

I. Introduction to Public Choice: Voting for Public Services and Taxes

- A.** Up to this point in the course, we have treated public policies as "exogenous" to our analysis, as something determined by factors outside the models that we have examined.
- Taxes or subsidies were imposed, there were consequences on market prices, outputs, and the distribution of net benefits between consumers and firms.
 - Those same taxes could be judged using various normative tools, including the extent of deadweight losses, equity or fairness, and whether persons were made better off or not by the fiscal packages adopted.
 - The policies themselves, in effect, came from outer space.
 - This handout shows how one can use rational choice models to analyze the sorts of policies we should anticipate in democracies.
- B.** To do so, we'll extend our net-benefit maximizing model of rational choice to democratic politics.
- We'll first think about how rational voters would decide between policies using both "spatial" and net-benefit models of voter preferences over policies.
 - We'll use those results to characterize the nature of equilibrium outcomes under direct democracy.
 - We'll then think about representative democracy.
 - We'll use rational choice models to characterize how candidates will position themselves if they want to be elected by a majority of such voters.
 - Finally, we'll use this model of elections to analyze how policies are chosen in a democracies and problems that might be associated with them.
 - It turns out that democratic governments too may fail to maximize social net benefits and so may be said to "fail."
 - The models developed are from the public choice research program worked out after World War II. (See Congleton [2018a](#) or [2018b](#) for overviews.)
- C.** In democracies, both public service levels and taxes are determined jointly by votes cast by voters, by elected representatives, and the implementing decisions of government employees (bureaucrats).
- From the public choice perspective, voters, elected representatives and bureaucrats are assumed to be **self-interested** in the same sense that

consumers and firms are in the private sector. That is to say, they all try to maximize their personal net benefits given the opportunities they have.

- That is to say, if one wishes to understand the pattern of tax and expenditure policies that are adopted by democratic governments, one has to take account of the interests and incentives faced by voters, candidates for elective office, and government employees (bureaucrats).
- However, elected officials cannot simply choose any combination of expenditures and taxes that they wish if they wish to be reelected.
 - They have to choose policies that please a majority of voters.
 - Just as firm owners cannot sell any product that they might want to at any price they desire--because their products have to satisfy consumer wants at a reasonable price to sell--politicians have to take "reasonable" positions on public policies if they wish to attract enough votes from voters to be elected.
 - Elections and electoral competition, thus, have important effects on fiscal policies within democracies.
 - (That voters, representatives and bureaucrats are self-interested implies that one can not simply assume that tax and expenditure policies are made by some net-benefit maximizing all knowing "government," as sometimes seems to be suggested in many public economic text books, newspapers, websites, and blogs.)
- D.** Although a wide variety of decision making rules can be used within democratic governments, we will focus most of our attention on the implication of majority rule. (For a more complete treatment, you should take a course in public choice.)
- Examples of **other voting rules** include:
 - Unanimity (100% approval is required to pass new laws. Anyone can veto a new law.)
 - Super Majority (More than 50% approval is required to pass new laws.)
 - For example, a 2/3 vote by the Senate is required for constitutional amendments and impeachment under the US constitution.
 - Plurality Rule (The policy/rule/candidate with the most votes is adopted.)
 - Committee rule (A relatively small elite makes decisions, possibly by majority rule within the committee.)
 - One person rule (Commander in Chief, King, Executive Mandates)
 - King and council template based governments.

- The first analytical examination of which voting rules work best for a given circumstance : *The Calculus of Consent*, in 1962 by James M. Buchanan and Gordon Tullock..
- viii. Initially, we will focus all our attention on the majority because it is the most widely used voting rule inside democratic governments. If we have time, we'll also analyze how rational ignorance and interest groups affect policy choices.

