

Seven Centuries of European Economic Growth and Decline

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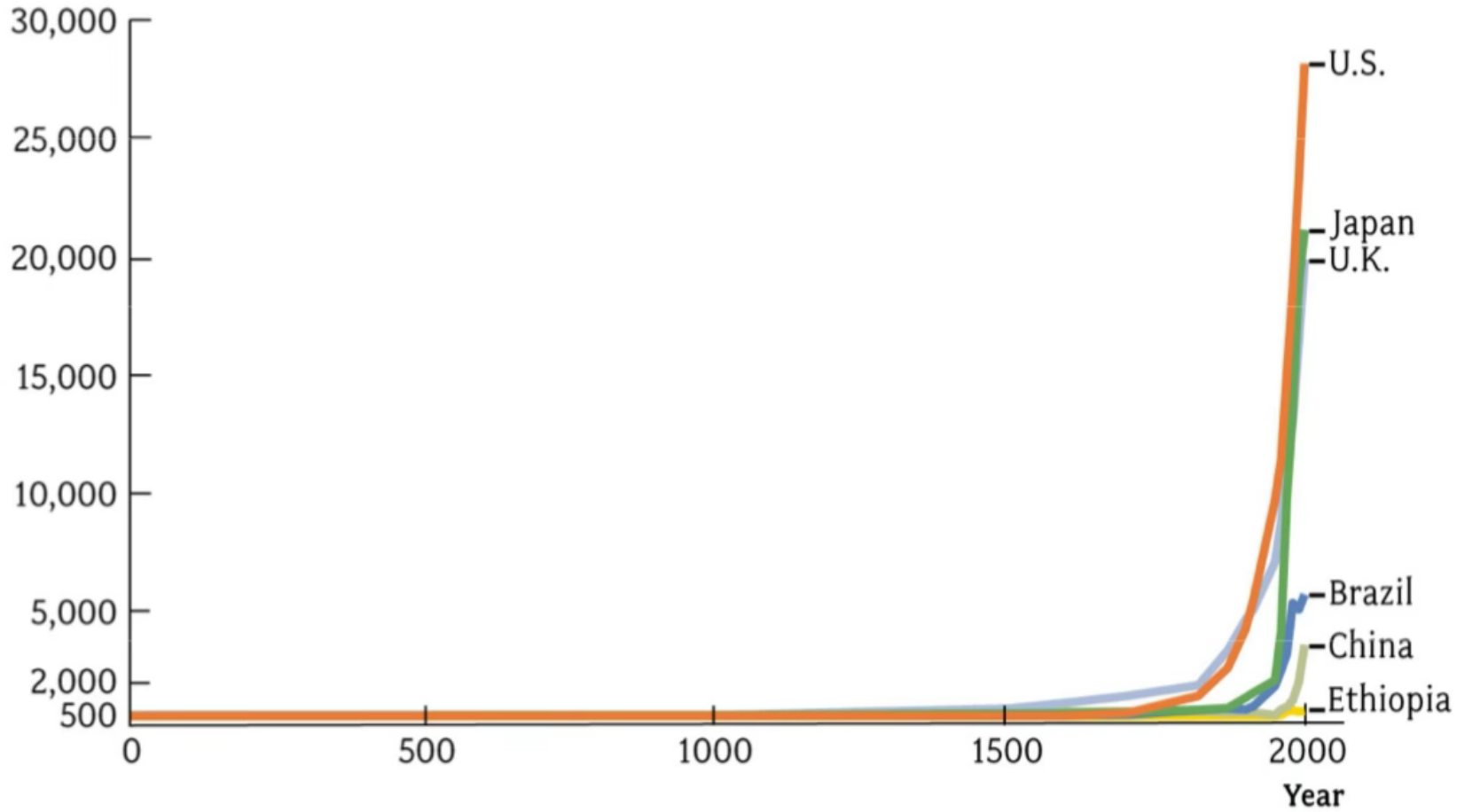
Presented by Bhimraj Bhuller

“From the earliest times of which we have record, there was no very great change in the standard of life of the average man living in the civilized centers of the Earth”

John Maynard Keynes (1931) in his essay “Economic Possibilities for Our Grandchildren”

The Hockey Stick (Jones 2008)

Per capita GDP
(1990 dollars)



