Benefit-Cost Analysis: Overview of the Approach and Practical Applications

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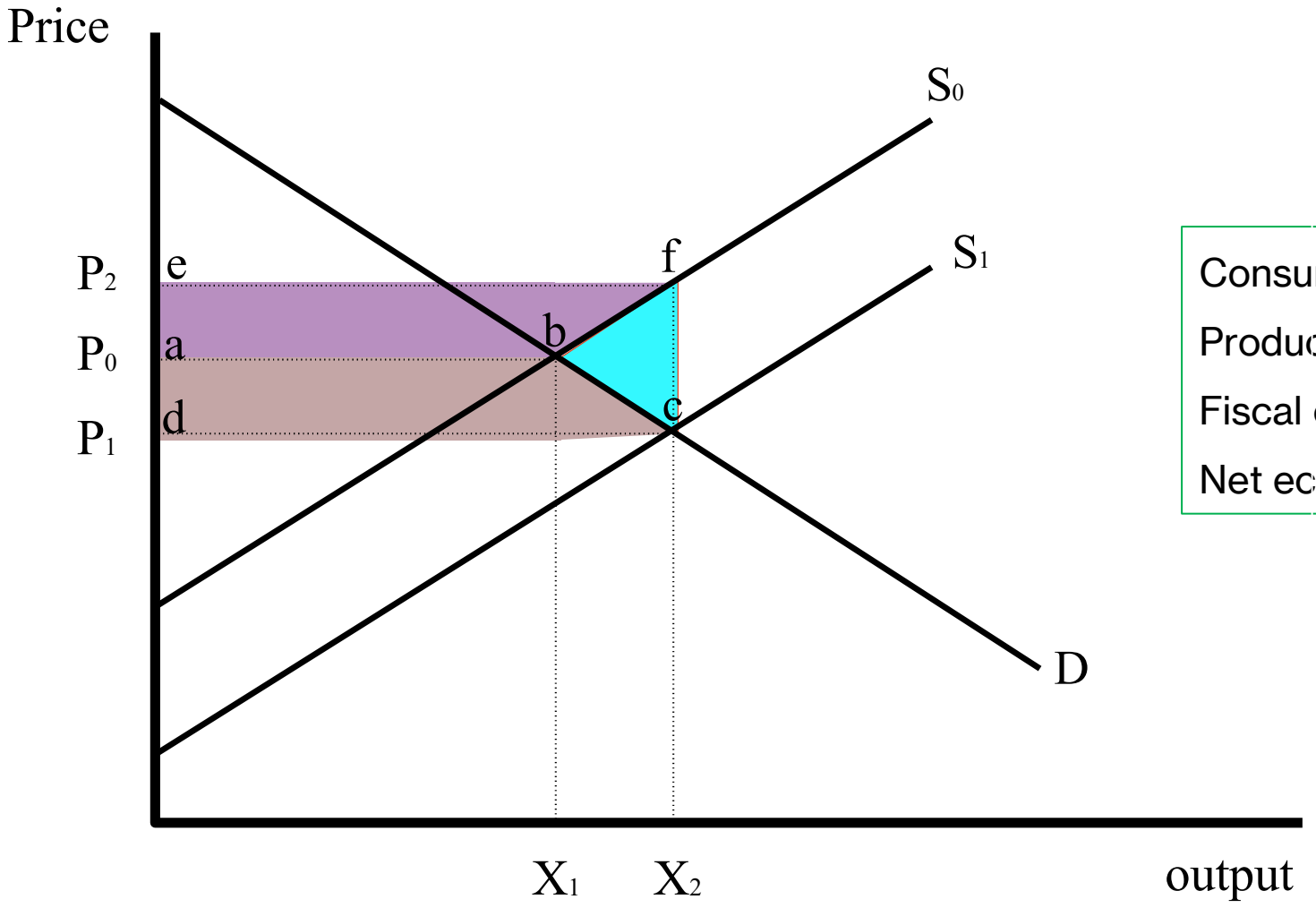
Outline

- Use of benefit-cost analysis in federal evaluations
- Overview of the benefit-cost methodology
- Application to business subsidies
  - Hypothetical production subsidies
  - SR&ED investment tax credit
- Application to social programs
- Comparing programs

Economic Cost of a Production Subsidy – No Market Failure



Consumer benefit: **abcd**

Producer benefit: **abfe**

Fiscal cost: **cdef**

Net economic cost: **bcf**

Benefit-Cost Analysis of a Hypothetical Manufacturing Sector Production Subsidy
(Millions of $, except as noted)

