

Chinese Success — a Miracle!?

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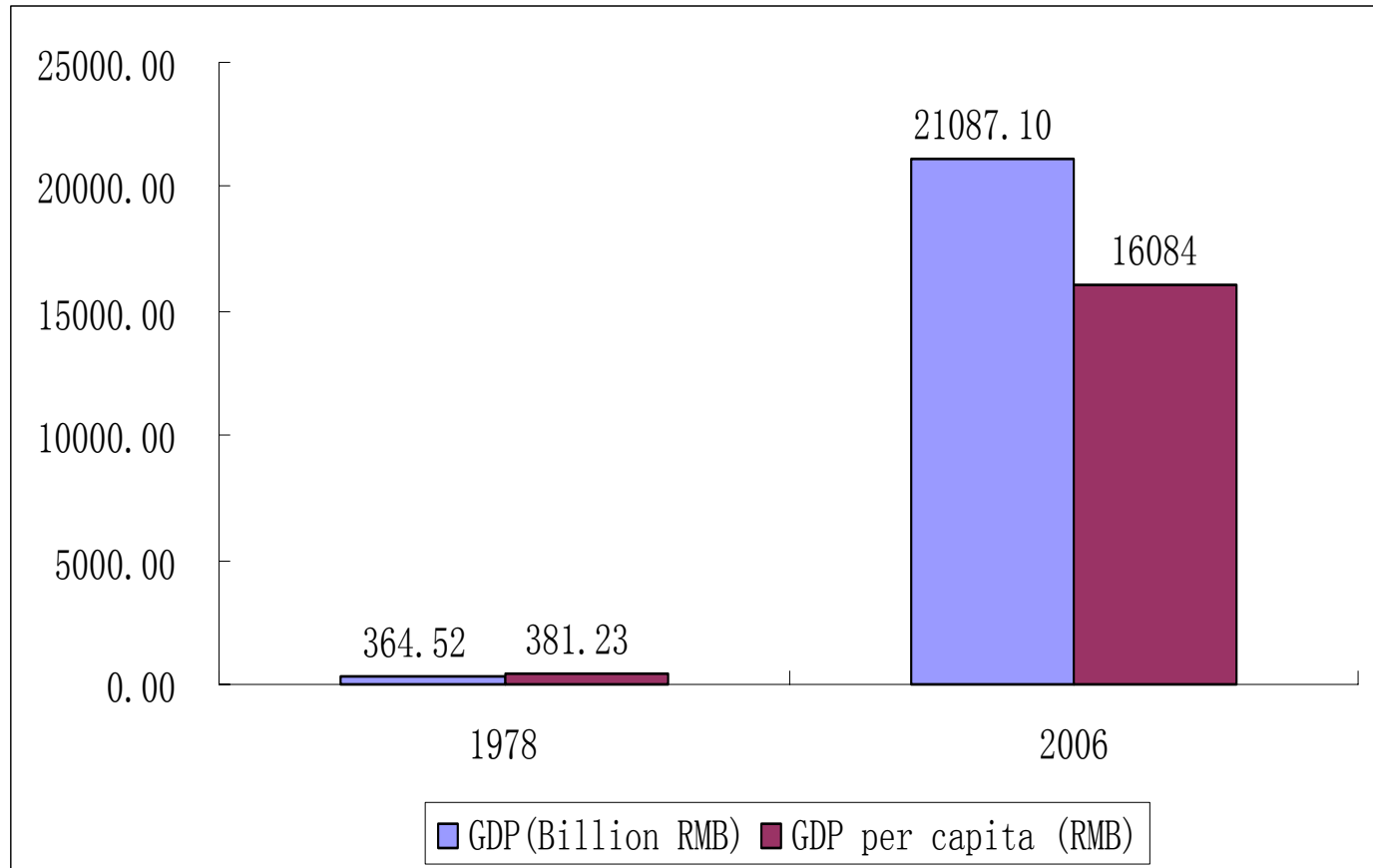
2008-10-15

1. A brief introduction of Chinese Success
2. Who benefits?
3. Possible reasons of Chinese economic growth
4. Understanding Chinese growth in a political economic framework

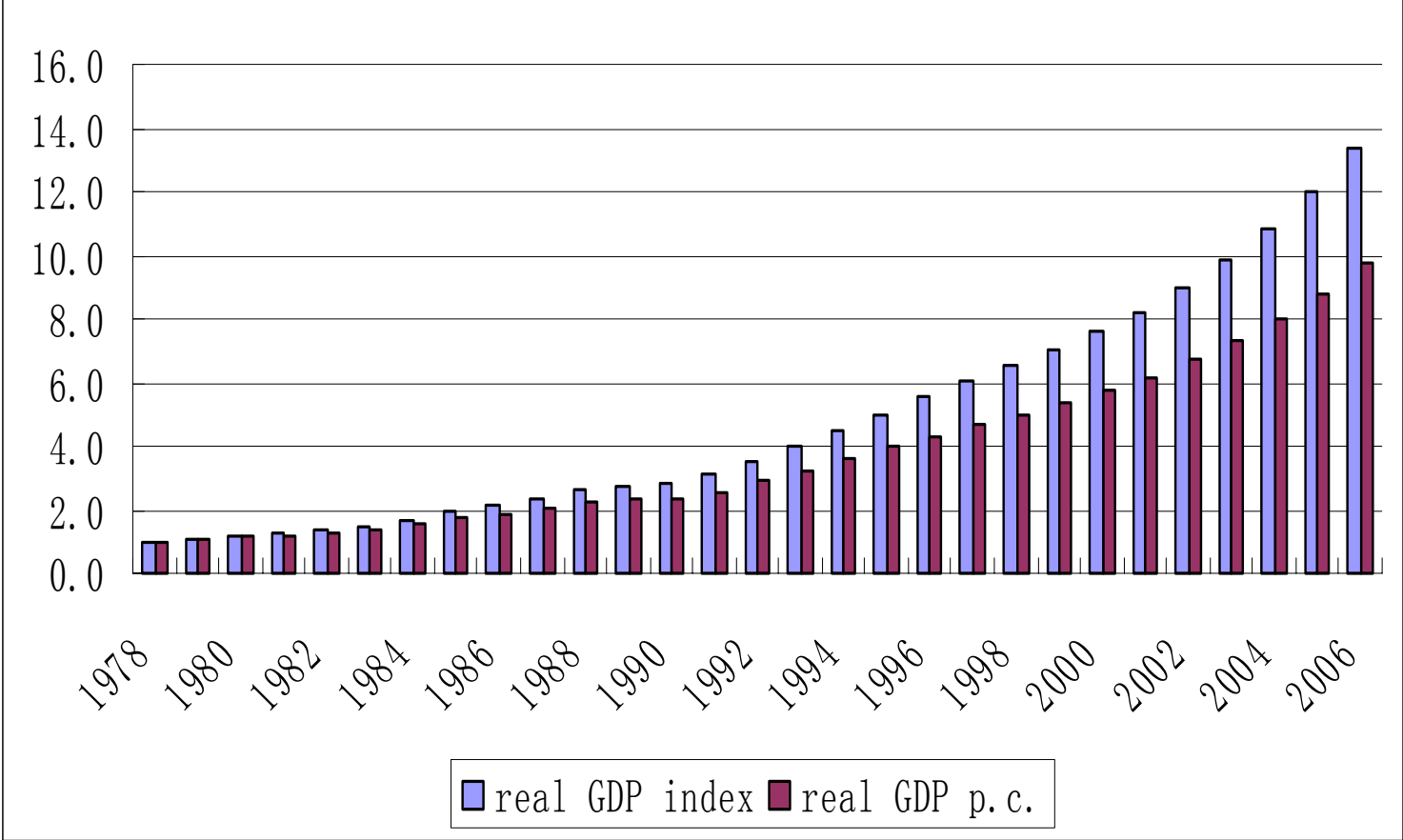
1. A Brief Introduction of Chinese Success

(All data without special notes are from Chinese Statistical Yearbook)

