Institutions, property rights and agriculture

Britain seems to have had much higher agricultural productivity than France, which directly affected living standards and also contributed to industrialisation. A traditional story about why this was true has to do with property rights and the organisation of farming. Progress in France, in this story, was held back by the dominant position of peasant households in cultivating the land, and by archaic, confusing, feudal property rights. The evidence on this is mixed.

1. A useful theoretical framework - New Institutional Economics

2. Agriculture - industry links

3. Data on agricultural productivity

4. Sources of agricultural productivity improvement

5. Pre-modern property rights and their problems – scattered strips, open fields, commons

6. Property rights in B & F

7. Did enclosures matter?

8. What else mattered?

1. New Institutional Economics

NIE offers a useful tool for thinking about many historical situations.

We will not be using NIE in a very formal way, but some discussion of definitional issues is useful.

What are institutions?

> Many definitions, but all have to do with man-made constraints that constrain or guide our behaviour.
>
> - Rules of the game (formal legal or informal norms) of a society
> - Formal or informal organisations like parliaments, universities, firms, families
> - Beliefs about others' behaviour or about the world
> - Internalised norms of behaviour
> - Repeated regular behaviour or practice, including in organizations like firms
>
> A recent definition by Greif (*Institutions and the Path to the Modern Economy*, Ch. 2) is very inclusive:
>
> > A system of rules, beliefs, norms and organisations that together generate a regularity of (social) behaviour.
> >
> > They affect the behaviour of individuals but are beyond the influence of the individual.
> >
> > Yes, cultural or religious beliefs can be part of an institution on this definition. They affect what a person believes about what others will do, hence affecting her own behaviour. (The more so, if she has internalised these norms.)
> >
> > Greif takes a broad view. Legal rules don't count for anything unless (people believe that) they will be respected and enforced. And that depends on understanding the behaviour of court officials, for example.

Organisations

> What we might usually call an institution, e.g. a parliament or a corporation or a university or a church or perhaps a bank, is an *organisation* in this terminology.
>
> In Greif's scheme, an organisation can be part of an institution.
>
> For example, a credit rating agency generates information that affects our beliefs about whether a potential borrower will repay a loan because it

will affect their credit rating and their future ability to borrow even if we never see them again. It is thus part of an institution that supports the behavioural regularity of borrowers getting loans in relatively impersonal credit markets and paying them back.

But it is also an institution itself because it has a set of norms and rules that guide the behaviour of the people that work in it, which motivate (or fail to motivate) them to do their job conscientiously, not take bribes, to not maximise short term profits at the expense of long term reputation, etc.

Discuss table from Greif below

North's scheme

Has institutions as the "rules of the game", both formal legal rules and informal norms of behaviour, along with enforcement mechanisms.

Organisations are the teams that play the game.

And particular arrangements like a type of contracts are tactics used in playing the game.

In practice I will use the term institution imprecisely

Examples: the common law, sharecropping, parliament, generalised trust, the corporation, serfdom, …

Different thinkers make different assumptions about institutions

One contrast is what Greif calls agency vs. structural perspectives.

Agency: people design an institution to achieve a purpose, consciously.

Structure: the institution determines the people's goals and beliefs and purposes. (The older institutional economics tradition followed this line.)

A related question is whether we should adopt a *functionalist* approach. That is, should we assume that institutions exist in order to achieve some particular end, and if so, what?

Economists, perhaps, tend toward functionalism and agency.

Possible functions:

Promote efficiency. If you see a historical institution, it probably exists to solve a problem in an efficient way. Scattered strips and

open fields in medieval villages. A guild as a way of solving collective action problems involving quality maintenance or training.

Distribute resources: historical institutions were probably set up by one group of people to extract rents from others – serfdom. A guild as a barrier to entry.

Reduce uncertainty

Restrain self-interested behaviour

Etc.

More differences concern assumptions about degree of human knowledge, rationality, and self-interest.

There is some notion of equilibrium in Greif's definition

People have beliefs and those turn out to be justified.

There could be multiple equilibria, though.

Institutions, by definition, affect behaviour and thus economic outcomes. NIE economists think they are the fundamental determinants of economic performance.

And they may be resistant to change, in which case history is particularly important.

