

Lecture 1

Industrial revolution, industrialisation, or economic development?

A mostly quantitative portrait of economic change in B&F over the period.

1. Prefatory remarks on problems and periodisation.
2. International comparisons
 - a. GDP per capita
 - b. Real wages
 - c. Structure of the employment
 - d. Broader range of indicators
3. Traditional, anglo-centric account of Industrial Revolution.
4. Revisionist views of British industrialisation

1. Problems and periodization.

A British narrative: the Industrial Revolution



Coalbrookdale by Night, de Louthenberg, 1801

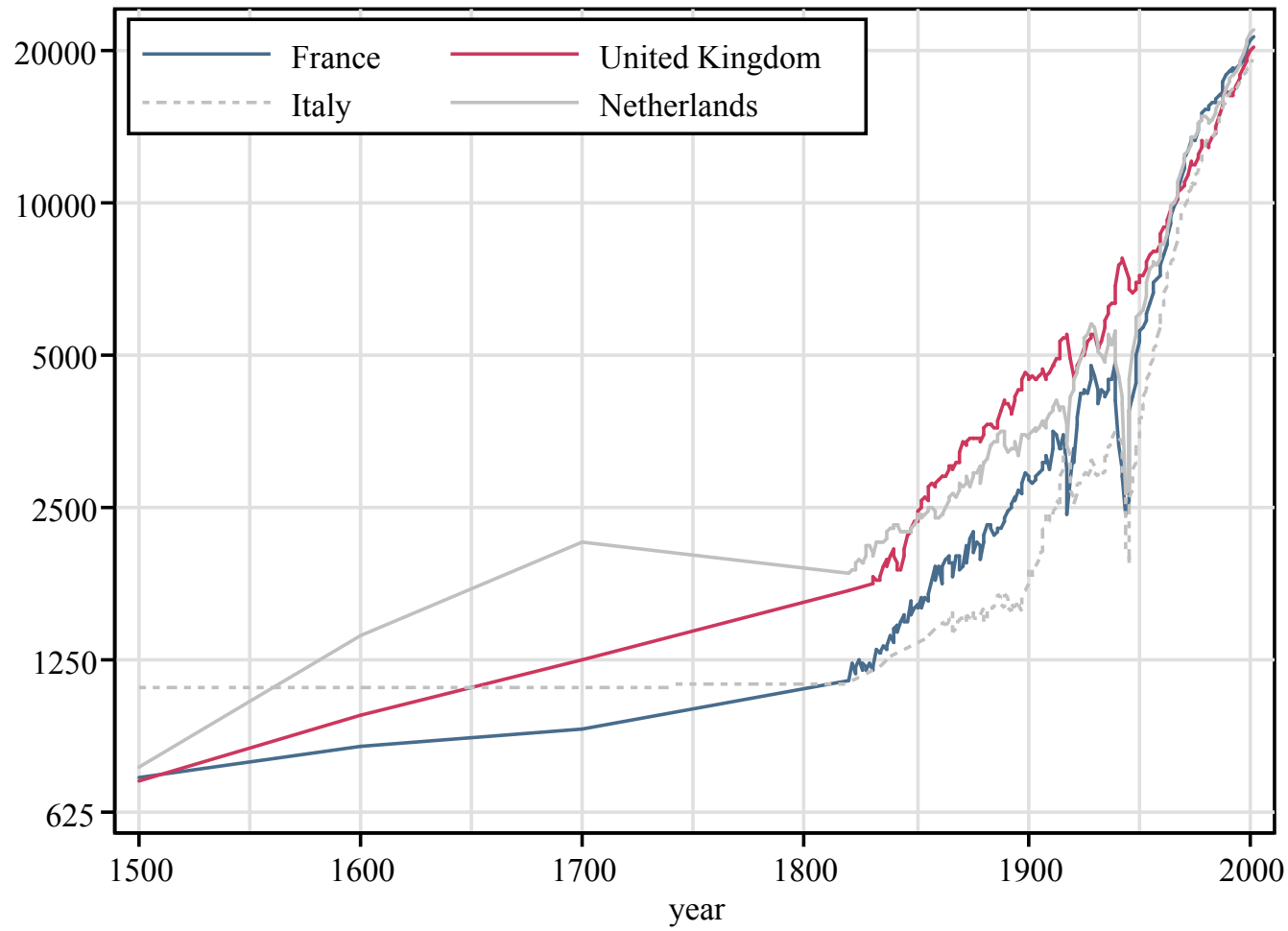
A French narrative: the Revolution of 1789



Liberty Leading the People, de la Croix, 1830

2. International comparisons

a. GDP per capita



Comments

Italy richest in Renaissance, but very long term stagnation -- all the way to mid-19c.

NL takes over as early-modern leader, but then stagnates throughout long 18c. Slower growing than B or F in 19c.

Britain opens lead w.r.t. France early, by 1700.

Post 1700 Britain and France seem to move roughly in parallel. France keeps up, but not able to close gap until after WWII.

Everyone seems to show a marked acceleration from 1820, but that precise timing is a figment of the low frequency data and the particular countries here.

Another common acceleration after WWII – this one is real.

Notes

Source is Maddison.

