The Optimal State Aid Control: No Control

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Introduction

- Wasteful aid: strategic trade theory (Spencer, Brander 1984; Krugman 1984; Eaton, Grossman 1986); asymmetric lobbying by losers (Baldwin, Robert-Nicoud 2007)
- Beneficial aid: product differentiation (Collie 2005)
- State aid (direct transfers, equity participation, debt conversion, tax deferrals or loan guarantees) is largely regulated by the EC; negative decisions of the EC during the 1990s amounted to less than 2 % of all cases under investigation (Besley et al. 1999).
- Is it that pool of aid projects is good? Is there a distorted incentive of a supernational authority? Or is optimal state aid control no control?

Introduction

We examine this in a context of conspicuous (and wasteful) pre-electoral spending by Dewatripont, Seabright (2006).

Career concerns

- opportunistic monetary expansion (Rogoff 1990)
- structure of spending, rather than fiscal aggregates (Drazen, Eslava 2007, 2008; Brenden, Drazen 2008)
- white elephants (Robinson, Torvik 2005)
- money-burning to eliminate pooling eq. (Gersbach 2004)
- incomplete info on competence and 'honesty' (Streb 2005)
- candidate quality in citizen-candidate framework (Candel-Sanchez 2007, Poutvaara, Takalo 2007; Gersbach 2009)

Dewatripont, Seabright (2006)

