The Political Economy of Fiscal Deficits and Government Production

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Introduction

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  - But parties typically care about policies also after losing power
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  ⇒ Incentive for incumbents to set current policy so as to influence the decisions of their successors

- How does the anticipation of political turnover influence public saving?
  - Traditional emphasis in the literature: Debt (Tabellini and Alesina (1990))
    - Limited empirical support (e.g. Petterson-Lidbom (2001))
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  - Traditional emphasis in the literature: Debt (Tabellini and Alesina (1990))
    - Limited empirical support (e.g. Petterson-Lidbom (2001))
  - This paper: Physical capital for producing public goods
    - Joint analysis of physical and financial capital accumulation
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- How does the anticipation of political turnover influence public savings in physical and financial capital?
This Paper: Key Assumptions and Mechanisms
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Assume that public goods must be produced, not purchased, by government. Inputs: Capital and labor.
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Assume that public capital is predetermined and purpose-specific.

⇒ Short run decreasing returns to scale

⇒ Composition of current investment affects the relative costs of producing public goods in the future

⇒ Returns to public investment sensitive to political turnover
This Paper: Results
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Political turnover reduces accumulation of physical, not financial, public capital

- Contribution 1: Existing theory predicts excess debt accumulation (Tabellini and Alesina (1990)).

- Contribution 2: Existing theory on heterogenous public capital predicts excess capital accumulation (Glazer (1989)).

- Contribution 3: Existing theory (Tabellini and Alesina (1990)) claims that political turnover and disagreement over public good provision motivate balanced budget rules.
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- Contribution 2: Existing theory on heterogenous public capital predicts excess capital accumulation (Glazer (1989)).

- Contribution 3: Existing theory (Tabellini and Alesina (1990)) claims that political turnover and disagreement over public good provision motivate balanced budget rules

Political turnover pulls government production behind the ex ante possibility frontier
The Model

- 2 goods $h = g, f$ produced by government

$$h_t = h \left( n_t^h, k_t^h \right) = \left( \gamma n_t^h \frac{\varepsilon - 1}{\varepsilon} + (1 - \gamma) k_t^h \frac{\varepsilon - 1}{\varepsilon} \right)^{\frac{\varepsilon}{\varepsilon - 1}}$$

$\varepsilon =$ the elasticity of substitution between $k_t^h$ and $n_t^h$. 
The Model

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$\varepsilon =$ the elasticity of substitution between $k_t^h$ and $n_t^h$.

- Purpose-specific capital

\[ k_{t+1}^j = i_t^j + (1 - \delta) k_t^j, \quad j = g, f \]
The Model

- 2 goods $h = g, f$ produced by government

$$h_t = h\left(n^h_t, k^h_t\right) = \left(\frac{\gamma n^h_t}{\varepsilon} + (1 - \gamma) k^h_t\right)^{\frac{\varepsilon}{\varepsilon - 1}}$$

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- Purpose-specific capital

$$k^{j}_{t+1} = i^j_t + (1 - \delta) k^{j}_t, \; j = g, f$$

- 2 periods, prices and income exogenous and equal to 1

$$n^g_1 + n^f_1 + k^g_2 + k^f_2 = (1 - \delta) k^g_1 + (1 - \delta) k^f_1 + 1 + b$$

$$n^g_2 + n^f_2 = 1 - b$$
The Model

- 2 parties, $J = D, R$, with preferences

$$W^J = E \sum_{t=1}^{2} u \left( g_t, f_t | \alpha^J \right) ; \quad J = D, R$$

where

$$u \left( g_t, f_t | \alpha^J \right) = \frac{\left( \alpha^J g_t^{\frac{\phi-1}{\phi}} + (1 - \alpha^J) f_t^{\frac{\phi-1}{\phi}} \right)^{\frac{\phi}{\phi-1}}}{1 - 1/\sigma}$$
The Model

- 2 parties, $J = D, R$, with preferences

$$W^J = E \sum_{t=1}^{2} u(g_t, f_t | \alpha^J) ; \quad J = D, R$$

where

$$u(g_t, f_t | \alpha^J) = \frac{\left( \alpha^J g_t^\phi + (1 - \alpha^J) f_t^\phi \right)^{\frac{\phi}{\phi-1}}}{1 - 1/\sigma}.$$

- Exogenous election probabilities:

$$Prob(R \ wins) = p_R$$

$$Prob(D \ wins) = 1 - p_R$$
Political Equilibrium

In period 1 the office holder sets \( \left\{ n_1^g, n_1^f, k_2^g, k_2^f, b \right\} \).

In period 2 the office holder sets \( \left\{ n_2^g, n_2^f \right\} \).