Perhaps because interlocking – each institution makes sense in terms of others, or alternatively each element of institutional system (in Greif's schema) fits together in an internal equilibrium

Perhaps because partly about culture/beliefs/norms that might be slow to change

Perhaps b/c institutions serve interests of those in power

More on institutional change later in term, perhaps

Some argue that institutions are relatively flexible, and reflect the needs of an economy at the time. They determine only the *form* of things

At issue today: were peasant agriculture and archaic property rights a big impediment to industrialisation, start of modern economic growth?

Traditional view:

large scale capitalist agriculture highly progressive, generates surplus, frees labour for other sectors; peasant agriculture backward, not market oriented, communal, extraordinarily risk averse, insists on bizarre inefficiencies like open fields or sharecropping, holds back development.

This view common across the spectrum of ideological approaches from Marxists to ardent liberals.

Perceptions of England and France played a role in generating this consensus.

The peasant household we can analyse as an institution.

Property rights to the land are another typical object of institutional analysis.

Consensus no longer so clear.

Table 2.1. *Institutions as Systems*

Rule	Organizations	Beliefs and Internalized Norms	Implied Regularity of Behavior
Rules of the road	Departments of motor vehicles and law enforcement officials	Beliefs that other drivers and law enforcement officials will behave in a particular way	Driving according to the rules
Rules regulating the payment of bribes such as the amount paid, how, and to what effect	State administration, police, courts of law	Belief that the response of the state, police, and courts to bribe taking renders it profitable to take; beliefs that paying the bribe is the least costly way to advance one's interest	Corruption
Rules regulating use of credit cards and prosecution of defaulters	Credit card companies and legal authorities	Belief in the credit card company's ability to screen cardholders, impose legal punishment, and damage one's credit history	Impersonal exchange without cash among sellers and holders of credit cards
Rules governing membership and behavior toward members and nonmembers	Community of Jewish traders in New York	Belief in community members' ability and motivation to punish cheaters, thereby making cheating unprofitable	Exchange without reliance on legal contracts
Behavioral rule of not clearing forests	None	Internalized beliefs about retaliation by forest deities	Avoidance of forest clearing
Rules legalizing and governing slavery in the United States	White communities, state and federal legislators, legal authorities in the South	Internalized norms justifying slavery; beliefs in particular behavior by other whites, African Americans, and legal authorities	Slavery

2. Contribution of the agricultural sector to industrialisation

Maths

With agriculture a big sector of the economy, it is hard for output per worker or GDP per capita to be high if it is low in agriculture. Fast growing industrial sector cannot drag rest of economy along at same pace.

Feed the workers

In a closed economy, agricultural sector must feed industry and service workers. Needs to be able to do this without requiring a huge share of labour force (and capital, other factors of production). Each farmer must be able to feed himself and a couple of other workers.

Supply raw materials

Like flax, wool, silk, vegetable oils, leather, tallow…
(Perhaps also oats etc. to feed horses employed in transport. For that matter, the beasts themselves.)
Fuel in the form of wood.

Market for manufactures

Households in the agricultural sector can be an important market for the output of the industrial and service sectors. In a closed economy this is likely to be important.

Release resources

Productivity growth in agriculture can release labour (or not retain excess growth of labour force) for other sectors. It could also provide capital, if profits in agriculture invested in other sectors.

These are all different ways of seeing the same problem. The food sold by the agricultural sector generates the income with which to purchase manufactures, for example. Still it's useful to think about the problem from different angles.

Failure to do these things can put a brake on growth of industry and/or services.

Dualism

Traditional agriculture sometimes seen as unlike modern industry -- not based on profit maximisation, equation of MP's to market rates of return.

Capitalist hires labour until w/p = MPL. And no more.

Peasant HH may care about survival of HH as a family agricultural enterprise.

Stay in agriculture ("hire labour") so long as APL > subsistence.

Or so long as income loss relative to urban wage less than some threshold.

Disequilibrium in which MPL much higher in industry.

As labour transferred, high profits and (if reinvested) rapid growth in industry.

Kindleberger said this was Europe *post WWII*.

A formal model would be useful but time-consuming to analyse.

3. Data on agricultural productivity

Britain: still a consensus that something we might call an agricultural revolution happened, probably mostly before the period we are considering.