Nominal GDP

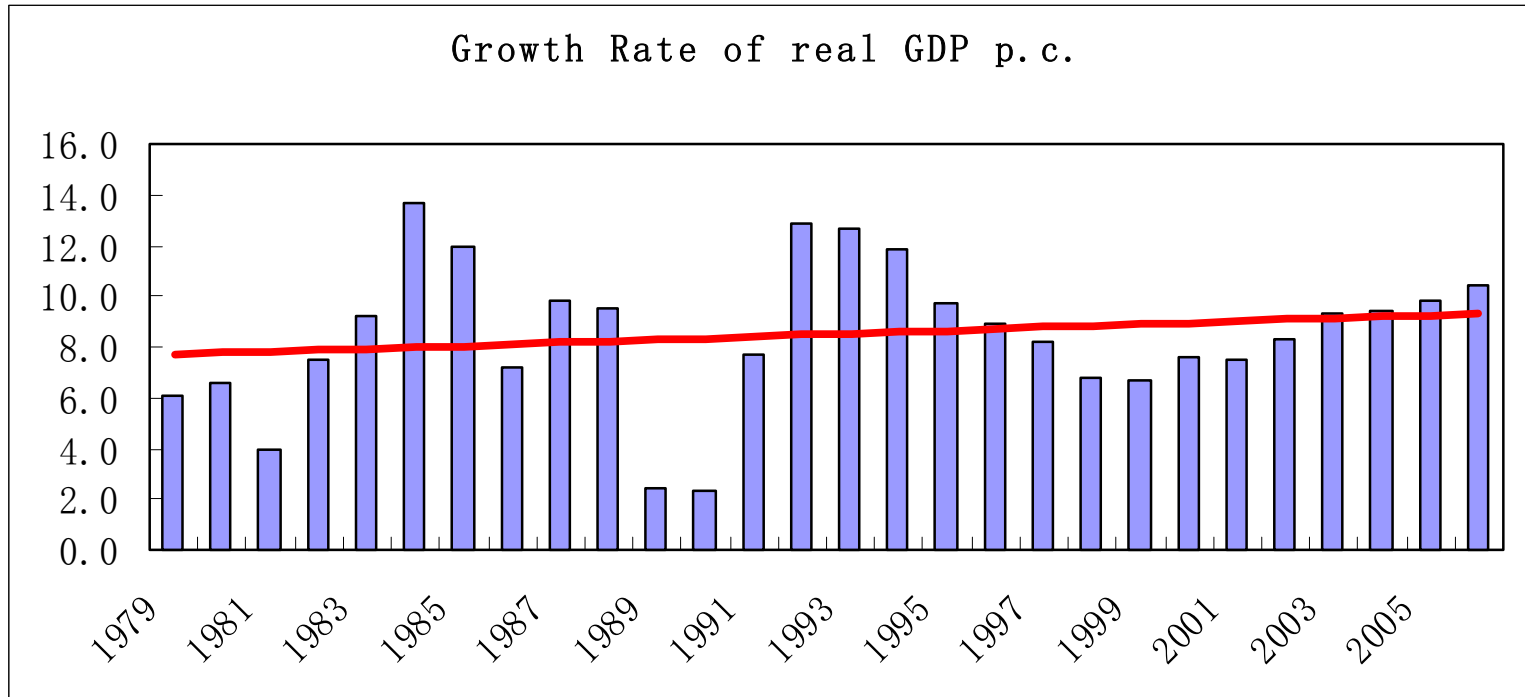


Real GDP Index (1978=1.0)



Growth rate (in RMB)

- Two stages of Chinese growth:
 1. 1978 --- 1991 Introducing market in the planning economy
Dual-track reform
 2. 1992 --- Constructing market economy



	Sample (157)	GDP per capita [USD]		Average growth rate [% p.a.]
		1970	2004	
Developing	113	300	2370	4.78
Developed	44	2446	28550	6.66
China		112	2604*	8.5*

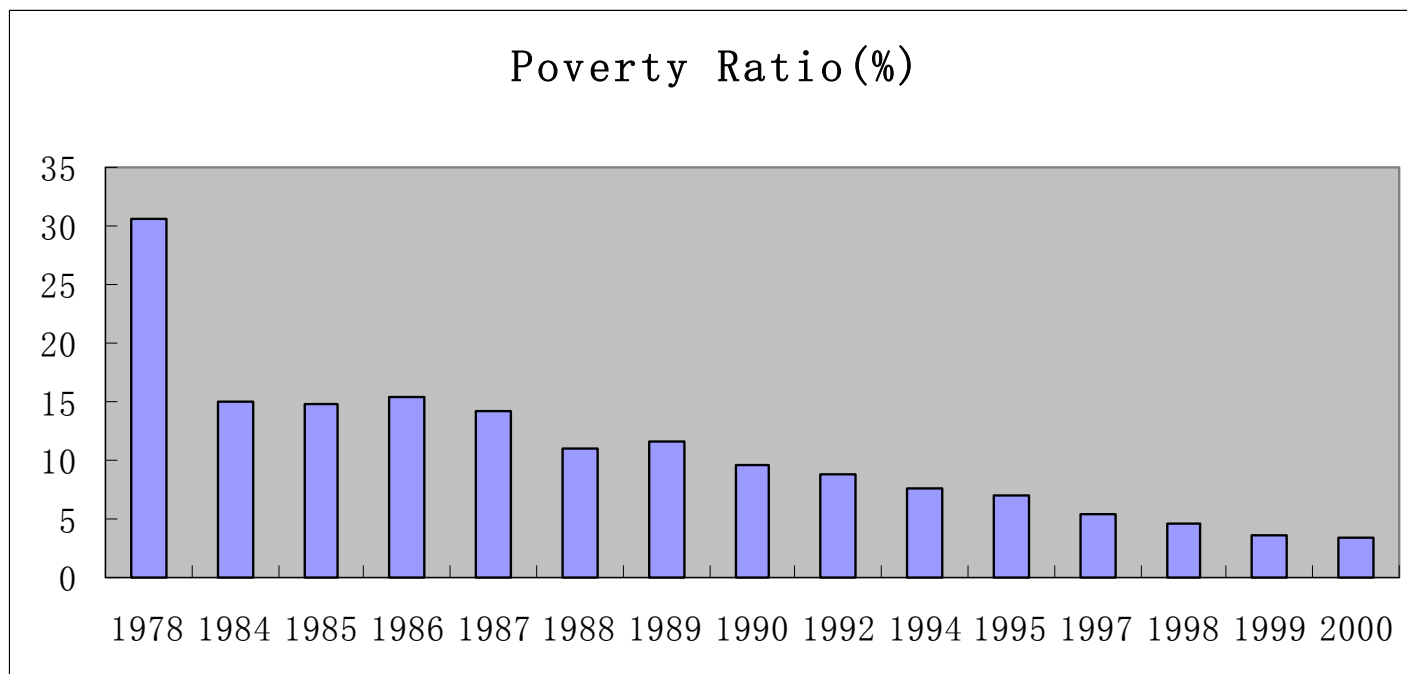
Developing countries: whose GDP lower than average level in 1970

Developed countries : higher

GDP: from UN database.

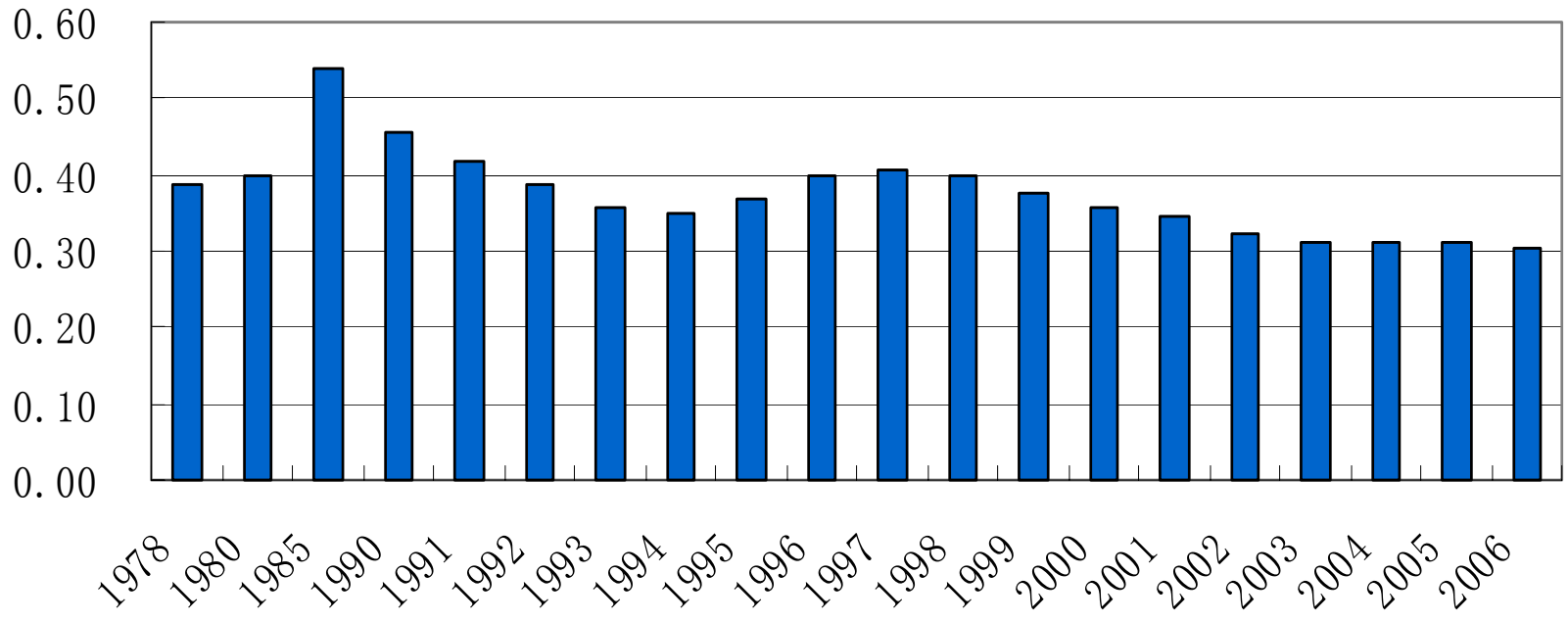
*: Data of China is 2007, 8.5% is the growth rate in 70-07

2. Who enjoys ?



- Poverty level: <100 yuan p.c. in 1978 250 Million
- <625 yuan p.c. in 2000 32 Million

Relative income of the rural to the urban



- In general, the income inequality in China increases since 1985.

