

Japan and the Great Divergence, 725 to 1874

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Transition to Modern Economic Growth

- Recent historical accounting studies shed a new light on the economic growth before the Industrial Revolution.
- Most countries experienced a recurrent pattern of positive growth episodes, followed by growth reversals.
- The transition to modern economic growth occurred gradually as growth reversals were dampened and eventually eliminated.
- This transition occurred first in Britain.

Japan in the pre-modern time

- Agricultural output is estimated from information in temple and government records and old encyclopedias.
- After 1600, data on crops harvested was made available by Hideyoshi's nationwide land survey (1590).

Annual growth rates of Japanese GDP per capita, 724-1874

| | Growth rate (%) |
|-----------|--------------------|
| 725-1150 | -0.02 |
| 1150-1280 | 0.11 |
| 1280-1450 | 0.00 |
| 1450-1600 | 0.05 |
| 1600-1730 | 0.00 |
| 1730-1800 | 0.29 |
| 1800-1874 | 0.22 |
| 725-1874 | 0.04 |
| 1600-1874 | 0.13 |

- Between 725 and 1730, there were recurrent cycles of acceleration and slowdown of GDP per capita.
- However, acceleration continued after 1730, which prepared for the take-off for the modern economic growth.
- Dampened growth reversals is essential for the modern economic growth to start.

GDP per capita levels in Europe and Asia, 725-1850 (1990 international dollars).

| | England/GB | Holland/NL | Italy | Spain | Japan | China | India |
|------|--------------|--------------|-------|-------|-------|-------|-------|
| 725 | | | | | 515 | | |
| 900 | | | | | 507 | | |
| 980 | | | | | | 1,247 | |
| 1020 | | | | | | 1,518 | |
| 1050 | | | | | | 1,458 | |
| 1086 | 754 | | | | | 1,204 | |
| 1120 | | | | | | 1,063 | |
| 1150 | | | | | 479 | | |
| 1280 | 679 | | | 957 | 552 | | |
| 1300 | 755 | | 1,482 | 957 | | | |
| 1348 | 777 | 876 | 1,376 | 1,030 | | | |
| 1400 | 1,090 | 1,245 | 1,601 | 885 | | 960 | |
| 1450 | 1,055 | 1,432 | 1,668 | 889 | 554 | 983 | |
| 1500 | 1,114 | 1,483 | 1,403 | 889 | | 1,127 | |
| 1570 | 1,143 | 1,783 | 1,337 | 990 | | 968 | |
| 1600 | 1,123 | 2,372 | 1,244 | 944 | 596 | 977 | 682 |
| 1650 | <u>1,110</u> | 2,171 | 1,271 | 820 | 622 | | 638 |
| 1700 | 1,563 | 2,403 | 1,350 | 880 | 610 | 841 | 622 |
| 1750 | 1,710 | <u>2,440</u> | 1,403 | 910 | 640 | 685 | 573 |
| 1800 | 2,080 | 1,752 | 1,244 | 962 | 732 | 597 | 569 |
| 1850 | 2,997 | 2,397 | 1,350 | 1,144 | 800 | 594 | 556 |

Escaping away from subsistence

- According to the World Bank, the subsistence level of annual income per capita is \$400.
- Japan's GDP per capita stagnated at the subsistence level for 725-1600.
- However, GDP per capita continued to rise from \$600 in 1600 to \$800 in 1850.

Little and Great Divergence

- Little Divergence
 - Between Britain and Holland in the North Sea area.
 - Between Italy and Spain in the Mediterranean economies.
 - Between Japan, China, and India in Asia.
- The whole story is not so simple as the Great Divergence between Europe and Asia.
- Rather both continents contained dynamic and stagnant parts.

Japan and China

- China was the richest country in the world in the 11th century, when it was ruled by the Northern Song dynasty.
- However, China continued to stagnate long after Japan became the growth leader in Asia in the 18th century.
- Japan's rapid development in the 19th century depends not only on the technology and ideas imported from Europe, but also on the dynamic internal forces that raised GDP per capita in the early modern time.