Logarithmic scale

Estimates expressed in “1990 international dollars”

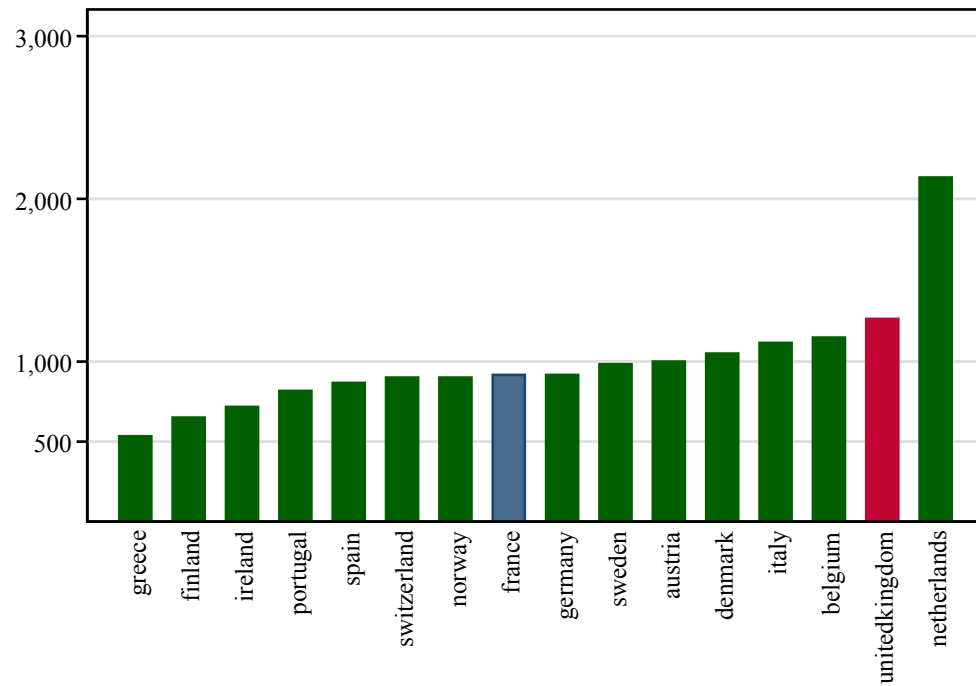
Estimates in national currencies are brought to a comparable basis, in a fairly sophisticated way based on PPP, in 1990. National time series of real output then anchored to those 1990 figures.

Before 19c, the estimates are nothing more than educated guesses.

Chart shows interpolation between 1500-1600, 1600-1700, 1700-1820.

There are newer and probably better estimates for a number of countries but not France.

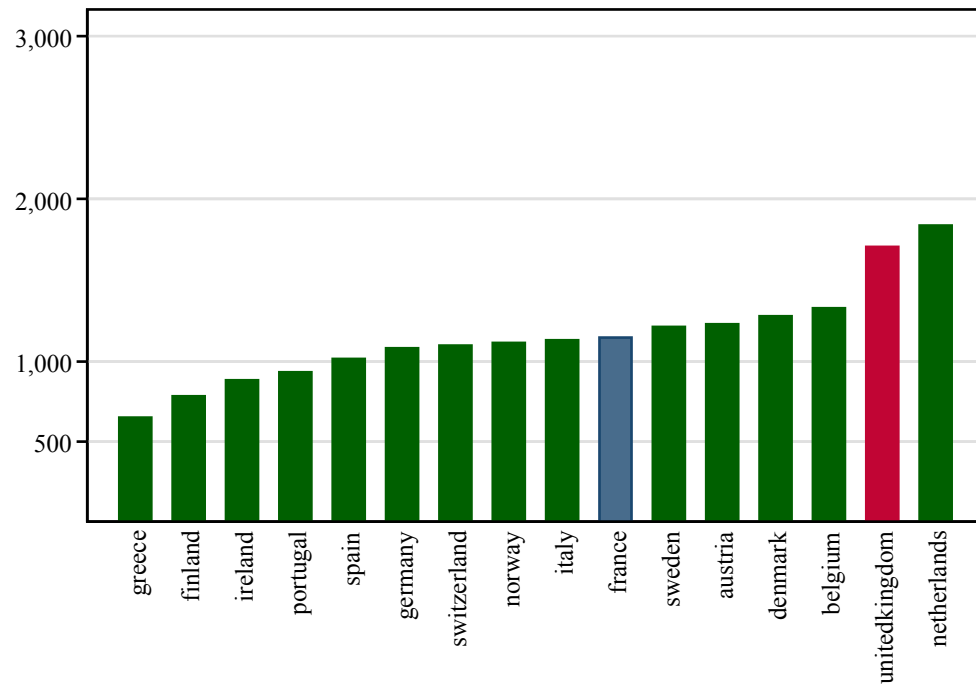
1700



Circa 1700, W. Europe average about 1000

8 countries in 900-1100 range (+/- 10% around mean).

