How Does Political Accountability Affect Public Spending

(based on work with J. Tirole)

E. Maskin
Institute for Advanced Study

Zvi Griliches Memorial Lectures
May, 2010
• In yesterday’s lecture, assumed (for most part) electorate *homogeneous*
  – except for single minority group

• in reality, officials elected by *coalition of interest groups*
  – e.g., in U.S., Republicans elected by union of
    - anti-abortion advocates
    - anti-government advocates
    - pro-business advocates
  – some overlap, but not much
• today, will assume official must assemble such a coalition to get \textit{re-elected} \\
  – i.e., must \textit{pander} to these interest groups \\
  – pandering takes form of (“pork barrel”) \textit{public spending} \\

• interested in \\
  – how re-election motive affects spending \\
  – how awareness of official’s inherent spending propensity matters \\
  – how “transparency” or “opaqueness” of spending itself matters
Model

• two dates
  – official chooses spending policy at date 1
  – stands for reelection at date 2
• electorate = continuum of interest groups [0,1]
• for each group $i$, politician chooses spending level
  $y_i \in \{0,1\}$
  – group $i$ enjoys benefit $B$
  – social cost = $L$
  – assume, for now, $L > B > L/2$ (spending wasteful - - i.e., it is pork)
• interest group $i$’s payoff

\[ y_iB - yL, \text{ where } y = \int_0^1 y_j dj \]

- if $i$ observes $y$ - - - transparency
- if $i$ doesn’t observe $y$ - - - opaqueness

• politician puts weight $\alpha_i > 0$ on minority $i$
  - $\alpha_i$ increasing in $i$
  - $\alpha_i$ known only to politician
  - $\int_0^1 \alpha_i di = 1$
  - $F(\alpha_i)$ c.d.f. of $\alpha_i$

• official's payoff from spending policy $y_i = \{y_i\}$

\[
U(y_i) = \int_0^1 \alpha_i [y_iB - yL] di = \left(\int_0^1 \alpha_i y_i di\right) B - yL
\]

• can write

\[ U(y) \text{ because } y_i \geq 1 \text{ for all } i \text{ above some cut-off } i^* \]
• Let \( \alpha^* B = L \)
  – if official were \textit{unaccountable}, would spend on interest group \( y_i \) provided that
  – \( \alpha_i > \alpha^* \)
  – so spending would equal
    \[
    x \equiv 1 - F(\alpha^*) = \text{spending propensity}
    \]
  – payoff \( U(x) \)

• Assume \( x < \frac{1}{2} \)
  – if unaccountable, official won’t assemble majority
Official chooses $y$ to maximize

$$U(y) + p(y) \cdot R$$

where

$$p(y) = \text{probability of being re-elected with policy } y$$

and

$$R = \text{payoff from re-election}$$
Assume first that everyone *knows* officials spending propensity \( x \)

- whether or not \( y \) observed (transparency or opaqueness) *doesn’t matter*
  - everyone can predict \( y \), and so \( y \) provides no information
- indeed, to be re-elected, official will choose \( y = \frac{1}{2}(+\varepsilon) \)
  - if \( y_i = 1 \), then prob official will spend on \( i \) if re-elected is
    \[
    \frac{x}{\frac{1}{2}} = 2x
    \]
  - so by voting for official, \( i \) gets
    \[
    2xB - xL
    \]
    rather than
    \[
    xB - xL \quad \text{(payoff from new official)}
    \]
  - so if \( y_i = 1 \), \( i \) votes for official, and so official re-elected because \( y = \frac{1}{2} \)
Proposition 1: If $U\left(\frac{1}{2}\right) + R > U(x)$, then accountability increases public spending over nonaccountable government (nonaccountable official spends only $x$)
• So far, assumed that minority $i$ votes “pocketbook”
  – wants to maximize expectation of second-period $y_i$

• Now assume
  fraction $v_i$ of group $i$ vote *pocketbook*
  fraction $1 - v_i$ of $i$ vote *ideologically*
    – random fraction $\phi$ of ideologues vote for incumbent
    – fraction $1 - \phi$ vote for challenger
    – $H$ is c.d.f. for $\phi$
• Then, incumbent re-elected if
  \[ E[v_i y_i] + (1 - v) \phi \geq E[v_i (1 - y_i)] + (1 - v)(1 - \phi), \text{ where } v = E v_i \]

• That is
  \[ p(y) = 1 - H \left( \frac{1}{2} + \frac{E[v_i (1 - 2y_i)]}{2(1 - v)} \right) \]

• optimal policy solves
  \[ \max_{y_i} E \left[ \alpha_i (y_i B - y L) \right] + p(y) R \]

• Thus interest group \( i \) gets pork if
  \[ \alpha_i B + \frac{H' v_i}{1 - v_i} R \geq L \]
Proposition 2:

