An Overview of Public Economics

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I. Introduction to Public Economics

A. What is Public Economics?

Public economics is the study of the government's impact on the "private economy," where by the private economy we mean the networks of exchange and production that make up the market system. The private economy is the system of consumer demands, production by private organizations called firms, and market prices that coordinate the activities of consumers and firms so that the quantities produced in each market approximately equal the quantity demanded of each good or service produced.

The equilibrium generated by market clearing prices assumes a minimal—but very important—role for government. The laws governing ownership and transfers of ownership determine (1) what is owned by individuals and organizations, (2) what owners can do with those goods and services, and (3) how ownership rights can be transferred from one person or organization to another. The latter includes voluntary exchange and gift giving. The government is assumed to enforce those laws in order to assure that transfers in the private economy take place only through voluntary transactions. Governments do so by, punishing violations of contractual agreements, and also by punishing theft, extortion, and fraud. Without such law enforcement services, markets networks would tend to be much smaller and societies much less prosperous.

In addition to this important service, governments produce a variety of other services—as with public education, national defense, and various forms of social insurance—and also encourage other goods and services to be provided by private firms by purchasing them, subsidizing them, and/or mandating that such services be provided—as with pollution control devices on automobiles and factory chimneys. It is the effects and origins of such policies that are the main focus of this course.

B. Main Strands of Public Economic Research and Organization of this Course

Public economics analyses how public policies affect the market outcomes associated with the private economies and the political processes through which the polices that we observe come to be adopted. There are three main parts to this body of research (1) positive analysis of the effects of

policy, (2) normative evaluation of existing and alternative policies, (3) positive analysis of the political and economic influences that drive the adoption of public policies. This course is thus divided into three parts.

The first part—and the one that most textbooks focus most of their attention on—is analyzing how a specific public policy affects a market or group of markets. Here, one might have begun with analysis of how various forms of property and contract law affect the kind and extent of market activities that tend to emerge in the private economy. However, for the most part the civil and criminal laws are taken to be fixed for public economics and so are not included in courses on public economics but in courses on law and economics. Instead, the focus of positive public economics is on how various governmental expenditures, taxes, subsidies, and regulations affect the private economy—while implicitly holding the civil and criminal law constant. There are by now thousands of such policies and each has an impact that is partly determined by the impacts of all the others.

In part I of this course, we'll examine some of the more general implications of commonplace policies using tools from microeconomics in an "other things being equal" policy environment. That is to say, we'll examine the consequences of a few important policies on the private economy, holding all others constant. The policies of greatest interest for part I of this course (and most other public economics courses) are various taxes and subsidies that are imposed on previously untaxed, unsubsidized, and unregulated markets—which is to say, imposed on the types of the markets modelled in a standard microeconomics course.

These analyses reveal that public policies normally affect both consumers and firms even when they are "aimed" at only one or the other side of supply and demand relationships. Any policies that directly or indirectly affect prices—such as excise, sales, and value added taxes—have effects on both consumers and firms and via the latter on various input markets. Similarly, any polices that directly or indirectly affect production costs also have effects on prices, consumers, and on input markets. The same is true of direct government expenditures that alter the pattern of demand for final goods and services or inputs. Market prices adjust to set supply equal to demand and by doing so they tend to distribute the burden of taxes and benefits of subsidies between firms and consumers. This implication is counter-intuitive and requires microeconomic foundation to be demonstrated, so a good deal of time is spent demonstrating mathematically or geometrically why this is true.

The **second part** of the course assesses the effects of public policies on the private economy normatively. This part of public economics is often called welfare economics because much of it at-

tempts to determine whether overall social welfare has been improved by a given policy or not. The main approach uses ideas from utilitarian philosophy and microeconomics to determine whether "aggregate utility" or "social net benefits" rise or fall as a consequence of particular policies and whether the existing level of "social welfare" can be increased through public policies or not. Other normative theories can also be applied as with the contractarian one developed by James Buchanan or the opportunities for human development one developed by Amarta Sen, but we only have time in this course for the one most widely used in public economics.

There are two general cases in which public policies can improve on market outcomes. Both can be referred to as social dilemmas: externality problems and public goods problems. In the case of externalities, spillover costs and benefits of activities are ignored (or assumed to be ignored) by market participants and so market outcomes fail to maximize social net benefits. When spillover costs are ignored, too much of the relevant products are produced and they tend to be produced in what might be considered inefficient ways. In cases of public goods, it is easy to free ride on their production (because they are by their nature available to everyone) and so public goods tend to over or under supplied relative to their ideal levels. These two general dilemmas are the main focus of the section on normative public economics. Normative ideas will also be applied in the other two sections as part of the analysis—although it will not be the main focus of parts I and III.

All kinds of policies may be adopted and implemented by governments, and their effects often differ among persons. Positive analysis may, for example, indicate that most people in society are made worse off and a few better off. In such cases, the normative issue (at least as posed by welfare economics) is whether the "winners" gain more than the "losers" lose. If so, such policies may be said to be improvements. If not, such policies can be said to worsen the preexisting situation. Notice that this type of conclusion differs from that implied by majority rule, which would tend to reject such policies—although this is not always or perhaps even usually the case. For example, if one eliminated parking on main street in Morgantown and turned that space into bicycle lanes, cyclists would benefit but auto drivers would lose their ability to easily park and walk to a business. Businesses would suffer if more such auto driver customers exist than cyclist customers. The losses from such a policy are thus probably larger than their benefits. Since in the US there are more persons who use automobiles for transportation than cyclists, the majority would be likely to oppose this policy. (In the Netherlands, however, where more people use bicycles for transport than autos, the reverse would be true, but the cyclist benefits in this case are likely to exceed the losses of drivers and local businesses would tend to benefit from such policies.)

