Comparative Politcs

Does electoral rule matter in determining policy choices?

We consider two different kinds of electoral rule

1) Majoritarian

2) Proportional

There are n (n odd)provinces. In the Majoritarian systems, the winner wins at least $\frac{n+1}{2}$ provinces. In each of these provinces, winner is declared by the majority rule. In the proportional system, the winner gets support from the majority of the whole population.

A society with 3 groups of voters: $J = 1, 2, 3$

$$w^J = c^J + H\left(g\right)$$

c^J = Private consumption $= \left(1 - \tau\right) + f^J$
$H\left(g\right)$ = Utility from the public good g

Budget constraint

$$3\tau = \sum_J f^J + g + r$$

r = Private rent to political parties
Policy vector

$$\mathbf{q} = \left[\tau, g, r, \left\{f^J\right\}\right] \geq 0$$

$$\begin{aligned} \max\ W &= \sum w^J = \sum \left\{ c^J + H(g) \right\} = \sum \left\{ (1-\tau) + f^J + H(g) \right\} \\ &= 3(1-\tau) + 3\tau - g - r + 3H(g) = 3 - g - r + 3H(g) \end{aligned}$$

Optimal policy choices:

$$g^* :\ H_g(g^*) = \frac{1}{3},\ r^* = 0$$

Redistributive transfers are indeterminate; But with concave utility function of private consumption, we will have f^{J^*} to be equal for each group. Further, if we assume any positive tax distortion, $f^{J^*} = 0$.

Parties want to maximize $P_P\,(R + \gamma r)$
Assume *probabilistic voting*
Voter i in group J votes for party A if

$$W^J\,(\mathbf{q}_A) > W^J\,(\mathbf{q}_B) + \left(\delta + \sigma^{iJ}\right)$$

where $\delta + \sigma^{iJ} =$ voter i's ideological preference for party B.

$$\delta \sim Uniform\left[-\frac{1}{2\psi}, \frac{1}{2\psi}\right]; \quad \sigma^{iJ} \sim Uniform\left[-\frac{1}{2\phi^J} + \bar{\sigma}^J, \frac{1}{2\phi^J} + \bar{\sigma}^J\right]$$

Assume $\bar{\sigma}^1 < \bar{\sigma}^2 = 0 < \bar{\sigma}^3$ (ordering in terms of their ideological stance)
Further assume $\phi^2 > \phi^1, \phi^3$.
For convenience: $\bar{\sigma}^1\phi^1 + \bar{\sigma}^3\phi^3 = 0$.

Define $\pi_{A,J} =$ vote share of party A in group J
For a given δ,

$$\begin{aligned} \pi_{A,J} &= P\left[\sigma^{iJ} < W^J(\mathbf{q}_A) - W^J(\mathbf{q}_B) - \delta\right] \\ &= \frac{1}{2} + \phi^J\left[W^J(\mathbf{q}_A) - W^J(\mathbf{q}_B) - \delta - \bar{\sigma}^J\right] \end{aligned}$$

In a single district election the candidate has to win the majority of the seat the whole population.

$$
\begin{aligned}
P_A &= \Pr\left[\frac{1}{3}\sum \pi_{A,J} \geq \frac{1}{2}\right] \\
&= \frac{1}{2} + \frac{\psi}{3\phi}\sum_J \left[\phi^J \left(W^J(\mathbf{q}_A) - W^J(\mathbf{q}_B)\right)\right] \quad \text{where } \phi = \sum_J \phi^J/3
\end{aligned}
$$

and using the fact $\bar{\sigma}^1\phi^1 + \bar{\sigma}^3\phi^3 = 0$.
Party A maximize
$(R + \gamma r)\left\{\frac{1}{2} + \frac{\psi}{3\phi}\sum_J \left[\phi^J \left(W^J(\mathbf{q}_A) - W^J(\mathbf{q}_B)\right)\right]\right\}$, given $\mathbf{q}_B$

Claim 1:

$$\mathbf{q}_A = \mathbf{q}_B = \mathbf{q}^*.$$

How to show: Both parties solve the same maximization problem given others choice

Claim 2:

$$f^2 > 0,\ f^1 = f^3 = 0$$

How to show: Party A maximize

$$(R+\gamma r)\left\{\frac{1}{2}+\frac{\psi}{3\phi}\sum_J\left[\phi^J\left(W^J(\mathbf{q}_A)-W^J(\mathbf{q}_B)\right)\right]\right\}$$

since $(1-\tau)+f^J+H(g)$ and $3\tau=\sum_J f^J+g+r$

$$=(R+\gamma r)\left\{\frac{1}{2}+\frac{\psi}{3\phi}\left(3\phi(1-\tau)+\sum_J f^J\phi^J+3\phi H(g)-3\phi W^J(\mathbf{q}_B)\right)\right.$$

$$=(R+\gamma r)\left\{\frac{1}{2}+\psi(1-\tau)+\frac{\psi}{3\phi}\sum_J f^J\phi^J+\psi H(g)-\psi W^J(\mathbf{q}_B)\right\}$$

Suppose, if possible, $f^1=\varepsilon>0$. Consider the possibility where f^2 is increased by ε and decrease f^2 by ε. Show that party A will be better off by such a deviation.