Key parameters and data	
Production level	3550
Subsidy-induced increase in production	458
Subsidy Rate	15.0%
Price elasticity of demand	-1.00
Administration expenses (% of subsidy)	1.7%
Compliance costs (% of subsidy)	3.5%
Output share of foreign-controlled firms	48.4%
Export orientation	50.0%
Marginal excess burden of taxation	0.26

Benefits	
Producer and consumer benefits from the subsidy	466
Costs	
Fiscal cost of the subsidy	500
Efficiency cost financing the subsidy with higher taxes[1]	144
Transfer of the subsidy to non-Canadians	
Profits of foreign-controlled firms	36
Lower export prices	105
Administration and compliance costs	28
Total costs	813
Net Benefit	-347
Memo items	
Resource reallocation cost	34
Net fiscal cost of the subsidy	560
Net benefit /net fiscal cost	-62%

1. Calculated as the net fiscal cost times the marginal excess burden of taxation.

Benefit-Cost Analysis of a Hypothetical EV Battery Plant Production Subsidy that Attracts Incremental FDI
(Millions of $, except as noted)

Key parameters and data	
Production level	3550
Incremental capital	6745
Rate of return on capital	15.0%
Subsidy Rate	15.0%
Administration expenses (% of subsidy)	1.7%
Compliance costs (% of subsidy)	3.5%
Output share of foreign-controlled firms	100.0%
Export orientation	90.0%
Marginal excess burden of taxation	0.26

Benefits	
Additional corporate income tax revenue	267
Producer and consumer benefits from the subsidy	335
Total benefits	602
Costs	
Fiscal cost of the subsidy	500
Efficiency cost financing the subsidy with higher taxes[1]	162
Transfer of the subsidy to non-Canadians	
Profits of foreign-controlled firms	75
Lower export prices	189
Administration and compliance costs	28
Total costs	954
Net Benefit	-352
Memo items	
Resource reallocation cost	165
Net fiscal cost of the subsidy	557
Net benefit / net fiscal cost	-63%

1. Calculated as the net fiscal cost times the marginal excess burden of taxation.

Benefit-Cost Analysis of the Federal Large Firm SR&ED Investment Tax Credit
(Millions of $, except as noted)

Key parameters and data	
Qualified R&D spending ($Million, 2022)	13,081
Subsidy-induced R&D	1,463
Subsidy Rate	15.0%
Price elasticity of demand	-0.86
Spillover rate (% of induced R&D)	74.1%
Administration expenses (% of subsidy)	1.7%
Compliance costs (% of subsidy)	7.1%
R&D share performed by foreign-controlled firms[a]	36.4%
Export orientation[a]	29.5%
Marginal excess burden of taxation	0.26

Benefits	
Producer benefits from the subsidy	1224
Lower production costs from spillovers	1084
Efficiency gain from lower taxes[1]	48
Total Benefits	2356
Costs	
Fiscal cost of the subsidy[2]	1331
Transfer of the subsidy to non-Canadians	
Profits of foreign-controlled firms	87
Lower export prices of commercialized R&D	69
Administration and compliance costs	173
Total costs	1660
Net Benefit	696
Memo items	
Resource reallocation cost	107
Net fiscal cost[3]	-147

a. Excess over economy-wide average

1. Calculated as the net fiscal cost times the marginal excess burden of taxation.
2. Adjusted for the reduced value of depreciation allowances and delayed claims.
3. Calculated as the net economic benefit times the average tax rate.

Net Benefit of the Large Firm SR&ED Investment Tax Credit--Sensitivity Tests ($m)				
		Price elasticity		
		-0.309	-0.86	-1.01
Spillover Rate	29.6	-213	0	53
	66.0	7	569	709
	74.1	56	696	855
	82.2	105	823	1001

A New Approach to Comparing Programs
(Hendren and Sprung-Kaiser, QJE, 2020)

- Rank programs by net social benefits relative to net fiscal cost, or the marginal value of public funds (MVPF)
- Optimality condition: equate marginal value and marginal cost of public funds (MCPF)
  - MCPF is the social cost of raising additional revenue
- Advantages over benefit-cost ratio
  - Net fiscal cost key consideration for policy makers
  - Consistent definition of numerator and denominator
  - Separate comparison with social cost of raising additional revenue

Concluding remarks

Why use BCA to evaluate programs?

- Recognizes opportunity costs
- Includes the benefits of correcting market failures
- Identifies the benefits and costs that affect Canadians
- Includes program administration and compliance costs
- Captures the social cost of raising additional tax revenue

Present MVPF as a supplementary indicator