1820

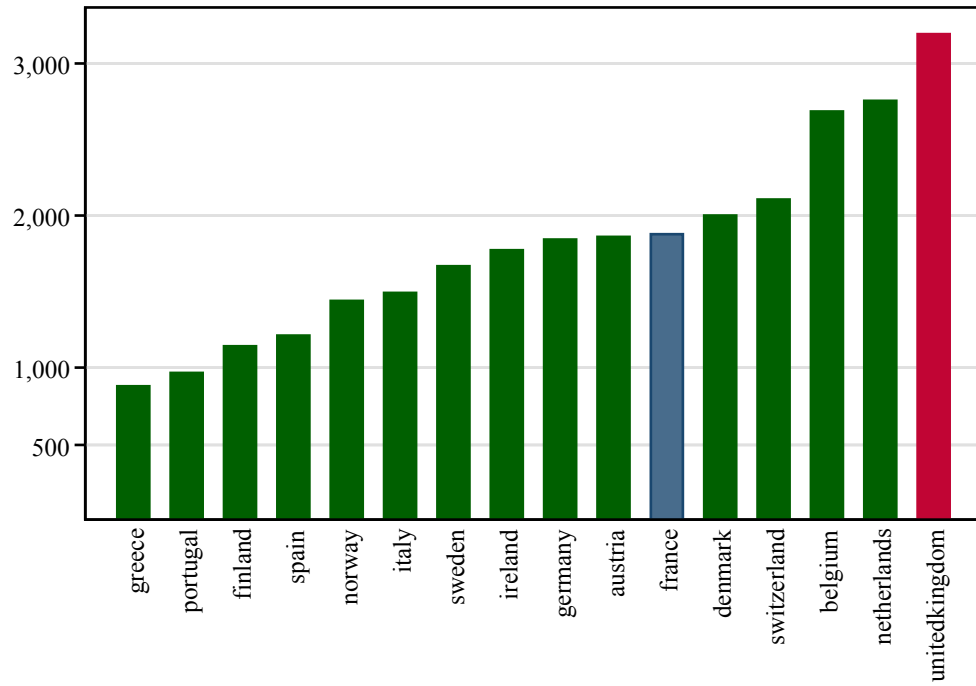


c. 1820, W. Europe average about 1200

1000-1200 range includes 8 countries

(the average is population-weighted, so Greece, Finland, Portugal don't weigh heavily)

1870

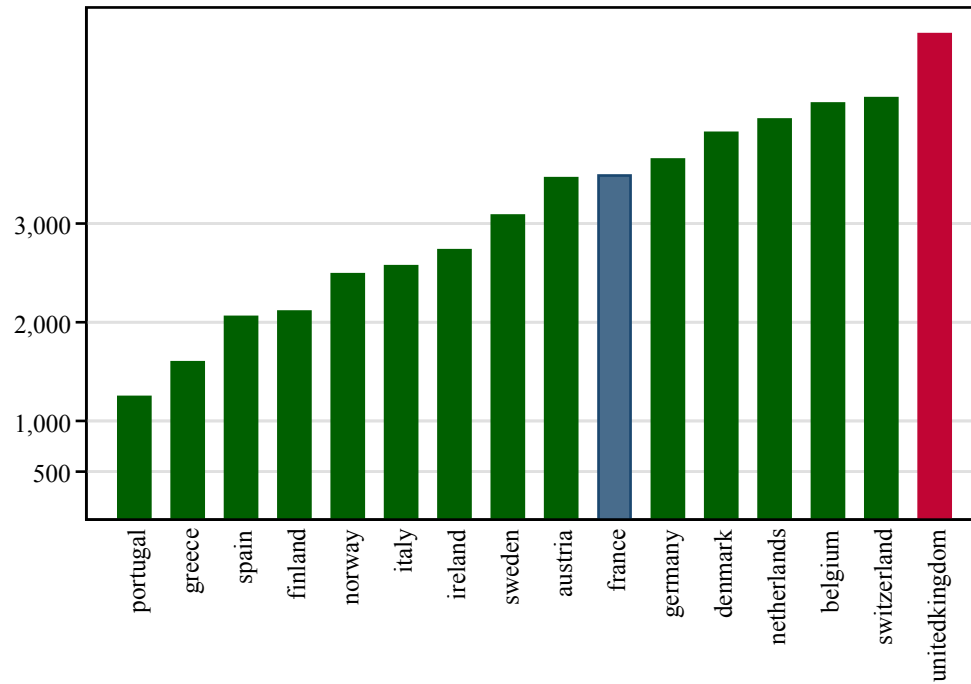


1870 W. Europe average about 2,000.

8 countries fall in range 1400-2000

This range is wide, even as percentage of mean. So greater dispersion.

1913



c. 1913 mean is about 3,500.

Range containing 8 countries is about 1500 wide (more than twice as wide as in 1870), so still more dispersion, even in percentage terms.

Other estimates of GDP or GNP p.c.

Crafts (JEH 1984) estimates

Basically similar for period of overlap. (France only from 1830; no guesstimates about 18c.)

Different method: GNP in national currency in 1910 converted to sterling using *market* (not PPP) exchange rates averaged over 1905-13. Then work backwards using internal-only real output estimates. Crafts says exchange rates don't make too much difference for his calculations.

Substantial British advantage of about 50%.

France does not look outstanding compared to other European countries in Crafts' table. Belgium is better at all dates, for example. France is 7th out of 10 in 1910. Very average.

In terms of *growth rates*, France continues to keep up with Britain in these estimates.

O'Brien & Keyder (1978) revisionist estimates.

They estimated commodity output only, i.e. no services. Claimed French output per capita higher than British in 1780s. French output p.c. lower in 19c, but growth rate about same, so keeping up w/ British growth.

But I don't think these estimates command much support any more.

Problems

Lack of services. Services were important, especially in Britain, which had biggest merchant fleet in Europe, for example. OB&K had argued most services are producer services, hence only a contribution to commodity production.

Difficulties with exchange rates and deflation. They don't deflate at all, so figures are nominal. Synchronic cross-country comparisons ok, but not diachronic within-country. They use PPP exchange rates and get very

different answers depending on whether they use French or British basket. (France has similar output p.c. to Britain in 19c if you use the French basket. Big lag if you use British basket.)

British estimates based on Deane & Cole are from income side, French estimates based on Toutain (ag), Markovitch (ind), Marczewski (revised and combined them) from output side (hence no services).

Contemporaries

Milanovic argues that we can take such estimates seriously once we check for internal consistency. (Current working paper and EJ article with Lindert, Williamson.) Compares per capita income to subsistence level in country to avoid exchange rate problems (similar to Allen).