Assume party \( R \) holds office in period 1
Political Equilibrium: Period 2

\[
\max_{n^g_2, n^f_2} u \left( g^J_2, f^J_2 | \alpha^J_2 \right)
\]

s.t.

\[
n^g_2 + n^f_2 = 1 - b
\]

F.o.c:

\[
u (g^J_2, f^J_2 | \alpha^J_2) g_n (n^g_2, k^g_2) = u (g^J_2, f^J_2 | \alpha^J_2) f_n (n^f_2, k^f_2)
\]

Hence

\[
n^g_{2, \star} = G \left( \alpha^J_2, b, k^g_2, k^f_2 \right)
\]

\[
n^f_{2, \star} = F \left( \alpha^J_2, b, k^g_2, k^f_2 \right)
\]
Political Equilibrium: Period 1

\[
\max_{n^g_1, n^f_1, k^g_2, k^f_2, b} \quad u \left( g_1, f_1 \mid \alpha^R \right) + p_R u \left( g^R_2, f^R_2 \mid \alpha^R \right) + (1 - p_R) u \left( g^D_2, f^D_2 \mid \alpha^R \right)
\]

s.t.

\[
n^g_1 + n^f_1 + k^g_2 + k^f_2 = (1 - \delta) k^g_1 + (1 - \delta) k^f_1 + 1 + b
\]

\[
n^g_2, J^* = G \left( \alpha^J_2, b, k^g_2, k^f_2 \right)
\]

\[
n^f_2, J^* = F \left( \alpha^J_2, b, k^g_2, k^f_2 \right)
\]
Political Equilibrium: Period 1

A special case: Certain re-election \( (p_R = 1) \)

- **Labor:**

\[
u_g \left( g_t^R, f_t^R | \alpha^R \right) g_n \left( n_t^g, R, k_t^g \right) = u_f \left( g_t^R, f_t^R | \alpha^R \right) f_n \left( n_t^f, R, k_t^f \right)
\]

- **Debt:**

\[
u_g \left( g_1^R, f_1^R | \alpha^R \right) g_n \left( n_1^g, k_1^g \right) = u_g \left( g_2^R, f_2^R | \alpha^R \right) g_n \left( n_2^g, R, k_2^g \right)
\]

- **Physical capital:**

\[
u_g \left( g_1^R, f_1^R | \alpha^R \right) g_n \left( n_1^g, k_1^g \right) = u_g \left( g_2^R, f_2^R | \alpha^R \right) g_k \left( n_2^g, R, k_2^g \right)
\]

\[
\Rightarrow \quad \frac{g'_n \left( n_2^g, R, k_2^g \right)}{g'_k \left( n_2^g, R, k_2^g \right)} = \frac{f'_n \left( n_2^f, R, k_2^f \right)}{f'_k \left( n_2^f, R, k_2^f \right)}
\]
Political Equilibrium: Period 1

When $p_R \leq 1$:

- Debt:

$$u_g (g_1, f_1 | \alpha^R) g_n (n_1^g, k_1^g) = p_R \left[ u_g (g_2^R, f_2^R | \alpha^R) g_n (n_2^g, k_2^g) \right]$$

$$- (1 - p_R) \left[ u_g (g_2^D, f_2^D | \alpha^R) g_n (n_2^g, k_2^g) G_b^D + u_f (g_2^D, f_2^D | \alpha^R) f_n (n_2^f, k_2^f) F_b^D \right]$$

- Physical capital ($k_2^g$):

$$u_g (g_1, f_1 | \alpha^R) g_n (n_1^g, k_1^g) = p_R \left[ u_g (g_2^R, f_2^R | \alpha^R) g_k (n_2^g, k_2^g) \right]$$

$$+ (1 - p_R) \left[ u_g (g_2^D, f_2^D | \alpha^R) g_n (n_2^g, k_2^g) G_{k_2^g}^D + u_f (g_2^D, f_2^D | \alpha^R) f_n (n_2^f, k_2^f) F_{k_2^g}^D + u_g (g_2^D, f_2^D | \alpha^R) g_k (n_2^g, k_2^g) \right]$$
Parametrization

Benchmark parametrization:

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- Exposition of results: Compare outcomes under certain re-election \((p^R = 1)\) to outcomes under certain turnover \((p^R = 0)\)
Result 1: Deficit Bias

Capital-labor complementarity reduces the deficit bias induced by political turnover.
Result 1: Deficit Bias

Deficit Bias

Excess Deficit

$\sigma$

No capital ($\gamma = 1$)
Result 1: Deficit Bias

Deficit Bias

Excess Deficit

-0.025
-0.05
0.025
0.05

σ

0.1 0.5 1 1.5 2

No capital (γ = 1)

With capital (γ = 0.7, ε = 0.7)
Result 1: Deficit Bias

Capital-labor complementarity reduces the deficit bias induced by political turnover.

