

n...z ¬ \$μD« Éí %ÈAÅ

Ø Ü

2001.2

Abstract

; Wß | i (convergence) Ü , à < « É³ A
Ñn...í z ¬ È, 7. / Q§ÀÅDw(í Å¬\
\$μ, † 1895–1945 È %ÈAÅO} ^a œQ

ñ"

1. « Éí ß | Å: 1895–1945
2. â ÅÜ j „ « Éí ß | Å
3. « ÉADn...A5F) } °
4. ! x: z ¬ \$µD%È Å

« ÉÍ GDP \$I

1. GDP: † é 1 (1976), Ø Ü (1991), r R (1997)



2. GNE: Ç¨ ÜW (1988) ■

3. Maddison (1995): F Å GDP ®ÄM^a œ
 ≥ 1990 Ñ benchmark year, â® 5õ" GDP A
 ÅO^a R, ©Ø_ÅÕ® 5õ" GDP ®Ä

Maddison's GDP R, 5 n: 1937–45

[1: 1937–51 « É Ì ©A GDP , M5^a œ

	1937	1939	1941	1942	1943	1944	1945	1946	1947	1949	1951
Maddison	1291	1409	1458	1522	1011	693	748	809	903	922	943
	100	109	113	118	78	54	58	63	70	71	73
r R	1977	2024	1724	1758	1587	1304	679	754	957	1325	1493
	100	102	87	89	80	66	34	38	48	67	76

- 1951/1937 5 GDP I bÌ Ø×İ æ,
- 1937–51, Èq GDP 5İ æ, ú...d5} &1Ì à

2Åí GDP \$I

- Yeh (1979): 1914–18 Ì , 1931–36®
- * 1914–18 *f* 1931–36, per capita GDP ÅÖ0.33%
- Maddison C q ° Ø ÅÖ, R 1890, 1900 per capita GDP

GDP AÅO^a O

[2: « ÉD®Åí %ÈAÅO

	AÅO	,
« É ì ©A GNE	2.15%	1905–35
« É ì ©A GDP	2.12%	1910–39
ì ©A E" Õ" È< gM	1.76%	1902–40
n... ì ©A GDP	2.30%	1905–40
2Å ì ©A GDP	0.33%	1914–31
Oä (56Å) ì ©A GDP	1.03%	1900–38
= ¹ (11Å) ì ©A GDP	0.66%	1900–38
ar (12Å) ì ©A GDP	1.12%	1900–38

GDP DA'' AÅ

- 1900–38, 2Å GDP Ó< 1.53I
« É GDP Ó< 3.45I
- 1900–40, 2ÅA'' ÅOÑ0.65%
« É Ñ1.91%

GDP @ ADA b

[3: GDP @ ADA b

		1890	1900	1913	1933	1938
I GDP	« É	–	759	794	1109	1320
	2 Å	615	652	688	801	778
	n...	974	1135	1334	2042	2356
GDP	« É	–	2173	2755	5537	7493
	2 Å	233517	260600	300924	400530	399267
A (–A)	« É	2500	2846	3502	5061	6077*
	2 Å	380000	400000	437140	500000	518770*

1900 Ì ©A GDP 5 < 2

1. Prechett (1977): | Qæ° ®Ä (subsistence level),
250 dollars (1985 price)
Ethiopia, 1961–65, 260 dollars. ■
2. ~ Ñ1990 ÄP: 298j
« É1900 Ñ759j , Ñ2.55l

1905 Ì ©A GNE

1. 1905 Ì ©A GNE: 41.27Æ
J TA'' ^, A'' 65%, ~ Ñ63.5Æ ■
2. 1903 ÐI | Æ Ì : 52.075Æ

1903 ǂ | ǂ

ǂ 4: « É1903 ± (QYp65F) ǂ '

©A F) ©A X|

1.	ǂ1 (ǂí - 7A)	40.00	50.00
2.	ǂ2 (ǂí - 12A)	20.00	20.00
3.	K‰ (ǂí - 3A)	45.02	43.37
4.	À™K‰ (DFA - R)	–	56.58
5.	A‰š Ú (ǂí - 2A)	56.58	53.38
6.	À™š Ú (DFA - R)	–	58.04
7.	« ° Ú (ǂí - 2A)		52.74
8.	š Ú (À™)		82.49

$\hat{A} \Delta \ddot{U} \quad j \quad „ \quad \ll \acute{E} \acute{I} \quad \beta | \quad A \Delta$