Main basis of such estimates are social tables:

enumerations of the numbers in typical socio-economic groups and their average incomes, e.g. 500k tenant farmer households with average income of 50 pounds/year.

Quesnay -- most important physiocratic thinker, influence on Adam Smith.

Total income is roughly 7 billion livres.
Per capita, about 250 livres p.a.
ca. **3.3** times Quesnay's estimate of subsistence level.

Another contemporary estimate for France, ca. 1780: **3.5** times subsistence (Isnard).

A modern estimate: **3.8** in 1788 (Morrison and Snyder).

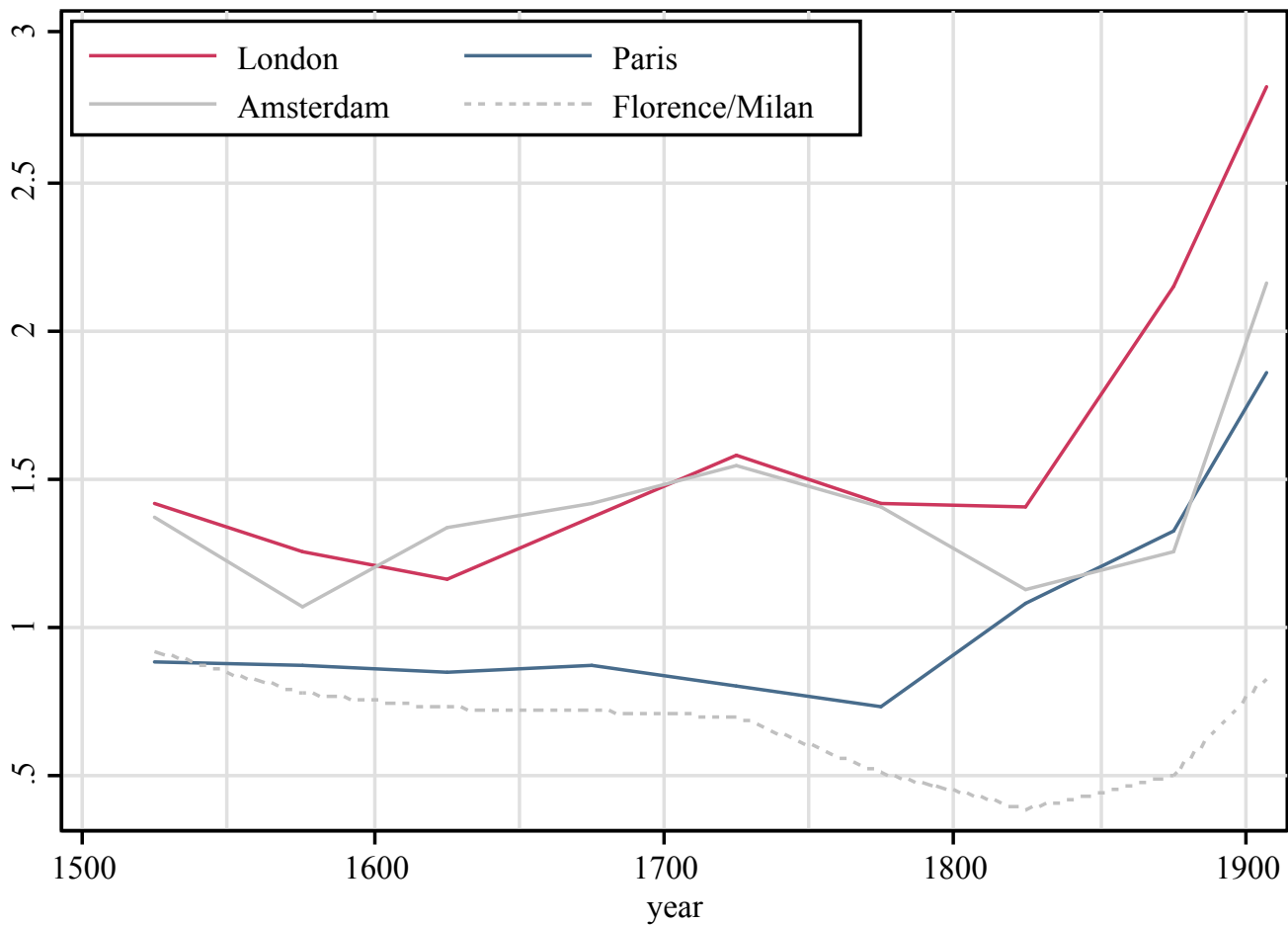
(Another modern estimate is by Toutain 1987. He does not estimate subsistence, but his gdp p.c. estimate of 220 in the 1780s is similar to others.)

Now for Britain: Massie's social table for England & Wales, 1759, gives **5.9** times subsistence.

This would put B as much as 75% ahead of F in late 18th century.

2. International comparisons, cont.

b. Real wages of construction labourers



Similarities and differences w.r.t. GDP p.c.

Italy looks worse. Less well off to begin with and decline rather than stagnation. Italians would consistently have to work more than 250 days to afford a minimal lifestyle. Man works more days, and/or wife and children add market labour. (Naples wages a bit higher than Milan until late 18c, when equally miserable.)

NL looks less exceptional.

English advantage w.r.t. France clear, at its widest in mid-18c.

Paris always below 1 before 1800. Strasbourg a bit lower.

London impressive – highest in Europe, along with Amsterdam

Until 19c, wages considerably lower in Oxford and York.