3. Possible Reasons of Rapid Growth

3.1 Nature resources

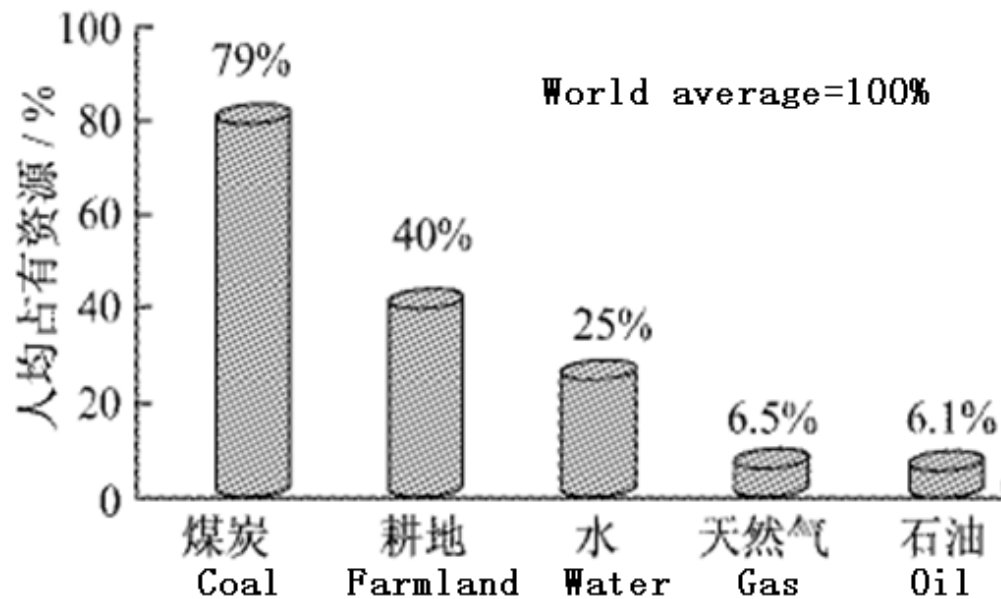


图 10 我国主要资源人均占有水平与世界平均水平的比较^④

Fig. 10 Comparison of per capita possession of main resources in China and the average in the world

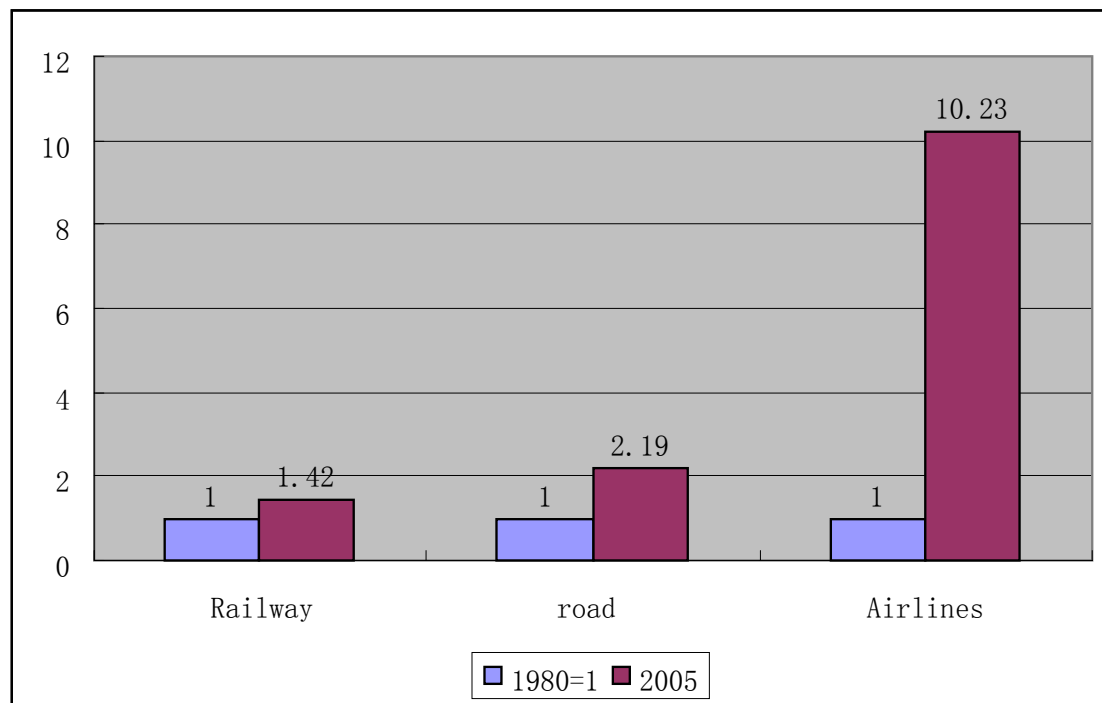
From Jiang, Ze-min (Journal of Shanghai Jiaotong Uni., 2008 42(3))

3.2 Infrastructure “要致富，先修路”

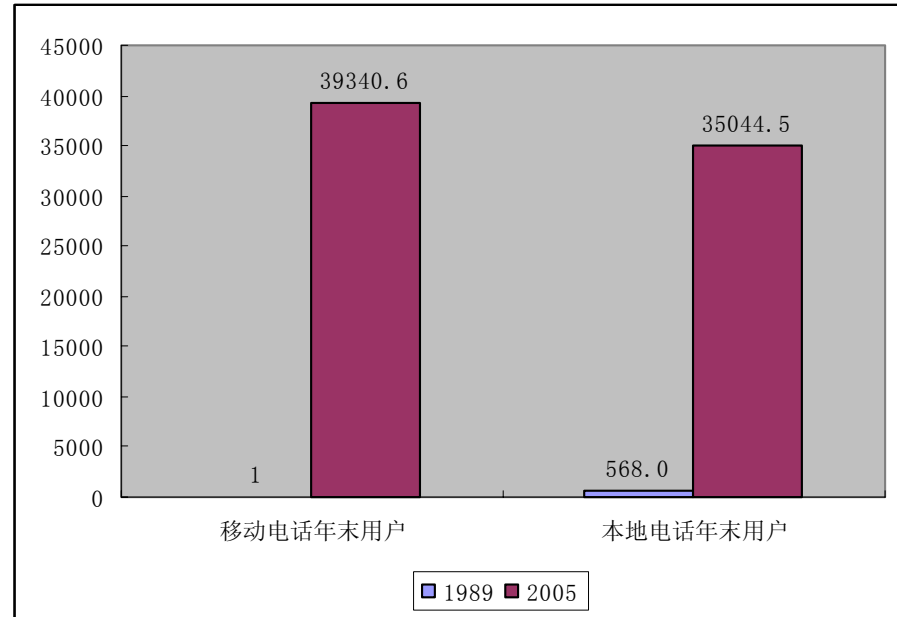
	Railway	Road	Airlines	Highway
1980	53.3	883.3	195.3	0.1*
2005	75.4	1930.5	1998.5	41

Units: 1,000KM

*: Data in 1988.



