The Right Type of Legislator

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Motivation

- Legislator’s backgrounds are correlated with political preferences (Carnes, 2011)

- American’s tendency to elect wealthy legislators may be partly responsible for the “wealth bias” in the U.S. politics

- Legislatures worldwide include more of the affluent than the less well-off (Norris, 1997)

- However, heterogeneity between legislatures across countries
Overview I

Assumptions

- Study a model where there can be redistribution between rich and poor, and between legislative districts

- Legislators are citizen candidates and there is positive correlation between private sector ability and ability to direct funds to a legislator’s district

Results

- When degree of competition between legislators is low (legislative discipline), tax rates will be those preferred by the median voter of the median district, and legislators will be heterogeneous.

- When degree of competition between legislators is high, voters elect more able citizens. Since these citizens are also successful in the private sector they favor lower taxes
Overview II

Intuition

- Your legislator has a relatively small impact on broad, national policies, but can have a large impact on the welfare of your district (and thus, on your welfare)

Extensions

- Policy motivated parties
- Large legislatures
- Legislative wages
Time Line

The game consists of:

1. **The election subgame**, which consists of a
   1.1 Voting stage, where citizens in each district vote for a representative

2. **The legislative subgame**, which consists of a
   2.1 Tax-policy stage, where legislators set the tax rate looking forward to the
   2.2 Distributive stage, where legislators compete to bring tax revenues to their district.
Citizens I

- Three districts \( j \in \{1, 2, 3\} \)

- Two types: \( \theta^h \) and \( \theta^l \). \( \lambda \) overall proportion of low types

- Citizens get utility from
  - Personal income \( y(\theta^i) \)
  - Transfers that depend on the share of tax revenue \( \pi_j \) directed towards their district

\[
  u_i^j = (1 - \tau^*)y(\theta^i) + \frac{1}{\alpha}(3\pi^j \tau^* \bar{y})^\alpha + \varepsilon \mathbb{I}_{\{iL\}}
\]

where \( \alpha < 1 \)
Citizens II

- High type citizens have higher incomes

\[ y(\theta^i) = \begin{cases} 
1 & \text{if } \theta^i = \theta^l \\
\eta & \text{if } \theta^i = \theta^h 
\end{cases} \]

with \( \eta > 1 \)

- Citizens may be elected to the legislature.

- Assume that first district has a low-type median voter, and third district has a high-type median voter. Middle district has a low-type median voter with probability \( p > \frac{1}{2} \)
What do Legislators do?

- **Vote** on a tax rate via majority rule and **apportion** tax revenue via legislative process
  
  - Each legislator introduces $\beta(\theta^i)$ bills apportioning revenue and amount of tax revenue transferred to a district is proportional to the number bills introduced by a district’s legislator (or legislative bargaining game)

- Legislative productivity depends positively the individual productivity in the market sector (the type) and is given by

$$\beta(\theta^i) = \begin{cases} 
1 & \text{if } \theta^i = \theta^l \\
\beta & \text{if } \theta^i = \theta^h 
\end{cases}$$

- High types are more legislatively effective $\beta \in [1, \bar{\beta}]$
Distributional Stage

- Analyze using backwards induction. District $j$’s proportion of the tax revenue is:

$$\pi^j = \frac{\beta(\theta^j)}{\sum_{j} \beta(\theta^j)}$$

- $$\pi^L_{3L} = \frac{1}{\beta + 2} < \frac{1}{3} < \frac{\beta}{\beta + 2} = \pi^H_{3H}$$

- $$\pi^L_{2L} = \frac{1}{2\beta + 1} < \frac{1}{3} < \frac{\beta}{2\beta + 1} = \pi^H_{2H}$$

- $\beta$ affects the endogenous variables through the values of $\pi^k_{nj}$. 
Tax-Policy Stage

- Ideal tax rates of low and high types, with even distribution between districts, are \( \tau_i^* \) and \( \tau_h^* \), respectively with \( \tau_h^* < \tau_i^* \) since \( \eta > 1 \) (note that \( \tau_h^* \) and \( \tau_i^* \) do not depend on \( \beta \))