Same general take-off sometime in 19c. Timing impossible to isolate with low frequency observations.

Notes:

Source is Allen EEH 2001

50 year averages

These are “welfare ratios”

Ratios of average annual earnings of a building labourer, assuming 250 days work per year, relative to three very basic (think near-poverty) adult-male consumption baskets for himself, wife, kids.

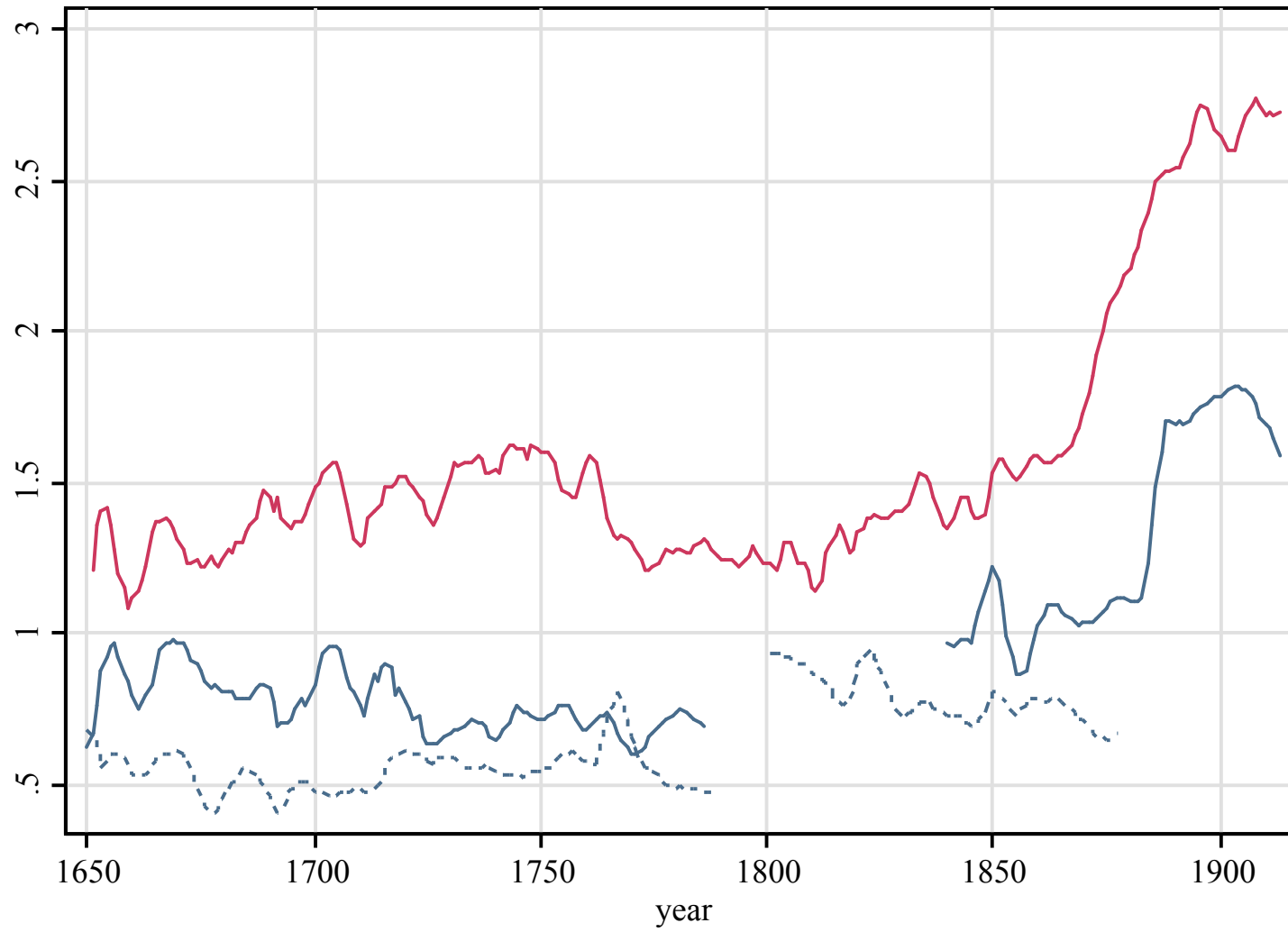
Basket is uniform across most of Europe but some substitutions like wine for beer or olive oil for butter.

Rent for housing was a very small share of expenditure, ca. 5%.

Components of Allen's price index

Consumer Price Index: Basket of Goods					
	Quantity per person per year ^a	Price g silver per unit ^c	Spending share	Nutrients/day ^d	
				Calories	Grams of protein
Bread	182 kg	0.693	30.4%	1223	50
Beans/peas	52 liter	0.477	6.0	160	10
Meat	26 kg	2.213	13.9	178	14
Butter	5.2 kg	3.470	4.3	104	0
Cheese	5.2 kg	2.843	3.6	53	3
Eggs	52 each	0.010	1.3	11	1
Beer	182 liter	0.470	20.6	212	2
Soap	2.6 kg	2.880	1.8		
Linen	5 m	4.369	5.3		
Candles	2.6 kg	4.980	3.1		
Lamp oil	2.6 liter	7.545	4.7		
Fuel	5.0 M BTU ^b	4.164	5.0		
Total		414.899	100.0%	1941	80

Allen's real wage estimates, annual data



Notes

Data have been smoothed: these are 5-year moving averages
Otherwise same as before.

Comment

London real wages remain high, but decline from 1750 to 1775, stagnate at that low level until after 1800, reach old peak only ca. 1850. Pessimistic picture.