II. Majority Rule and the Median Voter Theorems

- A.** The most widely used model of majority-rule politics is the median voter model. In a variety of electoral settings, self interested behavior implies that the "median voter" will get his or her way.
- B.** We begin with a simple model of direct democracy.
- Suppose that three individuals: Al, Bob and Cathy are to make a decision about where to eat lunch using majority rule.
 - Al prefers a restaurant where lunch can be had for \$5.00, Bob wants one where lunch costs around \$10.00 and Cathy, a gourmet, prefers one costing around \$20.00.
 - For convenience assume that, given any two options, each will prefer the restaurants whose price for lunch that is closest to their preferred one.
 - This "spatial voting" can be shown to be the result when their marginal benefit and marginal cost curves are straight lines.
 - Price is used as proxy for the quality of the restaurant and/or its service and ambiance.
 - Consider some votes on various alternative restaurants:

<u>Options</u>	<u>Votes Cast</u>			<u>Outcome</u>
a. \$10 vs. 20\$	A: 10	B: 10	C: 20	10 MP 20
b. \$5 vs. \$20	A: 5	B: 5	C: 20	5 MP 20
c. \$5 vs. \$16	A: 5	B: 5	C: 16	5 MP 16
d. \$10 vs. \$5	A: 5	B: 10	C: 10	10 MP 5
e. \$12 vs. 10	A: 10	B:10	C: 12	10 MP 12

- C.** Note that Bob always votes in favor of the outcome that wins the election. (The B column of Votes Cast and the Outcome column are EXACTLY the same.)

- D.** Note also that exactly the same number of individuals prefer a more expensive dinner as prefer a less expensive dinner than Bob.
- So, Bob is the median voter. (He is the voter with the median ideal point.)
 - The definition of a median ideal point or "preference." is that the same number of persons want more of this good or service as want less. It the "ideal point" that is the median of the distribution of voter ideal points for the electorate of interest.
 - Note that the median voter's ideal point can beat every other possible alternative in pair-wise voting.
- E.** The **Weak Form** of the *median voter theorem* says that the median voter always casts his vote for the policy that is adopted. [In the example above, Bob always votes for the alternative that wins.]
- F.** The **Strong Form** of the *median voter theorem* say the median voter always gets his most preferred policy. [In the example above, Bob's preferred expenditure level, \$10, will defeat any other policy. It thus tends to emerge as an equilibrium in a series of votes over alternatives.]

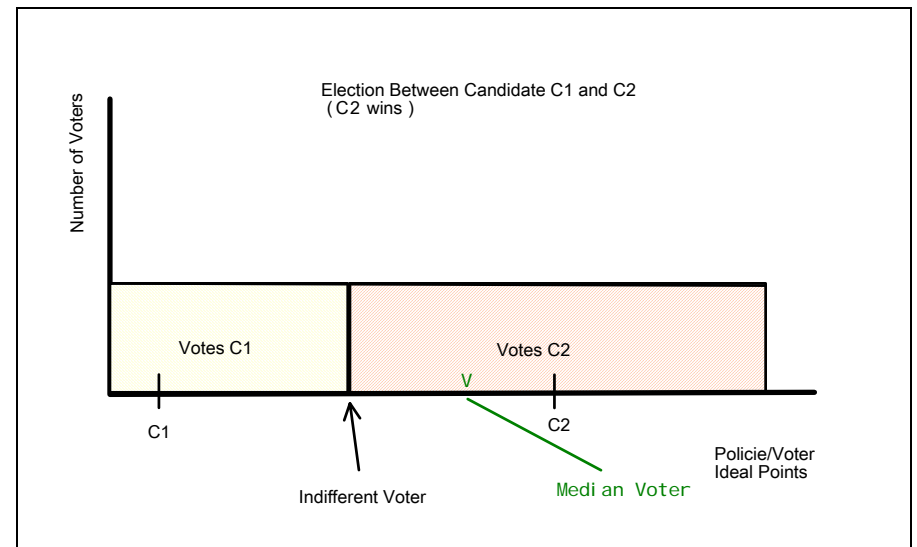
III. Electoral Competition and The Median Voter

- A.** The previous illustration shows that the median voter determines the electoral outcome in direct democracies. He or she always votes for the policy that is adopted. We next show that the median voter is also very important--pivotal--in representative democracy.
- B.** To make our analysis of elections more straight forward, we will assume that Voters all vote for the candidate (or policy) that is "closest" to them in the policy dimension.
- C.** This assumption allows competition between candidates for government office can be analyzed with a diagram that shows any distribution of voter ideal points.
- Voters may have a wide variety of ideal points, and one can either construct a bar chart with different ideal points along the bottom and numbers of voters represented as the height of the bars, or if there are enough voters and positions, one can represent the distribution with a diagram analogous to a frequency distribution in statistics.
 - In this "frequency distribution" representation, areas under the curve between two values, say G1 and G2, represents the number of voters whose ideal points are between G1 and G2 (including G1 and G2).

