

If you wish to discuss the tutorial questions please come to my [office hours](#).

1. [Dixit and Norman's \(1978\) paper](#) (in which they derived the excessive advertising result) assumed that consumers were homogeneous. [Shapiro \(1980\)](#) comments on Dixit and Norman's paper, and argues that allowing for certain types of heterogeneity of consumers can overturn the excessive advertising result.¹ To illustrate his point he uses a simple example. A monopoly faces two identical consumers. Each consumer has downward sloping demand given by $D(p)$ where p is the price. The monopoly's marginal cost is c .
 - (a) Suppose that before the monopoly advertises only one consumer is aware of the product.
 - (i) Draw the pre-advertising market demand curve, D^0 (for your diagram, assume the demand curve is a straight line), and the marginal cost curve.
 - (ii) Write down an expression (involving p , c and $D(p)$) for the monopolist's pre-advertising profit, $\Pi^0(p)$. Indicate on your diagram the profit-maximizing price p^0 and quantity q^0 .
 - (b) Advertising informs the second consumer of the existence of the monopolist's product but does not change the tastes of consumers.
 - (i) Draw the post-advertising market demand curve D^1 on the same axes as your previous diagram.
 - (ii) Write down an expression (involving p , c and $D(p)$) for the monopolist's post-advertising profit, $\Pi^1(p)$. Compare it to the profit expression in (a).ii and explain why the profit-maximizing price is not affected by advertising.² Indicate on your diagram the profit-maximizing price p^1 and quantity q^1 .
 - (c) On your diagram show Dixit and Norman's measure of the change in welfare using the post-advertising market demand curve D^1 .
 - (d) On your diagram show the actual change in welfare.
 - (e) There is an area included in the measure of the welfare change in (d) that is not included in the Dixit and Norman measure in (c). Label this area. What does this extra area represent?
 - (f) How does the change in welfare from (d) compare to the change in profits? If advertising informs about existence, is a monopoly likely to advertise excessively or insufficiently?

¹This is why we assumed that advertising was persuasive in the lecture.

²Note that Dixit and Norman's analysis assumed a price rise. This example could be altered slightly to fit Dixit and Norman's assumptions by assuming the second consumer's demand curve is more inelastic so that advertising raises the price.