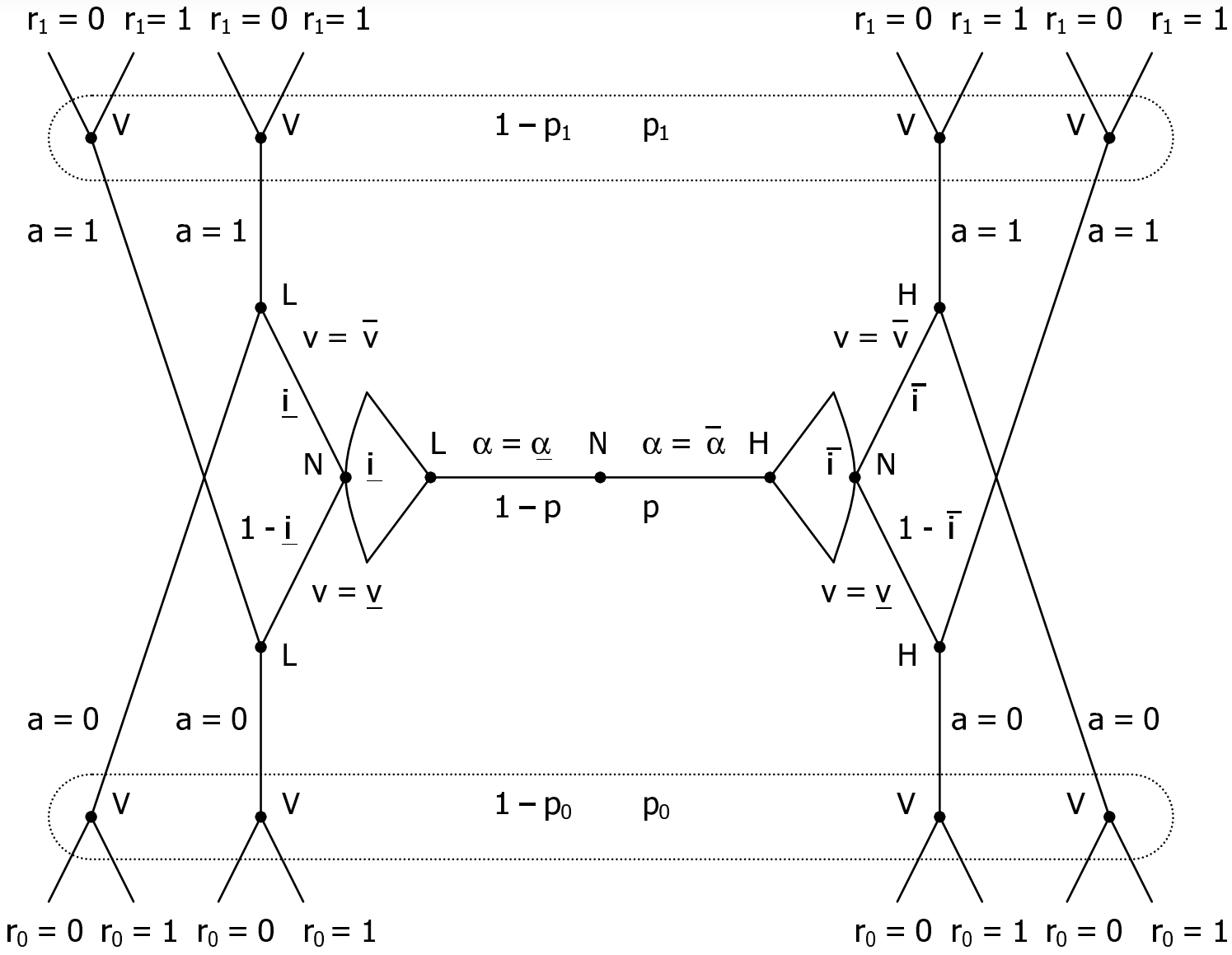
Key assumptions

project cost	$c > 0$
bad, good project	$\underline{v} - c < 0 < \overline{v} - c$
probability of good project	$i \in [0, 1]$
cost of lottery $\Pr(v = \overline{v}) = i$	$\psi(i), \psi_i > 0, \psi_{ii} > 0$
L-politician, H-politician	$\underline{\alpha} < \overline{\alpha}$
funding decision	$a \in \{0, 1\}$
reelection rates/difference/premium	$r_0, r_1, \rho := r_1 - r_0, \rho B$
politician's utility (reelection benefit B)	$Br_0, \alpha v - c + Br_1$

Timing

1. Nature chooses high-type politician with apriori probability $p \in [0, 1]$, and low-type politician with $1 - p$.
2. The politician chooses $\underline{i}$ or $\bar{i}$.
3. Nature chooses good project with probability i, and bad project with $1 - i$.
4. The politician chooses funding $a \in \{0, 1\}$.
5. Voter observes only funding, updates beliefs to p_0 or p_1, and decides on reelection, r_0 or r_1.

No proper subgame, hence simple Bayesian equilibrium.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Assumption (Overlap)

H-politician internalizes the benefit of the low-value project less than L-politician internalizes the benefit of the high-value project, $\underline{\alpha}\bar{v} > \bar{\alpha}\underline{v}$.

Assumption (Feasible subsets)

The game parameters $(\underline{\alpha}, \bar{\alpha}, \underline{v}, \bar{v}, c, B)$ *satisfy* $\bar{\alpha}\bar{v} - c - B \leq 0 \leq \underline{\alpha}\underline{v} - c + B$.

Assumption (Negative Φ^1-set)

Assume $\bar{\alpha}\bar{v} - c > 0$, *in order to obtain* $(r_0, r_1) \in \Phi^1 : \rho < 0$.

Politicians' best responses

Politician's incentive to fund

$$a = \begin{cases} 0 & \text{if } \alpha v - c + Br^1 < Br^0 \\ 1 & \text{if } \alpha v - c + Br^1 \geq Br^0 \end{cases}$$

Voter's strategy subsets

$$\begin{aligned}
\Phi^1 &= \{r_0, r_1 : \bar{\alpha}\bar{v} - c + (r_1 - r_0)B \leq 0\} \\
\Phi^2 &= \{r_0, r_1 : \underline{\alpha}\bar{v} - c + (r_1 - r_0)B < 0 \leq \bar{\alpha}\bar{v} - c + (r_1 - r_0)B\} \\
\Phi^3 &= \{r_0, r_1 : \bar{\alpha}\underline{v} - c + (r_1 - r_0)B < 0 \leq \underline{\alpha}\bar{v} - c + (r_1 - r_0)B\} \\
\Phi^4 &= \{r_0, r_1 : \underline{\alpha v} - c + (r_1 - r_0)B < 0 \leq \bar{\alpha}\underline{v} - c + (r_1 - r_0)B\} \\
\Phi^5 &= \{r_0, r_1 : 0 \leq \underline{\alpha v} - c + (r_1 - r_0)B\}
\end{aligned}$$