Long-run Growth of Japan

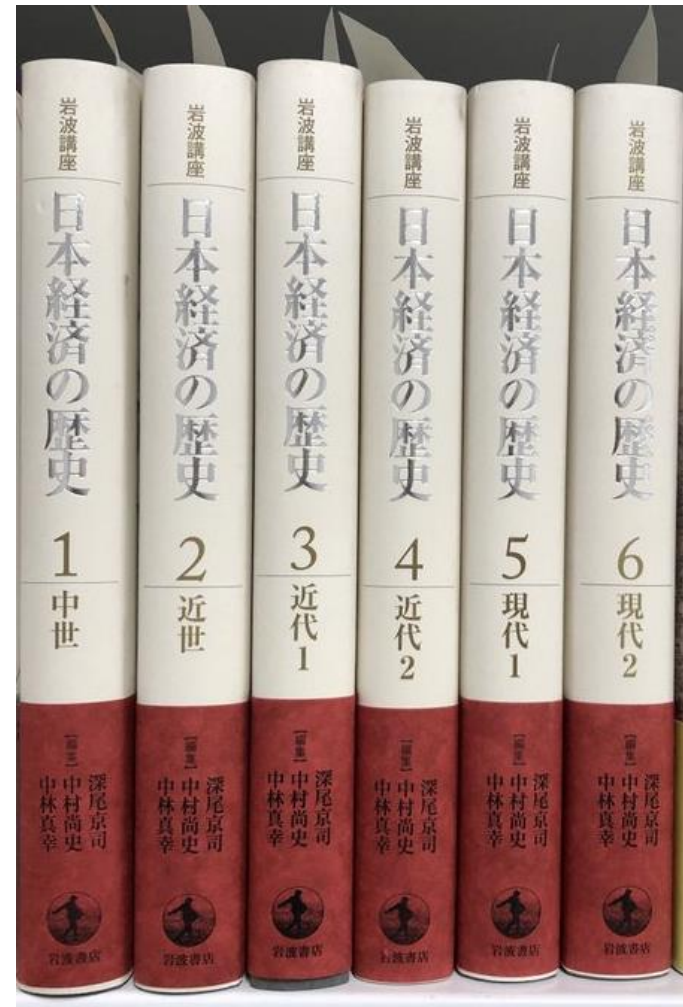
Ryoichi Imai

Based on the
lecture slide

by kyoji Fukao, 2018

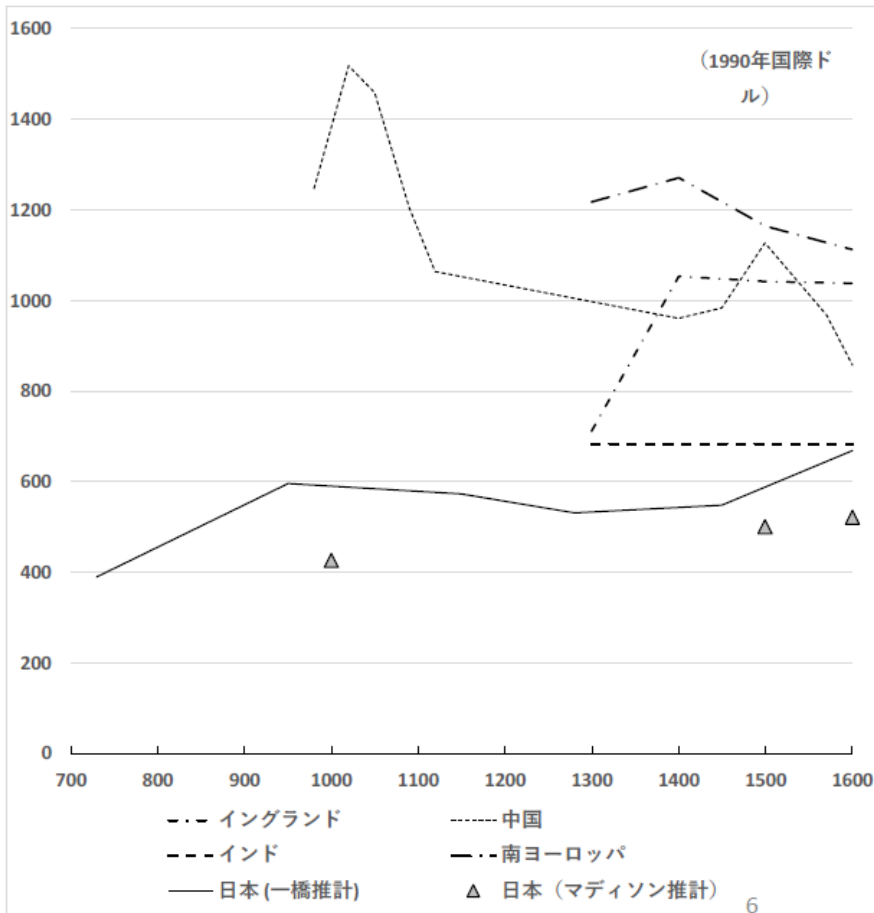
And

*History of the
Japanese Economy,*
Iwanami Shoten,
2017



Mediaeval Time

