Case 1.2 Opportunity cost and productivity in agriculture

Summary

This case study shows how the concept of opportunity cost can be applied to calculate a measure of the value of economic activity that incorporates resource costs due to environmental damage from the activity.

Suggested answers

1 Can you think of other examples of activities that cause environmental damage where the value of that damage would need to be incorporated into the value of inputs used in production in order to construct a ‘true’ measure of the productivity of that activity?

There are many possible examples. Where mining activity causes damage to the natural environment that reduces subsequent revenue from tourism or requires expenditure of resources to ‘clean up’ that damage, then these would need to be included as resource costs; alternatively, where there is some manufacturing operation that causes air pollution, which causes respiratory problems for the population living nearby, some of whom subsequently require medical treatment, the cost of that medical treatment would need to be incorporated as a resource cost of the manufacturing activity.

2 Simon and Erica give up their jobs in the Economics Department to set up their own consulting firm. To set up their business, they must buy an office for $50 000. Should they choose to cease operating their business at some future date, they know they will be able to sell the office for $40 000. If they did not buy the office they would have invested the money they spent on the office and earned an annual interest rate of 10 per cent. They also need to hire a research assistant. The salary cost of the research assistant is $50 000 per annum. In its first year of operation, Simon and Erica expect to earn revenue of $200 000.

What is the total opportunity cost to Simon and Erica of setting up their consulting firm for one year?

One component of opportunity cost involves the $50 000 invested to buy the office. If they decide to cease the business after one year, Simon and Erica can only recoup $40 000. Hence there is a cost of $10 000. As well, had they not bought the office, Simon and Erica could have invested the funds to earn 10 per cent interest. This represents foregone income of $5000. The other component of opportunity cost is the $50 000 salary for the research assistant.

Hence the total opportunity cost equals $65 000 ($10 000 + $5000 + $50 000).

3 Since 2015, the Victorian Government has spent over $2.5 billion removing over 30 train level crossings in Melbourne and replacing them with flyovers or tunnels. Their justification for this policy is the significant delays caused for motorists at the train crossings during peak time. For example, it was estimated in 2015 that the crossing at Koornang Road in Carnegie was found to be closed for up to 87 minutes between 7 am and 9 am (Gordon, 2015).

How would you calculate the opportunity cost of time spent by motorists at level crossings?

How would you evaluate whether the Victorian Government is spending its funds wisely by committing to eliminate the level crossings?

The opportunity cost of time spent by motorists at level crossings is the value of what they could have done with the next best use of that time. For example, if it is assumed that being stuck at a level crossing reduces working time, the opportunity cost for a driver would be the amount of time spent waiting at level crossings (in hours) multiplied by their hourly wage rate.

A benefit-cost analysis can be used to calculate whether the Victorian Government is spending its funds wisely. The opportunity cost to the government of eliminating the level crossings is the mount it is paying for their removal. The benefit of eliminating the level crossings is equal to the sum of individual benefits for each driver. The individual benefit to a driver is equal to the value of the reduction in time spent waiting at level crossings, which would be calculated as described above. The government will be spending its funds wisely if the sum of benefits to drivers is greater than the cost of removing the crossings.