Deficit Bias

- No capital ($\gamma = 1$)
- With capital ($\gamma = 0.7, \varepsilon = 0.7$)
- With capital ($\gamma = 0.7, \varepsilon = 1.0$)
Result 1: Deficit Bias

Capital-labor complementarity reduces the deficit bias induced by political turnover.

Intuition:

- Ex post decreasing returns to labor $\Rightarrow$ lower value of excess current spending.
- Ability to influence future expenditure composition through current capital accumulation $\Rightarrow$ higher value of future wealth.
Result 2: Investment Bias

With capital-labor complementarity investment in public capital is reduced by political turnover.
Result 2: Investment Bias

With capital-labor complementarity investment in public capital is reduced by political turnover.

![Graph showing Overinvestment in Physical Capital]
Result 2: Investment Bias

With capital-labor complementarity government capital accumulation is reduced by political turnover.

Intuition:

- Capital requires labor in order to yield returns. After turnover labor is allocated to the purpose preferred by the successor.
  ⇒ Capital for the incumbent’s most preferred purpose is combined with too little labor.
  ⇒ The value of capital is reduced by turnover.
Total Savings

Excess Total Savings

- No capital ($\gamma = 1$)
- With capital ($\gamma = 0.7, \varepsilon = 0.7$)
- With capital ($\gamma = 0.7, \varepsilon = 1.0$)
Result 3: ”Inefficiency” in Government Production

Political turnover pulls government production behind the ex ante possibility frontier.
Result 3: "Inefficiency" in Government Production

Political turnover pulls government production behind the ex ante possibility frontier.

If $\alpha^D = \alpha^R$, then
\[
\frac{g'_k(n^g_2,D,k^g_2)}{g'_n(n^g_2,D,k^g_2)} = \frac{f'_k(n^f_2,D,k^f_2)}{f'_n(n^f_2,D,k^f_2)} = 1.
\]

If $\alpha^D > \alpha^R$, then
\[
\frac{g'_k(n^g_2,D,k^g_2)}{g'_n(n^g_2,D,k^g_2)} > 1 > \frac{f'_k(n^f_2,D,k^f_2)}{f'_n(n^f_2,D,k^f_2)}.
\]

If $\alpha^D < \alpha^R$, then
\[
\frac{g'_k(n^g_2,D,k^g_2)}{g'_n(n^g_2,D,k^g_2)} < 1 < \frac{f'_k(n^f_2,D,k^f_2)}{f'_n(n^f_2,D,k^f_2)}.
\]

Hence second-period production is on the ex-ante production possibility frontier if and only if $\alpha^D = \alpha^R$. 
Result 3: "Inefficiency" in Government Production

Political turnover pulls government production behind the ex ante possibility frontier.

![Graph showing production inefficiency measured in f-goods lost, σ=1, ε=0.7](chart.png)
Result 3: "Inefficiency" in Government Production

Gains from knowledge of turnover dissipated by strategic behavior

Prod ineff measured in f–goods lost, \( \sigma = 1, \epsilon = 0.7 \)
Conclusion

- Disagreement over public good provision and political turnover is likely to generate under-accumulation of physical, not financial, public capital.

- Inefficiency in political equilibrium likely to be in terms of inefficient government production, not debt accumulation.

- The interaction between savings in physical and financial capital may explain why the existing evidence on strategic debt accumulation la Tabellini and Alesina (1990) is weak.

- Test: Do governments accumulate less capital when re-election is less likely? (Fiva and Natvik (2009))
Capital-Labor Substitutability and the Deficit Bias

Deficit Bias

Excess Deficit

\( \varepsilon \)
Capital-Labor Substitutability and the Deficit Bias

Deficit Bias

Overinvestment in Phys. Cap.

Total Savings Bias

\[ \varepsilon \]

Deficit Bias

Overinvestment in Phys. Cap.

Total Savings Bias

\[ \sigma = 1 \]

\[ \sigma = 2 \]

\[ \sigma = 0.5 \]
Capital-Labor Substitutability and the Deficit Bias

Deficit Bias

Overinvestment in Phys. Cap.

Relative Initial Phys. Capital

Relative Initial Phys. Capital

Excess Deficit

Excess Investment

Excess Deficit

Excess Investment

Deficit Bias

Overinvestment in Phys. Cap.

Total Initial Phys. Capital

Total Initial Phys. Capital

\[ \varepsilon = 1 \]

\[ \varepsilon = 1.5 \]

\[ \varepsilon = 0.7 \]
Decomposition of production inefficiency in the pol. eq.

Production inefficiency. Strategic vs. naive incumbent.