Keynes' Account

A point of departure

- Keynes' nuanced account has become more *stylized*. As one example, Hansen and Prescott (2002, pp. 1214-15) write that **“sustained growth has existed for at most the past two centuries, while the millennia prior have been characterized by stagnation with no significant permanent growth in living standards”**
- Yet, qualitative accounts seem to indicate that the **Renaissance in Italy, the Golden Age in Holland**, reflected phases of economic development, with the expansion of trade and urbanization, and developments in the arts and sciences prior to the Industrial Revolution (Goldthwaite 2009)

The paper

Goal

- Builds on bold empirical research programs by economic historians to explore archives and combine datasets (*time series*) in order to **offer an alternative interpretation of very long-run European economic development**



The FOUR sections of the paper

1st section

- 1st section: **Rejects the received wisdom that economies in pre-Industrial Revolution Europe were stagnant**
 - Data shows trends in GDP per capita in key European economies before the Industrial Revolution, identifying episodes of economic growth in specific countries, although not sustained. Data also shows period of substantial economic decline. Hence, rather than being stagnant, it experienced a great deal of change

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2nd, 3rd, and 4th section

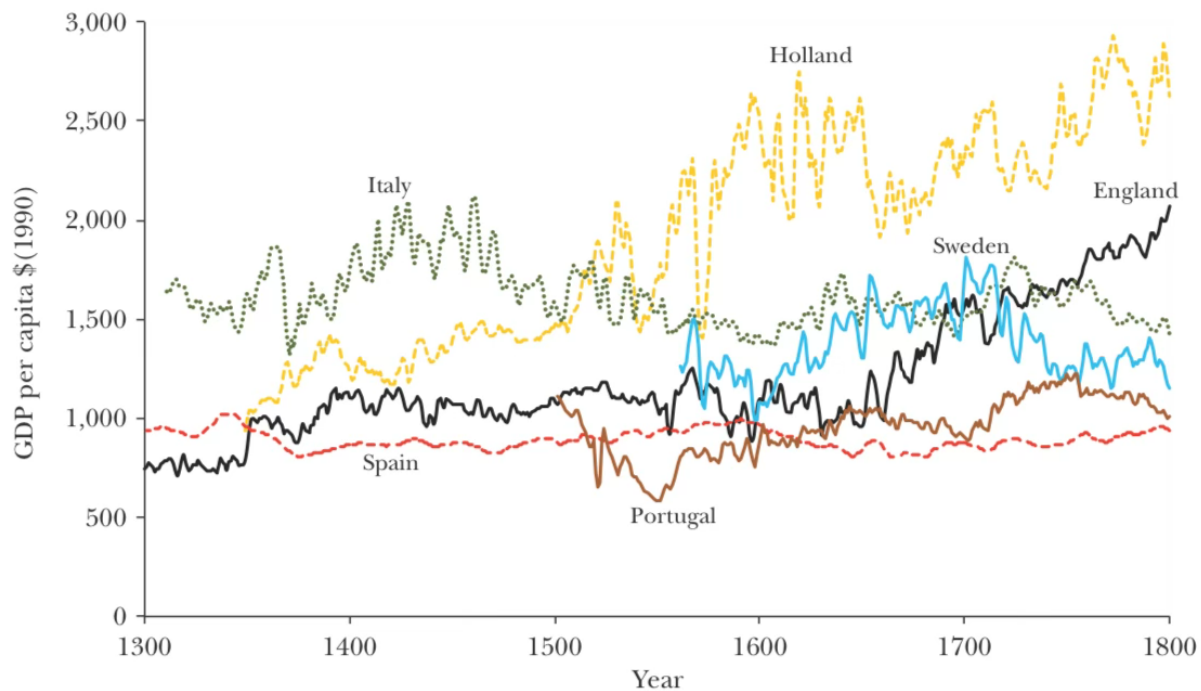
- 2nd section: **The likelihood of being in a phase of growth increased and the risk of being in a phase of decline decreased in the 19th and 20th centuries**
- 3rd section: **Shows divergence when a new economic leader moved ahead, followed by a period of convergence and catch-up by others**
- 4th section: **Presents main data sources and methods used to construct the GDP per capita estimates from the late medieval and early modern eras in the 19th century in six European economies:** (England, Holland, Italy, Spain, Sweden, and Portugal)

“Growth Episodes” and “Growth Reversals” in Europe before 1800

Figure 1

GDP per Capita in Selected European Economies, 1300–1800

(three-year average; Spain eleven-year average)



Sources: England/Great Britain (Broadberry et al. 2011); Italy (Malanima 2011); Holland (van Zanden and van Leeuwen 2012); Sweden (Schön and Krantz 2012); Spain (Álvarez-Nogal and Prados de la Escosura 2013); Portugal (Reis, Martins, and Costa 2013; Palma and Reis 2014).