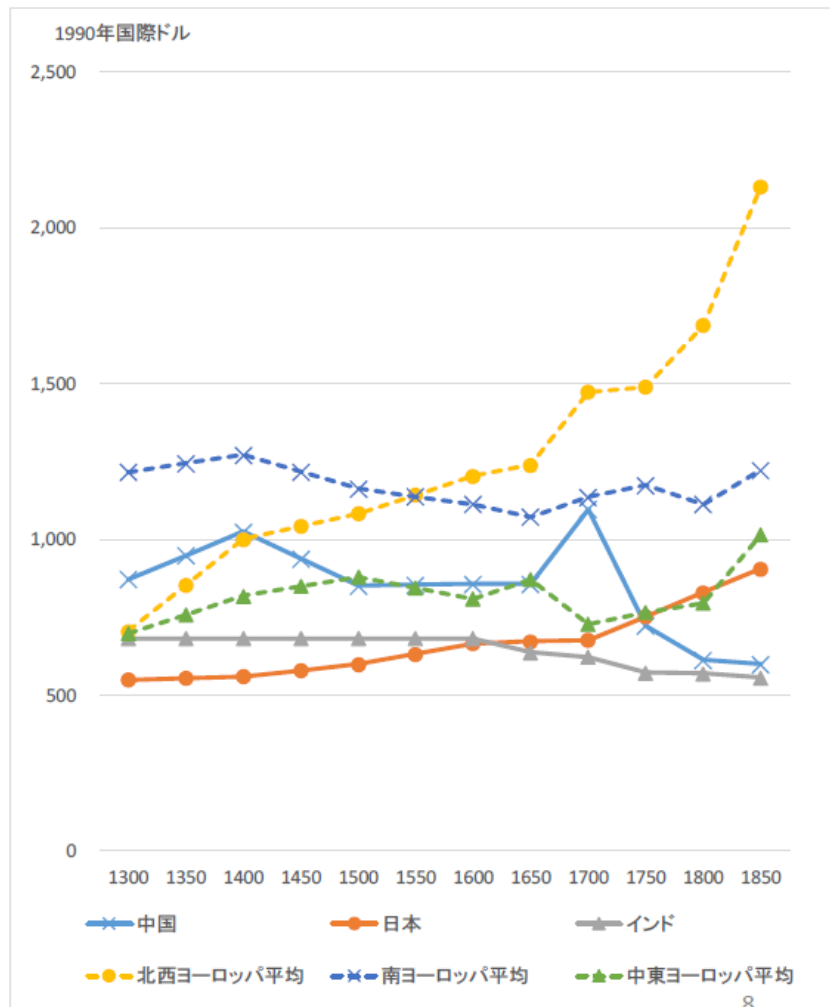
人口1人当たりGDPの推移：国際比較



- China was the richest economy around 1000, then declined.
- In mediaeval time, both northern and southern Europe was richer than China.
- Japan's GDP per capita was as half as that of England in the 16th century.