1000pcs	Mobile phone	Telephone
1989	10	5,680
2005	393,406	350,445



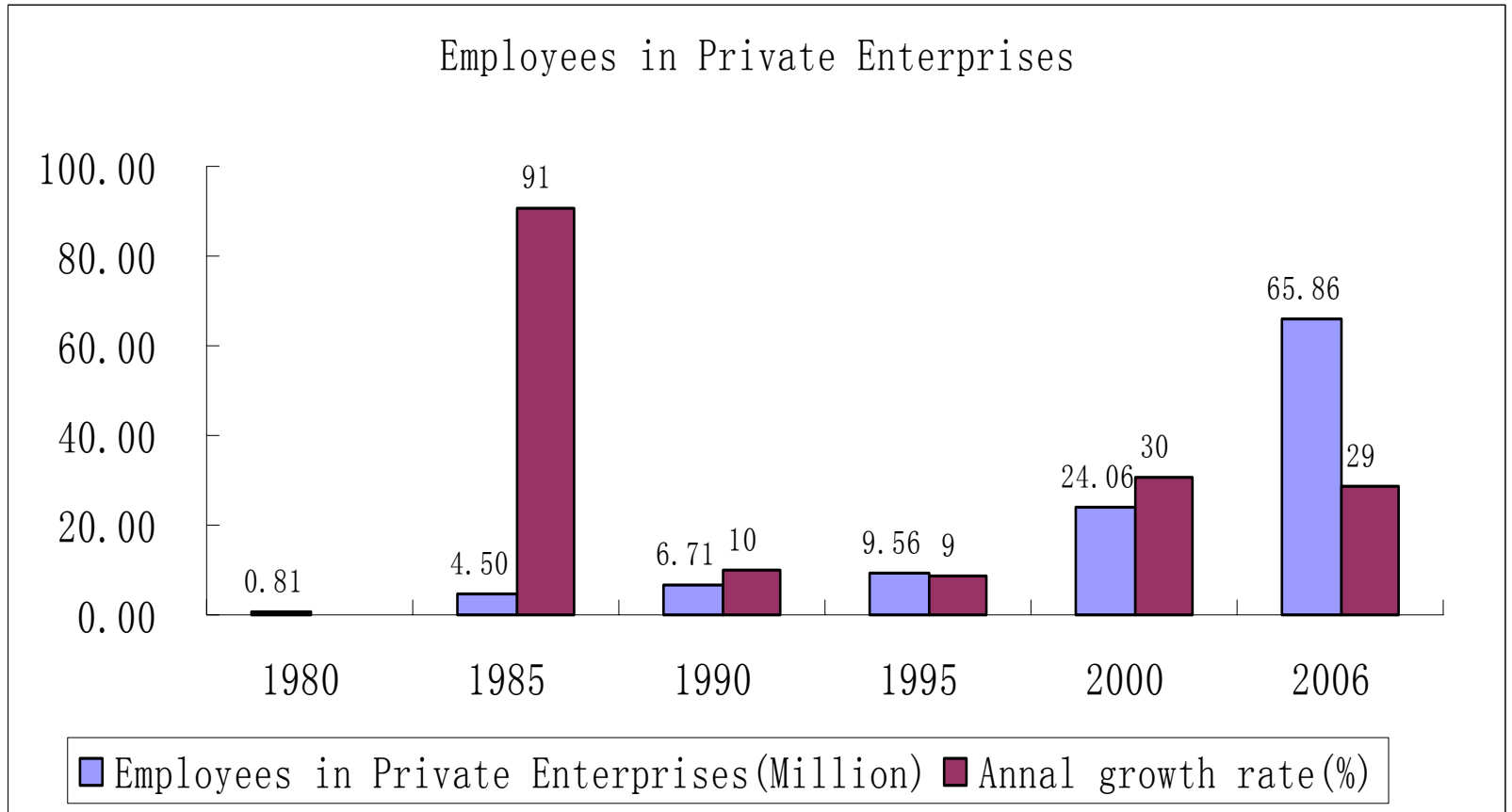
	Telephone(per 1000 persons)			Mobile phone		
	1990	2000	2004	1990	2000	2004
World	98.96	161.32	191.43	2.13	122.47	279.43
China	6.03	114.7	241.05	0.02	67.52	258.32
USA	545.28	682.13	605.97	21.16	387.91	616.73
India	5.97	31.93	40.71	0.08	3.52	43.81

3.3 Human Capital

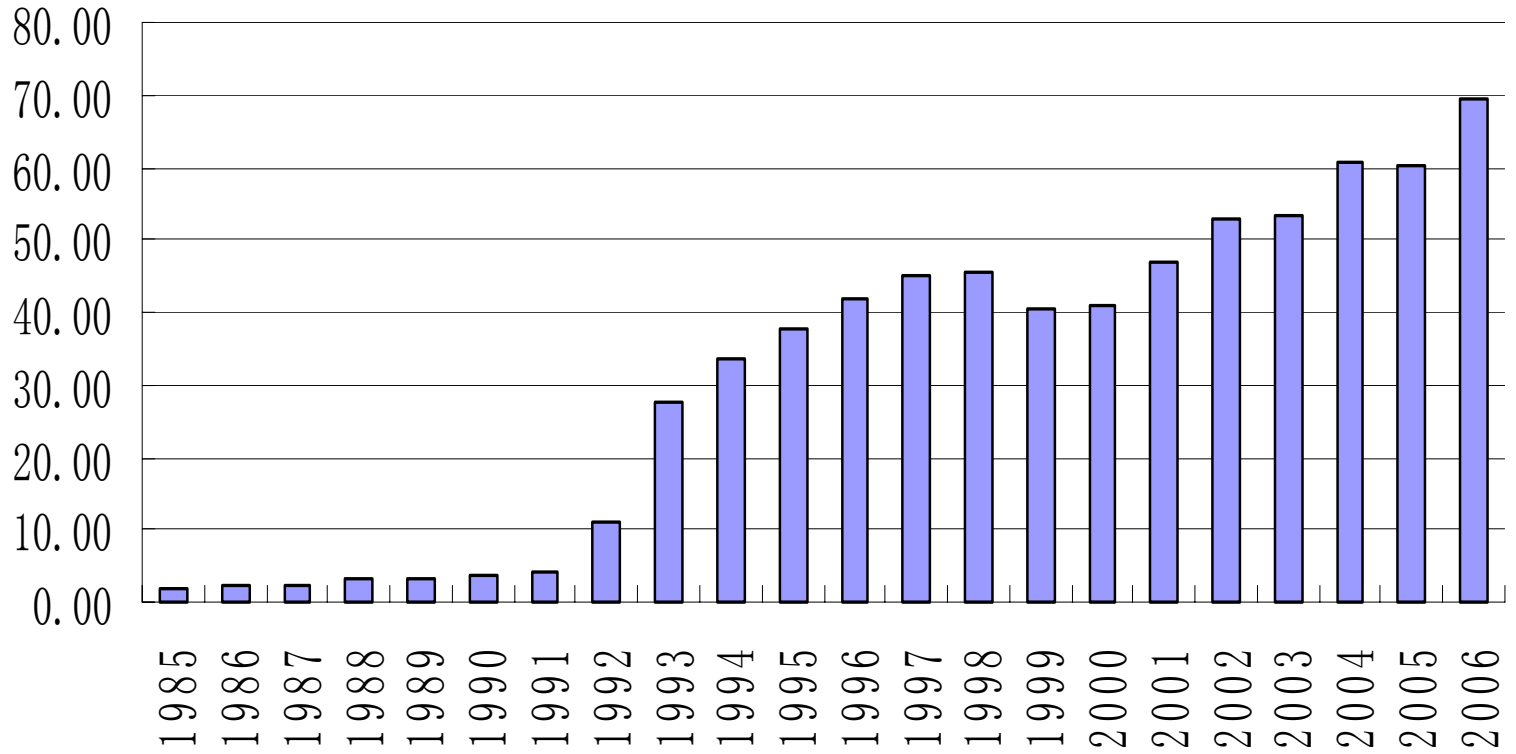
The adult literacy rate	1990	2004
Middle-income countries	80.71	89.79
China	78.29	89.68
India	49.32	61.01

University Enrolment rate	2000	2004
World	19.5	24.8
Middle-income countries	16.3	26.5
China	7.6	19.1
India	10.2	11.8
USA	69.2	82.4

3.4 Market-oriented reform: privatization and open-door policy



FDI (Billion USD)