Note: Figure 1 presents GDP per capita for six European countries before the nineteenth century: England (from 1300 until 1700) and Great Britain afterwards, Holland (starting in 1348), Italy (specifically, Central and Northern Italian States from 1310), Spain (since 1300), Sweden (beginning in 1560), and Portugal (from 1500).

The four major “growth episodes”

The case of Italy

- Italy was the first to have experienced a per capita growth episode as population declined sharply after the Black Death (time here), leaving survivors with more land and capital per person
- Moreover, Italian cities expanded their pivotal role in trade links in Europe and Asia (Hodget 2006)
- Between 1350 and 1420, the level of per capital income rose by 40%, (0.8% per year over 70 years)

Cont'd

The case of Holland and Sweden

- Holland followed with a spectacular 16th century
- Per capita GDP rose by 70% from 1505 to 1595 as the Dutch trade expanded rapidly and the economic structure shifted away from agricultural production towards higher-value commodities (translating into a growth rate of 1.3% per annum during this period)
- A decade later, Sweden started developing through its control of the Baltic trade, and its per capita GDP grew 41% in the first half of the 17th century

Cont'd

The case of England

- In the second half of the 17th century, England became the next vibrant economy - its per capita income growing by more than 50% during this period
- This 'growth episode' followed the end of a Civil War that marked an important step on the road to constitutional monarchy, culminating in the Glorious Revolution of 1688
- However, population stagnated during the second half of the 17th century, so it was only after 1700 that Great Britain achieved modern economic growth with the coexistence of population and per capita GDP growth

At practically every point during the 16th and 17th century, at least one economy in Europe was experiencing a growth episode

A comment on *spillovers* and *emulation*

Possible extensions

- It would be worth investigating in greater detail the scale of spillovers to trade partners and the degree of emulation
 - For instance, England was highly depended on Swedish iron imports in the 17th century and sought to emulate Holland's economic policies
 - Until the 16th century, no two economies of the six shown experienced simultaneous major phases of economic growth

The four major “growth reversals”

The case of Italy

- Italy suffered most from periods of major economic decline, from its early period of glory
- Italy experienced three periods of substantial decline of around 20% of per capita GDP, its markets remained fragmented between small states, and the focus of European trade shifted from the Mediterranean to the Atlantic

400 years

Is the time it took for Italy to regain GDP per capita levels after the collapse of per capita incomes in Italy in the mid-fifteenth century

Cont'd

The case of Portugal, Spain, Sweden

- Portugal suffered a dramatic collapse of roughly 40% of per capital GDP in the first half of the sixteenth century, associated with poor weather conditions (Reis, Martins, and Costa 2013) - though it recovered partially in the subsequent two decades
 - After a period of growth in the first half of the 18th century, Portugal lost 16% of per capita GDP in 3 years and then spiraled downwards following the Great Earthquake of Lisbon in 1755
- Spain also declined from the end of the sixteenth century - which was associated with the resource curse resulting from silver mining in the colonies
- Sweden suffered a collapse in the early 18th century, as it lost its great power status, with per capita GDP dropping almost 30% in three decades

“A[ll] happy families are alike; each unhappy family is unhappy in its own way”

Leo Tolstoy, *Anna Karenina*

The Long Road to Sustained Growth

A step back

Thought question

- Despite the different national patterns, did a general change in growth rates occur over time?
- In particular, one might provisionally expect that there were more phases of growth and fewer phases of decline in later centuries



Initial thoughts

- In looking at Figure 1, the 17th and 18th century perhaps show greater growth, but they also have more and better data
- Identifying phases of growth is more challenging when analyzing mostly agrarian economies or period before reliable statistics methods existed, because of the high volatility in the GDP per capita series.
- Volatility can result either from weather-sensitive agricultural production or the estimation methods

As received wisdom suggests, sustained economic growth seems to be a more recent phenomenon

- Using a criterion of three consecutive years with less than -1.5% growth, there were 47 downturns across six countries before the 19th century, compared to only eight after 1800
- From the 15th to the 18th century, countries averaged two downturns per century, while the 19th and 20th centuries saw less than one downturn per century.
- The percentage of years with downturns decreased from 8% in the 15th–16th centuries to 4–5% in the 17th–18th centuries, and further to 2–3% in the 19th–20th centuries.

