The profitability of a given price increase depends on the price elasticity of demand for goods in the specified market. If costs are constant, demand is linear, and the price initially is at the competitive level, a firm would raise price by 5% if the demand elasticity were equal to 10, and would raise price by 10% if elasticity were 5. Estimation of the elasticity of demand therefore provides a test of whether the hypothesized market is indeed a market for antitrust purposes.

This simple relation between critical elasticities and the price rule presupposes constant short run marginal costs. (I stress "short run" since, if the benchmark period is one year, the firm would presumably not make any significant changes in its fixed capital plant.) What is the critical elasticity of demand for market definition under the Merger Guidelines if cost is not constant? The answer is transparently simple if we know the parameters of the cost function. Even with limited information we can narrow the range on the critical demand elasticity. In particular, the critical demand elasticity can be approximated as a function of the supply elasticity.

Consider the usual model of costs, in which marginal costs decline over some region and then subsequently rise. The variable cost function is represented by $V(Q)$ and units are defined so that the competitive output Q_0 equals 1. (I ignore fixed costs as they do not affect the firm's decisions in the short run.) Competitive equilibrium is then $V'(1) = P_0$, and monopoly equilibrium is $V'(Q_1) = MR(Q_1)$, where $MR(Q)$ is the marginal revenue