- Convergence ($\beta | \quad i \quad \ddot{U} \quad)$ ■
- Solow $A \Delta _ :$ $J | \quad z \quad O \quad x \quad X \quad D A \ddot{''} \hat{\quad} \quad \grave{\quad} , \quad GDP$
 $i \quad k \quad \text{steady state} \quad (MPK \quad] \quad \acute{A})$ ■
- $J \quad A \ddot{''} \quad D x \quad X \quad \quad \grave{\quad} \quad A \Delta O, \quad \dagger \quad \grave{\quad} \quad \copyright A \quad GDP \quad 5 A \Delta O$
 $k \quad x \quad X A \Delta O$ ■
- $J \quad s \Delta I \quad z \quad O \acute{o}^{\circ} , \quad U \grave{a} \acute{o}^{\circ} \quad 5 \beta \beta x \quad X ,$ per capita
output $\acute{e} Q \acute{I} \quad \acute{A} \check{O} , \quad A \Delta O \acute{e} \grave{o} , \quad] \quad \grave{\quad} \quad \copyright A \beta | \quad \}$
converge

̃} û" (Barro and Sala-i-Martin)

- Convergence when using cross-sectional data:

1 Å (1880–90) F ° ' e

n... (1930–90) F + ' e

r 1 (1960–90) F – ' e



- No convergence using cross-country data

114 Å ð' e, 1960–90

Convergence D« Éí ß | AÅO

- ÀÅ\$μ , , « Éí Ì ©A GDP @Qk 2Å, OA ÅOœè ■
- ÀÅ\$μ , « Éí Ì ©A GDP @D %œØ Ì æ. × ■
- 1895–1945 5È, « ÉAÑn...z ¬È « ÉDn..... É5 Ì ©A GDP @MÚQj ■
- J « É³ AÑn...í z ¬È, . /Q\$ÀÅDw(í Å ¬\ \$μ, †Ê1945 (n...l ±) « Éí Ì ©Aß | @D %Qj

Àµν, « É5Β| DAÅO

- « ÉA¨ (Shepherd, 1993):
 1756 , 660,147A; 1893 , 2,545,731A
 « ÉA¨ Ì AÅO0.99%
 2ÅA¨ AÅO: 1750–1890, 0.27% (Maddison, 1998) ■
- « ÉA¨ òAÅO¥ø2Åí z ¬ (¬) \µ, Äœ,
 « Éí | zO ÞΒxX@D %oÓ°

- Implications: $180^\circ \leq \theta < 270^\circ$

land/labor $\propto L^{-1}$;

capital/labor $\propto K$; \rightarrow output/labor $\propto K^\alpha$

\Rightarrow $\frac{Y}{L} \propto \left(\frac{K}{L}\right)^\alpha$ GDP per worker $\propto K^\alpha$, $\frac{Y}{K} \propto K^{\alpha-1}$

- 1900 \rightarrow US GDP: ≈ 759 ; 2000 , 652 Why?

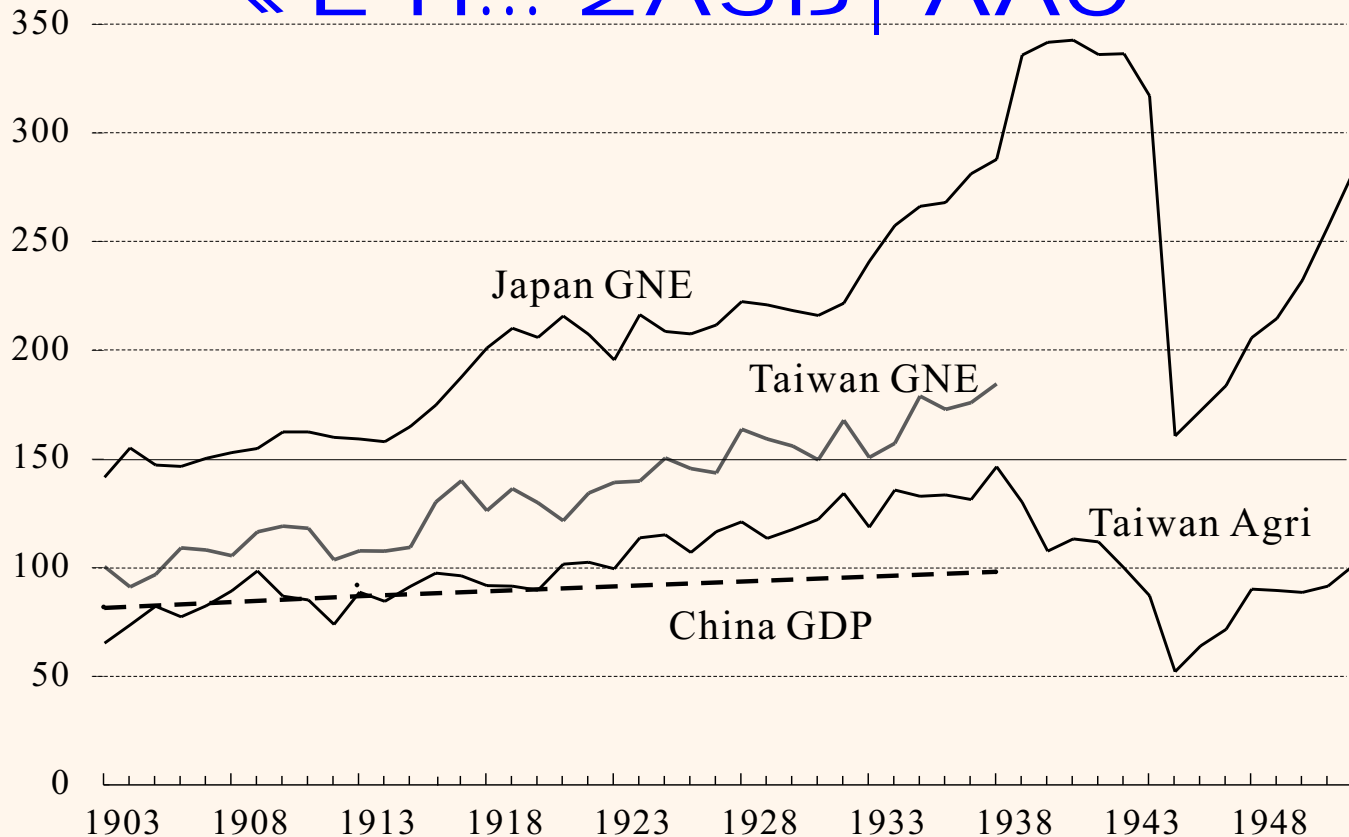
1860 \rightarrow $\frac{Y}{L} \propto \left(\frac{K}{L}\right)^\alpha$, $\frac{Y}{K} \propto K^{\alpha-1}$?