The **third part** of the analysis attempts to explain why the public policies that we see are in fact in place. There are two aspects of this analysis—again positive and normative parts. There are normative problems associated with self-interested behavior in some settings and some of these problems may attract the attention of government officials and voters. Social welfare is often maximized by private markets, in the sense that the "net benefits" of consumers and firms are maximized in individual markets. However, there are cases in which this is not true—externality and public goods problems—and in which government policies can improve on market outcomes. For example, air and water pollution may be neglected by markets, but be important to persons living near a group of factories. Various regulations and tax policies can improve on market results in such cases—and anyone interested in maximizing social welfare would favor one or more of the policies that a public economist would recommend as solutions.

However, the policies that are chosen or emerge from a political system may not maximize social welfare. A dictator is not necessarily a utilitarian philosopher king that aims to maximize social welfare. Voters in a democracy may similarly be uninterested in the conclusions of utilitarian policy analysts. They may have different norms or have practical interests that they regard to be more important, or may simply be ignorant about the details necessary to recognize and solve the problem. In any of these cases, public policies will differ from the ones commonly recommended by public economists. These too, need a coherent explanation and the tools used in the first half of the course can be extended to analyze the policy preferences of both dictators and voters. We'll only have time to examine those of voters and majority rule based governments in this course.

For the most part, the focus is on policy making within democracies for roughly the same reason that we assume markets to be competitive. Most of you live in societies with democratic politics and competitive markets. We'll assume that political competition for higher office induces candidates to take policy position to win enough votes to be elected to office. Successful candidate will be, on average, neither more or less interested in "social welfare" than a typical voter is. That model has some clear implications about the public policies that will be observed—namely those preferred by the "median voter" (not the average voter).

The analysis and conclusions of all three parts of the course are undertaken with a variety of **geometric and mathematical "tools"** from microeconomics. These demonstrate why economists predict particular types of results from particular policies, and also identify conditions under which the "usual predictions" may be incorrect. Because these "tools" are what distinguish economic analysis from loose, casual discussion of public policy, a good deal of the course is devoted to teaching

those tools and demonstrating how they can be used to think about public policy issues., They are the foundation lurking behind all good economic analysis whether the results are presented to others in words, equations, diagrams, intuitive stories, pictures, or songs. There is an "economic intuition" that emerges from the analyses developed—and hopefully you will come to understand that intuition and also the logic behind it after you master the tools taught in the course.

C. Why Study Public Economics?

Public policies have an increasingly broad effect on national economies. Knowledge of public economics is necessary to be an informed voter and also necessary to make informed decision within most businesses. In today's society it is the most important field of economics.

At the time when microeconomics was being worked out, many Western governments could be approximated as "watchman states." They enforced criminal and civil law, took care of national defense, and did relatively little else. This is not to say that they did nothing else. There were public works projects such as highway and canal systems. There were regulations on the disposal of human and industrial wastes. There were tax-financed schools and modest social welfare systems. But all these programs were relatively small and together typically consumed less than a tenth of what economists would later refer to as Gross National Product (GNP).

Such a minor part of the economy could be ignored in order to focus on how markets generally operated as social systems and the role that prices played in coordinating consumer and producer decisions. To reduce the enormous complexities of real-world economic organizations and enterprises to a few diagrams and equations that capture their central tendencies was an amazing achievement. To do so, required largely putting aside—or holding constant in the background—all kinds of things including government policies and manner in which those policies contributed to or undermined the "market order" that emerges from billions of individual decisions in societies with tradable property rights. The microeconomic theories taught in principles of economics courses in a semester were worked out over the course of a century by thousands of talented men and women who (in the end) who attempted to develop and understand the implication of rational more or less self-interested choices for final goods and input markets.

However, to continue ignoring the role of the public sector in contemporary market orders is no longer reasonable and it has not been for decades. In several Western economies, government expenditures now exceed half of GNP, the others exceed a third of GNP. That implies that more than a third of the pattern of trade observed is either directly determined by government decisions

about expenditures or significantly influenced by them. Much of the rest is affected by the incentive effects of taxes and regulations.

Taxes and expenditures are much higher today throughout the West than they were in 1850, 1900, or 1950 in all industrial countries as a percentage of income and in absolute levels. Higher taxes imply that more of a nation's GNP is directly allocated by governments than before. These expenditures affect the pattern of demand throughout a nation's economy and have effects on the pattern of production throughout the nation and the world. Moreover, the scope of government regulation is also much broader and affects the manner in which goods and services are produced through direct regulation of some aspects of production (such as environmental and safety regulation) and through indirect effects on the costs of inputs and transportation.

Firms, for example, can no longer simply dispose of their waste products in the nearest stream or river, which increases their production costs because wastes must now be "hauled off" and disposed of in ways that are less likely to cause problems for persons living downstream or downwind from major production facilities. Changes in the types of relative cost of different production methods induced by such "environmental" and other regulations cause profit-maximizing firms to change from what formerly were "least cost" methods of productions to ones that are "least cost given the new regulations." This increases prices for goods that tend to have relatively large waste biproducts relative to others that have relatively lower waste (or less toxic) waste products.

This is not to say that microeconomic theory is no longer relevant. But it is to say that a more general and descriptive theory of the market order must now take account of public policies. We are no longer in 1900 or even 1950. If you want to understand today's markets, you have to study public economics. Without a reasonable understanding of public economics all sorts of errors with respect investment decision, purchases of goods and services, and voting for candidates and policies.

Indeed, the effects of public policies can be seen in your own choices. Many of your decisions today were affected by government fiscal policies. You are attending WVU. WVU is (partly) a publicly financed university. About 15% of WVU's operating expenses are paid by West Virginia taxpayers, and much of the research conducted at WVU is also supported by tax dollars or tax deductions associated with research and development expenses. You doubtless chose WVU, in part, because the cost of a college education at WVU is relatively less expensive than at an equivalent out of state university. And, if you received fellowship money from a private donor, his or her decision was probably influenced by the tax deductibility of charitable contributions.

You probably used highways and/or public transit (the PRT) to make your way to class. You probably paid sales tax on your lunch, and also paid a variety of state and federal excise taxes on the gasoline that you used to drive here. If you worked during the summer or while attending WVU, you paid a variety of federal, state, and local income taxes, and your employer was subject to a variety of labor regulations.