Mediaeval – Pre-Modern

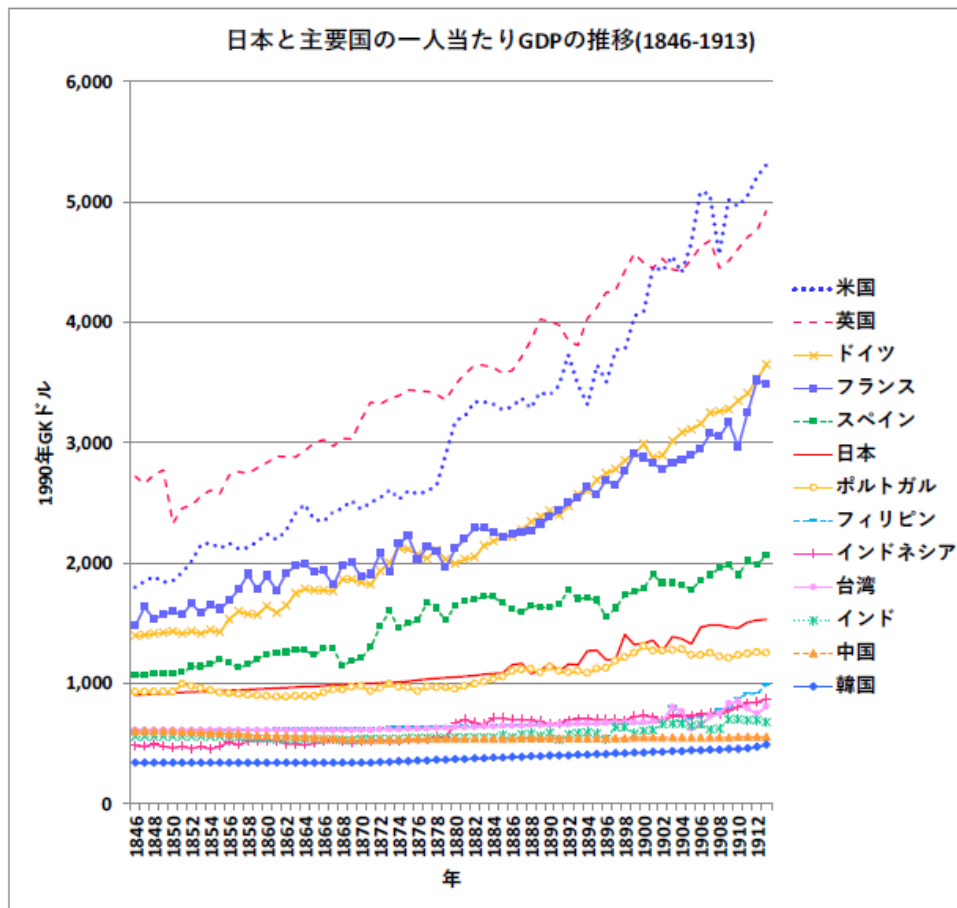
人口1人当たりGDPの推移：国際比較



- Southern Europe was richer than north-western Europe before 1550
- Since 1550, north-western Europe overwhelmed southern Europe.
- China was richer than Japan until 1750, while Japan overcame China since 1750.
- Japan was highly decentralized. Each domain had a strong incentive to develop economy.
- China was slow in innovation due to the high cost of concentration of power to the emperor.

