. The above equation states that the welfare loss is dependent on the change in price resulting from the move to monopoly (the price elasticity of demand), and total revenue. Harberger assumed that the price elasticity of demand was equal to one. Using this formula, he summed areas ABC for each industry to arrive at an aggregate estimate of welfare loss for the US economy. He concluded that the total deadweight loss for the US in the 1920s represented no more than 0.1% of GNP. This implied that there was not a large social cost associated with non-competition. Society need not worry about the presence of monopolies in the economy, and policy makers need not direct their efforts towards restricting or controlling their behaviour.

However, it can plausibly be argued that Harberger's estimation procedure was flawed. Stigler (1960) was one of the early critics. Firstly, he contested Harberger's equation of the price elasticity of demand to one. He argued that this was unrealistic due to the fact that non-competitive firms tend to operate on more elastic parts of the demand curve. If we accept this we should use a larger value in the above formula, yielding a larger deadweight loss. Secondly, Stigler pointed out that, because some profits are treated as costs, accounting rates of return understate true monopoly profits.

Despite these criticisms the majority of the early studies concurred that the losses to society arising from the existence of monopoly were relatively insignificant as Harberger had proposed. However, these early studies were limited in their approach since they only focused on the welfare costs arising from output restrictions. They didn't consider the fact that to maintain their position, monopolies may wastefully use resources. This idea was the subject of Posner's (1975) analysis.

Beyond the Harberger Triangle

When monopoly profits exist, profit-maximising behaviour on the part of firms entails the inefficient use of resources in an effort to sustain these profits. The associated resource misallocation is a significant cost of non-competition. Posner, by assuming that the resources needed for this sustaining behaviour are in perfectly elastic supply, claimed that their consumption would equal the whole of monopoly profits. He asserted that these resources are wasted on such activities as:

- (i) advertising as an entry barrier: in order to compete, entrants would be forced to incur the same level of advertising costs per unit of output. For some this would be financially infeasible.
- (ii) over-patenting: the incumbent firm may

spend large amounts of money on research and development. Consequently new prototypes and products emerge. The firm patents these in order to prevent their development by others, hoping to claim market share. However only a small proportion of these are actually produced by the firm. Therefore much of his expenditure is wasteful because it does not give rise to benefits for society in the form of new and improved products.

- (iii) directly unproductive activities: a monopolist wants to ensure that he stays in his advantageous position. In order to pursue this objective he may engage in political lobbying, bribing etc. These activities, as well as being of no social benefit, constitute a distraction to public officials from their work for society. They are also of dubious moral integrity.

Referring back to Figure I, the social cost of non-competition is now represented by both the Harberger triangle and monopoly profits; ie. $ABC + PmABPc$. Using the same data as Harberger for U. S industry, Posner (1975) estimated the total welfare loss of monopoly to be 3.4% of G.N.P.

Once again, however, objections can be raised. Monopoly profits are a poor measure of wasteful expenditure. On the one hand, they may overestimate the loss. First, forms of non price competition such as advertising may offer benefits to society, such as the provision of improved information about products and their uses. Secondly, firms may decide among themselves not to compete for the profits and therefore don't need to waste resources in pursuit of them. On the other hand, the profits may underestimate the loss. First, as noted by Stigler (1960), some of monopoly profits may appear as costs but we need full monopoly profits if we are attempting to use them to measure the wasted resources.

Second, costs resulting from Government efforts to control monopolies are not included in Posner's calculation.

The work of Posner was lent empirical support by Cowling (1972). He examined the social costs of non-competition in both the US and the UK, obtaining similar results to Posner's. A further result of his study was that social losses in the U.S are larger than those in the U.K. This could be a reflection of the higher levels of advertising in America. Overall, then, it can be concluded that the objections raised by Posner remain tenable.

One final study deserves attention. Comanor and Leibenstein's (1969) work on the efficiency of monopoly has led to a further examination of the extent of social losses. They question the assumption of identical costs under perfect competition and monopoly. Their proposition is that a monopolist is cushioned from the competitive market forces and so may allow his costs to rise above those of a perfect competitor.

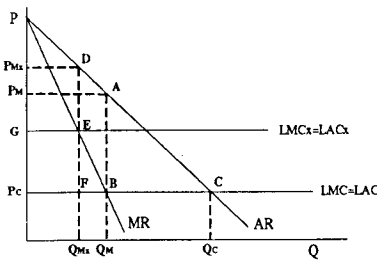


Figure II

As can be seen from Figure II, the perfect competitor operates at P_c and Q_c and consequently there is no deadweight loss or supernormal profits. The monopolist with identical costs produces Q_m at P_m , making supernormal profits of P_mABP_c and causing a deadweight loss of ABC. However the inefficient monopolist with higher costs ($LMC_x = LAC_x$) restricts

output further to Q_m and charges a price of P_m . He earns supernormal profits of $P_m x DEG$ and we can also see that the deadweight loss is increased to DFC. A further social loss, to be added to this is the straight x- inefficient loss GEP_c . This is a result of the higher monopoly costs.

Certain problems with this analysis can, however, impinge. The social loss under monopoly can in fact be smaller than that under perfect competition if the monopolist's costs are considerably below those of a perfect competitor due to economies of scale.

Conclusion

In this essay, attention was focussed on the idea of social welfare loss under conditions of monopoly. Harberger's approach remains deficient in certain respects, and alternative formulations, buttressed by empirical data, seem to deserve more consideration.

References

Comanor, W. S. and Leibenstein, H. (1972) "Allocative Efficiency, X-Efficiency and the Measurement of Welfare Losses," *Economica* (Aug.), 304-309.

Cowling, K. (1972) *Market Structure and Corporate Behaviour: Theory and Empirical Analysis of the Firm*. London: Gray-Mills.

Harberger, A. C. (1954) "Monopoly and Resource Allocation," *American Economic Review*, 44(2), 77-92.

Posner, R. A. (1975) "The Social Costs of Monopoly and Regulation," *Journal of Political Economy*, 83(4), 807-827.

Stigler, G. J. (1960) *The Theory of Price*. New York: Macmillan.