If you plan to marry someday, your decision will be based partly on the standardized bundle of rights and obligations associated with the "marriage contract," which are largely determined by state laws and regulations. If you think about retiring someday, your decision will be influenced by the magnitude of Federal Social Security and Medicare benefits.

Overall, whether one likes it or not, government decision affect all manner of plans and decisions at the margin, and by doing so has consequences for private lives and market activities. Such effects also has implication for politics and political decisions insofar as government politics are supported, opposed, and adopted with their anticipated consequences in mind.

II. Historical Background on National Government Taxes and Expenditures

The scope of governmental policies expanded greatly during the 20th century relative to what it had been in the previous century. Some aspects of this expansion may be regarded as historical accidents—expansions associated with wars and unusual economic events—and others may be regarded as driven by shifts in ideology and subsequent domestic politics, which is to say by the votes of a nation's citizens and the lobbying efforts of various organized interest groups. Together these three factors random shocks, voter interests, and campaigns by organized interest groups account for most of the expansion of government during the past century or two throughout the West.

This course will focus for the most part on developments in the United States, but it useful to know that many of the developments here were similar to those taking place in other industrialized democracies around the world—the so-called West.

A. The Great Transformation of the 19th and Early 20th Centuries

The 19th century was a period of great transformation for both markets and politics. It was the period in which voting began to indirectly determine national policies and both industrialization and urbanization took off. Farming stopping being the main enterprise of the vast supermajority of individuals, which gradually became the employment of a relatively small minority of persons for the first time in more than a thousand years. Although trade and trading networks have always existed, they were not always as central to life as became during that period.

Most people in 1800 lived on farms or in farming villages and most worked on farms or sold goods and services to farmers. Farm help was largely paid "in kind," which is to say with room and board rather than with money. Innovations in the agriculture shifted this ancient pattern of life toward the modern ones as fewer farmers were needed to produce food for everyone, which allowed labor to be shifted to other tasks. New jobs emerged at roughly the same time because of changes in technology that made a variety of old products profitable to produce and a variety of new products possible that were not before. As a consequence, wages were higher in cities and new industrial towns than in farm communities and a good deal of migration from the countryside to towns and cities took place. In these new jobs, people were paid in cash for their labor, rather than through room and board.

At the same time, governments which many years later became known as the "West" (including Japan) were transformed from more or less authoritarian systems of government run by kings, nobles, and narrowly elected parliaments into constitutional democracies. This took place in most cases through a long series of constitutional reforms that gradually expanded suffrage and made the elected parts of parliament the dominant branch of government (instead of the least important). By 1925, essentially all adult men and women in the West could vote in elections used to select "representatives" who would make policies. This was another great break with the past. Kings and nobles had ruled for thousands of years in Europe and most other places with significant governments, as in China, Japan, North Africa, Turkey, Iran, Egypt, India and so on.

These transformations of society caused two things to happen. Shift from villages and farms to towns and cities reduced the extent to which informal family, church, and village "safety nets" could be relied upon to help out persons with temporary health, crop, or cash flow problems. In cities such services were often provided by combinations of private savings, new private clubs (friendly societies), and insurance companies, but these were less reliable than the old village systems in the new more money based economic systems because of correlated risks associated with business cycles. Business cycles directly affected more persons simultaneously than in former times. Earlier business cycles to the extent that they occurred would not have much affected the lives of farmers and their employees, who were largely self-sufficient. In an industrial city environment, one could not fall back on one's own or firm's "produce," because it was largely inedible. So, disruptions in markets for labor were more disrupting for persons "hiring themselves out for wages," than they would have been back on the farm.

This created a political demand for tax-financed "safety net" programs (social insurance) and the effects of votes on policies caused tax-financed social insurance programs to be adopted gradually throughout the West. Over the course of a half century, from 1890 to 1940, most Western democracies created tax-finance safety net programs for unemployment and persons who could no longer work (mainly older persons). The United States was among the last to adopt such policies, and did not do so until the Great Depression of the 1930s, although a number of state had adopted such programs earlier. This may have been because farming remained a relatively more important enterprise in the United States than it did in much of Northern Europe during the first third of the 20th century and so family-based safety net programs were more widely regarded to be adequate by voters. (During the early days of the Great Depression, many unemployed city dwellers moved back to family farms run by their relatives.)

During roughly the same period, industrialization also tended to cause a good deal of local pollution. Industrial production is energy intensive and produces lots of waste products on the way to final products. Again, electoral pressures emerged to address a new problem. In this case, there was support for rules that would reduce air and water borne pollutants (waste products with obnoxious odors or health risks). These regulations addressed local air pollution through new or more strict smoke stack regulations and other problems associated with solid wastes with laws on garbage containers shifts of trash disposal to outlying regions away from city streets. "Regulations" were thus adopted to top up earlier rules that were part of civil laws—as for example, one could sue persons for damages caused by the action of others including the effects of poor waste management.

Together, industrialization and democratic politics thus tended to increase the size of the tax-financed social insurance programs and the extent and nature of governmental regulations. The new policies implicitly modified or supplemented older pre-industrial safety nets and rules governing the use of one's property.

Of course, industrialization also created new opportunities for what would later be termed "rent seeking" as well as policies to reduce the ill effects of industrialization. For example, industrialists and labor unions often lobbied for policies that would increase industry profits and/or labor salaries by reducing the competitiveness of particular markets. Such regulation would also affect the incentives for persons to work in at particular jobs in particular places through their effects on rates of return and wage rates (incentive effects), but in most cases they produced benefits for only narrow organized subgroups, rather than broader benefits for a super majority of the persons living in a country, state, or city.

The new commercial societies that emerged in the twentieth century thus reflected technological advance as emphasized by microeconomic textbooks but also new programs of social insurance and regulations—the latter being the focus of public economics.