Changes in the number of dependants supported would make things seem slightly worse b/c ratio of dependent population to employed/occupied population rose from 2.6 to 3.1 between 1771 and 1821.

France prior to revolution

long-run stagnation at low level in Strasbourg

gently falling real wages in Paris.

Both well below 1.

Problem of gap during Revolution and (for Paris) Empire and early 19c. Is the Strasbourg jump between 1788 and 1801 believable? This makes it hard to identify impact of those big events on development of French economy, standards of living. We also lack any annual GDP estimates in this period. Very frustrating.

Feinstein's (JEH 1998) estimates

Real weekly earnings for Britain

Allen's data for male unskilled construction workers in London.

Feinstein's estimate for male and female, all occupations, all regions. There could be very important differences. Changes in composition could outweigh within-occupation/region/sex trends. Wages for all occupations and regions could be falling, but the overall average could rise due to increasing weight of high-wage occupations/regions/sex.

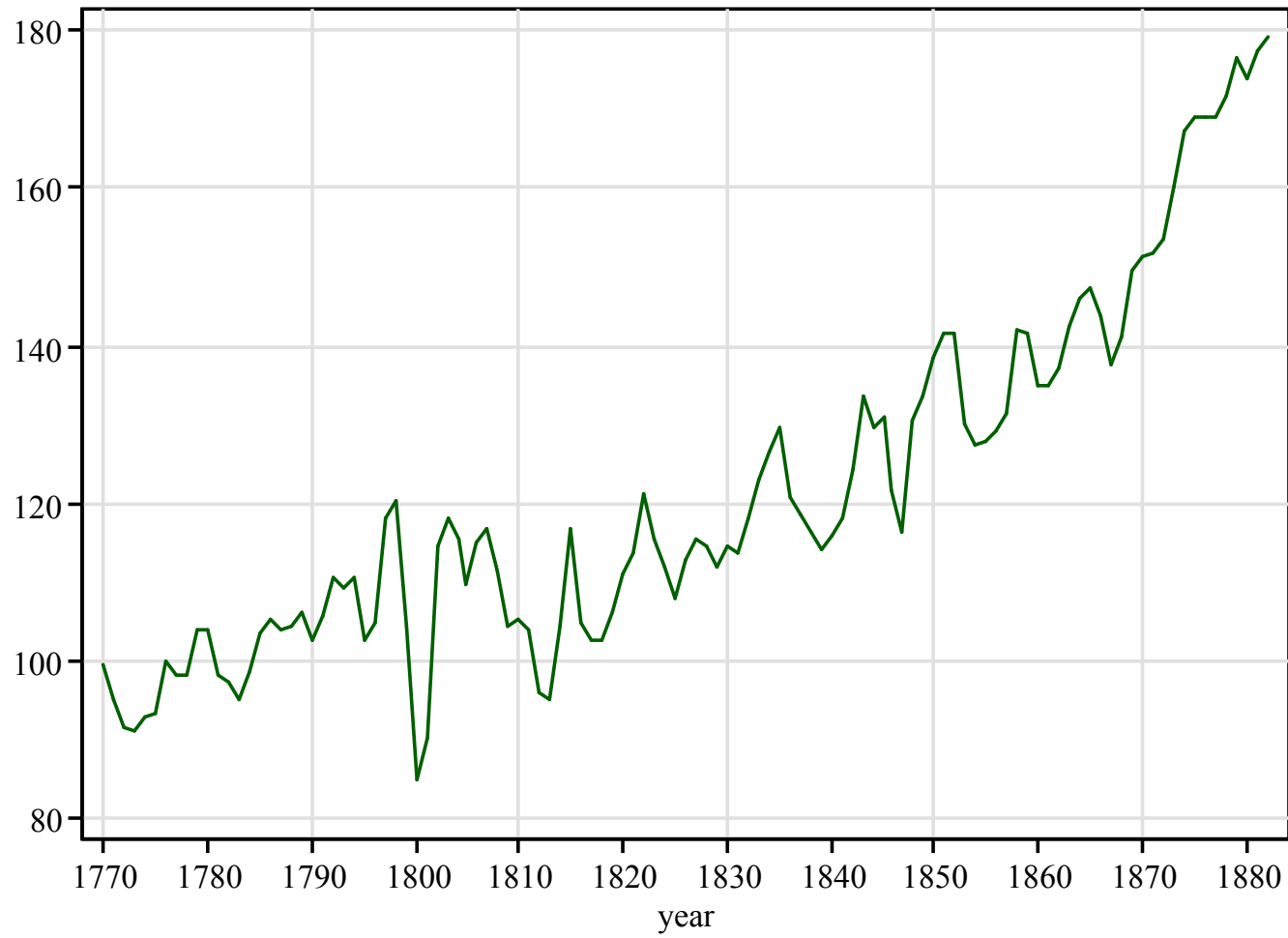
Feinstein's consumption basket also includes a wider range of commodities including clothing and rent.

Feinstein attempts to make adjustments for unemployment.