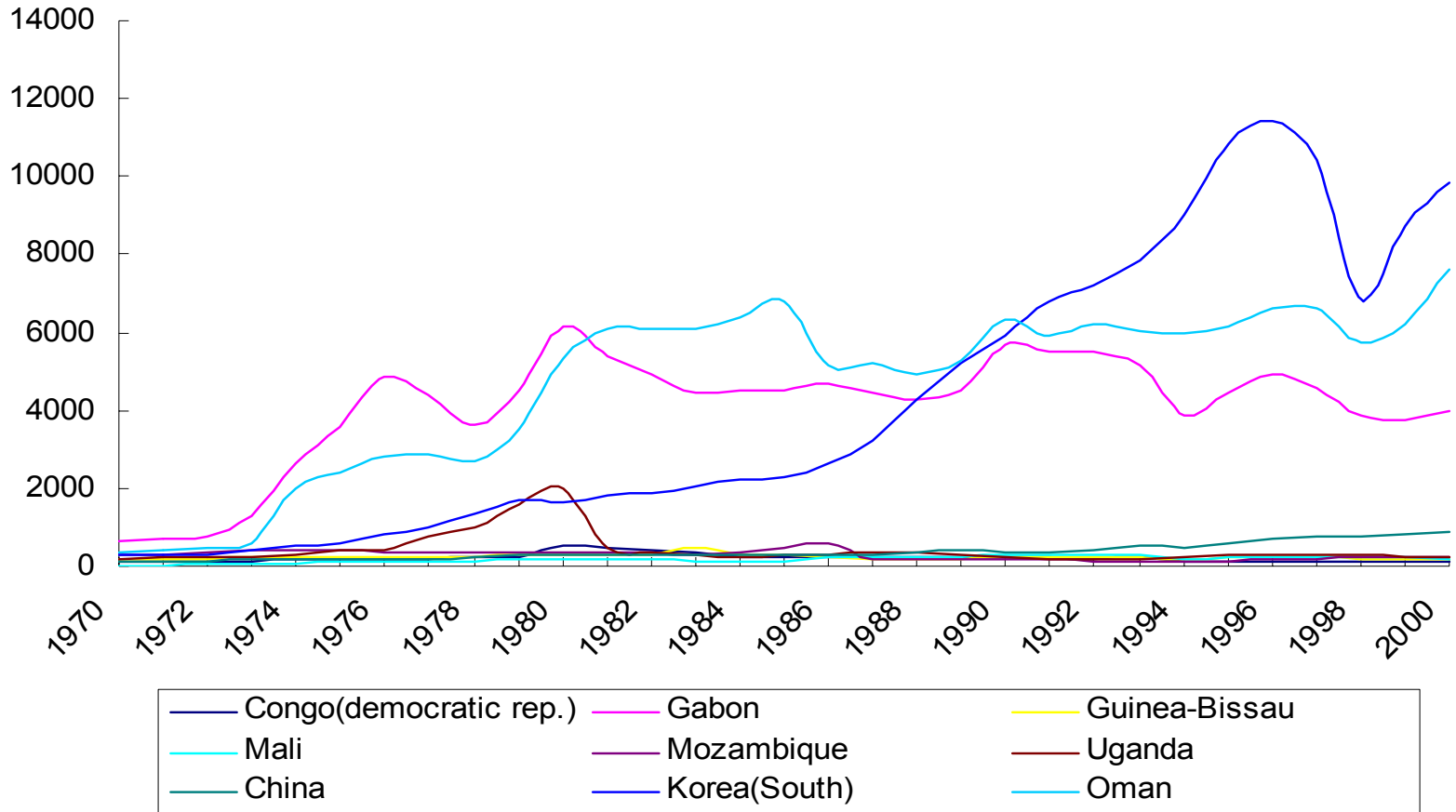
4. Economic growth in dictatorship

- Most developing countries have dictatorial political institution.
- Civil Liberty Index: from Freedom house
1.0 --- 7.0 political environment of economic development.
- GDP: from UN

	Sample (157)	Civil Liberty Index 1972-74	GDP per capita [USD]		Average growth rate [% p.a.]
			1970	2004	
Developing	113	4.56	300	2370	4.78
Developed	44	2.81	2446	28550	6.66

	Sample (157)	Civil Liberty Index 1972-74	GDP per capita [USD]		Average growth rate [% p.a.]	Variance of growth rate
			1970	2004		
C.L. 7~6	42	6.38	442	2764	4.37	8.03
C.L. 5.9~5	27	5.22	472	4767	4.46	6.28
C.L. 4.9~4	18	4.28	414	3104	4.44	5.49
C.L. 3.9~3	23	3.26	781	6917	6.00	4.32
C.L. 2.9~2	28	2.08	1175	14278	6.07	5.51
C.L. 1.9~1	19	1.02	2733	34977	7.46	0.89
Average		4.07	881	6418	5.84	6.62

real GDP p.c. of some dictatorial countries 1970-2000



Dictatorial countries: Index of civil liberties bigger than 6.0 in 1972/74.
 All data from UN and Barro-Lee 1994.

When will a Dictator be “good”?

- Barro (1996): “Democracy and growth”, *Journal of economic growth* (1), pp.1-27
- Tarares and Wacziarg (2001): “How democracy affects growth”, *European Economic Review* (45), pp.1341-1378
- Democracy:
 - Advantage: more human capital investment,
less inequality
 - Disadvantage: less physical capital investment
- Dictatorship:
 - Advantage: more infrastructure (physical)
investment
 - Disadvantage: more corruption

Main features of our model

with M. Schiffbauer (2008)

Utility function:

$$U^i = \beta \ln C^i + (1 - \beta) \ln(\theta + b)$$
$$i \in \{p, g\}, \quad 0 < \beta < 1, \quad \theta > 0$$

- Intuition : individuals care about own welfare and that of the next generation, however, not at the same level. If they are too poor, then they will consume all income and leave nothing for children.

- **Proposition 1:**

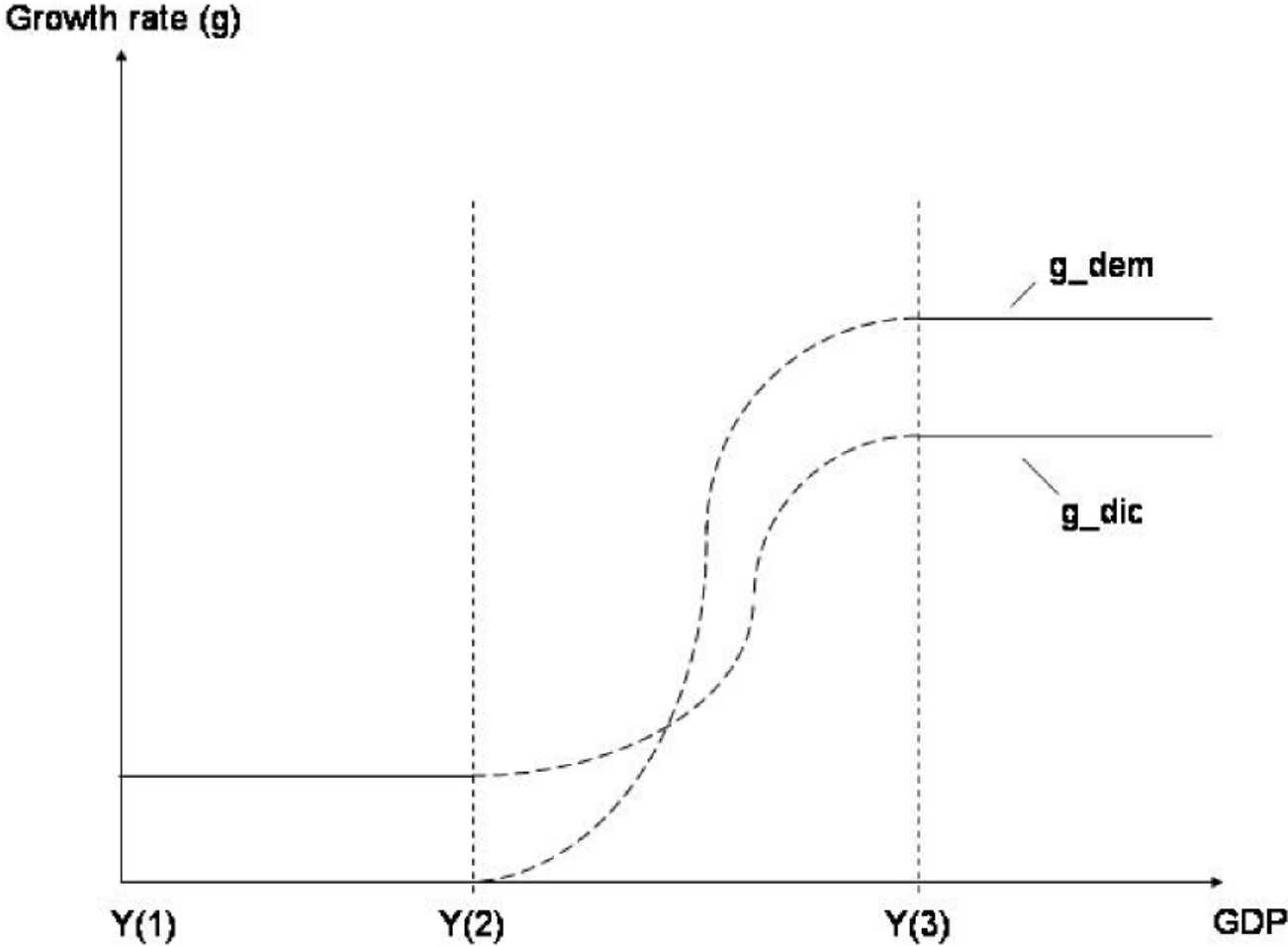
If a government is democratic, the economy could have a zero growth rate – in a “poverty trap” -- if the initial income is too low.

- **Proposition 2:**

Under the above situation, even a selfish dictator would lead the economy to leave the “poverty trap”, i.e., to achieve a positive growth rate.