B.The 20th Century and the Expansion of the Welfare State

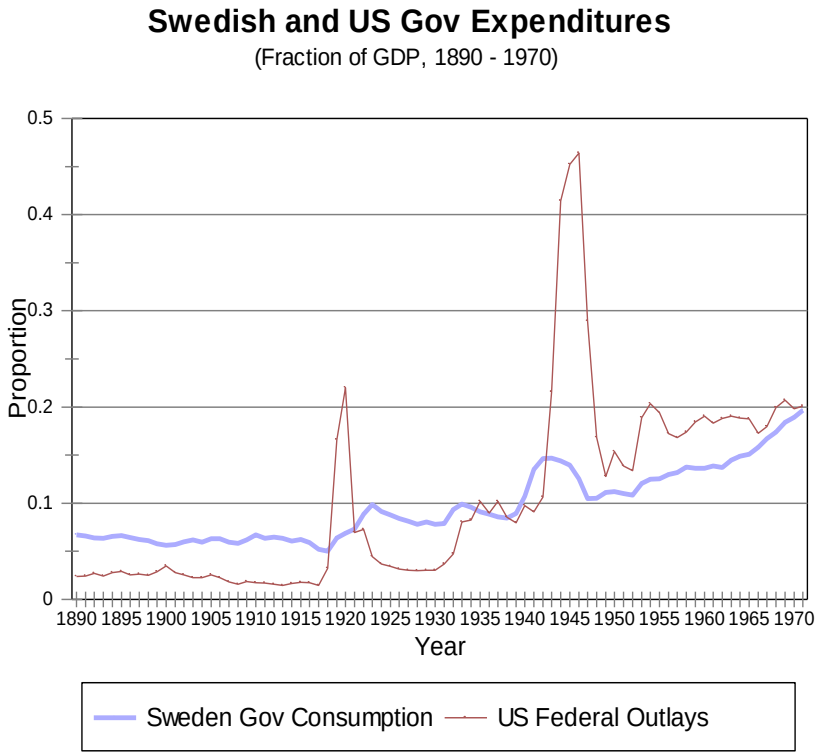
Trends that began in the late nineteenth century continued through out the twentieth century. Electoral and interest group support for larger and more government safety net programs, more expensive national defense efforts (another side effect of technological advance), and the direct production of more government services induced democratically elected governments to increase taxations, expenditures and regulations. Over the course of the twentieth century this produced what some term a "mixed economy," an economy in which state regulations, taxation, and expenditures play a central role in the patterns of commerce that we observe. Price and quality competition still ultimately drive the networks of exchange between firms and consumers that we observe, but these are more in more influenced by public policies.

It also in the twentieth century that governments began to systematically track expenditures, national output, and prices. These can be used to show the growth in tax-financed activities during the 20th century. A series of tables and diagrams are provided in below that provide a numerical history of government finance in the U.S. and a few other countries.

Most of the charts displayed below characterize taxes and expenditures as fractions of GDP. This avoids all the problems of measuring prices or purchasing power in economies in which innovation is continuous and the mix of products demanded change radically of the course of the 20th century. It does, however, tend to understate the extent of growth in governmental roles in the economy, because enormous growth in average income (per capita RGNP) took place during the twentieth century.

The first figure shows the fraction of GNP that has been directly controlled by the central governments of Sweden, an exemplar of the modern welfare state, and the United States, and exemplar of a country with a relatively small welfare state. Government consumption rather than expenditures are used for Sweden, because an expenditure series going back to the early part of the 20th century was not available. (Government consumption ignores safety net or transfer programs, but counts most everything else, but these were small during the first half of the twentieth century in both countries.) Notice that both governments spent well under 10% of their respective GNPs in 1900 and approximately 20% of GNP in 1970. In the case of the U. S., more of that expenditure

would have been national defense than in Sweden, in part because the U.S. adopted a more world-wide programs of National Defense after World War II. (Note also the great expansions of expenditures by the U.S. during both the first and second world wars.)



The first chart shows how the expenditures and taxation changed in the period from 1960-1996, a period in which social insurance programs expanded greatly throughout the West. Denmark and the United Kingdom are added to the list of countries examined. Notice that central government expenditures increased far more than government consumption in this period. The difference consists largely of social insurance and redistribution programs. Notice also that Swedish central government expenditures exceeded half of its GNP in 1993.

Table 1: Central Government Consumption, Tax Receipts, and Expenditures As Percent of GDP (1960 -1996)

	Sweden (Central Government)			United States (Central Government)			Denmark		U. K.	
Year	Swd Gov Con	C. G. Tax Rev.	Cent. Gov Exp.	US Gov Con	C. G. Tax Rev.	Cent. Gov Exp.	D Gov Con	Cent Gov Exp.	C. Gov Con..	Cent. Gov Exp.
1960	16	..	..	17	..	..	13		16	
1961	16	..	..	17	..	..	14		17	
1962	17	..	..	18	..	..	15		17	
1963	17	..	..	17	..	..	15		17	
1964	17	..	..	17	..	..	16		17	

1965	18	..	..	16	..	..	17		17	
1966	19	..	..	17	..	..	17		17	
1967	20	..	..	19	..	..	18		18	
1968	21	..	..	19	..	..	19		18	
1969	21	..	..	18	..	..	19		17	
1970	22	26	25	18	..	..	20	32	18	32
1971	23	28	26	18	..	..	22	32	18	32
1972	23	28	28	18	17	19	22	32	19	32
1973	23	27	28	17	17	19	22	29	19	32
1974	24	27	29	18	18	19	24	33	20	36
1975	24	27	29	18	17	21	25	34	22	39
1976	25	31	32	18	16	21	25	33	22	39
1977	28	33	35	17	17	21	24	33	21	37
1978	28	32	37	17	17	21	25	34	20	37
1979	29	31	39	16	18	20	26	35	20	36
1980	29	30	39	17	18	22	27	39	22	38
1981	30	32	42	17	19	23	28	41	22	41
1982	30	32	43	18	19	24	29	43	22	41
1983	29	32	45	18	17	25	28	43	22	40
1984	28	33	44	17	17	23	26	42	22	40
1985	28	34	45	18	18	24	26	40	21	40
1986	27	34	43	18	17	24	24	37	21	38
1987	27	37	41	18	18	23	26	37	21	37
1988	26	37	40	18	18	23	26	39	20	35
1989	26	37	39	17	18	23	26	39	20	34
1990	27	38	41	18	18	23	26	39	21	38
1991	27	36	43	18	18	25	26	39	22	40
1992	28	35	46	17	18	24	26	41	22	43
1993	28	31	52	17	18	24	27	42	22	42
1994	27	29	49	16	18	23	26	43	22	42
1995	26	34	49	16	19	23	26	41	21	42
1996	26	37	46	16	19	22	26		21	

Source: World Development Indicators, 1999, (CD) World Bank, ISBN 0-8213-4375-0.