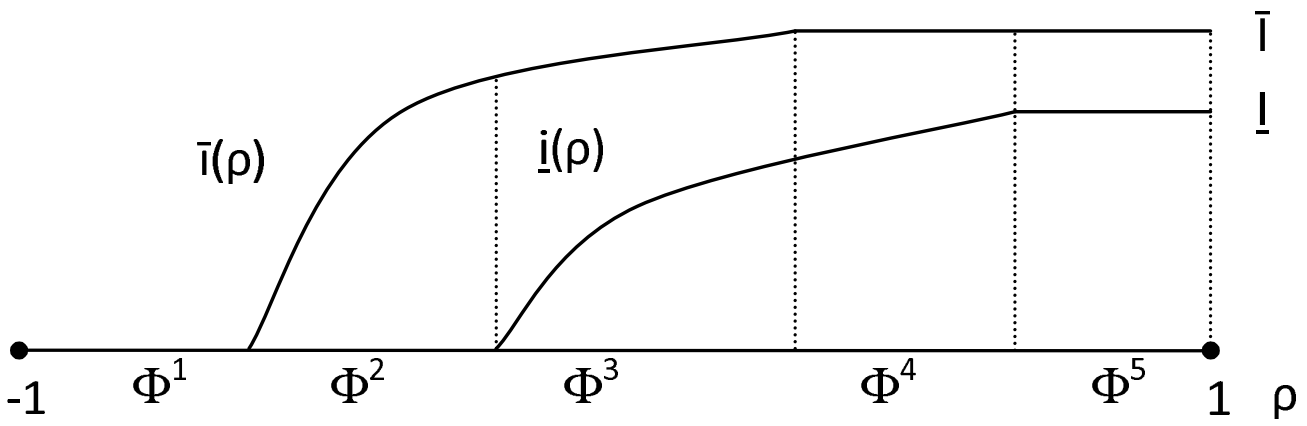
Politician's funding choice

Politician	$\alpha = \underline{\alpha}$		$\alpha = \bar{\alpha}$	
Project	$v = \underline{v}$	$v = \bar{v}$	$v = \underline{v}$	$v = \bar{v}$
Φ^1	0	0	0	0
Φ^2	0	0	0	1
Φ^3	0	1	0	1
Φ^4	0	1	1	1
Φ^5	1	1	1	1

Politicians' levels of effort: $\underline{i}(\rho), \bar{i}(\rho)$

Politician	$\alpha = \underline{\alpha}$	$\alpha = \bar{\alpha}$
Φ^1	0	0
Φ^2	0	$\psi'^{-1}\left(\bar{\alpha}\bar{v} - c + B(r_1 - r_0)\right)$
Φ^3	$\psi'^{-1}\left(\underline{\alpha}\bar{v} - c + B(r_1 - r_0)\right)$	$\psi'^{-1}\left(\bar{\alpha}\bar{v} - c + B(r_1 - r_0)\right)$
Φ^4	$\psi'^{-1}\left(\underline{\alpha}\bar{v} - c + B(r_1 - r_0)\right)$	$\psi'^{-1}\left(\bar{\alpha}(\bar{v} - \underline{v})\right)$
Φ^5	$\psi'^{-1}\left(\underline{\alpha}(\bar{v} - \underline{v})\right)$	$\psi'^{-1}\left(\bar{\alpha}(\bar{v} - \underline{v})\right)$