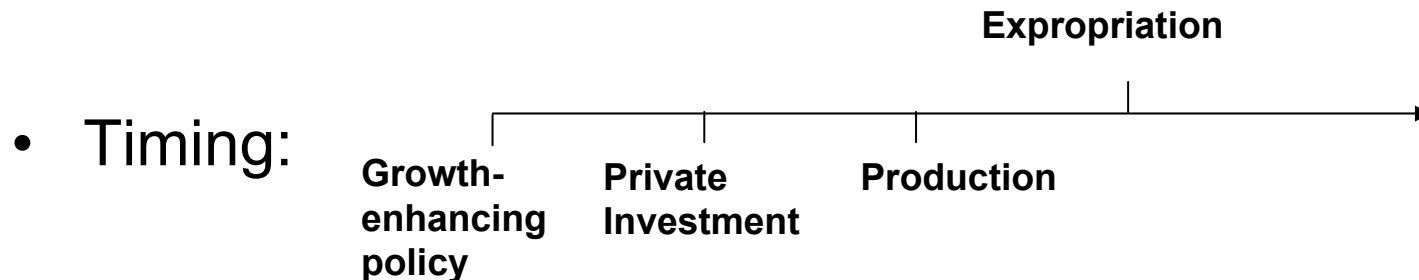
-- In this sense, we have a “good” dictator.

Potential growth paths of democracy and dictatorship

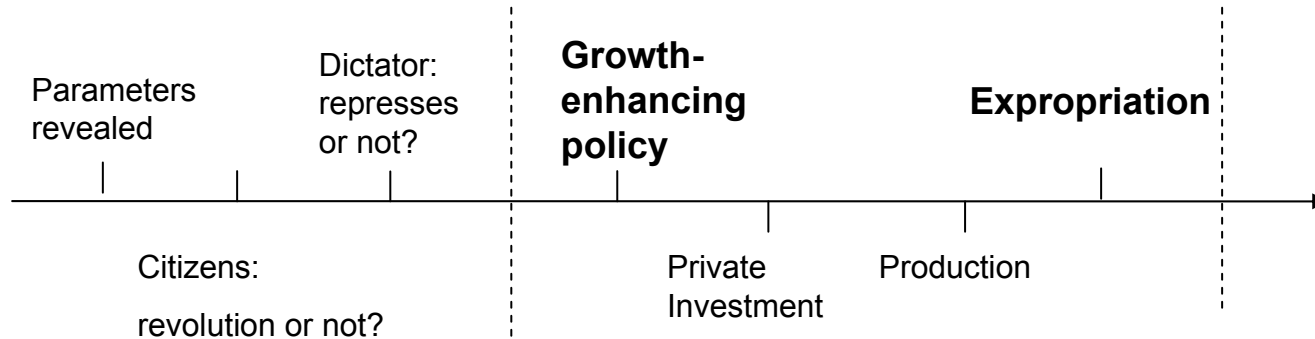


4.2 When will a dictator be “good”?

- “Stability overrides everything.” ---- Deng, xiaoping
- McGuire, M.C. and Olson, M. (1996) “The Economics of Autocracy and Majority rule”, *Journal of Economic Literature* 34, pp.72-96
- From the roving bandits to Emperor



- Shen, ling (2007) “When will a dictator be good?” *Economic Theory* 31(2), pp. 343-366
- Endogenous life-time of dictatorship:



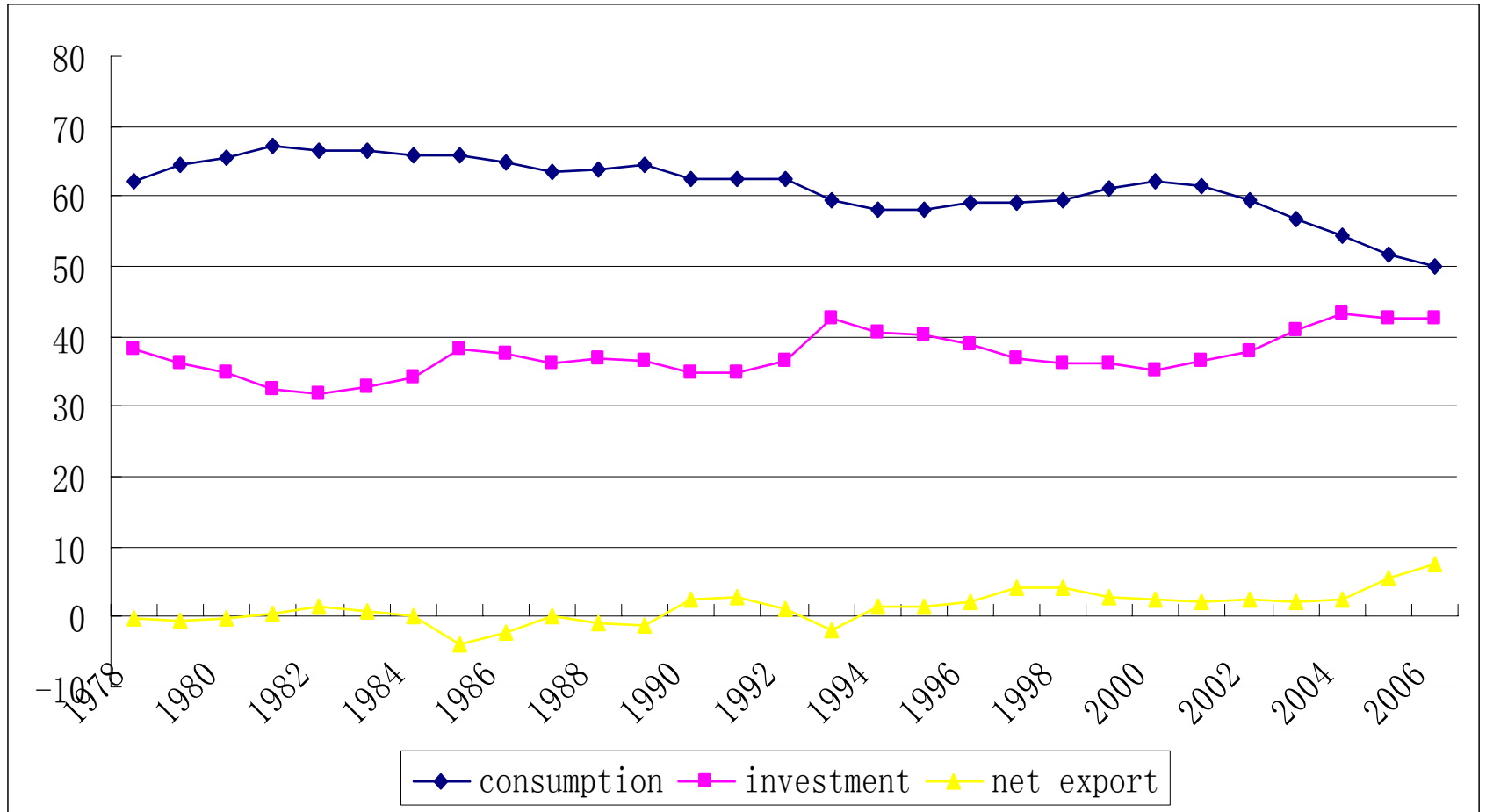
- Stability does not necessarily lead to a better dictator.