Claim 3: Less public good provision compared to socially optimal level.

Intuition: Note that budget constraint $3\tau = \sum_J f^J + g + r$. Compare the trade off between f^2 and g. If we increase f^2 or g by ε, tax has to increase by $\varepsilon/3$, keeping everything else at the same level. Hence, the cost of increasing f^2 or g would be the same, in particular, the cost of increasing the tax rate by $\varepsilon/3$. Compare the partial derivative of the objective functions with respect to f^2 and g

$$(R+\gamma r)\left\{\frac{1}{2}+\psi\left(1-\tau\right)+\frac{\psi}{3\phi}\sum_J f^J\phi^J+\psi H\left(g\right)-\psi W^J\left(\mathbf{q}_B\right)\right\}$$

Condition determining the optimal level of g:

$$\begin{aligned}(R+\gamma r)\frac{\psi}{3\phi}\phi^2 &= (R+\gamma r)\,\psi H_g\left(g\right)\\ \text{or } H_g\left(g\right) &= \frac{\phi^2}{3\phi}\in\left(\frac{1}{3},1\right)\end{aligned}$$

Comparing the trade off between f^2 and r; and the trade off between f^2 and τ it can be shown that $\tau^* = 1$ and r^* can be positive

Proposition:
In the single district election, only group 2 receives transfer and the public good provision is less than the socially optimal level.

The winner has to win 2 seats out of 3. Note that District 2 is pivotal. It can be shown the party that wins the majority in district 2, also wins the national election.

$$
\begin{aligned}
P_A &= \Pr\left[\pi_{A,2} \geq \frac{1}{2}\right] \\
&= \frac{1}{2} + \psi\left[W^2\left(\mathbf{q}_A\right) - W^2\left(\mathbf{q}_B\right)\right]
\end{aligned}
$$

$$
(R+\gamma r)\left\{\frac{1}{2} + \psi(1-\tau) + \psi f^2 + \psi H(g) - \psi W^J\left(\mathbf{q}_B\right)\right\}
$$

Compare the trade off between f^2 and g

$$
1 = H_g(g)
$$

Recall that

$$
\begin{aligned}
\text{Single district case } H_g(g) &\in (1/3, 1) \\
\text{Socially optimal } H_g(g) &= \frac{1}{3}
\end{aligned}
$$

Empirical estimation of the hypothesis whether majoritarian system has smaller governments.
Data: 80 democracies between the period 1990 and 1998
Constitutional rule:
$Maj = 1$ if the outcome determined through plurality rule in the most recent election to the legislature; 0 otherwise
$Pres = 1$ if the presedential system of government

Empirical specification:
Constitution selection

$$S_i = \begin{cases} 1 \text{ if } G\left(\mathbf{X}_i\right) + e_i > 0 \\ 0 \text{ otherwise} \end{cases}$$

Policy selection

$$Y_i = F\left(S_i, \mathbf{Z}_i\right) + u_i$$

Empirical issues with OLS estimation:
(i) conditional independence of e_i and u_i, (Heckman correction; IV estimation)
(ii) linearity assumption

OLS estimation:

TABLE 2—SIZE OF GOVERNMENT AND CONSTITUTIONS: OLS ESTIMATES

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent variable	*cgexp*	*cgexp*	*cgrev*	*dft*	*cgexp*	*cgexp*	*cgexp*
pres	−5.18		−5.00	0.16	−2.65	−7.75	−6.46
	(1.93)***		(2.47)**	(1.15)	(2.70)	(2.70)***	(2.98)**
maj	−6.32		−3.68	−3.15	−1.45	−7.94	−6.33
	(2.11)***		(2.15)*	(0.87)***	(2.32)	(3.74)**	(2.48)**
propres		−6.56					
		(3.01)**					
majpar		−6.96					
		(3.72)*					
majpres		−10.37					
		(3.03)***					
pres_newdem						3.50	
						(2.72)	
maj_newdem						3.58	
						(4.03)	
newdem						−4.08	
						(2.23)*	
pres_baddem							2.42
							(4.16)
maj_baddem							2.06
							(5.97)
baddem							−5.73
							(3.46)
F-test (*pres*)		0.43				4.01**	1.40
F-test (*maj*)						3.18*	0.66
Sample	1990's	1990's	1990's	1990's	1960–1973	1990's	1990's
Observations	80	80	76	72	42	80	80
R^2	0.71	0.70	0.68	0.50	0.79	0.72	0.70

Notes: Robust standard errors are in parentheses. All regressions include our standard controls, *lyp, lpop, gastil, age, trade, prop*65, *prop*1564, *federal,* and *oecd,* plus a set of indicator variables for continental location and colonial origin, except that *age* is missing in column (5)–(6), while *gastil* is missing in column (7) and replaced by *polity* in column (5). *F*-test (*pres*) refers to tests of the hypotheses that the coefficient for *propres* is equal to the difference between the coefficients for *majpres* and *majpar* [column (2)], the sum of the coefficients for *pres* and *pres_newdem* is zero [column (6)], and the sum of the coefficients for *pres* and *pres_baddem* is zero [column (7)]. *F*-test (*maj*) refers to the corresponding tests with regard to *maj* [columns (6) and (7)].