- iii. The frequency distribution of voter ideal points can be used to create diagrams with policy alternatives along the bottom (X) axis and with number of voters with a specific ideal point along the vertical axis. .
- iv. The assumption of spatial voting allows us to determine how all these voters will vote when there are two candidates or two policy options being voted on
 - (Every voter will vote in favor of the candidate whose position is closest to their own.)
 - (Voters who are exactly half way between the two "alternatives" will be indifferent between them., and are assumed either not to vote or to vote by flipping a coin.)
- v. Voters to the left of the "indifferent voters" will vote for the policy on the left, and those to the right of the "indifferent voters" will vote for the policy on the right.)

D. The illustration below assumes that candidates 1 and 2 have taken policy positions C1 and C2, and that voters vote for the candidate closest to their ideal point.

- i. The distribution of voter ideal points is assumed to be a "uniform" distribution--although essentially the same results would arise for other distributions, as shown in class.
 - The uniform distribution is adopted here to make drawing the diagram a bit simpler.
- ii. It turns out Candidate C1 loses this election.
 - He or she gets fewer than half of the votes cast. (This is implied by the fact that the area labeled C1 is much smaller than the area labeled C2.)
- iii. How could Candidate C1 have done better?
 - Clearly he or she should have chosen a policy position further to the right.
 - That is to say, he or she should have chosen a position closer to the median voter.



iv.

E. It turns out that **the candidate who is closest to the median voter's ideal point will always win the election**, because that voter will always receive **AT LEAST HALF OF THE VOTES**.

- i. Thus, if candidates are free to adjust their policy position to attract votes, they will each try to be closer to the Median Voter's ideal point than the other candidate.
- ii. This tends to make the candidates take more similar positions on the issue(s) of interest to voters, which is to say less extreme policy positions.

F. In **equilibrium**, this kind of competition for votes implies that both candidates will take essentially the same position, namely that of the median voter.

- i. At this equilibrium, the candidates take essentially the same position, so they receive approximately the same number of voters.
- ii. Note that the predicted outcome is a tie, when both candidates take the exactly same position.
- iii. At this equilibrium, **the median voter gets exactly what he or she wants.** *That is to say the strong form of the median voter theorem holds!*
 - This is not because the median voter is "special" or "admirable" but simply because of competition for votes.

- The median voter outcome is simply the Nash equilibrium of pragmatic competition by candidates or parties for votes along a single ideological or policy dimension.

IV. The Median Voter and Public Policy

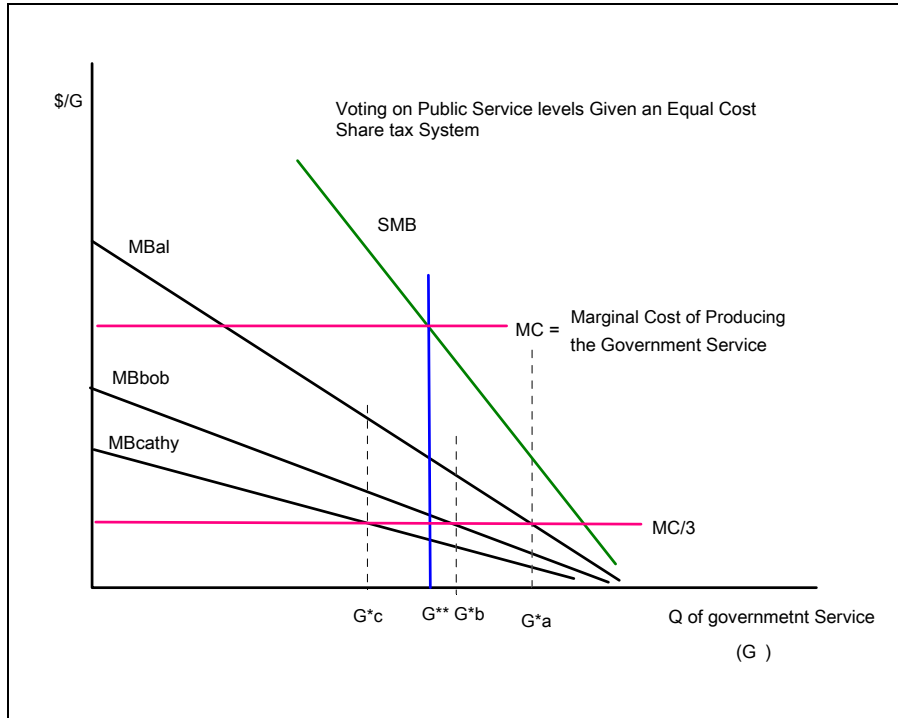
- A.** One important insight that follows from the median voter model is that to understand the scale of government programs, one has to look at **both** the benefit and cost sides of programs from the point of view of the median voter.
- B.** In most cases, the median voter is approximately the VOTER with MEDIAN characteristics.
- That is to say he or she is a voter of median age with median income, median education, median family size, median political ideas and so forth.
 - This allows this model to be used to predict public policies using estimates of median voter demands for public services.
 - This turns out to vary with both his or her marginal benefits from the service and from his or her tax price.
- C.** The median voter will not ordinarily be the same as the median member of the community because not all persons are equally likely to vote!
- In the US it turns out that the median voter is a bit older, richer, and better educated than the median member of the group of persons eligible to vote.
 - Poor, young, and less educated person vote less frequently than older, richer, and more educated persons.
- D.** To the extent that the Median Voter gets what he or she wants, anything that changes the median voter's preferred policy will affect government policy.
- [This neglects possible "agency problems."
 - Candidates may say one thing to get elected and do something else once in office.
 - Moreover, elected representatives may not be able to fully control the bureaucracy.
 - However, candidates that are known to have cheated and done poorly at overseeing the bureaucracy will be more likely to lose the next election than those that have not since the median voter will not have gotten what he or she wants. So this is not a crazy assumption.]

