Framework

- Voters differ (only) in their income $y^i$.
- Voters have the same preferences,

$$w^i = c^i + H(g) \quad (1)$$

$c^i$ : private consumption of a person of income $y^i$
g : per capita government spending
$H(g)$ : increasing, concave, and the same for everyone
proportional income tax $\tau$, so that

$$\tau \bar{y} = g$$  \hspace{1cm} (2)

$\bar{y}$ : average income in the jurisdiction

$$c^i = (1 - \tau)y^i$$  \hspace{1cm} (3)

so that

$$W^i(g) = y^i - \frac{y^i}{\bar{y}}g + H(g)$$  \hspace{1cm} (4)
Bureaucrats

**ASSUMPTION**: Government administrators want $g$ as large as possible.

**ASSUMPTION**: Government administrators are the only people who can propose policies.
Take it or Leave It

1. A bureaucrat proposes $g$.

2. Voters vote.

3. If a majority votes in favor of the budget, government spending is $g$ (and tax rate is $\frac{g}{y}$).

4. If a majority votes against, $g = 0$, and no taxes.

A voter of income $y^i$ will vote in favor of the proposal if and only if

$$W^i(g) \geq W^i(0)$$

(5)
for a voter of income $y^i$, there is some spending level $\hat{G}(y^i)$ which the voter finds exactly as good as no spending at all

$$W^i(\hat{G}[y^i]) = W^i(0)$$ (6)

$$\hat{G}(y^i) > g^*(y^i)$$
Poor Voters Tolerate More Spending

lower–income people have higher values for $\hat{G}(y^i)$ than do high–income people.

This result follows from the following observation:

**OBSERVATION:** if a person of income $y^i$ is indifferent between spending levels of 0 and $G > 0$, then everyone of lower income $y^j < y^i$ will strictly prefer the spending level $G$ to the spending level of 0.
proof: From the definition of $W^i$, a person of income $y^i$ will find a spending level of $G$ at least as good as a spending level of 0 if (and only if)

$$y^i - \frac{y^i}{\bar{y}} G + H(G) \geq y^i + H(0)$$

(7)

This condition (7) is equivalent to

$$H(G) \geq H(0) + \frac{y^i}{\bar{y}} G$$

(8)

If condition (8) holds as an equality for some $y^i$, then it must be true that

$$H(G) > H(0) + \frac{y^j}{\bar{y}} G$$

(9)

for any $y^j < y^i$, so that a person of income $y^j < y^i$ would rather have a public expenditure level of $G$ than a public expenditure level of 0 (if the person of income $y^i$ was indifferent between the two). •
The Administrator’s Choice

is

\[ \hat{G}(y^m) \]

which is the largest level of public expenditure which the person of median income would ever vote for.

Since \( \hat{G}(y^m) > g^*(y^m) \), the administrator can get a larger level of spending than the median voter’s preferred level.
Suppose now that senior administrators are able to spend money on projects which do not directly benefit taxpayers. 

\[ \text{total government expenditure} : g + r \]

\( g \) : expenditure on public services which the taxpayers consume

\( r \) : expenditure which is “wasted”

\[ \tau \bar{y} = g + r \]  \hspace{1cm} (10)
assume that voters can observe the actual level of public expenditure \( g \)

bureau chiefs’ problem is to choose \( g, r \) and \( \tau \) to maximize their total budget \( g + r \), subject to the budget constraint (10), and subject to approval by the voters

voter of income \( y^i \) will now vote in favour of a budget if

\[
y^i - \frac{y^i}{\bar{y}} (g + r) + H(g) \geq y^i + H(0)
\]  \hspace{1cm} (11)

So the bureaucrat’s budget–maximizing problem is to maximize \( (r + g) \) subject to the approval constraint, which can now be written

\[
y^m - \frac{y^m}{\bar{y}} (g + r) + H(g) \geq y^m + H(0)
\]  \hspace{1cm} (12)
RESULT: If the bureaucrat maximizes $r + g$ subject to the approval constraint (12), the policy chosen will be $g = \hat{G}(y^m)$ and $r = 0$.

Proof Suppose that the bureau chief proposes some budget $(g, r)$, satisfying the approval condition (12) with equality. Is this the biggest budget she can get? Suppose she replaces this budget with a new budget, with $g' = g + r > 0$, and $r = 0$.

Then the welfare of the median voter will be

$$y^m - \frac{y^m}{\bar{y}}(g') + H(g') = y^m - \frac{y^m}{\bar{y}}(g+r) + H(g') > y^m - \frac{y^m}{\bar{y}}(g+r) + H(g) =$$

So the median voter strictly prefers this new policy to the alternative of no spending at all. In other words, if condition (12) holds, and $r > 0$, then

$$g + r < \hat{G}(y^m)$$

So the bureaucrat can get a bigger budget than $g + r$ approved, by proposing $g = \hat{G}(y^m)$ and $r = 0$. ●
Changing the Reversion Level

if the budget is defeated. Instead $g$ will equal some pre–specified low level $\bar{g} > 0$.

a voter will vote for the budget if and only

$$y^i - \frac{y^i}{\bar{y}} G + H(G) \geq y^i - \frac{y^i}{\bar{y}} \bar{g} + H(\bar{g})$$  \hspace{1cm} (13)$$

if $g$ is very small, $W^i(g)$ is increasing in $g$. So raising the reversion level $\bar{g}$ increases the right side of (13)
Now the biggest level of public expenditure $\hat{G}(y^i; \bar{g})$ which a voter of income $y^i$ will support is the level of spending for which

$$y^i - \frac{y^i}{\bar{y}} \hat{G} + H(\hat{G}) = y^i - \frac{y^i}{\bar{y}} \bar{g} + H(\bar{g})$$

(14)

The higher the reversion level $\bar{g}$ is, the lower is the maximum level $\hat{G}(y^i)$ which the person is willing to vote for.