The second table examines various indicators of average citizen welfare. It is one thing to say that government expenditures have increased. It is an another to assert or show that such expansions increased or decreased the average citizen's wellbeing. Notice that all countries experienced significant increases in longevity in this period, including those with the least government consumption expenditures. The income share of the bottom 40% of the citizenry has generally increased somewhat as a consequence of expanded social insurance programs. However, those same programs evidently tended to increase unemployment during this period, in spite of significant economic growth in all the listed countries. (All the countries listed are democracies, and all have "first world" income levels.)

Table 2: Government Growth and National Performance, 1960 and 1995
(Sorted by 1995 Central Government Consumption)

	Government Consumption as % RGDP		Life Expectancy		Income Share Bottom 40%		Unemployment Rate	
	1960	1995	1960	1995	1960s	1980s	1960	1996
Sweden	16	25.8	74	79	15.1	21.2	1.4	8
UK	16.4	21.4	71	77	19.2	17.3	1.7	7.4
Norway	12.9	20.7	73	78	17.1	19	2.5	4.9
Canada	13.4	19.6	71	79	19.7	17.5	7	9.7
Germany	13.4	19.5	70	76	14.8	19.5	1.3	10.3
France	14.2	19.3	71	78	10	18.4	6.2*	12.4
Australia	13	18.8	69	77	19.7		3.5	6.2
Austria	11.2	17.5	71	77	20.1	15.5	2.4	8.5
Spain	8.3	16.6	70	77	16.5	19.4	11.5*	22.7
Italy	12	16.3	70	78	15.6	18.8	4.2	12.1
USA	19.4	16.2	70	77	15.9	15.7	5.5	5.4
Belgium	12.4	14.8	71	77		21.6	5.4	12.9
Ireland	12.5	14.7	70	77			6.7	11.3
New Zealand	10.5	14.3	71	76	20.9	15.9	2.5*	6.1
Netherlands	12.3	14.3	73	78	14.5	20.1	1.2	6.7
Switzerland	8.8	14	72	78		16.9	0.2*	4.7
Japan	8	9.7	69	80	15.3	21.9	1.1	3.3
Average	12.629	17.265	70.941	77.588	16.743	18.58	**4.8**	10.173

Assembled from Tanzi and Schuknecht (2000) various tables. (Most of their data is from various OECD reports.)

We next look at how expenditures in the United States have been distributed among various during the at the end of the twentieth century and beginning of the twenty first century. Notice the great expansion of social insurance programs (Social Security, Medicare, Medicaid, and Disability, etc.) and the decrease in relative importance of defense spending over this period. These are simple dollar-based levels of expenditures.

The dollar amounts are not adjusted for changes in purchasing power over the period (inflation). They can be adjusted using a variety of price indices. For example, the Consumer Price Index was 127.4 in 1990, 168.8 in 2000, and 216.7 in 2010. Thus, to compare the purchasing power cost of the programs in 2010 dollars one should multiply the 1990 column by 216.7/127.4, and the 2000 column by 216.7/168.8. Much but not all of the increase in defense spending, for example, was induced by inflation the column would read 509.1, 377.9, 693.6. Instead of doubling, real defense ex-

penditures increased by about 20% in this period. The health row would have been 265.0, 451.4, 706.7, which is more than a 2-and-a-half-fold increase rather than a 5-fold increase. Even in relatively low inflation periods such as the period covered by the this table, inflation should not be ignored when making comparisons across decades.

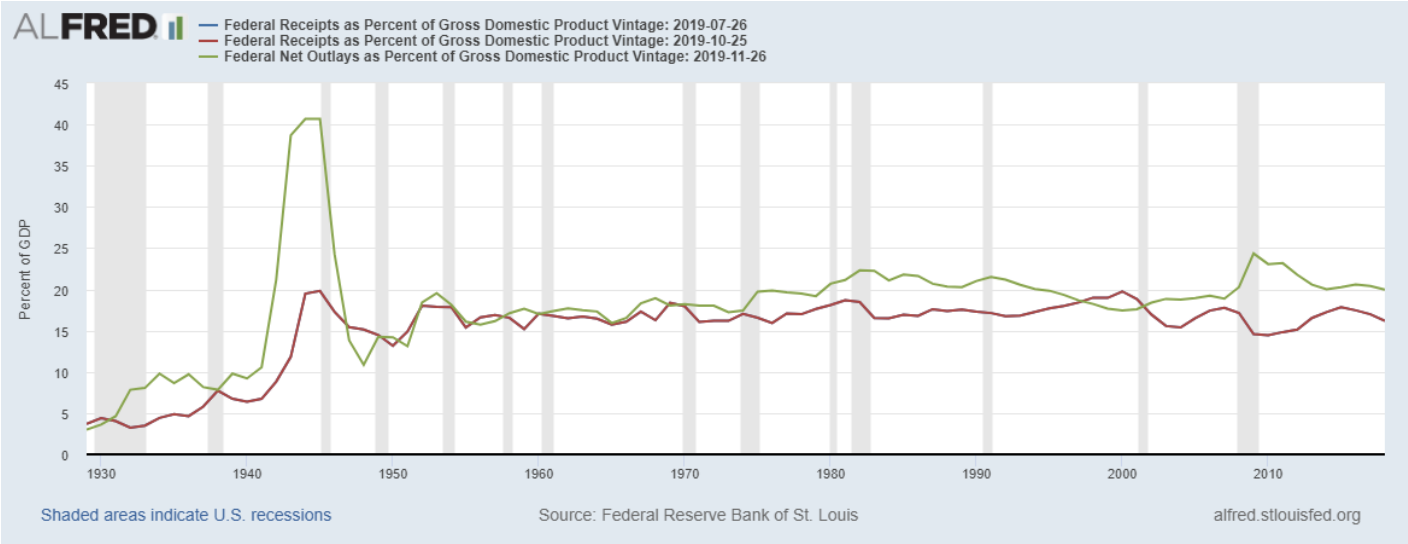
In both nominal and real terms health care has been the fastest area of spending growth during the past 40 years. Net interest on the national debt, in contrast has decreased in real terms—not because the government has become more frugal, but because interest rates fell to historically very low rates during his period.

