# Toward Longer Investment:
# Authority versus Inclusive Governance

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# Outline

# Capital and Capital Flight

- Capital is crucial for economic development.
- Capitalists can vote with their feet by means of capital flight.
- The issue of capital flight is especially worse for developing countries.

Evidence:

- China: 2.8 trillion RMB was transferred overseas in 2011, and emerging markets in 2015 saw an estimated $735 billion in net capital outflows with all but $59 billion of that coming from China.
- A 2012 report for Global Financial Integrity estimated that, from 2001 to 2010, capital flight from developing countries increased from $477.1 billion to $1,138 billion, registering a trend rate of growth of 12.6% per annum.

# Motivation

- Such scales of outward capital flight would be detrimental to sustainable growth (e.g., Cuddington (1986) and Pastor (1990)).
- Other things equal, the capability of **sustaining** private capital investment is desirable for:
  - implementing investment-based economic development;
  - enlarging tax base along time dimension.
- Thus, governments should be interested in ways stopping capitalists from leaving.

# Question

For two economies with similar economic returns,

- What kind of governance arrangement can incentivize capitalists to invest in an economy for a longer time?
- Or, what kind of relationship connecting government and capitalists is more desirable for sustaining private investment?

# Two Types of Relationship

Take China for example:

- During the decade of the Great Proletarian Cultural Revolution, the "Left" ideology was carried to its extreme and capitalists were put in great danger—hurt growth.
- After implementing the Reform and Opening-up policy, capitalists are welcomed by Chinese governments, while we also see lots of corrupt relationships—seems to promote growth.

### Example

Yun Ma's (CEO of Alibaba) suggestion for entrepreneurs and capitalists: *"No matter where you are, love your government but never get married to your government."*

# What We Do

- Focus on two governance arrangements—inclusive governance (IG) and authoritarian governance (AG)—implying two alternative capital-income tax-rate-setting problems;

- Formalize the two governance arrangements as two different game forms;

- Derive game equilibria and compare the expected investment horizons;

- Identify conditions predicting when authority dominates inclusive governance and when inclusive governance dominates authority.

# Relation to Literature

- The literature is silent on how investment horizon changes across alternative governance arrangements.
- Capital flight:
  - Alesina and Tabellini (1989): uncertainty over the fiscal policies of future governments.
  - Tornell and Velasco (1992): poor protection of property rights.
  - Svensson (1998): political instability.
  - Segal and Vincent (1998): suggesting punishments.
- Foot-voting mechanism:
  - how foot-voting threat may constrain government (e.g., Tiebout (1956), Qian and Roland (1998), Cai and Treisman (2005), and Bai et al. (2016)).

# Expected Investment Horizon (EIH)

- To determine EIH, *sustainability*[1] motive leads the capitalist to solve the optimal stopping problem (OSP):

$$\hat{\tau} = \mathrm{argsup}_{\tau \in \mathcal{T}_\Delta} \mathbb{E}^{t_0, k_0} \left[ e^{-\rho(t_0 + \tau)} (k(\tau) - \varpi) \right]$$

subject to

$$dk(t) = [(1 - \tau_k)(r - \delta)k(t) - c(t)]dt + \sigma k(t)dB(t), \qquad (1)$$

$$\mathcal{T}_\Delta \equiv \{ t \geq t_0; \mathfrak{F}_{t-\Delta}\text{-adapted exit times for } \Delta \geq 0, P\text{-a.s. finite} \}.$$

- $\varpi \uparrow \Longrightarrow$ a lower degree of capital mobility.
- $\Delta \uparrow \Longrightarrow$ a lower degree of government transparency.
- EIH $= \mathbb{E}_{t_0}(\hat{\tau}) - t_0 \geq 0$.

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[1]It is usually defined by maximizing terminal stocks (or final states) (e.g., Radner, 1961; Kurz, 1965; McKenzie, 1963, 1976).

# Definition of AG

### Definition

A governance arrangement is called **authoritarian governance** if the government unilaterally determines a tax rate and the capitalist has $\Delta$-delayed information when choosing the investment horizon.

- strong top-down authority generally leads towards a very low degree of transparency;
- e.g., the Soviet Union under Stalin's regime.

# The Game under AG

Events proceed as follows:

- the capitalist chooses an exit time $\tau_\Delta$ by solving the OSP.
- the government chooses a capital-income tax rate by solving

$$\max_{0 \leq \tau_k \leq 1} \mathbb{E}_{t_0} \left( \int_0^{\tau_\Delta} e^{-\rho(t_0+t)} \left\{ \underbrace{\varepsilon \ln c(t)}_{\text{for the benevolent}} + \underbrace{(1-\varepsilon) \ln[\tau_k(r-\delta)k(t)]}_{\text{for the selfish}} \right\} dt \right)$$

subject to Eq. (1).

- the capitalist chooses an optimal consumption plan by solving

$$\max_{c(t)>0} \mathbb{E}_{t_0} \left[ \int_0^{\tau_\Delta} e^{-\rho(t_0+t)} \ln c(t) dt \right]$$

subject to Eq. (1).