- As legislators also work, implemented tax rates will be one of

\[
\begin{align*}
\tau_{3L}^* &= \tau_i^* \\
\tau_{2L}^* &= (3\pi L^2) \frac{\alpha}{1-\alpha} \tau_i^* \leq \tau_i^* \\
\tau_{3H}^* &= \tau_h^* \\
\tau_{2H}^* &= (3\pi H^2) \frac{\alpha}{1-\alpha} \tau_h^* \geq \tau_h^*
\end{align*}
\]

- In general \( \tau_{2H}^* \) can be larger or smaller than \( \tau_i^* \). For example, when \( \beta \) is large \( \tau_{2H}^* > \tau_i^* \). Similarly, it may be the case that \( \tau_{2L}^* < \tau_h^* \).
No Competition

- When \( \beta = 1 \), no competition between legislators over allocation of resources. This leads to standard results.

Result

*If \( \beta = 1 \), then in all pure-strategy subgame-perfect equilibria low type legislators are a majority with probability \( p \) and the tax rate is \( \tau_l^* \) with probability \( p \), and \( \tau_h^* \) with probability \( 1 - p \).*
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Inter-District Competition

- $u_l(j|k, k')$ is the utility a low-type gets from electing a $j$ type when the other districts have elected a legislators of type $k, k'$

$$A) \quad p[u_l(L|L, H) - u_l(H|L, H)] + (1-p)[u_l(L|H, H) - u_l(H|H, H)] \geq 0$$

Result

When $\beta > 1$

1. If $A$ holds, then in all stage-strong, pure-strategy, subgame-perfect equilibria the tax rate is $\tau_{2L}^*$ with probability $p$, and $\tau_{2H}^*$ with probability $1 - p$

2. If, instead, $A$ does not hold, then in all pure-strategy subgame-perfect equilibria only high-types are elected and the tax rate is $\tau_h^*$

3. The number of bills introduced is higher in (2) than in (1)
### Intuition

When $p \to 1$, we can use the following information on incentives:

<table>
<thead>
<tr>
<th>If other two districts elect</th>
<th>L-type median will want to elect a</th>
<th>H-type median will want to elect a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two L-types:</td>
<td>H-type</td>
<td>H-type</td>
</tr>
</tbody>
</table>

L-type if:

A L-type and a H-type:

$$\frac{(\tau_l^* \bar{Y})^\alpha - \alpha \tau_l^*}{(\tau_h^* \bar{Y})^\alpha - \alpha \tau_h^*} \geq \left(\frac{\pi_{2H}}{\pi_{2L}}\right)^{\frac{\alpha}{1-\alpha}}$$

otherwise, a H-type

Two H-types: H-type H-type
Equilibrium behavior is largely governed by whether or not
\[
\left(\frac{\tau_i^* y}{\tau_h^* y}\right)^\alpha - \alpha \tau_i^* \geq \left(\frac{\pi_{2H}}{\pi_{2L}}\right)^{\frac{\alpha}{1-\alpha}}
\]
holds. If so high tax rates in equilibrium. RHS increasing in $\beta$, LHS depends only on $\eta$.

RHS is the **distributive** benefit of electing a H-type (competition between districts). LHS is the **tax** benefit of electing a L-type when pivotal (competition between citizens).

When legislative effectiveness ($\beta$) is high, distributive benefits are stronger than tax benefits $\Rightarrow$ taxes are low, legislators are relatively homogeneous, redistribution is low.

Reducing $\beta$ key to getting tax rates similar to what median voter prefers: “Regulating” competition between legislators, might be done by party, institutional details.
Parties

- Results are robust to the introduction of two parties (L—prefers high tax rate—and H—prefers low tax rate) that simultaneously announce a slate of citizen candidates to run in three districts.