Table 3 Major U. S. Federal Outlays by Function
(Nominal Dollars, Billions)

Function	**1990**	**2000**	**2010**
National Defense	299.3	294.4	693.6
Veterans Benefits	29	47	108.4
Health: Medicare + Medicaid etc. (all, non vet)	155.8	351.6	820.7
Social Security (pension)	248.6	409.4	706.7
Income Security (disability, unemployment etc)	148.7	253.7	622.2
Net Interest	**184.3**	**222.9**	**196.2**
Education	37.2	53.8	127.7
Transportation	29.5	46.9	92
Natural Resources and Environment	17.1	25	43.7
Community Development	8.5	10.6	23.8
Agriculture	11.8	36.5	21.4
Total	**3159.8**	**3751.8**	**5466.4**
Subtotals: *Insurance and Risk Management*	*2900.3*	*3417.6*	*5026.7*
Pure and Near Public Goods	*2335.9*	*2366.3*	*2839.3*
Redistributive	*454.8*	*764*	*1501.8*
CPI (standardized dollar)	0.765	0.581	0.459
GNP	5801	9952	14660
Population (millions)	250.132	282.385	308.745

Total Outlays is calculated from the table entries, and neglects several small categories of expenditures not included in the functional categories tabulated.
All data taken from the *2012 Statistical Abstract* except for the 2010 population estimate, which is from the US Bureau of the Census Website (downloaded 10-29-12).

The last chart provided characterizes U. S. expenditures and revenues as a fraction of GNP for the past 90 years. It shows both the expansion of the size of government and the extent to which taxes have routinely been lower than expenditures for most of the twentieth century.



This chart also includes gray bars that indicate the periods in which the U. S. economy was in recession (periods in which GDP fell) and that with minor exceptions there is no clear evidence of a strong "counter cyclical" fiscal policy. This would require relatively large deficits being run during recessions and balanced budgets or surpluses being run during periods of positive growth. Instead deficits are run in most periods. There is, however, some evidence that expenditures are more stable than tax receipts and that when revenues fall during a recession expenditures are held more or less constant (often expanding a bit perhaps because of increased unemployment insurance payments) and borrowing expands somewhat beyond the usual degree.

Notice that after World War II, that deficits were relatively small for about 25 years and then began to rise. There is only one short period after 1970 onward when surpluses were run (in the late 1990s). Instead, deficit finance had become a routine part of the manner in which the central government of the U. S. "paid" for its programs. Since about 1975 expenditures by the central government have averaged around 20% of GNP and tax receipts around 18% of GNP, which implies a deficit of about 2% of GNP, which is roughly equal to the economy's average real growth rate in this period.

Together, these charts show that government spending increased relative to the private sector over the course of the twentieth century. In the U. S., most of this expansion occurred between 1930 and 1950 (ignoring the war years). Other Western countries grew relatively more in the post-war period, with several countries having expenditures approaching 50% of GDP by the early to mid-1990s.

During the same period, many indicators of human welfare increased: longevity and education, for example, increased, although far less than proportionately to absolute real expenditures per capita or even as fraction of GNP.

The increase in the relative size of government spending relative to spending was significant in the United States, but has not greatly increased as a fraction of GNP since around 1950, although the composition of national expenditures has changed, with a much larger portion of government spending going to Social Security and Healthcare than in past decades.

III. Positive and Normative Public Economics

One of the "problems" with studying public economics is that it is not just an abstract exercise. Public economic analyzes real policies and many individuals care deeply about policies for various ideological, philosophical, normative reasons. It is for that reason that its worth spending some time on a few philosophical ideas, that can help take the "heat" out of public economics.

A. The Distinction between Positive and Normative Theories

Conservative and libertarian economists often argue that the West would be richer if we hand much lower taxes and regulation. Progressive often argue that the West would be more distributionally just if it redistributed a good deal of income from rich to poor. Moderates, in contrast, might argue that our prosperity depends partly on how taxes are collected and spent, and the kinds of regulations adopted. They might believe that poverty programs should attempt to help only "the deserving poor," rather than everyone who might like to have more income for less work.

However, it is not that simple. One cannot simply point to the deadweight loss of taxes or regulation and conclude that public policies reduce national income and welfare. Nor can one simply point to a homeless person and conclude that "capitalism" has failed. The industrialized democracies are the most attractive that have ever been on earth. The typical person (median, average, or modeal) person lives in a larger house, lives longer, is healthier, and has more material comforts than that which emerged under any other social system. Even the poor are far richer than they have ever been in the West than elsewhere or in human history—and not by a small amount. This suggests that both conservatives and progressives should at least be a bit modest in their claims.

Life in the West is not easy, but it is far better than it has been in the past. Emigration is nearly all form other parts of the world to the West rather than the reverse, which is what you would expect if the claims of social critiques were correct. This is not to say that further improvement is impossible, but simply to put our present state in historical perspective.

All such claims about the possibility of further "improvements" are "normative" claims. They attempt to rank alternative states of the world and determine whether one is better than another. Disagreements among persons on normative matters exist because we all use somewhat different normative theories and rules of thumb to determine whether one policy is better than another—including theories that focus on our own personal interests. Positive claims in contrast are about "what is," "what has been" and "what will be." They are claims about the nature of the universe as it is, rather than whether it can be improved or not or whether a particular action generates an improvement or not, is better or worse than anther, is right or not, is just or not.

