

# 90-774 Public Expenditure Analysis

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This is a companion course to Public Finance, 90-736, and is designed to deal with the expenditure side of the public sector budget in a series of modules. It has been conceptualized as a blending of private and public capital budgeting principles. The former provides a systematic framework, for the evaluation of private- sector projects, while the latter builds on the former, and introduces issues of externalities, shadow pricing, and the social rate of discount. The two courses, Public Finance and Public Expenditure Analysis, may be viewed as capstone courses for those Heinz students seeking careers in the public sector, or those parts of the private sector that routinely deal with the public sector. Students from across campus are welcome to enroll.

The course is divided into 4 modules. In Module 1, the course develops the essential techniques of private sector evaluation principles. In Module 2, special problems which arise in the evaluation of public sector projects are discussed; a variety of evaluation techniques and applications especially suited to public sector projects are then examined. In Module 3, actual cost-benefit studies in the policy areas of education, environment, health, criminal justice, transportation and recreation are examined. In Module 4, evaluation at a high level of aggregation is dealt with through the use of generational accounting models. These models are examples of *aggregate* long and short-term public evaluation problem areas typically dealt with by national governments. Also in Module 4 groups of students perform and report a critical review of a cost-benefit study they have chosen. Throughout the course, similarities and differences between the public sector and private sector are emphasized, and examples from the real world are discussed in class.

The course presumes that the student has had courses in microeconomics and economic statistics, owns a calculator capable of doing  $x^{a/b}$  or  $x^{1.36}^1$ , and is familiar with the use of spreadsheet packages on a personal computer. Students are expected to bring their calculator to each class, and perform calculations in conjunction with class activities.

Applications of Public Expenditure Analysis in particular areas are contained in **CBA**; copies of the case studies will be distributed in bound form in class.

In addition, it is strongly recommended that you subscribe to *The Wall Street Journal* in order to keep abreast of fiscal and financial events in the private and public sectors. Please note that *The Wall Street Journal* is available free online through the Carnegie Mellon library portal.

No student who wishes to audit or take the course pass-fail will be permitted to do so unless the student agrees in writing to do **all** the work in class: all problem sets, participate in the project, take the 2 exams, participate fully in the group project, and of course attend the course.

Class attendance is not mandatory but strongly urged.

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<sup>1</sup> For example, the Casio fx-300H is a nice little, affordable calculator; it lists for about \$13.00 at discount stores.

This course is lecture-discussion and meets Monday and Wednesday and, as necessary on Friday to maintain the course calendar. The course will also meet Friday luncheon for guest speakers.

Evaluation will be based on performance in 5 problem sets, a group project and presentation due at the end of the course, a 1.5 hour midterm exam (March 6), and 3 hour final exam, and classroom performance. Problem sets are to be handed in **on paper**, and worked on **separately and independently** by each student. They must be word processed, explained in words, symbols and numbers; and any spreadsheet analysis utilized must display formulas in an appendix to the answer. A student may drop the lowest problem set score although the remaining problem sets will be worth 5% each of final points.

5 Problem sets 20% (4% for each problem set):

Problem set 1: Accounting Statements and Cash Flow, Discounting Formulae

Problem set 2: Valuing Stocks & Bonds, Alternative Investment Rules

Problem set 3: Capital Budgeting and Net Present Value Analysis

Problem set 4: Using CBA 1

Problem set 5: Using CBA 2

The problem sets **must** be handed in paper form; they can take a significant<sup>2</sup> amount of time, so plan accordingly. Group Cost-Benefit Project 15%

Midterm exam 30% (10 essay questions, or 3.0% per question)

Final exam 30% (15 essay questions or 2% per question)

Class participation 5% (answers in class about session readings and material)

Final points in the course are then calculated as the sum of the weighted scores above multiplied times the master weight. The grading scale for the course is:

50.0%-59.9%	R
60.0%-69.9%	D
70.0%-79.9%	C
80.0%-89.9%	B
90.0%-100%	A

Plus and minus grades are distributed within the above ranges, and ordinary numeric rounding rules are in effect. To pass the course on a pass-fail basis requires a 70% or above.

The expectation for each of the Group Cost-Benefit Project is as follows.