Meiji Era

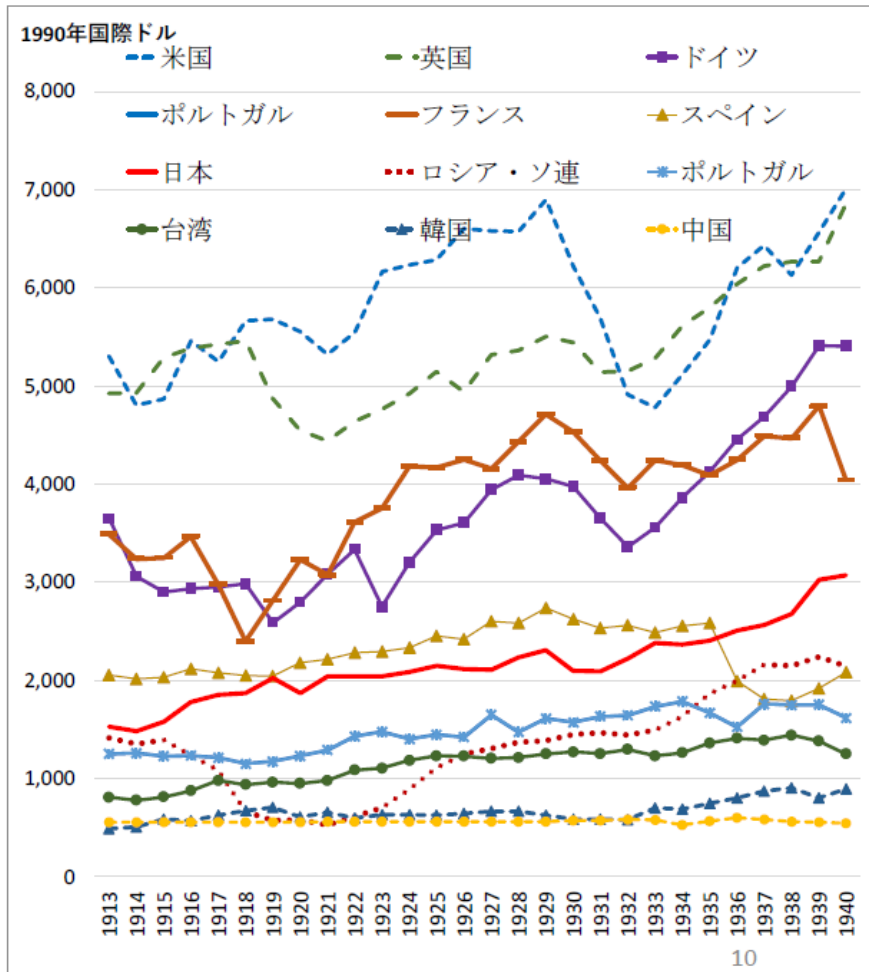
人口1人あたりGDPの推移：国際比較



- USA and UK led had driven the global economy until the WW1. Their GDP per capita was \$2000 in 1850 and \$4500 in 1910.
- France and Germany followed USA and UK. Their GDP per capita was \$1500 in 1850 to &3500 in 1910.
- Japan's GDP per capita was over \$1000 In 1870 and still around &1500 in 1910.
- China's GDP per capita was less than half of Japan's GDP per capita.