Most contemporary normative theories—although not all of them—are consequentialist, which means that whether an action or policy is good or bad, improves or worsens the world, etc. is determined by the consequences of those actions and policies. If for example, income is believed to be a good index of the quality of life, one might conclude that a policy that increases the income of a typical person is an improvement and one that decreases income for a typical person is a deterioration, a bad policy rather than a good one. Note that one's conclusions about a policy if one is a consequentialist is partly determined by one's positive theory (what will happen after a policy is adopted) and partly by one's normative theory (is what happens good or bad, desirable or not). In the example, the positive question is whether a typical person's income goes up or down, and given a normative theory that concludes that "up" is "good," one can rank policies.

Consequentialist normative theories require "positive" theories if they are to affect behavior or public policies. That one should try to increase average or personal income through public policies requires a positive theory that connects personal or government actions with average or median income. Some policies may reduce average or median income and other increase them. Still others may have no effects on average or median income at all.

Theories that connect public policies with economic consequences are "positive" in that they attempt to explain how actions generate consequences without assessing whether particular actions are good or bad or whether particular consequences or good or bad. The positive questions regarding causes and effects are separate from the normative questions regarding good or bad actions or good or bad policies.

They are, in a sense, completely independent of a scientist's personal normative theory—although as human beings scientists will tend to find some questions to be more interesting than others because answers to some questions are more likely to advance his or her normative aims than others.. True relationships can be determined by true theories and true theories can be determined

by evidence—do they predict consequences well? The extent to which a social theory accounts for the facts can be tested using scientific methods—which these days are largely grounded in statistical theories. There are disagreements among social scientists about which theory "fits the data" best, but general agreement about how to determine this—experiments and statistical tests.

Determining which normative theory is best, in contrast, is far more controversial, because there is little agreement about what "best" means when evaluating rival normative theories. Is a society better when income is the same—no matter how much income is realized? Or is a society better when everyone's income is increasing through time, the faster the better? Or is a society better, when people simply prefer one society to another for whatever reasons (equal liberty, comfort levels, health, more entertaining, more religious, more moral, wealthier, longer lived, etc etc.). This lack of a common index of the quality of normative theories implies that there will be more disagreements and because normative theories are often very important to individual, there will be more "heat" in normative discussion than in positive ones.

Normative accessing the relative merits of those consequences requires "normative" theories. Many people use their "gut reactions" as their normative theory. Others study issues and attempt to identify principles that can explain both their gut reactions and address other issues that one has no intuitive feelings about. The study of ethics, for example, attempts to identify principles that can produce a "good life" or a "good society."

This course mostly focuses on positive issues. What happens when a policy is adopted? Although it also considers normative issues using the most commonplace normative theories applied by economists (welfare economics).

The positive focus of the course is partly because understanding causal relationships is not easy and it takes quite a bit of time to teach the main positive results in public economics. It is also partly because it is usually easier to reach agreement on positive theories than on normative ones. A course on economic and political morality could also be constructed, but such a course would spend less time on causal relationships and more on intellectual history, ethics, and ideology.

B. A Digression on Normative Theories Used by Economists

Most of the normative ideas used in economics emerged from utilitarianism at the beginning of the twentieth century shortly after the field of economics and other social science emerged as a separate specialization within what had previously been philosophy. Many of the most famous academic economists held university positions in moral philosophy when they did their most famous

writings (as with Adam Smith and Alfred Marshall). Others were non-academics, scholarly folks who were independently wealthy or at least had relatively lucrative but not demanding jobs.

Utilitarianism and Welfare Economics

Utilitarianism is a normative theory that was worked out by Jeromy Bentham in the late eighteenth century and deepened by many others in the twentieth century, including James Stuart Mill who wrote one of the first widely used textbooks in economics. Utilitarian normative theory assumes that every person is motivated by a quest for happiness or utility, and that one society is better than another if it generates more aggregate utility than another, where aggregate utility is normally thought of as the sum of individual utilities (happiness). As utility functions were devised to systematically model how particular choices or goods and services contribute to happiness, it became logically possible to add up such utility functions and use the sum of utility across individuals to analyze how different public policies affect aggregate utility. Such "social welfare" functions are still widely used in public economics and in the subfield of economics called welfare economics.

This approach has a good deal of intuitive appeal—everyone should count, and everyone's happiness is important—but it has one problem, namely utility functions (if they actually exist) and happiness levels are unobservable and difficult to measure. It is not easy for an individual to determine whether he or she is happier this year than last—and for an outsider that does not know such-persons very well, its essentially impossible.

In the early 19th century Alfred Pigou attempted to "operationalize" utilitarian analysis by noting that utility tends to increase with income. (The marginal utility of income is normally assumed to be positive over its entire range.) Thus, when everyone's income rises, it must be the case that aggregate utility increases. Similarly, if one can estimate the benefits and costs associated with an individual's action and the benefits are greater than the costs, then his or her utility must increase because utility rises when the net benefits associated with an action increase. These two ideas create a method for analyzing individual and national welfare that is measurable (or at least estimatable) and so can in principle be used as guides for utilitarian public policy.

Also, one can use aggregate net benefits as a proxy for aggregate utility. In this case, however, the link back to utilitarianism is less precise, because it is possible for aggregate net benefits to rises, while aggregate utility falls. For example, all the gains [benefits] might be captured by one person and the losses [costs] by everyone else. Diminishing marginal utility would imply that the losses would reduce utility for the losers by more than it increases those of the winner, especially in cases in which the benefits are just a bit greater than the costs. Nonetheless, this "Hicks-Kaldor" measure

of social welfare is widely used by economist—partly because as we'll see its geometrically easy to do with standard economic diagrams, and benefits and costs can be estimated. It is not a perfect utilitarian social welfare indicator, but it is measurable and is a reasonable first approximation of aggregate utility. This idea provides the foundation for cost benefit analysis.