A group project is the cost-benefit analysis derived or based on an earlier cost-benefit analysis performed on a public policy initiative, typically, but not always a public capital project. Engineering studies are a common source as are “evaluations” performed by consultants, often accounting firms. The purpose of doing this is to bring together the technical discounting skills developed in the first part of the course, the conceptualization of public cost benefit analysis from the second part of the course and the “plug-ins” available from the CBA textbook, experience and knowledge gained from doing course problem sets, and the demonstration of professional presentation and writing skills. The project thus is intended to tie the course together for each student by “doing it.”

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<sup>2</sup>Students who have not had me should understand that I am prone to *understatement*; this means the problem sets take a lot of time, and you would be well advised to plan to devote on average 15 hours to **each**.

Prior course projects have looked at: subways in New York City, the various stadiums and convention centers in Pittsburgh, the tunnel to the North Side, maglev to the Pittsburgh International Airport, Boston's Big Dig, the Heinz School's 1 year masters program (M3), highway extensions from Denver to the mountains, the DC stadium, the Texas superhighway project, light rails in Seattle and Minneapolis, the No Child Left Behind federal education reform, the Emsworth lock and dam in Pittsburgh, the Central Arizona Water Project, the Pittsburgh Promise, a retrospective on the construction of the Pittsburgh International Airport, a retrospective on the construction of the Penguins new stadium, a retrospective on the Pittsburgh convention center, high a speed highway project in Turkey, a subway in Santo Domingo, high speed rail in China, and a DUI initiative for Pennsylvania. Each group is encouraged to find a new project for which there is some sort of *ex ante* evaluation with data that can be reanalyzed with more realistic assumptions about discount rate, benefits, costs and dead weight loss. Each group consists of no more than 3 students who choose each other; there is a presumption that one will be devoted to benefits, one to costs, and one to synthesis and sensitivity analysis. Examples of prior project presentations (essentially the power points) and papers are on Blackboard under *Review Materials* and on my personal website.

Each group, composed typically of 3 students, is required to make a class presentation of about 20 minutes devoted to background of the capital project, assumptions, costs, benefits, synthesis and conclusions. At the presentation, alums of the class, typically in the region, are invited to attend. Pizza and refreshments, including alcoholic beverages are provided. Each group must also write up the presentation in the form of a paper that is due the week of final examinations.

We will utilize *Blackboard* for as many course management purposes as possible. Within Blackboard, the course syllabus (and its updates) can be found under *Syllabus*; problem sets can be found under *Problem Sets*; lecture notes, power point presentations, and overheads can be found under *Notes and Reading Materials*. Note that the last group of material is organized by *Course Session* which corresponds to the syllabus (below) as Lecture/Session.

**The Course Syllabus is:**

Lecture/Session	Topic
	Student Survey, Course Overview
1	Overview of CBA
	No Class
2	Corporate Finance & Accounting Statements
3	Accounting Statements & Financial Planning
4	Net Present Value 1
	TA Review
5	Net Present Value 2
6	Valuing Debt and Equity
	TA Review
7	Alternative Investment Rules
8	NPV / Capital Budgeting 1
9	Capital Budgeting 2
10	Capital Budgeting & Strategy
	TA Review
11	Long-Term Debt, Sinking Funds
12	Cash Management
	REVIEW
	MIDTERM EXAM
<b>Spring Break</b>	NO CLASSES
13	Lease vs. Buy
14	CBA for Public Decision-Making
15	CBA with Known S and D Curves: I
16	CBA with Known S and D Curves: I
	TA Review

Lecture/Session	Topic
17	CBA with Known S and D Curves: II
18	CBA with Known S and D Curves: II
19	Risk and Uncertainty
20	Uncertainty and Social Discount rate
21	Option Value & Existence Value
22	CBA with Primary Data
23	CE and Distribution
24	Micro CBA: Education
25	Micro CBA: Sports Stadiums
26	Micro CBA: Crime Macro CBA: cost of regulation
27	Micro CBA: Elderly Driving, Environmental Issues
28	Macro CBA: Generational Analysis 1&2
29	Group Presentations I
	Group Presentations II
	<b>REVIEW</b>
	<b>FINAL EXAM</b>

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