The Inter-War period

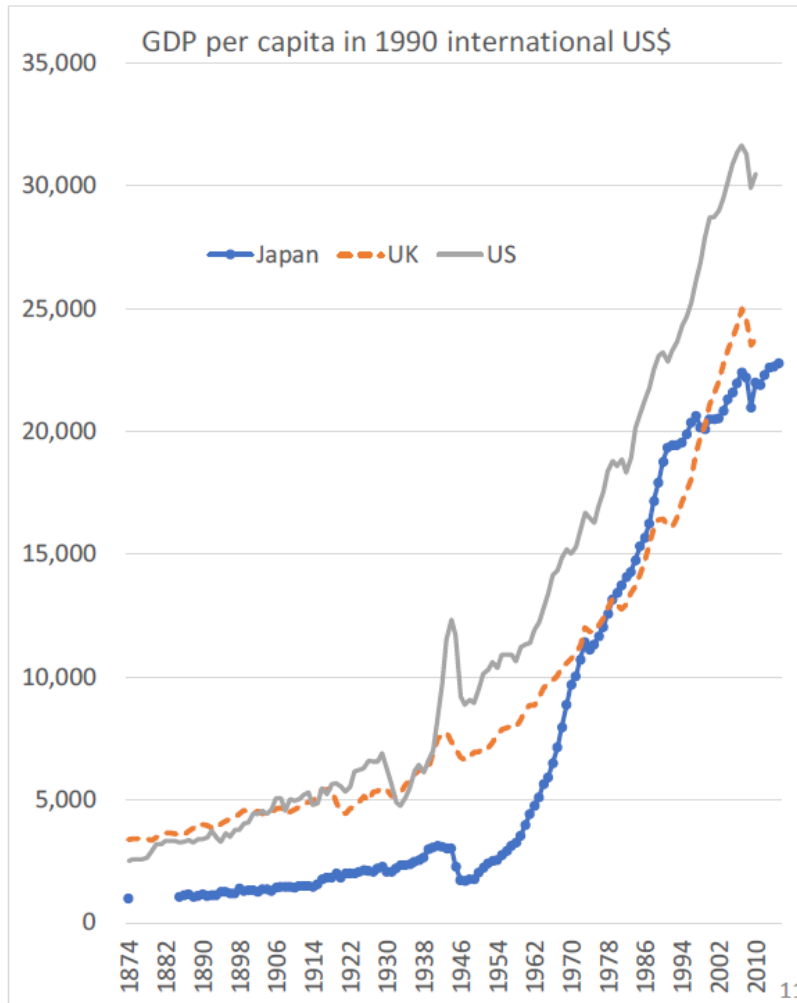
人口1人当たりGDPの推移：国際比較



- Both UK and US started as rich as 5000 in 1910, and achieved GDP per capita 7000 in 1940.
- France and Germany started at the comparable GDP level in 1910, but Germany overwhelmed France in 1940. (GDP per capita = 3000 to 5000).
- Japan's GDP per capita was 1500 in 1914, while it reached to 3000.
- American and European economies was seriously damaged by the Great Depression, which did not hurt Japan so much.
- China continued to stagnated around 500 of GDP per capita.

The Post-War period

人口1人当たりGDPの推移：国際比較



- The economic growth of the leading economies was amazing.
- Among them Japan seemed to catch up USA until 1990.
- Since 1990, Japan's GDP per capita growth slowed down, partly because of population aging.

Overview

付表2 近世の全国人口・都市人口，実質 GDP，産業構造，1600-1874 年

A. 推移

| A. 推移 | | | | | 実質粗付加価値額（石高ベース：100 万石） | | | |
|-------|-------------------|-------------------|-------------|--------------------------|------------------------------|--------|--------|-----------|
| | 全国人口 (1,000 人) | 都市人口 (1,000 人) | 都市化率 (%) | 人口密度 (人/町) | 第一次部門 | 第二次部門 | 第三次部門 | 計(実質 GDP) |
| 1600 | 17.0 | 1.1 | 6.4 | 0.59 | 30.7 | 3.6 | 7.3 | 41.6 |
| 1721 | 31.29 | 3.96 | 12.6 | 1.09 | 48.81 | 8.43 | 20.36 | 77.60 |
| 1804 | 30.69 | 3.94 | 12.8 | 1.06 | 58.80 | 10.09 | 24.40 | 93.30 |
| 1846 | 32.21 | 3.96 | 12.3 | 1.12 | 67.06 | 11.70 | 28.14 | 106.90 |
| 1874 | 34.840 | 3.588 | 10.3 | 1.20 | 77.103 | 15.888 | 36.551 | 129.541 |
| | 部門粗付加価値のシェア (%) | | | 人口 1 人 あたり GDP (石) | 人口 1 人あたり GDP(1990 年国際ドル) | | | |
| | 第一次 | 第二次 | 第三次 | | | | | |
| 1600 | 73.7 | 8.8 | 17.5 | 2.45 | 667 | | | |
| 1721 | 62.9 | 10.9 | 26.2 | 2.48 | 676 | | | |
| 1804 | 63.0 | 10.8 | 26.2 | 3.04 | 828 | | | |
| 1846 | 62.7 | 10.9 | 26.3 | 3.32 | 904 | | | |
| 1874 | 59.5 | 12.3 | 28.2 | 3.72 | 1,013 | | | |

Overview (1600-1874)

- Population became twice (17mil->34mil).
- Urban concentration of population (6%->10%)
- Aggregate GDP measured in rice became triple (41->129).
- Share of primary sector (73%->59%)
- Share of secondary sector (8%->12%)
- Share of tertiary sector (17%->28%)
- GDP per capita in 1990 dollars (667->1013)