The Pareto Criteria

An alternative way to rank states of the world was suggested by Vilfredo Pareto, who was writing at about the same time as Pigou. Pareto suggested that one could avoid problems associated with adding utility levels, by attempting to determine whether at least one person was better off after an action or policy is adopted and no one worse off. In that case, one could safely conclude that the action or policy was an improvement, was a good policy. The so-called "Pareto criteria" are the second most widely applied normative theory in economics. If social state A makes at least one peson better off and no one worse off then social state B, then A is said to be "**Pareto superior**" to B. If Pareto superior moves are possible, then society is less good than it can be. A social state is said to be "Pareto optimal" or "**Pareto efficient**" if its impossible to take an action or adopt a new policy that makes at last one or more persons better off without making others worse off.

In a Pareto optimal state, no Pareto superior moves are possible—it is not possible to alter conditions in a manner that makes at least one person better off without making anyone worse off. Notices that one need not be a utilitarian to apply this norm, although it can be regarded as another operational form of utilitarianism—although a weaker one than developed by Pigou because it cannot address cases in which there are both winners and losers. A non-utilitarian—that is a person who is not particular interested in maximizing aggregate utility—may use the Pareto criteria because it provides a way of ranking states of the world based on the welfare of individuals. No aggregates are necessary.

Contractarianism

A less used, but still frequently used, alternative is to use consensus as a measure of the relative merits of institutions. This approach began with a book by Thomas Hobbes (1651), the *Leviathan*, continued through works by Locke (1689) and Rousseau (1762), and then disappeared for nearly two century as contractarian theories of the state and public policy were replaced by utilitarian ones. The general approach was resurrected by John Rawls (1971) and James Buchanan (1962, 1975, 1985). Rawls and Buchanan reject the utilitarian approach for a variety of reasons (absence of a place for human rights, impossibility of understanding individual goals which may not be one-dimensional, differences among individual expectations, and so forth) and argue that agreement is

not only the best but the only possible way to determine whether an action, policy or institution is better than another. *A change is undeniably an improvement only if every agrees that it is.*

Rawls and Buchanan both focus much of their attention on institutions and both argue that uncertainty can help generate agreement about the nature of the best institutions. In Rawls' case he suggests that individuals should imagine themselves behind a "veil of ignorance." When behind a veil of ignorance, one would not know their own place in society and so when judging the effects of a particular change, would take account of the effects of that policy on persons in positions throughout society. (If I might be rich, middle class, or poor, which policy would I prefer?) Given that imagined state, how would one choose among institutions or at least principles for designing institutions? The result would tend to be "fair" in the sense that everyone would agree either to design principles or to the specific institutions to be implemented.

Buchanan argues that the nature of institutional or constitutional choice is such that one cannot fully predict what one's position will be in the society that follows and so decisions are made from what he terms a "a veil of uncertainty" in which each person imagines possible futures associated with particular institutions in a manner that also tends to distance themselves from their own narrow interests. It is the latter than makes consensus likely to emerge and it is the consensus that determines whether an institution can be said to be unanimously an improvement over the preexisting order.

Mathematical characterizations of the contractarian thought process resemble those of utilitarian models, but they have a different motivation and interpretation. For example, there are no efficiency-equity tradeoffs in contractarian theory because the result can be said to be both equitable (fair) and efficient (among the best possible, given preexisting circumstances).

These four groups of normative theories are the most widely used in public economics, although others are off course possible. Egalitarians may pursue equality (however defined) and regard only policies that increase equality as "good" policies. Libertarians may pursue policies that tend to increase the degree of voluntariness in social relationships and regard only policies that increase individual abilities to accept or reject alternatives as improvements. Kantians may search for rules that satisfy the categorical imperative (rules that can be followed by everyone without generating problems) and attempt to have such rules implemented in public policies and private norms, and so forth.

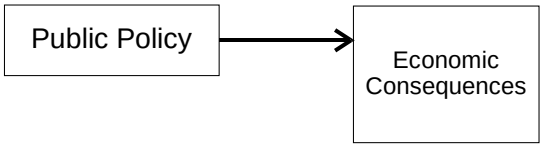
There are many many possible normative theories, among which economists use a relatively small fraction of in their normative research. All religions and ideologies include normative theories and rules of thumb.

IV. The Expanding Domain of Public Economics

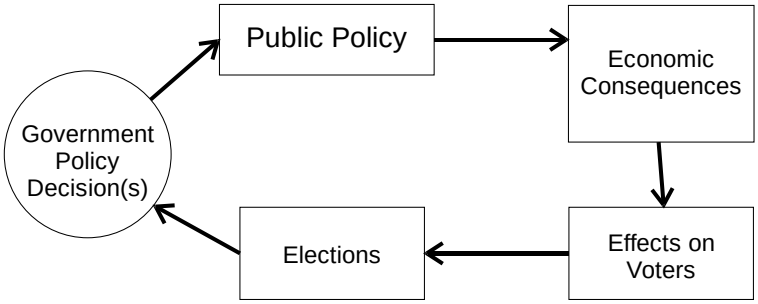
The domain of public economics has gradually expanded at the same time that various sub-areas have become specialized areas of research. (1) At first, it was simply the application of microeconomics to analyze the effects of public policies, which remains its main area of research. To this was added the normative domain—what is the best way to determine whether a new or refined policy improves on the existing situation or not. (2) This was followed by an analysis of how policies are chosen—do some methods of choosing policies—for example requiring cost-benefit analysis or using committees, or a sequence of committee, democratic governance—produce systematically better than others. (3) If so, what methods for choosing among those procedures works best? Does it matter if people within a government or territory have internalized different normative theories or not? If so, why and how much?

The following three diagrams illustrate the economic and political systems that need to be analyzed as the domain of public economics expands. (In this class, we'll mostly be focused on the first and second part. There is simply not enough time to explore the constitutional and social parts during the semester.)

Part 1: Basic Public Economics



Part 2: The Political Economy of Public Policies



Part 3: The Constitutional Political Economy of Public Policies