Politicians' efforts

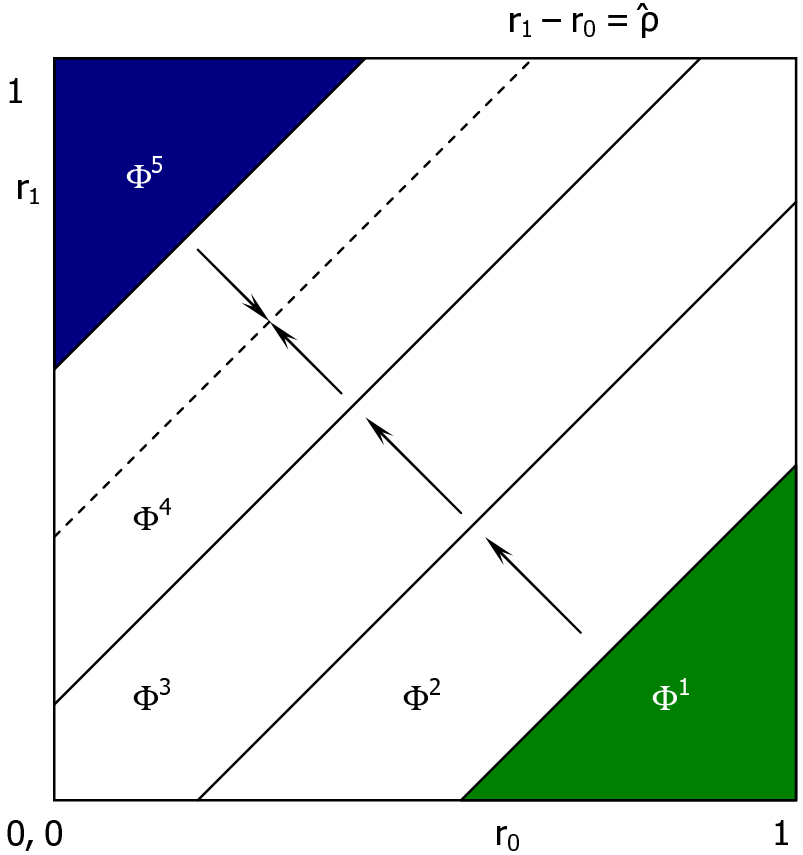


Voter's deviations

Subset	Effort	Funding	Overall	Update	Deviation
Φ^1	H, L	H, L	H, L	no	no
Φ^2	H	H	H	$p_1 > p > p_0$	yes
Φ^3	H	H,L	H	$p_1 > p > p_0$	yes
Φ^4	H	L	ambiguous	$p_1 > p > p_0$	ambiguous
Φ^5	H	H,L	H	no	no

Voter's best responses

Cutoff value $\hat{\rho}$: $\bar{u}(\hat{\rho}) - \underline{u}(\hat{\rho})$



Multiple equilibria

- Φ^1 -pooling equilibrium of total underspending
- Φ^4 -separating equilibrium of partially wasteful spending
- Φ^5 -pooling equilibrium of total overspending

Proposition (Bayesian equilibria)

There exist two sets of pooling equilibria:

1. *No funding:* $(r_0, r_1) \in \Phi^1, \underline{a}(v) = \bar{a}(v) = 0, v \in \{\underline{v}, \bar{v}\}, \underline{i}(\rho) = \bar{i}(\rho) = 0, p_1 \in [0,1]$
2. *Total overfunding with* $\underline{a}(v) = \bar{a}(v) = 1, v \in \{\underline{v}, \bar{v}\}, \underline{i}(\rho) = \underline{I}, \bar{i}(\rho) = \bar{I}$*, where (i)* $(0, r_1) \in \Phi^5, p_0 < p$*, (ii)* $(r_0, r_1) \in \Phi^5, p_0 = p$*, and (iii)* $(1, r_1) \in \Phi^5, p_0 > p$.

If an entire Φ^4*-set is feasible, there exists a set of semi-separating equilibria with* $\underline{a}(\underline{v}) = 0, \underline{a}(\bar{v}) = 1, \bar{a}(\underline{v}) = \bar{a}(\bar{v}) = 1$ *if and only if* $(r_0, r_0 + \hat{\rho}) \in \Phi^4$.

Refinements (passive conjectures, complete robustness, intuitive criterion) are not very helpful.

Comparative statics

- An increase in the project cost the politician pays shifts boundaries upwards., Φ^5-set of overfunding pooling equilibria shrinks, and Φ^1-set of no-funding pooling equilibria enlarges.
- An increase in the reelection value decreases the *absolute* values of the boundaries. The boundaries move towards the zero-premium line, hence both sets of pooling equilibria, Φ^1-set and Φ^5-set, get larger.