# Definition of IG

### Definition

A governance arrangement is called **inclusive governance** if the
capitalist is allowed to bargain with the government on the tax rate
and the capitalist has overall information when choosing the
investment horizon.

- a decision-making process that gets more people involved and
  attempts to take the most satisfactory decision for everybody.
- information sharing is the prerequisite condition for building up
  cooperation.
- may be interpreted as the maximization of encompassing interests
  between the power and citizens (Olson (2000)).

# The Game under IG

Events proceed as follows:

- the capitalist chooses an exit time $\tau_0$ by solving the OSP.
- under cooperation, the cooperative equilibrium is the solution of

$$\max_{c(t),\tau_k} \mathbb{E}_{t_0} \left( \int_0^{\tau_0} e^{-\rho(t_0+t)} \left\{ \underbrace{\ln c(t)}_{\text{for capitalist}} + \overbrace{\varepsilon \ln c(t) + (1-\varepsilon) \ln[\tau_k(r-\delta)k(t)]}^{\text{for government}} \right\} dt \right)$$

subject to Eq. (1).

## Lemma

*Under the allocation principles of Nash bargaining solution/Shapley value and proportional distribution, the cooperative equilibrium satisfies (i) group rationality, (ii) individual rationality, (iii) Pareto efficiency, (iv) subgame consistency, and (v) stability (i.e., neither the capitalist nor the government will unilaterally deviate from cooperation).*

# The Choice between Authority and Inclusive Governance

## Theorem

- *The lower the degree of government transparency, the shorter the EIH.*
- *There is a threshold, $1/\Xi^*$, of the degree of capital mobility such that:*
  - *below the threshold (low capital mobility),*

    $$EIH_{AG,\Delta} > EIH_{IG} \quad for \quad \Delta < \Delta^*,$$

    $$otherwise \quad EIH_{AG,\Delta} < EIH_{IG};$$
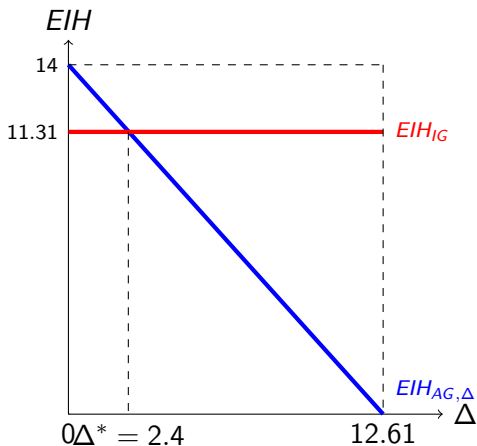
  - *above the threshold (high capital mobility),*

    $$EIH_{AG,\Delta} < EIH_{IG},$$

    *even though there is no discrepancy of government transparency between the two (or $\Delta = 0$).*

# Graphic Illustration

Here we set $\varpi = 0.71 > 0.695 = \Xi^*$ with $k_0 = 1$.

# Numerical Illustration

| Parameter | Value | Description |
|:---:|:---:|:---:|
| $r$ | $0.086^2$ | Capital return rate |
| $\delta$ | $0.025^3$ | Depreciation rate |
| $\rho$ | 0.03 | Subjective discount factor |
| $\sigma$ | 0.025 | Percentage volatility |
| $\varepsilon$ | $0.146^4$ | Fraction of benevolent politicians |

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[2] Pretax capital return for 1990-1996 period (Poterba (1998)).

[3] 10% depreciation per annum (RBC model).

[4] Target $\tau_k = 0.42$, namely the average tax rate during 1990-1996 (Poterba (1998)).

# Numerical Illustration (cont'd)

| $\varpi$(exit cost) | 0.68 | 0.707 | 0.709 |
|---|---|---|---|
| $EIH_{AG,\Delta}$ | 3.43 | 11.21 | **11.78** |
| $EIH_{AG,0}$ | 3.96 | **11.75** | 12.31 |
| $EIH_{IG}$ | 10.25 | **11.55** | **11.64** |

$\Delta = 0.5$

| $\varpi$ | 0.68 | 0.707 | 0.711 |
|---|---|---|---|
| $EIH_{AG,\Delta}$ | 3.03 | 10.81 | **11.94** |
| $EIH_{AG,0}$ | 3.96 | **11.75** | 12.88 |
| $EIH_{IG}$ | 10.25 | **11.55** | **11.74** |

$\Delta = 1$

| $\varpi$ | 0.69 | 0.707 | 0.718 |
|---|---|---|---|
| $EIH_{AG,\Delta}$ | 4.20 | 9.06 | **12.15** |
| $EIH_{AG,0}$ | 6.88 | **11.75** | 14.84 |
| $EIH_{IG}$ | 10.74 | **11.55** | **12.06** |

$\Delta = 3$

# Implications and Future Research

(I) In terms of incentivizing a longer investment horizon:

- in the current context, both government transparency and capital mobility are relevant factors;
- inclusive governance dominates authority whenever capital is sufficiently mobile;
- for authority to dominate inclusive governance, a lower degree of government transparency must be accompanied by a lower degree of capital mobility.

(II) Empirically testing these theoretical predictions awaits future research.

# Thank You!