- E.** To the extent that government services are normal goods, Government services will tend to increase as the median voter becomes wealthier, as their tax-cost relative to private services decreases, and as their perceived value increases.

V. The Electoral Demand for Government Services

- A.** The next step is to see how our net-benefit maximizing model can be used along with the median voter model to predict the size of government programs. We'll start off with a "simple" example, based on the equal sharing form of the Samuelsonian tax system. However, we'll now assume that voting determines the quantity provided rather than some abstract effort to maximize social net benefits (as at Q^{**} in our diagrams)
- B.** Suppose that there are three voters, each with a somewhat different marginal benefit curve for the government service of interest (G).
- For purposes of illustration assume that the tax system in place is an "equal share" system.
 - (Recall, that this will satisfy the Samuelsonian conditions for the Pareto efficient supply of a public services if the "right" service level is produced (Q^{**} .)
 - Given this tax system, these three voters will all **disagree** about the optimal level of the government services.
 - (See the diagram below.)
 - If a referendum is held to determine the service level, we know from our previous analysis that the median voter's ideal point will determine the outcome.
 - Recall that the median voter is the voter whose ideal point is exactly in the middle in the sense that there are exactly the same **number** of voters with ideal points to the left as to the right of his or her ideal point.
 - In this case, **Bob is the median voter.** (Why?)
 - Thus the predicted result of democratic politics is policy Q^*_b .
 - Note that this is not usually the same as the social net benefit maximizing level of the public service!
 - Bob has no reason to take account of the benefits and costs imposed on other voters by his vote.
 - (Remember we assuming self-interested voting, so Bob maximizes his own consumer surplus rather than social net benefits.)

- c. In the case illustrated Q^{**} is somewhat below Q^*_b .
- d. As drawn below, the supply of public services will be somewhat higher than the net-benefit maximizing level of services.



- e. The government may be said to "fail" in such cases just as markets failed when we were analyzing public goods and externality problems.
- v. (It is also possible for Q^{**} to be greater Q^*_b .
 - As and exercise draw such a case, and label all details.

- C. Note that the median voter's demand for services depends on his tax price for the service(s) that government provides.
- It is his or her marginal benefits from the service in combination with his or her marginal cost for the service that determines his or her ideal point.
 - A variety of tax systems satisfy the Samuelsonian rules, but not all of them will generate G^{**} as the outcome in a democracy.

- D. Notice that this illustration implies that taxes not only affect market outcomes, they also affect political outcomes.
- i. The tax system affects what QUANTITY of services each voter wants to purchase.
 - ii. The tax system thus affects the demand of every voter.
 - iii. It is the middle voter that is pivotal--which is to say the median voter.
 - iv. By determining the demand of the median voter, a tax system can essentially determine the level of the service that emerges from competitive elections.