Proposition (Neutrality and cornering-out)

1. *Any change in project cost c paid by the politician or reelection rent B received by the reelected politician that preserves the existence of semi-separating equilibria, $\exists(r_0, r_0 + \hat{\rho}) \in \Phi^4$, does not change efforts $(\underline{i}(\hat{\rho}), \overline{I})$ or funding choices of the politicians, hence the voter's utility remains constant in equilibrium.*
2. *By imposing a sufficiently high project cost c or sufficiently low reelection rent B, the Φ^4 and Φ^5-sets become infeasible, hence all Φ^4 and Φ^5-equilibria disappear. As a result, there exist pairs (c, B) that induce a corner Φ^3-equilibrium with efficient funding choice of both types, $\underline{a}(\underline{v}) = \bar{a}(\underline{v}) = 0, \underline{a}(\bar{v}) = \bar{a}(\bar{v}) = 1$.*

Summary of the baseline model

- Multiple equilibria exist.
- Wasteful spending preserves only in a weak equilibrium, where the voter is indifferent over types, hence H-politician doesn't gain any electoral advantage.
- Minor incentives do not change the politicians' effort in the wasteful signaling equilibrium.
- The only way to remedy wasteful spending is to impose sufficiently large incentives that eliminate wasteful signaling for good.

Aid control in Φ^4-separating equilibrium

Extra signal about the politician type

A single symmetric signal $S^\alpha \in \{\underline{\alpha}, \overline{\alpha}\}$, true with $\sigma > 1/2$

truth/signal	$S^\alpha = \underline{\alpha}$	$S^\alpha = \overline{\alpha}$
$\alpha = \underline{\alpha}$	σ	$1-\sigma$
$\alpha = \overline{\alpha}$	$1-\sigma$	σ

Proposition (No indirect control)

Indirect signal S^α is worthless for all $\sigma \in [1/2, 1]$. The controller never purchases such signals and approves all funded projects with probability $f(q(p_1)) = 1$.