1900 \rightarrow $\frac{Y}{L} \propto \left(\frac{K}{L}\right)^\alpha$ GDP per worker, ?

« É5ß | ÅÅO: 1895–1945

- No convergence between Taiwan and Japan:
« ÉDn...5ÅÅO I ó
- 1950–70, « Éí ÅÅOEQkn...
- « É per capita output ÅÅO±òk 2Å,
consistent with Convergence theory.

« É n... 2Å5ß | AÅO



Ç 1: n... « É D2Å5 ì ©AF) 5%

n...AD« ÉAÈ5F) } °

- $f^{\wedge} m$ (1989, 1997): « ÉAF) ^a O
1930 , 70.8%; 1940 , 71.9% ■
- æQö (1997): « ÉAF) ^a O
1912–1941, 60.8% – 69.9% ■
- J « É³ AÑn...z ¬Ë, 1938 Ì ©A GDP ^a ?
u778j , 7Ý1,320j (1.7l) ■
- Y $f^{\wedge} m$ bā, 1938 « ÉA Ì ©AF) 1,011.8
j , Ñ2Åí 1.3l ■
- 2000 , 1 Å Ì ©A GDP u« Éí 1.56l , n...u
« Éí 1.31l (« Éu2Åí 6.04l)

D ! ! (n...AÊ« É5' ß

- D ! ! (, Ê« Én... \neg 40N, > A 13N ■
- 1945 10 ~ | Æ, 43.6% 5n...Aè G« É ■
- 1946 nAr ¶ ^D, ©Ac? • 1,000Æ ■
- nßTÜã° } ! ! , Ñµ (1947)
I QYnß (×PgM) « Þ156.654hj
1943 5±ñ GDP Ñ20.19hj (7.76l)

Life expectancy at birth

[5: | Þv 5ã, ?· (life expectancy at birth)

	4	1906	1919	1926–30	1936–40	1956
« É	ã	27.7	27.7	38.8	41.1	60.2
	Þ	29.0	29.6	43.1	45.7	64.2
2Å	ã	–	–	24.6*	–	46.1
	Þ	–	–	23.7*	–	48.1
n... **	ã	–	42.1	44.8	46.9	62.8
	Þ	–	43.2	46.5	49.6	66.8

$z \sim \$\mu D \% \hat{E} A \hat{A}$

- $n \dots z \sim \$\mu$: « \hat{E} per capita GDP $\hat{a} 0.33\%$, $\sim \tilde{N}$
 $\sim 2\%$
- “Making a Miracle” (Lucas, 1993). How?
- Myers (1890): $h \sim \hat{a} \hat{A}^a T \sim \sim 036\%$
- $n\mu$, $\hat{a} \% \hat{O} 6r \quad \hat{E} k 7j A \hat{A} \hat{a} \hat{S} \sim$