- E. Most public services are normal goods, ordinarily a wealthy person will demand higher services than a poor person.
- i. That is to say, a wealthy person's MB curve for a normal good tends to be higher than that of poorer persons.
 - ii. However, wealthy voters are willing to pay a higher price to have one more unit of a public service than a poor person (just as they are for ordinary private goods).
 - iii. The "price effect" of a progressive income tax system can cause wealthy persons to demand less of a service than a poorer person because they pay a much higher price for it.

- F. It is the quantities demanded by each voter that determines the distribution of voter ideal points and thus who the median voter is.
- i. For example, if one uses a flat tax to fund all services, the rank order of service demands will reflect differences in tastes and incomes of voters.
 - ii. Generally a small increase in the marginal tax rate faced by individuals for services (an increase in the tax rate) will reduce demands for services without affecting their "rank order" -- that is to say, without changing the median voter.
 - iii. Other things being equal, such a change in tax law would tend to reduce the demand for public services.
 - However, if income is rising at the same time, the demand for public services may nonetheless increase..
 - (Explain why.)

VI. Voting on the "Governmentization" of Private Services

- A. To this point, we have applied the electoral model to the provision of public goods as within a Samuelsonian fiscal package. We found that median voters will not necessarily favor the service level that maximizes social net benefits

and so governments may be said to fail in the same sense that markets fail in the provision of pure public goods.

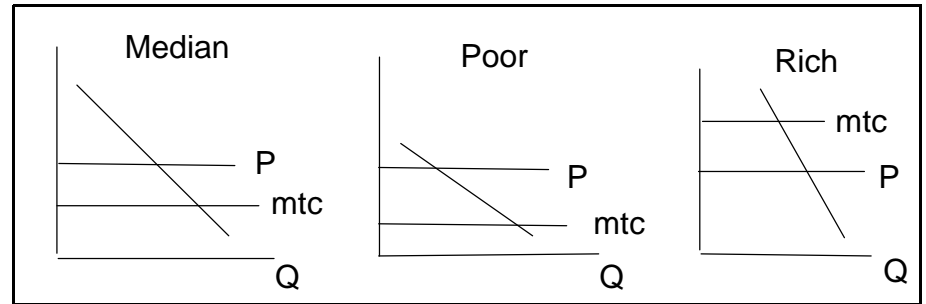
B. In cases in which the initial supply of a pure public good is zero, government supply of that good at median voter ideal levels will tend to increase social net benefits if not necessarily to maximize them. (Draw a few diagrams to see how this operates.) However, when positive amounts are provided by the private sector, voters may prefer to free ride rather than pay for somewhat larger amounts of the services. (Again, draw a few examples to see how this operates. Perhaps surprisingly, this is also true of Lindahl tax based provision of public goods. (Again draw a few diagrams to see that free riding is often preferred to paying a positive price for all units of a pure public good.

C. The next cases of interest are ones in which a pure private good may be provided by government. Such cases are actually fairly common. For example, the two of the three largest areas of government expenditure today are public pensions (social security) and health care (medicare and medicaid) are cases in which a pure private good (income and insurance) are provided by government.

- i. There is, of course, no simple net benefit maximizing justification for providing private goods through public means if the products of interest can be provided through competitive markets. Competitive markets as shown early in the course tend to maximize social net benefits. (An exception might be made for products for which there are large economies of scale or problems with monopoly that cannot be solved through regulation--but these are not straight forward to develop.
- ii. Nonetheless, it can be in a voter's interest to have the government take over the production of such services because their own tax price for the service is lower than that of the market price. because of the way the tax system works. For example, the more progressive is the tax system, the more likely it is that the median voter will be able to save money by having the government provide a pure public good--assuming that the quality of the service does not fall or at least does not fall much.
- iii. The median voter is choosing between getting the service that he or she wants at his or her tax price versus paying the market price. Obviously a cost minimizing median voter will favor the delivery system with the lowest price.
- iv. Other voters are choosing between the median voter's preferred level of the private good at their tax price and their own ideal level at the market price. many will also benefit from a lower price even though they cannot control

the amounts received. (Indeed, these may not differ very much from that provided by markets--although without some competition, quality is likely to fall.) Among those voters, low income and richer voters with high health needs may both favor government supply of the service--ignoring quality differences and the effects of ideology.