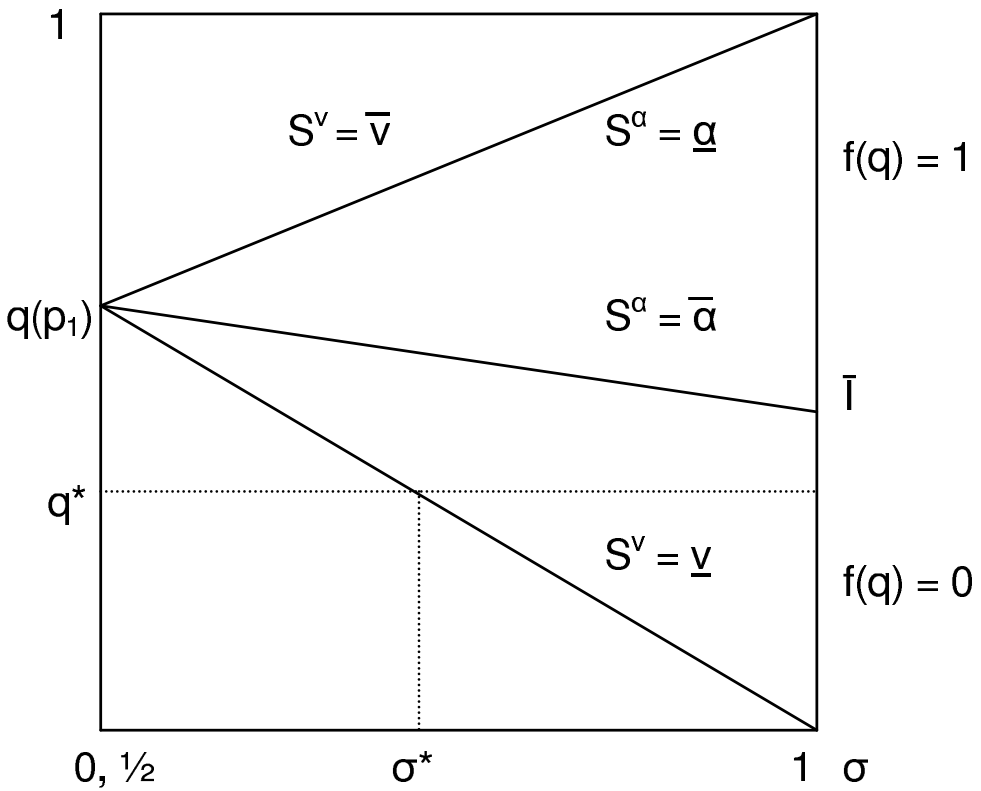
Extra signal about the project type

A single symmetric signal $S^v \in \{\underline{v}, \overline{v}\}$, true with $\sigma > 1/2$

truth/signal	$S^v = \underline{v}$	$S^v = \overline{v}$
$v = \underline{v}$	σ	$1 - \sigma$
$v = \overline{v}$	$1 - \sigma$	σ

A signal is worthless as long as $\underline{q} \geq q^*$, or $\sigma \leq \sigma^*$, where

$$\sigma^* := \frac{q(p_1)(\overline{v} - c)}{q(p_1)(\overline{v} - c) + (1 - q(p_1))(c - \underline{v})}.$$


1
$S^v = \overline{v}$
$S^\alpha = \underline{\alpha}$
f(q) = 1
$q(p_1)$
$S^\alpha = \overline{\alpha}$
$\overline{l}$
q*
$S^v = \underline{v}$
f(q) = 0
0, ½
σ*
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σ

A full extensive game with aid control

- H-politician certainly decreases effort

$$I(\sigma) = \arg\max\{i\sigma(\bar{\alpha}\bar{v} - c) + (1-i)(1-\sigma)(\bar{\alpha}\underline{v} - c) + Br_1 - \psi(i)\}$$
$$= \psi_i^{-1}\{\bar{\alpha}[\sigma\bar{v} - (1-\sigma)\underline{v}] - (2\sigma - 1)c\}$$

- L-politician decreases/increases effort

$$\underline{i}(\sigma) := \arg\max\{i\sigma(\underline{\alpha}\bar{v}) + ir_1B + (1-i)r_0B - \psi(i)\}$$
$$= \psi_i^{-1}\{\sigma(\underline{\alpha}\bar{v} - c) + (r_1 - r_0)B\}$$

Expected payoff of no control

$$\bar{I}(\bar{v} - c) + (1 - \bar{I})(\underline{v} - c) = \underline{i}(\hat{\rho})(\bar{v} - c)$$

Expected payoff of with control

$$\sigma I(\sigma)(\bar{v} - c) + (1 - I(\sigma))(1 - \sigma)(\underline{v} - c) = \sigma i(\sigma)(\bar{v} - c)$$

3 effects of aid control

- diligence
- overcautiousness
- worse pool of projects funded at least by H-politician

When is no control socially preferred?

Proposition (No direct control)

Suppose that Φ^4-equilibria with wasteful spending as signaling exist in regimes with and without aid control. In these equilibria, the regime of no state aid control involves a larger expected payoff of the voter than any regime with state aid control, $\bar{u}(\hat{\rho}) > \max \bar{w}(\sigma), \sigma \in [1/2, 1]$, if

$$\underline{\alpha}\bar{v} - \bar{\alpha}\underline{v} > \max\{\bar{\alpha}\bar{v} - c; \tfrac{\bar{\alpha}}{2}(\bar{v} - \underline{v})\}.$$

Aid control is not desirable when (i) the project cost is large, (ii) losses of the unprofitable project go up, and (iii) the politicians are relatively homogenous.

Summary of the aid control

1. Indirect signals and weak direct signals are useless.
2. Aid control decreases effort, at least of H-politician.
3. Aid control brings a tradeoff combining three effects: diligence, overcautiousness, and deterioration of the pool of funded projects.
4. The absence of state aid control is socially desirable when the project benefits are low (or, the project cost is large), losses of the unprofitable project are high, and the politicians are relatively symmetric.