Chapter Five

Valuing Benefits and Costs in Secondary Markets
Figure 5-1(a) Primary Market: Market for Fishing Days

[Diagram showing the market for fishing days with access price on the y-axis and days of fishing on the x-axis. The diagram includes lines representing different market conditions, with points a and b indicating intersections.]
Figure 5-1(b) Secondary Market: Market for Fishing Equipment (No Price Effect)
Figure 5-2(a)  Primary Market: Market for Fishing Days

Access price

$P_{F0}$

$P_{F1}$

$D^*$

$D_{F0}$

$D_{F1}$

$q_{F0}$

$q_{F1}$

Days of fishing
Figure 5-2(b)  Secondary Market: Market for Golfing Days (Price Effects)
Figure 5-3  Distorted Secondary Market: Market for Fishing Equipment (No Price Effect)
Figure 5-4  Market for (a) Beef (b) Chicken
EXHIBIT 5-1

It is sometimes both desirable and feasible to build models of closely linked markets to estimate changes in social surplus. They are commonly referred to as computable general equilibrium (CGE) models, but this is a misnomer—they take account of a small set of the many markets that make up an economy and thus might be more accurately called computable multi-market equilibrium models. Considering multiple markets rather than limiting analysis to the equilibrium demand schedule in the primary market is appropriate when markets are not neatly separable because of externalities in consumption or production.

One application of CGE models is to assessing policy changes in markets for heterogeneous goods with production externalities. For example, what is commonly referred to as the oil market involves the extraction of crude oils of various qualities in various locations, their transportation to refineries employing different technologies to produce petroleum products in various locations, and the sale of these petroleum products in various regional markets. George Horwich, Hank Jenkins-Smith, and David Weimer use such a model to assess the efficiency of various public policy responses to oil supply disruptions.

Constructing, calibrating, and using industry-level CGE models are demanding tasks that require substantial resources and thus often are not worth developing for purposes of a single CBA. For example, a proper CBA of changes in the capacity of O’Hare International Airport would require a model that takes account of the network externality inherent in the airline system—delays originating at O’Hare propagate to flights into and out of other U.S. airports. Creating a CGE model of the U.S. airline industry would likely be too costly a task for analysts doing a one-time study of a proposed O’Hare expansion but might be an appropriate investment for the Federal Aviation Administration to provide as a tool for assessing the net benefits of any proposed airport expansions.

Despite the difficulty of creating useful CGE models, they are being increasingly used in policy analysis. For example, Thomas Nechyba has developed models of public education to take into account the effect of school outcomes on residential choice and the consequences of residential choice on student body composition and tax revenues, important factors in school outcomies.

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<thead>
<tr>
<th>Type of Intervention</th>
<th>Efficient Markets</th>
<th>Inefficient Markets</th>
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<td>Purchases from factor markets. (Concept: value costs as the opportunity cost of the purchased resources.)</td>
<td>If supply schedule is flat, value cost as direct budgetary expenditure. (Example: purchase of materials from a competitive national market.)</td>
<td>Value costs as direct budgetary expenditure less (plus) any increase (decrease) in social surplus in market. (Examples: hiring unemployed labor; purchases of materials from a monopoly.)</td>
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<tr>
<td>Changes in costs to consumers or producers in primary markets. (Concept: value benefits as WTP for the change and costs as WTP to avoid the change.)</td>
<td>Value change as net change in social (i.e., consumer and producer) surplus plus (less) any increase (decrease) in government revenues. (Example: government provision of goods and services to consumers or producers.)</td>
<td>Value change as net change in social (i.e., consumer, producer, and third-party) surplus plus (less) any increase (decrease) in government revenues. (Example: tax or subsidy in market with externality.)</td>
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Table 5-1 (continued)  Rules for Measuring Social Benefits and Costs of Government Interventions

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<th>Changes in quantities exchanged in secondary markets as a result of government intervention in primary or factor markets.</th>
<th>If prices do not change in secondary market, ignore secondary market impacts.</th>
<th>Costs or benefits resulting directly from increases in the size of the distortion should, in principle, be measured. Other impacts in secondary market should be ignored if prices do not change. (Example: price changes in primary market cause the demand schedule to shift in a secondary market with an externality.)</th>
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<td>(Concept: commodities exchanged in secondary markets are typically complements of or substitutes for commodities exchanged in primary markets; most impacts in secondary markets can be valued in primary markets.)</td>
<td>If prices do change, but benefits in primary market are measured using a demand schedule with other market prices held constant, then social surplus changes in the secondary market will always represent reductions in social surplus that should be subtracted from changes in the primary market. But if benefits in the primary market are measured using a demand schedule that does not hold other prices constant, ignore secondary market impacts. (Example: price changes in primary market cause demand schedule shifts in competitive secondary market.)</td>
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*These rules pertain only to measuring impacts of government interventions on society as a whole. Issues concerning standing are ignored in the rules.*
1. The cracked walls in houses that would result from the increased traffic are a negative externality. Although the externality would occur in the secondary market for housing, it should be taken into account in the study.

2. The increased purchases of gasoline would occur in a secondary market. If this market is not seriously distorted (e.g., by externalities or monopoly power), then the increase in gasoline purchases should be ignored because any
EXHIBIT 5-2 (continued)

effects on surplus will be captured by measuring surplus in the primary market. (Notice, however, that doing this neglects the fact that it is the owners of the filling stations, rather than automobile drivers, who receive the increase in surplus from increased purchases of gasoline; it also ignores the possibility that filling station owners who are located on other streets may face reductions in surplus.)

3. The property market is also a secondary market. Hence, these effects should be ignored.

4. The decrease in traffic on adjacent streets can be viewed as a reduction in a negative externality—congestion—that distorts a secondary market (the adjacent streets are presumably substitutes for the street that would be widened). This is a real benefit that should be taken into account.

5. Air pollution is a negative externality that distorts the primary market. Hence, it should be taken into account.

6. The hiring of three additional police officers would take place in a factor market for labor and can be viewed as a direct cost of the project.

7. The increase in traffic fines would simply be a transfer between motorists and the city and, except for their distributional implications, can be ignored.

8. The 10 laid off bus drivers would lose their jobs because the demand schedule in the secondary market for public transportation would shift to the left. Unless this market or the factor markets that serve this market are distorted, the shift in demand can be ignored. Examples of such distortions are the loss of monopoly profits by the bus company or the inability of the bus drivers to find new jobs because of high rates of unemployment. Otherwise, the bus drivers would simply find new jobs at a similar level of compensation, implying that widening the road would have no effect on the social value of the output they produce.

9. The benefits and costs of cutting down the trees and selling them to a sawmill can be assessed independently of the street-widening project. If the benefits from cutting down the trees exceed the costs, then the trees should be cut regardless of whether the street-widening project is undertaken. However, if the costs exceed the benefits, then the costs and benefits of cutting the trees should be included in the CBA of the street-widening project.