- v. The figures below illustrate the median voter's choice, a relatively poor voter's choice, and a relatively rich voter's choice under the assumption that the private good is provided at a uniform level and is paid for with a progressive income tax.



- i. **P** is the market price for insurance or health care, **mtc** (marginal tax cost) is the price under a tax financed supply of the same service.
- ii. Note that both the median voter and poor voter pay a below market price under government provision, because of the progressivity of the income tax system used to pay for the service.
- iii. This is not always the case, but is often the case and is assumed here to illustrate why the median voter may prefer to have some private services provided by the government.. (There may also be ideological reasons, but these are not necessary to explain such policy preferences as demonstrated here.)
- iv. The relatively rich voter pays a higher than market price under government provision, because he or she has relatively higher income than the median or poor voter. The more progressive the income tax system is, the larger the range of marginal tax prices is.
- v. Notice that as drawn, the median voter's demand for this service is in the middle of the three voters or types of voters.
- vi. The result is a vote is a program in which the rich voters may be said to "subsidize" the middle income and poor voters.

- vii. (The amounts of the goods preferred by the three voters is left to the student to identify under personal and tax-financed provision.)
- viii. Note that "governmentization" is a predictable result for some sorts of goods--even if we ignore voter ideology--when they are funded through a progressive tax system.
- ix. The diagrams above have the following implications:
 - a. As progressivity is reduced, this effect tends to diminish, but does not disappear.
 - b. If expected quality is expected to be lower after governmentization--for example, because of reduced rates of innovation associated with government provision and reductions in choices associated with reduced competition--interest in governmentization diminishes--other things being equal. (In effect the MB curve after governmentization is below that of MB before privatization.)
 - c. Ideological interests may reinforce or reduce this tendency, as interests in equality tend to increase it and interest in personal property rights tends to reduce it. (These also affect relative position of the before and after governmentization MB curves.)

VII. Rational Ignorance and Fiscal Illusion

- A. An implication of the strong form of the median voter theorem(s) is that the median voter gets what she/he wants. However, the median voter's ability to pick the policy that is most in her (or his) interest is limited by the information, theories, and time that she (he) has available for analyzing the alternatives.
- B. Analyzing the relative merits of alternative public policies is costly.
 - i. As with other costly activities, it is engaged in only up to the point that maximizes expected net benefits.
 - ii. In most cases this occurs at the point where the expected marginal benefits of more information and more analysis equals its expected marginal cost.
 - iii. An implication of the rational pursuit of polity information (one stressed by Downs and Tullock) is that voters will **rationally remain ignorant** of much useful information.
 - Indeed they may remain completely ignorant on most policy issues. (A point stressed in some of my own work on rational ignorance.)

- iv. They will use smaller than possible samples of data and ignore types and dimensions of information that are relatively costly to acquire and/or to analyze.
 - v. [Draw a diagram that illustrates the collection of information by an expected net benefit maximizing individual. Show that less than perfect or complete information is often optimal.]
- C. A bit of rational ignorance is not a problem for democracy as long as it does not induce "biased expectations" about the benefits and/or costs of public policy for the median voter.
 - i. For example, if the sampling of information done by voters is reasonably complete they will tend to have unbiased estimates of their costs and benefits--although not perfect ones--and the result will *on average* advance the interests of the median voter--if not perfectly so.
 - ii. As long as voter expectations are unbiased, the Condorcet jury theorem implies that the outcomes of majority rule in effect "aggregate" the information in the minds of voters (by using the median of their estimates when assessing candidates or policies), and so help assure that median voter interests are actually advanced by public policies.
 - iii. However, if the information included in the sample falls to zero for some policy issues, voter expectations will be biased, and the results of elections will not necessarily advance all the interest of the median voter.
 - iv. (See Congleton 2007 and 2001 for more on this. These are available on my website under "recent publications.")
 - D. When voters have biased expectations about the benefits and/or cost of public programs they are said to exhibit **Fiscal Illusion**.
 - i. In cases in which the median voter's expected marginal benefit from a public policy is greater than the actual benefit or her (or his) expected marginal cost is lower than the actual cost, the result will be an OVER demand for public services, relative to that which actually maximizes net benefits for the median voter.
 - ii. In cases in which the median voter's expected marginal benefit from a public policy is less than the actual benefit or her (or his) expected marginal cost is higher than the actual cost, the result will be an UNDER demand for public services, relative to that which actually maximizes net benefits for the median voter.
 - iii. It bears noting that both governments and interest groups may attempt to induce biased expectations by "subsidizing" (freely providing) information

about the benefits of programs and/or "taxing" (withholding) information about the costs of programs.