- Office seeking, also have policy utility from tax rate set in the game, $\tau^*$:

  \[
  U_L = R\mathbb{1}_{\{\geq 2\}} + f(|\tau_i^* - \tau^*|)
  \]
  \[
  U_H = R(1 - \mathbb{1}_{\{\geq 2\}}) + f(|\tau_h^* - \tau^*|)
  \]

- **Election subgame** now consists of a
  1. Party stage, where two parties nominate candidates to run in three districts
  2. Voting stage, where citizens in each district vote for a representative

- **Legislative subgame** remains the same
Legislative Wages

- Suppose legislators are paid a wage $w$ in addition to private earnings
- This will reduce the ideal tax rate of high- and low-type legislators and low- and high-type legislators become more similar (and more different from low-type citizens)
- As $p \to 1$ equilibrium behavior will now be determined by whether or not

$$
\frac{\left(\tau_{lw}^* \bar{y}\right)^{\alpha} - \alpha \tau_{lw}^*}{\left(\tau_{hw}^* \bar{y}\right)^{\alpha} - \alpha \tau_{hw}^*} \geq \left(\frac{\pi_H^2 H}{\pi_L^2 L}\right)^{\frac{\alpha}{1-\alpha}}
$$

holds
- As $w$ grows large, LHS goes to one. RHS does not change, and is greater than one. The relationship is not monotonic
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- Extensions
- Legislative Wages
Comments

- Downside to paying legislators more: it will make them sufficiently different from the citizens they represent, resulting in lower taxation than the median voter prefers.

- If the legislative wage is high enough, it will shrink the difference between all legislators sufficiently that low-type median voters will opt for the high-type legislator’s superior ability to direct tax revenue to their district even when the difference in legislative ability is quite small.
Other Extensions

- **Weighted Voting**

- **Large Legislatures**
  - The larger the number of districts/size of legislature, the more sensitive the equilibrium is to increases in $\beta$

- **A More General Model of Legislative Effort** *(in progress)*
  - Two tasks: setting taxes efficiently (L-types are better), apportion tax revenue to districts (H-types are better)
  - Legislators choose how much effort to allocate in each task

- **Dynamics** *(in progress)*
  - Repeated game where elected legislators vote on $\beta$ for the next period
Empirical Relevance

- More competition between legislators for tax revenues in the U.S. than in Europe
- U.S. legislators more likely to have college degrees
  - Also likely to be very wealthy
- If we measure legislative effectiveness through number of bills introduced
  - Over 10,000 bills introduced in the 111th Congress
  - 20 Private bills per year in British Parliament
- But where does legislative discipline come from?
Conclusion

- Studied a model where there can be redistribution between the rich and poor, and between legislative districts
  - Even allowing for small amounts of redistribution between district can vastly change equilibrium
  - Predictions about size of government, legislator types, number of bills, distribution between districts

- If there is enough competition between legislators, then all voters will want to elect more able citizens, resulting in low taxes
  - Intuition: your legislator has only a small impact on broad, national policies, but can have a huge impact on the welfare of your district
  - Cannot be countered (in elections) by policy motivated parties
  - This problem is exacerbated by larger legislatures
  - Also exacerbated by paying legislators more
ADDITIONAL SLIDES
Literature Review

- Link between party strength and spending (Primo and Snyder, 2010)

- Pork barrel politics (Huber and Ting, 2009)

- Seniority in legislatures (McKelvey and Riezmann, 1990)

- Complementary explanations
  - Differences in campaign resources (Campante, 2010; Bartels, 2007)
  - Sensitivity of poor voters to the outcome of richer voters (Bartels, 2007)
Equilibrium: Helpful Features

- Discrete strategies for all players

- Some simplifications:
  - Parties’ policy utility eliminates some indifferences
  - Citizens’ party utility reduces number of election subgame equilibria
  - Uncertainty about middle districts eliminates some citizen indifference
Equilibrium: Refinements

- Pure-strategy subgame-perfect equilibria

- **Mostly** pure strategy subgame-perfect equilibria (only used when $\beta = 1$)
  - Pure strategies on the equilibrium path
  - Off the equilibrium path: If pure-strategy subgame perfect equilibria exist in the voting stage, use one of those
  - If they don’t exist, use a mixed strategy equilibria

- **Stage strong** pure strategy subgame-perfect equilibria:
  - If strong pure-strategy equilibria exist in a subgame of the voting stage, use one of those on- and off- the equilibrium path
Example Equilibrium

- This is a stage-strong Nash equilibrium
What Does “Strong” Do?

- Requires four non-stage-strong-Nash off-path subgame equilibria (when strong alternatives are available)
However....

- Although an equilibrium of voting stage, not stage strong