

equal to the income which would be withdrawn to offset the price decrease.

Equivalent Variation is the change in income which, given the original price, would leave the consumer's satisfaction or utility unchanged if price decreases. An increase in income equal to EV would be given to the consumer to maintain welfare.

While EV and CV are technically the more correct measures of welfare change, they are difficult to estimate, and the value of consumer surplus, which is closely related to CV and EV, is easier to measure and is therefore recommended for this analysis.

### Public Goods

In the above discussion, we assumed that commodity x was traded in an organized market at a non-zero price. The impact of LRTAP on the price of a particular commodity was subsequently considered. This scenario is, of course, an over simplification. Now let us consider a certain commodity which is a "public good" such as an environmental commodity (e.g., clean air), which is not traded in an organized market (but not, of course a zero value to society). The levels of this environmental commodity are assumed to be outside the control of the individual. Hence, the overall level of consumer welfare depends not only upon prices of market commodities and money income, but also upon the level of environmental commodities he consumes.

Where there are no markets, and hence no prices, it is difficult to derive a demand curve, and it is done through other means, as discussed in sections II and III. Again, the measure of consumer's surplus is the area under the demand curve, and in this case, the total area since the price is zero. The change in consumer surplus would be measured by the change in quantity if, for example, visibility increases due to reduced LRTAP, as shown in Figure 7-7.

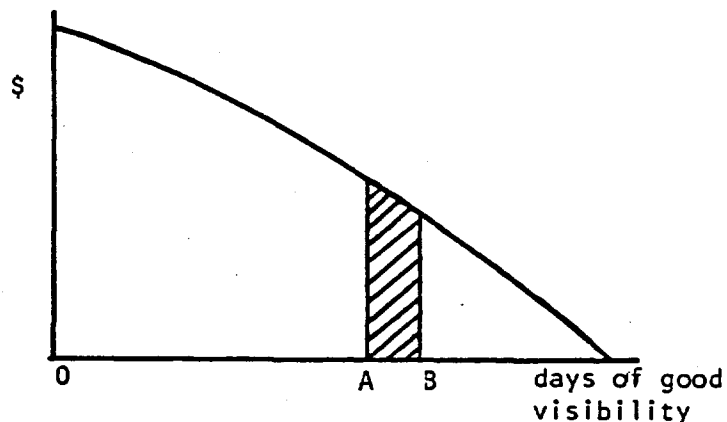


Figure 7-7 Change in demand due to visibility improvement.

While willingness-to-pay is used to determine demand curves, this is not the real test of the value of visibility, although it is an easier measure. The change in quantity has affected consumer utility, and the consumer effectively enjoys an increase in income.