- E. [Draw a diagram of the policy preferences of voters with "biased" assessments of their marginal benefits or costs, and contrast the results with their actual interests.]

VIII. Extensions and alternatives to the median voter model: Interest Groups, Agency Costs, and Representative Governance

- A. The median voter model represents a pure electoral model of policy formation in democratic governments. Although a very useful and powerful model of policy formation in well-functioning democracies, the median voter model neglects the effects of interest groups and the bureaucracy on public policy.
- B. Incorporating the effects of these groups into the model is more properly the subject of Public Choice than public finance, but some brief discussion of their effects is presented below and in the next handout.
- i. Both interest groups and the bureaucracy can influence public policy by lobbying elected officials for particular policies.
 - ii. By doing so, such groups take advantage of the rational ignorance of voters.
 - a. When these groups are successful, the policies that we observe will depart from those preferred by the median voter toward those preferred by these "special interest groups."
 - b. Voters tend to punish politicians for adopting policies that are different from those announced during campaigns.
 - This will reduce the extent to which elected officials will listen to lobbyists and bureaucracy.
 - But rational ignorance implies that there are many policies about which voters know little or nothing.
 - iii. **William Niskanen** argued that **bureaucrats** sometimes operate as an interest group and have incentives to try to **maximize their budgets** for many private reasons.
 - a. Larger budgets often create new opportunities for advancement, more pleasant office environments, more staff support, and, perhaps, even opportunities for travel.
 - b. Note that even "public spirited" bureaucrats who want to advance their agency's "mission" will also lobby for larger budgets.
 - c. Thus, Niskanen argues that lobbying by bureaucrats creates systematic increases in government budgets to the extent that they are successful.

- (Draw a diagram that illustrates this form of bureaucratic bargaining with the legislature using all or nothing offers. Note that government services tend to be larger than optimal when it succeeds.)
- [This will be covered in class if we have time.]

- C. The effects of other interest groups are less systematic. Some government services may increase and other fall.
- i. In general one anticipates that interest groups will be most common in policy areas in which benefits are substantial and concentrated so that the interest group can overcome its own "free riding problem."
 - ii. **Mancur Olson's** *Logic of Collective Action* is the classic work in this area and the point of departure for most interest group models.
 - a. If we have time, we'll undertake a short overview of this literature, some of which is covered in the next handout..
 - b. That overview will include the theory of rent seeking.

IX. Some Other Extensions to the Median Voter Model

- A. There is a link between the rational ignorance idea and the ability of interest groups to influence public policies.
- B. A good deal of what **interests groups** do is informational in nature.
- i. They sponsor research and testimony of researchers in Congress and before regulatory commissions.
 - ii. They sponsor political advertising of various kinds.
 - iii. All of this information is intended to persuade voters, legislators, and bureaucrats that the "public interest" is advanced by policies that just happen to be the ones that the lobbying groups want.
 - iv. To the extent that these informational strategies affect voter expectations about their costs or benefits, they **may induce fiscal illusion**.
- C. Voter ignorance also allows candidates for office to trade favors to interest groups in exchange for campaign resources.
- i. If voters knew everything, campaign resources would not matter.
 - a. However, voters typically know relatively little about the details of candidate positions on "minor issues."
 - b. This allows such deals to be made without voters knowing they occur.
 - ii. Most campaigns for higher office benefit from campaign resources, so it turns out that a candidate that can bargain for such resources from interest

groups (without being noticed) increases his or her probability of winning the election.

- iii. Candidates thus often move away from the median voter's position along dimensions of policies in which voters are ignorant of (or disinterested in) in order to secure campaign resources.
- iv. This allows interest groups to have direct effects on policy that is disproportional to the number of votes that they cast in an election.
- v. (It is also one reason why **campaign reform law** tends to be discussed and adopted.)

D. Other topics in voter theory beyond the scope of this course:

- i. Majority cycles: there is not always a median voter
- ii. Turnout: why do people vote if they have so little direct effect on electoral outcomes?
- iii. The role of morality, ideology, and "expressive voting" in voter behavior.