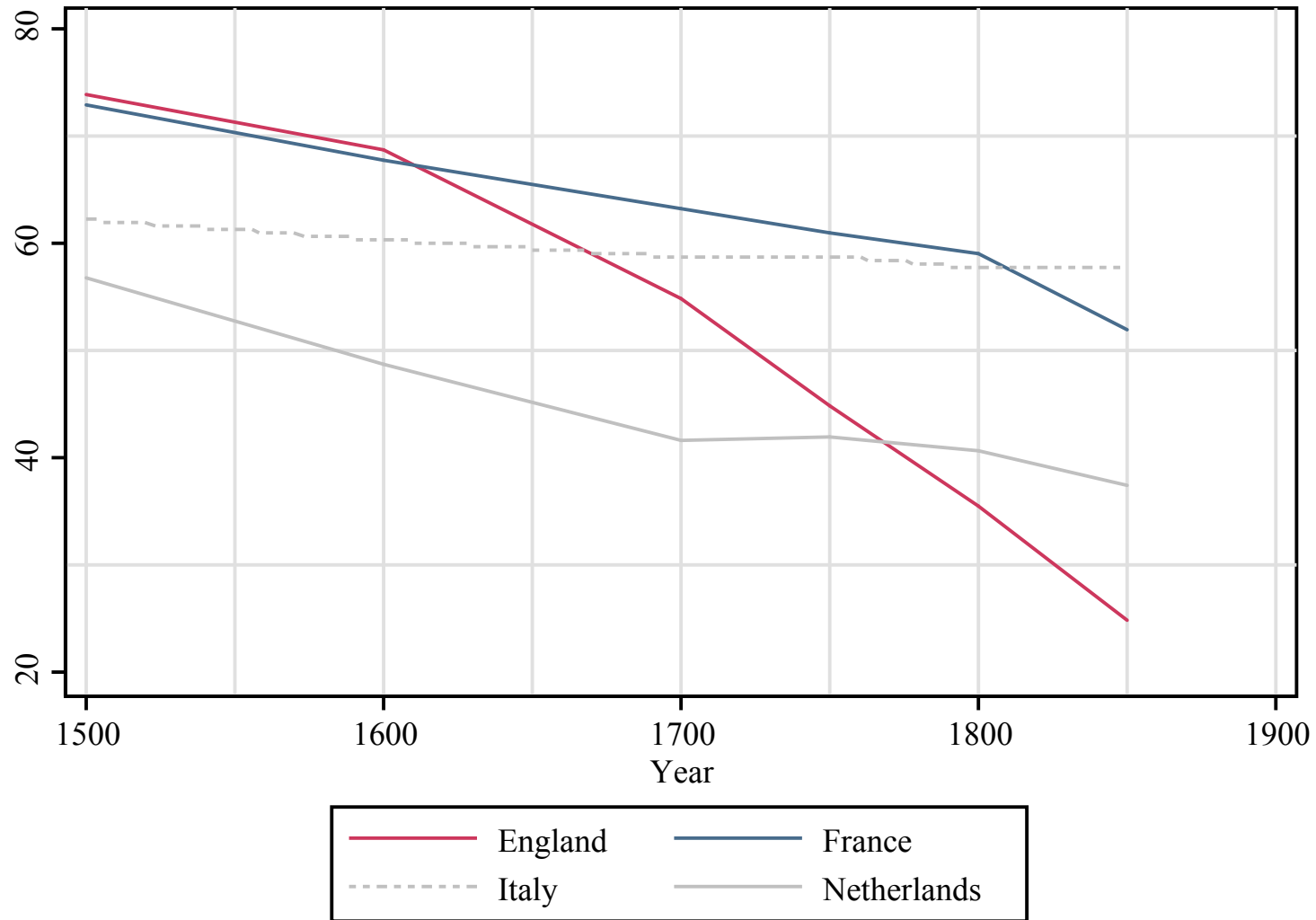
Data available only from 1770, so no long term perspective. Nor international comparison possible.

“The main conclusion of the present estimates is thus that over the 75 years from 1778/82 to 1853/57 the increase in real weekly earnings, allowing for unemployment and short-time working, was less than 30 percent, irrespective of whether or not Ireland is included with Great Britain... Wage earners' average real incomes were broadly stagnant for 50 years until the early 1830s, despite the fact that in many parts of the country they were starting from a very low level, having been falling in the second half of the eighteenth century. ... (I)t was only after the post-1873 downturn in prices that average real earnings finally accelerated.”

Feinstein is also pessimistic about other aspects of working class life that these numbers don't capture.



International comparisons, cont.; (c) structure of employment



Notes

Source is Allen EREH 2000.

Share of the population in agriculture, rural-non agriculture, and urban.

Not labour force. Not broken down by sex.

1850 my efforts to infer figures from Allen article details, or taken from elsewhere

Procedure

Evidence on total and urban population throughout.

Evidence for rural-nonagricultural population for early 19c. Assume that value for 1800 and 0.80 of the total rural population for 1500, and interpolate in between.

Agricultural population is the remainder.

Hence very rough estimates for the early years.

Comment

All countries transitioning from predominantly rural-agricultural to urban and/or rural-nonagricultural (e.g. protoindustry)

This process is more rapid in Britain than anywhere else in Europe.

Starting from a high share of ca. 70%, Britain reaches 25% by 1850.

Surpasses even NL and Belgium in urbanisation and small agricultural sector by end.

NL again precocious.

Italy again total stagnation.

France slow, gentle, incomplete transition. Arguably looks rather backward by the end.

Urbanisation: share of the population in towns of more than 10,000 inhabitants

Country	1700	1750	1800	1870
England & Wales	13	16	22	43
Scotland	5	12	24	36
Netherlands	33	30	29	29
Italy SI	16	19	21	26
Belgium	20	16	17	25
France	9	9	9	18
Germany	5	6	6	17
Spain	10	9	15	16
Ireland	5	5	7	14
Italy CN	13	14	14	13
Portugal	10	8	8	11
Balkans	14	12	13	11
Scandinavia	4	5	5	9
Switzerland	3	5	4	8
Poland	4	3	4	8
Austria & Hungary	2	3	3	8
Russia	2	3	4	7
Europe	8	8	9	15

Source: Malanima in CEHME

England becomes most urban country in Europe

France is about average throughout. Slow urbanisation after 1800.