Thank you for your
attention



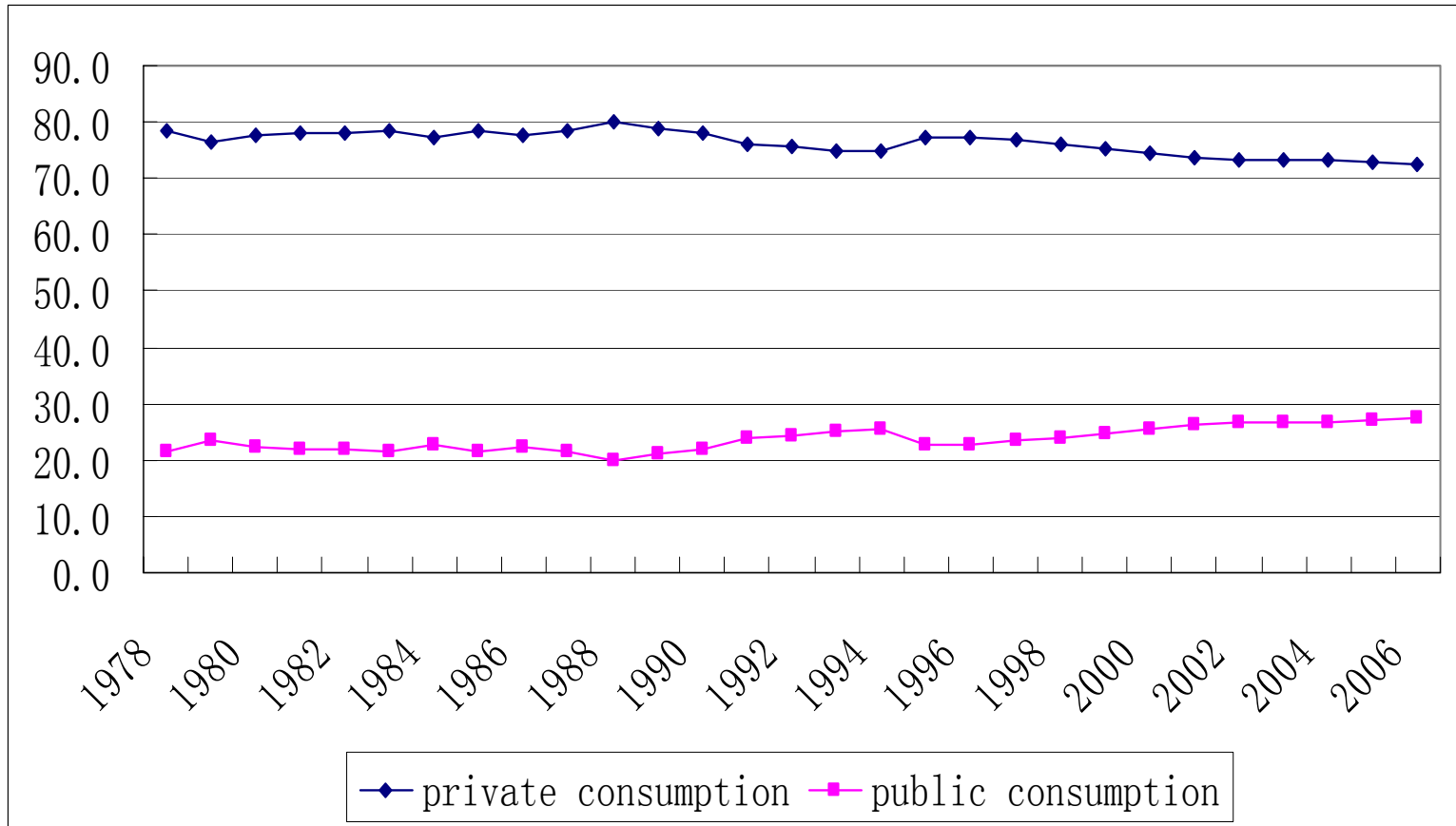
Decomposition GDP (100%)

= consumption + investment + net export



Decomposition of Consumption (100%)

=private consumption + public consumption



- Discussion in a political economy model

4.1 Do we “need” a dictator?

4.2 When will a dictator be “good”?

4.3 When will democratization happen?

Acemoglu, Daron and Robinson, A. James (2000) “Why did the West Extend the Franchise? Democracy, Inequality and Growth in Historical Perspective”
Quarterly Journal of Economics 115(4) pp. 1167-1199

_____. (2001) “A Theory of Political Transitions”
American Economic Review 91(4), pp. 938-963

Relative education cost = expenditure per student in
Uni./GDP per capita

Relative Education Cost (%)	2000	2004
World		34.5
Middle-level income		32.9
China	99.2	
India	90.5	94.7
Japan	17.4	20.5
USA	31.6	27.6

- Is China already a market economy?

- 1 Consumption goods market

- 2 Factors Market

- Land Market

- Capital Market

- Labor Market

2. Production function:

$$y_t = Ak_t^\alpha$$

$$Y_t = N Ak_t^\alpha$$

3. Capital evolution functions:

$$k_t = k_0 + b_{t-1} \quad k_0 > 0$$

$$b_t = b_t^p + b_t^g$$

4. Political institutions:

dictatorship: the single ruler decides the tax rate and investment

democracy: simple majority rule – the median voter

- The optimality problem in democracy:

$$\max_b U = \beta \ln c + (1 - \beta) \ln (\theta + b)$$

$$s.t. \quad y = c + b$$

$$\frac{dU}{db} = \frac{\beta}{y-b}(-1) + \frac{1-\beta}{\theta+b} = 0$$

$$\Rightarrow b^* = \begin{cases} 0 & \text{if } y \leq \frac{\theta\beta}{1-\beta} \\ (1-\beta)y - \theta\beta & \text{if } y > \frac{\theta\beta}{1-\beta} \end{cases}$$

Proposition 1:

If there is no government, or government is democratic, the economy could have a zero growth rate – in a “poverty trap” -- under certain conditions.

- The optimality problem in dictatorship:

For individuals:

$$\max_{b^P} U^P = \beta \ln c^P + (1 - \beta) \ln(\theta + b)$$

$$s.t. \quad (1 - \tau)y = c^P + b^P$$

$$b = b^P + b^G / N$$

$$b^{P**} = \begin{cases} 0 & \text{if } y \leq \frac{(\theta + b^G / N)\beta}{(1 - \beta)(1 - \tau)} \\ (1 - \beta)(1 - \tau)y - (\theta + b^G / N)\beta & \text{if } y > \frac{(\theta + b^G / N)\beta}{(1 - \beta)(1 - \tau)} \end{cases}$$

- **Proposition 2:**

If there is a selfish dictator, the incentive of private investment decreases.

For dictator:

$$\max_{b^g} U^g = \beta \ln c^g + (1 - \beta) \ln(\theta + b)$$

$$s.t. \quad \tau N y = c^g + b^g$$

$$b = N b^p + b^g$$

$$b^{g**} = \begin{cases} 0 & \text{if } y \leq \frac{(\theta + N b^p) \beta}{(1 - \beta) \tau N} \\ (1 - \beta) \tau N y - (\theta + N b^p) \beta & \text{if } y > \frac{(\theta + N b^p) \beta}{(1 - \beta) \tau N} \end{cases}$$

$$\frac{\theta\beta}{(1-\beta)\tau N} < y_0 = Ak_0^\alpha \leq \frac{\theta\beta}{1-\beta}$$

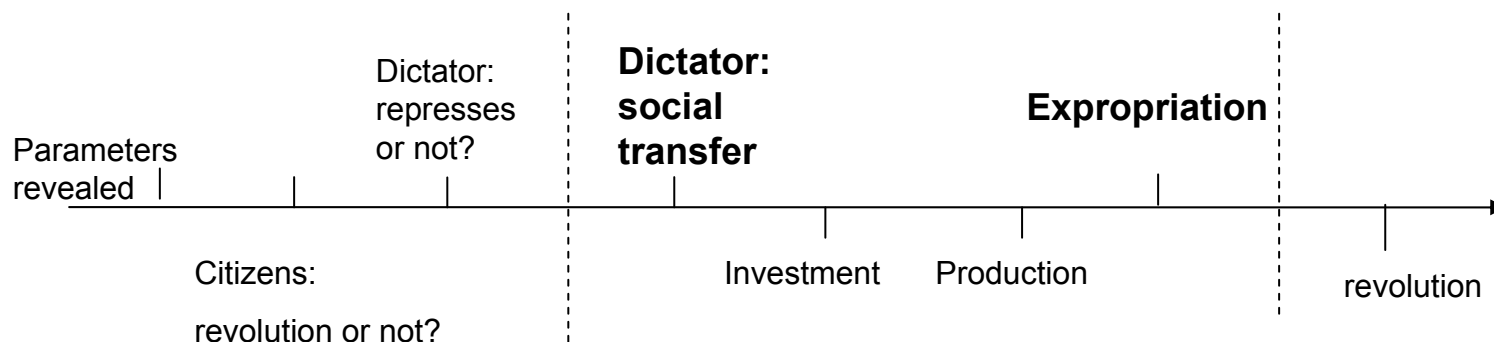
$$b^p^{**} = 0$$

$$b^g^{**} = (1-\beta)\tau Ny_0 - \theta\beta > 0$$

- **Proposition 3:**

Under certain conditions, even a selfish dictator would lead the economy to leave the “poverty trap”, i.e., to achieve a positive growth rate.