Table 1

Periods of Economic Growth and Decline across Six Economies, 1300–2000

(England/Great Britain, Italy, Holland, Sweden, Spain, and Portugal)

	<i># of phases of 4-year consecutive 1.5% annual growth rate</i>	<i>% of years in 4-year consecutive 1.5% annual growth rate</i>	<i># of phases of 3-year consecutive -1.5% annual growth rate</i>	<i>% of years in 3-year consecutive -1.5% annual growth rate</i>
1300s	1	1.1%	2	1.6%
1400s	1	1.0%	10	8.0%
1500s	3	2.3%	14	8.7%
1600s	2	1.3%	9	4.3%
1700s	2	1.3%	12	5.8%
1800s	8	5.3%	4	2.0%
1900s	38	40.0%	4	3.2%

Source: Authors.

Notes: Column 1 represents the number of times countries in the group had four consecutive years of at least 1.5 percent growth in GDP per capita. That is, if this were to happen once in one country and twice in another country within a certain century, it would equal three times in that century. Column 2 shows the same as a percentage of the total number of years (for which data exists) during the specified century. Column 3 represents the number of times a country had three consecutive years of -1.5 percent (or lower) growth rates. Column 4 shows the same as column 3 as a percentage of total number of years.

Very Long-Run Cycles of Convergence and Divergence

A central question

What does the very long-run data presented here have to say about the process of convergence?

- Convergence and divergence of GDP per capita in the very long run is a central question in the literature on economic development
- For instance, the classic Solow (1956) growth model predicts convergence of less developed economies with leading economies.
- From a very-long run perspective, there has been a great deal of debate about the Great Divergence, when the European economies overtook Asian economies like China over the period from the 16th to the 19th century.

Understanding Limits

Historical subsamples

- With evidence for only a small sample economies around the world, drawing conclusions about very long-run divergence and convergence at a global scale is inappropriate
 - ***In fact, DeLong (1988) showed that countries for which historical data exists are successful economies with high GDP per capital, and therefore, drawing global conclusions based on a historical sub-sample can be very misleading***
- Hence, the focus in the following discussion is on regional European convergence or divergence
- Amongst these 6 European nations, there was considerable catching up and falling behind of particular nations over this 500 year period
- So, at least, tentative conclusions about convergence and divergence for European economies

A “Little Divergence”

- The Great Divergence between Europe and Asia and the Little Divergence between NW Europe and the rest of Europe from the 16th century
 - If interested, Broadberry (2013) discusses how particular economies were affected by **pivotal shocks (“critical junctures”)** associated with the Black Death and new trade routes between ER, Asia, and the Americas



Additional observations

Related to Convergence and Divergence across countries

- **Observations on Convergence and Divergence:** Comparing GDP per capita of leading and following economies reveals patterns of convergence and divergence across centuries. For instance, in the 14th and 15th centuries, Europe's average GDP per capita was 50–60% of the leading economy (Italy). By 1500, it rose to 75%, fell to 42% by 1600 (Holland as the leader), rose to 61% by 1700, dropped to 50% by 1800 (with Britain's supremacy), and declined to 41% by 1900. By 2000, it increased again to 84% (Netherlands as the leader).
- **Cycles of Divergence and Convergence:** Over the long run, European economies experienced cycles of divergence (14th, 16th, and 18th centuries) and convergence (15th, 17th, and 20th centuries).
- **Income Mobility and Stratification:** While some European economies improved their relative positions over time, leaders often maintained their status for centuries, and poorer economies remained stagnant. This stratification created "clubs" of economies with limited mobility between them, highlighting structural barriers and opportunities within Europe's economic hierarchy.

The Data

Methodology

A glimpse

- The data set presents six original datasets constructed within last four years: England, Holland, Northern and Central Italy, Spain, Sweden, and Portugal
- Each time series starts and ends in different years and uses a different combination of methods to estimate output
- The methods of data construction for agricultural and nonagricultural sectors
- 3 main methods to construct historical estimates of GDP and GDP per capital: methods based of direct measures, income, and indirect methods (focusing on demand or using proxies)

Table 2

A Broad Classification of Methods for Estimating GDP per Capita in Selected European Countries

	<i>Period</i>	<i>Agriculture</i>	<i>Industry</i>	<i>Service</i>
England/Great Britain	1270–1870	Output	Output	Output/Proxies
Holland	1348–1510	Demand	Proxies	Proxies
	1510–1807	Output	Output	Output
Italy (Central & Northern Regions)	1310–1861	Demand	Proxies	Proxies
Spain	1254–1850	Demand	Proxies	Proxies
Sweden	1560–1800	Demand	Output	Proxies
Portugal	1500–1850	Demand	Proxies	Proxies

Sources: England/Great Britain (Broadberry et al. 2011); Italy (Malanima 2011); Holland (van Zanden and van Leeuwen 2012); Sweden (Schön and Krantz 2012); Spain (Álvarez-Nogal and Prados de la Escosura 2013); Portugal (Reis, Martins, and Costa 2013; Palma and Reis 2014).