Stagnation in many peripheral countries, in some cases beyond 1800: N. Italy, Balkans, Portugal...

1870 Labour force allocation by sector

Country	Agriculture	Services	Industry
Belgium	44	18	38
Denmark	48	30	22
Finland	76	14	10
NL	39	38	22
Norway	50	28	23
Sweden	67	15	17
UK	22	35	42
France	50	22	28
Italy	61	16	23
Portugal	65	10	25
Spain	66	16	18
Austria-Hungary	67	18	16
Germany	50	21	29
Switzerland	42	16	42

UK stands out for small agricultural sector.

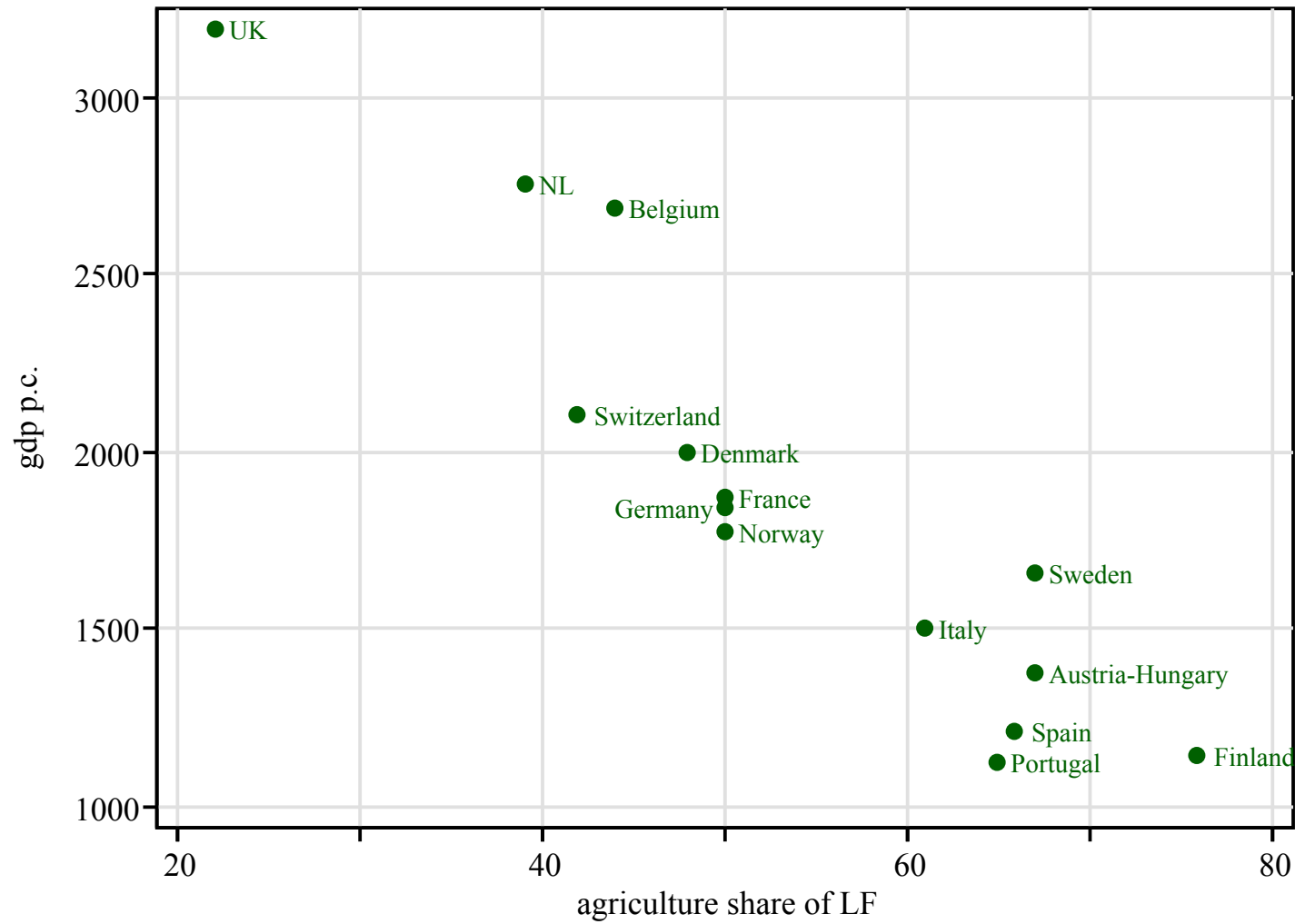
Belgium and Switzerland have similar industrial share.

NL, Denmark have similar services share.

Only UK has both large industry and large service sector.

France and Germany very similar here.

GDP per capita and agriculture's share of employment, 1870



Notes

Source: Broadberry et al., CEHME vol. 2.

Comment

In this period, de-agrarianisation was the key to prosperity.

No example of a really prosperous, predominantly agricultural economy.

This is why the course is about “industrialisation”.

Correlation (-0.93 for agriculture) is weaker for services (+0.75) or industry (+0.71).

Structural change was the key to progress and achieving prosperity in the period up to the mid-19c.

After that, it is more about productivity growth within sectors.

This is challenged, for the British case, by latest findings of Wrigley and Shaw-Taylor, which show Britain much less agricultural already in 1700.

Can we say that industrialisation drove growth of the service economy? Why not service-isation?