- Shen, ling (2007) “When will a dictator be good?”
Economic Theory 31(2), pp. 343-366
- Endogenous life-time of dictatorship:



- **Political transition (Gun Model)**

the payment of citizens: $\int P_{i,t} di - c$

the payment of ruler: $P_{ruler,t}$

- Net incentive for a revolt: $\Delta_t = \int P_{i,t} di - c - P_{ruler,t}$

3.2.1 Assumptions

- A continuum of citizens $i \in [0, 1]$ inelastically supply one unit of labor
- Individual-specific productivity $\varepsilon_i = i$
- Production function: $y_{i,t} = A_t N \varepsilon_i \lambda^{I_i}, \lambda > 1$
- Investment $I_i = \begin{cases} 0 \\ 1 \end{cases}$ at cost: $eA_t, e > 0$
- **Political institution:** $(\tau, s) \quad \tau \in [0, \bar{\tau}], \quad \bar{\tau} < 1$
- Dictatorship: one ruler is unproductive, but he can expropriate via taxation.
- Democracy: no expropriation $\tau^{dem} = 0$

3.2.2 Exogenous economic growth: A grows exogenously

- The tax rate : $\tau^{dic} = \bar{\tau}$
- Investment decision: $1 - \hat{\varepsilon} : Y_{\hat{\varepsilon},t}(invest) = Y_{\hat{\varepsilon},t}(no\ invest)$

$$\hat{\varepsilon} = \frac{eA_t - s_{\hat{\varepsilon}}}{A_t N(\lambda - 1)(1 - \bar{\tau})}$$

- Assumption 1: $\frac{N(\lambda - 1)}{e} > \frac{1}{1 - \bar{\tau}}$
- Social transfer: $s_{i,t} = 0 \quad \forall i < \hat{\varepsilon}; \quad s_{i,t} = s_t \quad \forall i \geq \hat{\varepsilon}$

$$\begin{aligned} \underset{s_t}{Max} \quad Y_{ruler} &= \tau \int_0^1 y_i di - (1 - \hat{\varepsilon})s_t \\ &= \frac{1}{2} \tau A_t N [\lambda + (1 - \lambda)\hat{\varepsilon}^2] - (1 - \hat{\varepsilon})s_t \end{aligned}$$

$$s_t \equiv A_t S^{exg} = \begin{cases} 0 & \text{if } \frac{N(\lambda-1)}{e} \geq \frac{1}{(1-\bar{\tau})^2} \\ A_t \frac{e - N(\lambda-1)(1-\bar{\tau})^2}{2-\bar{\tau}} & \text{if } \frac{N(\lambda-1)}{e} < \frac{1}{(1-\bar{\tau})^2} \end{cases}$$

- **Proposition 1:**

1) If the private investment has no effect on the aggregate technical level A , the dictator will be bad if $\frac{N(\lambda-1)}{e} \geq \frac{1}{(1-\bar{\tau})^2}$; she will be good if $\frac{N(\lambda-1)}{e} < \frac{1}{(1-\bar{\tau})^2}$.

2) If the condition $\frac{N(\lambda-1)}{e} < \frac{1}{(1-\bar{\tau})^2}$ holds, the transition from the bad to the good dictatorship is a Pareto-improving process.

- The investment ratio:

$$1 - \hat{\varepsilon}^{bad} = 1 - \frac{e}{N(\lambda - 1)(1 - \bar{\tau})}$$

$$1 - \hat{\varepsilon}^{good} = 1 - \frac{e + N(\lambda - 1)(1 - \bar{\tau})}{N(\lambda - 1)(2 - \bar{\tau})}$$

- **The condition of a good dictator :**

$$1 - \hat{\varepsilon}^{bad} < \bar{\tau}$$

3.2.3 Revolution:

- The incentive for a revolt :

$$\Delta_t = \int P_{i,t} di - c - P_{ruler,t} = A_t \int_{\beta^{dem}}^{\beta^{dic}} (N(\lambda - 1)i - e) di - c$$

- The life time of the dictator : $T = \text{the root of } (\Delta_t = 0)$

- In the bad dictatorship:
$$\Delta_t^{bad} = A_t \frac{e^2 \bar{\tau}^2}{2N(\lambda - 1)(1 - \bar{\tau})^2} - c$$

- In the good dictatorship:
$$\Delta_t^{good} = A_t \frac{(N(\lambda - 1) - e)^2 (1 - \bar{\tau})^2}{2N(\lambda - 1)(2 - \bar{\tau})^2} - c$$

- **Proposition 2**

1) The incentive for revolution increases in A.

2) Effects of the tax rate and nature resource are different in good and bad dictatorship.

3.2.4 Endogenous economic growth

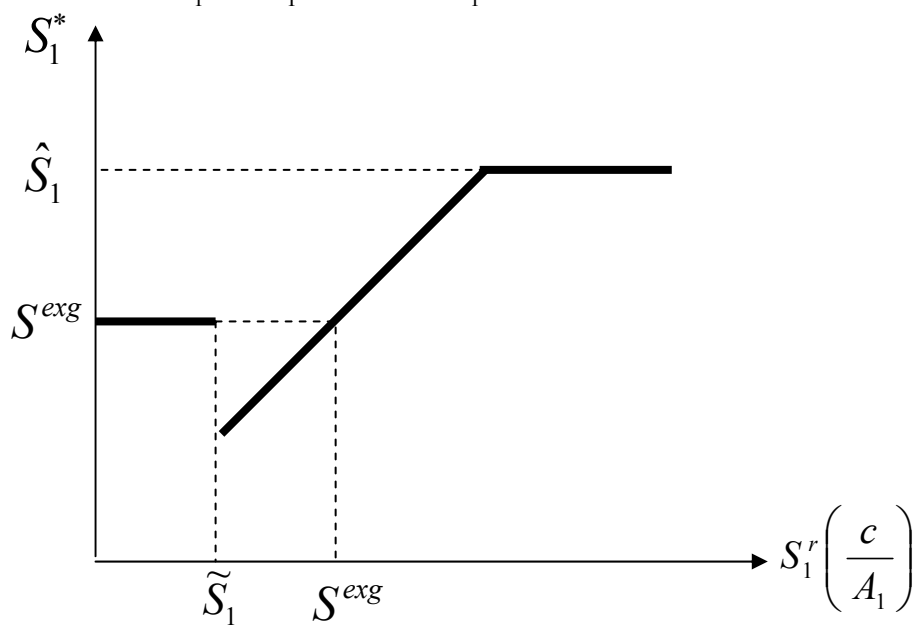
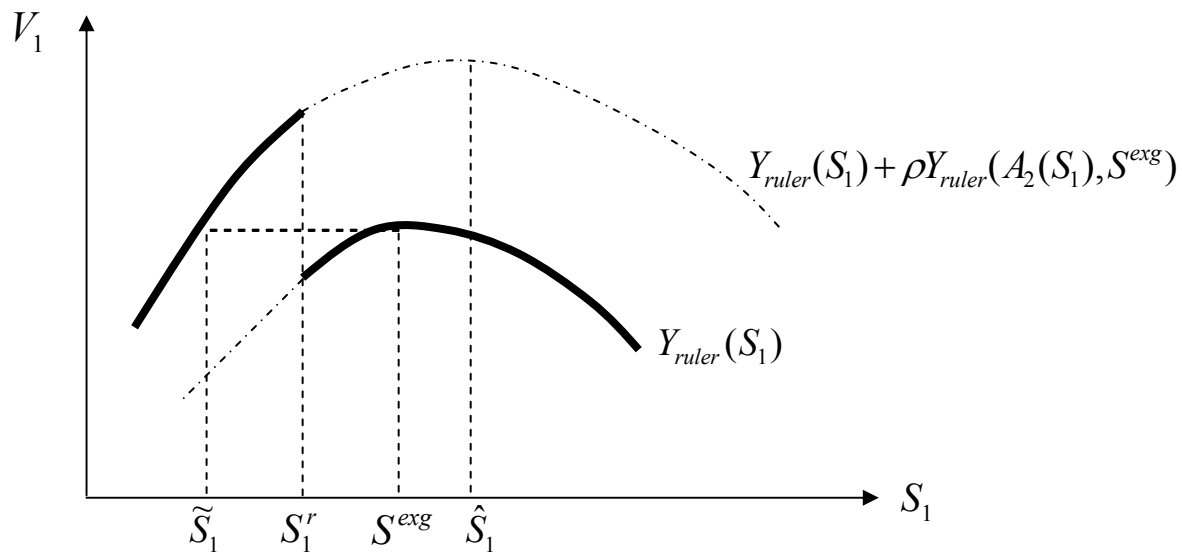
- Assumption : private productivity becomes public goods in the next period.

$$A_t = A_{t-1}(1 + g(S_{t-1})) \quad g'(S_{t-1}) > 0$$

- **Proposition 3**

In the endogenous growth model, the dictator chooses social transfer as follows:

- 1) In the last period of her life-time, the dictator acts as same as in the exogenous growth model, i.e., she chooses S^{exg}
- 2) In the period before, the dictator sets $S^* = \min\{S^r, \hat{S}\}$ S^r increases in the revolution cost and decreases in the initial technology level .
- 3) $S^* = \min\{S^r, \hat{S}\}$ could be smaller than S^{exg} .



3.2.5 Summary:

- Dictatorship and its effect on economic performance.
- Dictator has incentive to transfer more to citizens if they have a lower incentive to invest.
- Distinguish the different effects of economic performance on revolution.
- Emphasize the trade off faced by the dictator:
 - economic benefit in short term
 - induce earlier revolution in long term
- Stability does not necessarily lead to a better dictator.