

Illustration one.

Taxing Alcohol to save lives (chapter 16)

Argument: the consumption of alcohol by the individual does not take into account the cost to society of this consumption.

Why?

Long term health effects may not be reflected.

Highway fatalities of alcohol impaired drivers.

In 1980, over 23,000 of 53,000 highway deaths were caused by drivers who had been drinking.

For each 100 alcohol impaired drivers who dies, about 77 other people also die in these accidents.

Proposal is to raise the excise tax on alcohol by 30%.

What is the impact on the demand for alcohol?

First, they assume the supply is effectively flat.

This assumes that suppliers are not particularly price responsive compared to consumers, and that the burden of the tax is passed on to consumers pretty much completely.

Demand for youth and adults is estimated separately, as youth and adults appear to differ in both demand and in the impact they have when driving.

Tax has impact on supply and demand graph as illustrated on figure 16.7 (page 415).

Tax revenue goes up, price to the consumer goes up (here price to the seller is the same with and without the tax), quantity goes down.

Loss of consumer surplus is \$9.5 billion, tax revenue is \$9.0 billion, DWL of about a half billion in the beer market. Wine and liquor added in, together a DWL of \$1.4 billion.

Valuing the reduction in fatalities.

Young drivers:

Using existing data, arrive at an estimate that a 30% tax leads to 1,650 fewer fatalities of drivers 16-21. As each driver fatality also has potential non-driver fatalities, the total deaths avoided by this would be $1,650 + 1,270 = 2,920$ per year.

Older drivers, indirect methods leads to an estimate of 861 lives for the adults.

Reduction in injuries and property damage. Look at damage estimates currently (\$3.75 billion per year) and assume non-fatal accidents are decreased by the same proportion as fatal accidents. Estimate the benefits to be \$0.65 billion.

Health and productivity gains. Estimate from a 1977 document that identifies health costs equal to \$25.92 billion and productivity at \$39.96 billion (after conversion to 1986 dollars used elsewhere in the analysis).

Benefits estimated at around 6.6 billion for productivity and 4.3 billion for health.

Prices: do drinkers make informed choices when drinking about the potential for their own death? Then it is already taken into account. If they are subject to missing information / uninformed demand, then the alcohol market data may not reflect social cost. People killed in accidents who are not drinking are clearly subject to a missing market problem. They are subject to an externality imposed by private decision of the driver. Alternatively, they have a willingness to pay for safe roads that is a public good.

Different cases: Table 16.3 on page 422.

Alternative tax rates: table 16.4 on page 423

Benefit cost.

We are trying to figure out whether introduction of a fodder crop that can be used to fatten sheep before marketing them makes sense in rural Mali. The fodder will be grown in fields that are currently producing millet, which is valued at 2.5 million dollars a year. If the fodder is grown the millet cannot be grown in the field. Training farmers in the production and use of this fodder will cost 0.5 million dollars over the first two years ($t=0, t=1$) of a three year project. In $t=0$ and $t=1$ it is estimated that the increased revenue from fattening is worth 2 million. In $t=2$, after farmers have some experience, it is anticipated this will increase to 4.5 million. All values are nominal values.

a) If the nominal discount rate is 10%, does the fodder project pass a benefit cost test over the time horizon $t=0, t=1$, and $t=2$?

	Benefit	Cost	Net
T=0	$2.0/(1.1)^0$	$0.5+2.5/(1.1)^0$	$2.0-(0.5+2.5)/(1.1)^0$
T=1	$2.0/(1.1)^1$	$0.5+2.5/(1.1)^1$	$2.0-(0.5+2.5)/(1.1)^1$
T=2	$4.5/(1.1)^2$	$2.5/(1.1)^2$	$4.5-2.5/(1.1)^2$

b. If there is a $t=3$ year of the project included in the calculation, where the costs and benefits in $t=3$ are the same as $t=2$, will that lead to a

different evaluation about whether the fodder project should be undertaken or not?

	Benefit	Cost	Net
T=0	$2.0/(1.1)^0$	$0.5+2.5/(1.1)^0$	$2.0-(0.5+2.5)/(1.1)^0$
T=1	$2.0/(1.1)^1$	$0.5+2.5/(1.1)^1$	$2.0-(0.5+2.5)/(1.1)^1$
T=2	$4.5/(1.1)^2$	$2.5/(1.1)^2$	$4.5-2.5/(1.1)^2$
T=3	$4.5/(1.1)^3$	$2.5/(1.1)^3$	$4.5-2.5/(1.1)^3$

c. If someone asked you which was the more defensible approach to the time horizon, that taken in part a or part b, what would you respond?