Growth Rates

| B. 平均成長率 | | | | | | | (年率, %) |
|-----------|-------------|-------------|-------------|-------|-------|-----------|-------------------|
| | 全国人口 (%) | 都市人口 (%) | 実質粗付加価値額(%) | | | | 人口1人あたり 実質 GDP |
| | | | 第一次部門 | 第二次部門 | 第三次部門 | 計(実質 GDP) | |
| 1600-1721 | 0.51 | 1.07 | 0.38 | 0.71 | 0.85 | 0.52 | 0.01 |
| 1721-1804 | -0.02 | -0.01 | 0.22 | 0.22 | 0.22 | 0.22 | 0.25 |
| 1804-1846 | 0.12 | 0.01 | 0.31 | 0.35 | 0.34 | 0.32 | 0.21 |
| 1846-1874 | 0.28 | -0.35 | 0.50 | 1.10 | 0.94 | 0.69 | 0.41 |

注・出典) 1874 年のみ北海道・沖縄を含む。推計方法・資料については、全国人口は第 1 章表 1-1, 都市人口は第 1 章表 1-3(ただし, ベンチマーク年を全国人口にあわせて推計している), 実質粗付加価値額は序章第 1 節を参照。

Fukao et al (2017) History of the Japanese Economy, Volume 2, Iwanami Shoten, Tokyo

- Population grew rapidly in the 17th century.
- Population growth rate declined in the middle of the Edo era.
- There is no stagnation.
- Growth in GDP per capita seems to be accelerating.

International Comparison

付表3 人口1人あたり GDP の推移と国際比較

(単位：1990 年国際ドル)

| | 1300 | 1400 | 1500 | 1600 | 1650 | 1700 | 1750 | 1800 | 1850 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 英国 | 711 | 1,053 | 1,041 | 1,037 | 887 | 1,513 | 1,695 | 2,097 | 2,718 |
| オランダ | 674 | 920 | 1,119 | 2,049 | 2,071 | 1,620 | 1,812 | 2,008 | 2,371 |
| ベルギー | 896 | 1,223 | 1,487 | 1,589 | 1,445 | 1,375 | 1,361 | 1,479 | 1,847 |
| スウェーデン | 560 | 768 | 768 | 768 | 974 | 1,352 | 981 | 864 | 1,086 |
| 北西ヨーロッパ | 705 | 1,000 | 1,083 | 1,203 | 1,239 | 1,473 | 1,489 | 1,686 | 2,132 |
| イタリア | 1,477 | 1,596 | 1,398 | 1,243 | 1,275 | 1,346 | 1,398 | 1,243 | 1,350 |
| スペイン | 864 | 819 | 846 | 892 | 687 | 814 | 783 | 916 | 1,079 |
| ポルトガル | 742 | 742 | 742 | 933 | 1,059 | 898 | 1,216 | 1,002 | 923 |
| 南ヨーロッパ | 1,216 | 1,271 | 1,163 | 1,112 | 1,072 | 1,135 | 1,173 | 1,113 | 1,222 |
| ドイツ | 839 | 1,146 | 1,146 | 807 | 948 | 939 | 1,050 | 986 | 1,428 |
| ポーランド | 562 | 562 | 702 | 810 | 810 | 569 | 569 | 634 | 634 |
| 中東ヨーロッパ | 698 | 819 | 880 | 809 | 871 | 728 | 766 | 796 | 1,015 |
| 中国 | 1,076 | 1,032 | 990 | 865 | 977 | 1,103 | 727 | 614 | 600 |
| インド | 682 | 682 | 682 | 682 | 638 | 622 | 573 | 569 | 556 |
| 日本 | 539 | 560 | 599 | 667 | 672 | 677 | 753 | 829 | 905 |
| アジア | 854 | 836 | 819 | 775 | 798 | 827 | 663 | 610 | 599 |

注・出典) 日本は一橋推計, 中国は Broadberry, Guan, and Li (2017), その他の国・地域は Broadberry (2016). 地域別の数値は人口で加重した地域全体の平均値となっているが, アジアのみ一橋推計を利用して再計算してある.

International Comparison (1300-1850)

- Great Divergence is observed between the west and the east: The western economy overwhelmed the eastern one.
- Regional divergence in the west: The northwestern Europe (UK and Netherland) caught up the southern Europe (Italy and Spain) in 16th century , and pulled far ahead of the latter since then.
- Regional divergence in the east: Japan caught up and ran ahead of China, which shrank since the medieval to pre-modern periods.