* Significant at the 10-percent level.

** Significant at the 5-percent level.

*** Significant at the 1-percent level.

Public Debt

Do political and institutional factors play any role in determining the public debt policy?

Observation:

High debt accumulation in countries ruled by coalition governments and weak governments
Second, Budgetary procedure with veto rights correlated with high debt accumulation.

2-period economy

An individual starts with an endowment e in the first period and earns from labour income in the second period.

Private consumption

$$u = c_1 + c_2 + V(x); \;\; x = 1 - l$$

Budget constraint

$$c_1 + b = e$$
$$c_2 = (1-\tau)\, l + \rho b$$

Claim: $b^* \in (0, e) \Rightarrow \rho = 1$ (follows from linear utility and no discounting)

Hence,

$$c_1 + c_2 = e + (1-\tau)\, l$$

Equilibrium labor supply $L(\tau)$: Solve max

$e + (1-\tau)\, l + V(x) \Rightarrow L(\tau) = 1 - V_x^{-1}(1-\tau)$

Government budget constraint

$$\begin{aligned} g_1 &= b \\ g_2 + b &= \tau L(\tau) \end{aligned}$$

Since the optimal choice of l and b is completely determined by τ (and therefore, also by $g_2 + b$), we can rewrite a consumers indirect utility from private consumption as

$$W(g_2 + b) = \max_{\tau} (c_1 + c_2 + V(x))$$

Claim: $W_b = W_g < 0$ (change in b or in g_2 changes τ exactly at the same rate)
Claim: $W_{bb}, W_{gg}, W_{gb} < 0$ (concave V)
Public good consumption: $H(g_1), H(g_2)$.

2 groups of voters, D and R, care about two different types of public goods g^D and g^R.

$$g_t = g_t^D + g_t^R,\ t = 1, 2$$

Utility of group J

$$w^J = W\left(g_2 + b\right) + H\left(g_1^J\right) + H\left(g_2^J\right)$$

Normative benchmark: Consider the problem of a social planner choosing $\left(g_1^D, g_1^R, g_2^D, g_2^R : g_1^D + g_1^R = g_1 = b; g_2^D + g_2^R = g_2\right)$ to maximize $\left(w^D + w^R\right)$
FOC:

$$\begin{aligned} 2W_b + H_g\left(g_1^J\right) &= 0, \quad J = D, R \\ 2W_g + H_g\left(g_2^J\right) &= 0, \quad J = D, R \end{aligned}$$

Claim:

$g_1 = g_2$ (Since $W_b = W_g$)
$g_t^D = g_t^R$ (by symmetry)

Each group is free to set public spending on its favored good.
Solve equilibrium outcome by backward induction.
Consider group J's decision problem in period 2

$$\max W\left(b + g_2^J + g_2^I\right) + H\left(g_2^J\right)$$

FOC:

$$W_g\left(b + g_2^J + g_2^I\right) + H_g\left(g_2^J\right) = 0$$

Comparing the corresponding FOC of the social planner's problem, we see that g_2^J would be higher in this case (use the fact that $W_g < 0$ and $W_{gg}, H_{gg} < 0$)
Why? Intuition: benefit from the public good remains the same, but half the cost is borne by the other group.

From period 2's solution, we can write $g_2^J = G^J(b)$ (easy to show that $G'(b) < 0$: follows from the fact $W_{gg}, H_{gg}, W_{gb} < 0$)

Consider group J's decision problem in period 1

$$\max_{g_1^J} W\left(b + G^J(b) + G^I(b)\right) + H\left(g_1^J\right) + H\left(G^J(b)\right) \text{ subj to } g_1^J + g_1^I =$$

FOC:

$$W_b + W_g G_b^I + H_g\left(g_1^J\right) = 0$$

Use $W_b = W_g$ and $W_g + H_g\left(g_2^J\right) = 0$ to get

$$H_g\left(g_1^J\right) = H_g\left(g_2^J\right)\left(1 + G_b^I\right) < H_g\left(g_2^J\right)$$

Conclusion: (i) More spending than optimal and (ii) more spending in period 1 than in period 2

Uncertainty about future receipt of its favored public good (caused due to electoral mechanism) (Alesina and Tabellini 1990),
Uncertainty about future size of favored public good provision (Persson and Svensson 1989)
Manipulate chances of reelection (Aghion and Bolton 1990)

Nature of debt accumulation - (Song et al 2008)
if tax distortions are small, progressive debt accumulation,
if tax distortions are large, convergence to a stationary debt level (mean reverting process)

Delayed stabilization (Alesina Drazen)