- spending increases with rent from office \((R)\) and intensity of political competition \((H')\)
- as ideology falls \((v_i)\) rises, spending on \(i(y_i)\) rises

\[ \alpha_i B + \frac{H'v_i}{1-v_i} R \geq L \]
• Next consider *limits on public spending*
  – constitutional
  – statutory
• in practice, strict limits difficult to enforce
  – government can “hide” spending off balance sheet
  – sanctioning mechanisms not perfectly enforceable
So, assume that if $yL$ is cost of pork

- only $y\hat{L}$ actually "counts", where
  - $\hat{L} \leq L$
  - actual cost = $\hat{L} + D_1(L - \hat{L})$,
    with $D_1(0) = 0, D_1'(0) = 1, D_1' > 0, D'' > 0$

- Idea: hiding spending *inefficient*
• So far, public spending completely wasteful (pork)
  – so optimal spending limit zero

• Thus, introduce beneficial public spending $g$ (public good)
  – generates surplus

$$W - D_2 (g_0 - g), \text{ where}$$

$$g_0 = \text{optimal level}$$

$$D_2 = \text{deadweight loss of deviating from } g_0$$

$$D_2 (0) = 0, D'_2 (0) = 1, D''_2 > 0, D'''_2 > 0$$
• So, official maximizes

\[
E\left[ \alpha_i y_i B - y \left( \hat{L} + D_1 \left( L - \hat{L} \right) \right) \right] + g - D_2 \left( g_0 - g \right)
\]

\[
+ \left( 1 - H \left( \frac{1 - 2vy}{2(1 - v)} \right) \right) R
\]

subject to \( g + y\hat{L} \leq G \)

• First-order conditions

(1) \( D'_1 \left( L - \hat{L} \right) = D'_2 \left( g_0 - g \right) = 1 + \mu \),

where \( \mu \) Lagrange multiplier

(2) \( y_i = 1 \iff \alpha_i B + \frac{hv}{1 - v} R \geq L + D_1 + \mu \hat{L} \)
Proposition 3: stricter deficit cap

- reduces pork
  - stricter cap raises $\mu$
  - raises RHS of (2)
  - makes $y_i = 0$ more likely
- reduces public good spending $g$
  - RHS of (1) rises
  - $g$ decreases
- increases off-balance-sheet spending $L - \hat{L}$
  - RHS of (1) rises
  - $\hat{L}$ falls

(1) $D_1'(L - \hat{L}) = D_2'(g_0 - g) = 1 + \mu,$

(2) $y_i = 1 \iff \alpha_i B + \frac{hv}{1-v} R \geq L + D_1 + \mu \hat{L}$
Proposition 4: As accountability increases \((R \text{ rises})\), pork increases \((y \text{ rises})\) and optimal spending cap \(G\) increases

\[- \text{ as } R \text{ rises, LHS of (2) rises} \]
\[- \text{ more likely that } y_i = 1 \]
\[- \text{ } G \text{ must rise to accommodate greater proportion of pork} \]

\[- \text{ empirically, accountable officials have bigger budgets} \]
\[- \text{ here, it is because they spend higher proportion on pork} \]
• So far, assumed official’s spending propensity $x$ known
• Now, assume 2 types
  – $x_L$ with prob $\rho$
  – $x_H$ with prob $1 - \rho$
  – $x_L < x_H$
• $F_L(\alpha), F_H(\alpha)$ c.d.f. of $\alpha$
• $E_L(\alpha) = E_H(\alpha) = 1$
• $F_H(\alpha) < F_L(\alpha)$ if $\frac{1}{2} \leq F_L(\alpha) < 1$
• $x_L = 1 - F_L(\alpha^*) < x_H = 1 - F_H(\alpha^*) < \frac{1}{2}$
If $y$ not observable -- spending opaque

**Proposition 5:** Two possible equilibria

- generalization of equilibrium with $x$ known:
  - $y_L = y_H = \frac{1}{2}$
  - group $i$ votes for incumbent provided receives pork
  - equilibrium always exists

- if $\frac{B}{L}$ small enough, also have equilibrium
  - $y_H = x_H, y_L = x_L$
  - group $i$ votes for incumbent only if *not* beneficiary
  - idea: being beneficiary is *bad* news
    - increases probability $x = x_H$
  - if $L$ big enough, $i$ votes against incumbent even though beneficiary
If \textit{y observable} - - spending transparent

\textit{Proposition 6:}

\begin{itemize}
  \item if \(\frac{B}{L}\) small,
  \begin{itemize}
    \item \(y_H = x_H\)
    \item \(y_L < x_L\)
  \end{itemize}
  \item group \(i\) doesn’t vote for type \(H\) incumbent
  \item so, \textit{less} spending than if official nonaccountable
\end{itemize}
• if $\frac{B}{L}$ medium
  
  - $y_H = \frac{1}{2}$
  
  - $y_L = x_L$ or $y_L < x_L$ (if $H$'s incentive constraint binding)
  
  - group $i$ votes for incumbent if beneficiary

• if $\frac{B}{L}$ big
  
  - $y_H = y_L = \frac{1}{2}$
  
  - group $i$ votes for incumbent if beneficiary
• Desire to appear fiscally conservative limits pork
• Transparency reduces pork