The *concern* in using wage-based approaches

- **Incomplete accounting of work effort:** Wage-based methods often fail to account for variations in hours worked per day and days worked per year
- **Divergence from GDP per capita:** Wage-based estimates can diverge significantly from GDP trends due to income distribution, labor supply, and relative price changes (Angeles 2008)
- The generally preferred approach to estimating national income is the output approach. For instance, the rich accounts of British economic history offered an opportunity to estimate pre-1870 annual GDP using an output approach that separates agricultural, industrial, and service sectors

Example: The case of the English

Measuring Agricultural Output

3 databases

- For medieval agriculture, three data sources are available
 - The Medieval Accounts Database of Campbell (large sample of manorial accounts)
 - The Early Modern Probate Inventories Database (mid 16th to mid 18th century)
 - The Modern Farm Accounts Database of Turner, Beckett, and Arron (1720-1913) is based on a large sample of accounts produced by farmers and kept in local record offices
- **Agriculture outputs were calculated by multiplying the acreage for each crop by the yield per acre (to estimate total acreage)**
- **For pastoral output, they multiplied the # of animals by the share producing and their yields**
- **Prices for individual crops and animal products are used to convert the output into current prices and create weights for the agricultural real output index**

Measuring Industrial Output

- Wool and woolen cloth: crucial sources included Carus-Wilson and Coleman (1963)
- Iron: King (2005) based on a reconstruction of blast furnaces, capacity, and knowledge of when they were in blast
- Tin: Hatcher (1973) based on receipts on coinage dues
- Construction: house building index
- Series are combined to generate an index of industrial production from 1264 to 1700

Measuring Service Output

- Service sector broken down to commerce, housing, domestic services, and government
- Commerce indicator: estimates on domestic trade, international trade), freight transport, and financial services.
- Housing and domestic services were assumed to grow at the same rate as population
- Government activity is based on its revenue - from annual exchequer accounts back to the early twelfth century
- ***Three real output series for the agricultural, industrial, and service sectors were combined using a set of sectoral weights that capture the changing structure of the economy***

The case of the Italians

How can researchers construct these GDP per capita estimates from the late medieval and early modern eras until the nineteenth century?

Conclusion

The received wisdom that preindustrial economies more than two centuries ago were stagnant is not true.

Exciting advances

In our understanding of very long-run economic growth

- These economies had major and minor phases of economic growth before the nineteenth century, some lasting more than 50 years, which often led to substantial long-run improvements in per capita income—even if these growth rates were not ultimately sustained
- The very long-run historical evidence presented here resolves what had previously appeared to be a major difference between recent developing economy growth patterns and the received wisdom on preindustrial patterns.
- The findings here suggest that historical patterns of economic growth and decline in preindustrial Europe may have been broadly similar to those of present-day developing economies—another area of ongoing and future research.

Relating to the Great Divergence

How growth dynamics relate to the Great Divergence

- Research using very-long run data in its early stages, it is already offering some insight and challenges for how we think about the processes of economic growth
- Each substantial peak and trough in per capita income implied a process of change, with agents adjusting to new incentives, constraints, even adopting substantially new economic systems every 50 to 100 years
- **An avenue for future research:** how the dynamism of the rises and falls in European economies from the 14th century may offer a clue to the Great Divergence between Europe and China during this time period

Extensions

The challenge of growing beyond a certain point

- Preindustrial Europe also showed patterns of divergence and convergence
 - Divergence was associated with a new leading economy
 - Convergence was associated with phases of economic stagnation or decline amongst leading economies
- World economic leaders at one time often seem to struggle to grow beyond a certain range of economic development
- *It is intriguing to speculate as to whether England, the world leader in per capita GDP in the late nineteenth century, might have stagnated had other economies—like the United States and later Germany—not overtaken it and had England been unable to import new technologies, modes of management, and institutions.*