France: real debate about whether traditional view of unchanging backward economy hobbled by antiquated institutions in 18c is valid. Toutain thought there was an agricultural revolution in 18c. Morineau thought only "*faux-semblants*" of one.

How to measure productivity: output per worker, per acre, per unit of capital and labour input, grain per seeds?

Arguably labour productivity is the key.

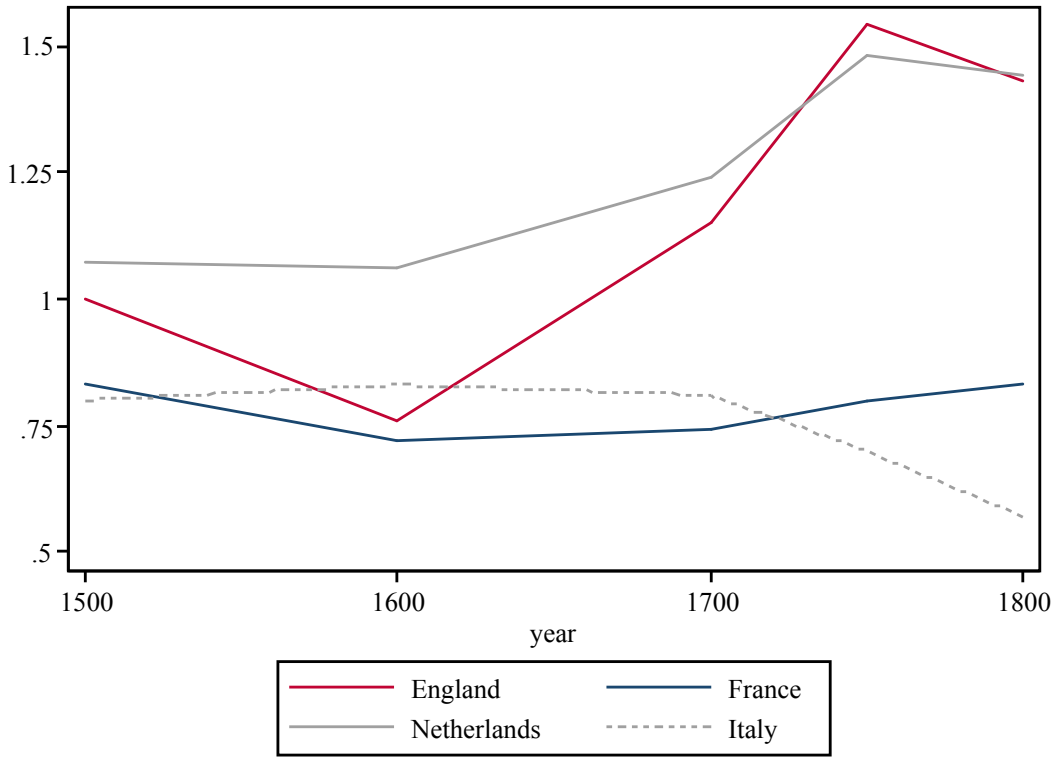
> Only high labour productivity will permit a small agricultural sector to support a large industrial/service sector.
>
> Only high labour productivity will permit high real wages and standards of living.
>
> Ultimately we are interested in economic output per person.

Other measures of productivity helpful in diagnosing what is going on.

> Is labour productivity high/low because lots/little capital per worker?
>
> Because lots/little land per worker?
>
> B/c soil fertility?
>
> B/c inefficient crop rotations or cultivation techniques?
>
> Etc.

Labour productivity

a. Allen's (EREH 2000) estimates of output per agricultural worker



Note: England 1500 = 1

Comments

Belgium (Flanders) not shown but had highest productivity in middle ages when it was the most urban and advanced part of northern Europe, then long slow decline.

Britain looks ordinary until 1600, when it takes off. There was something of an agricultural revolution in Britain, but it *preceded* the IR. Productivity growth *slows* in late 18c.

France looks like rest of Europe.

Fairly stagnant over long run. A little better than Italy or Spain post-1600.

Well behind NW Europe in 18c and falling further back.

Other countries like Austria-Hungary, Germany look a lot like F, I.

Technical issues

Estimating agricultural LF very difficult.

Rural population known, but multiple activities in HH the norm. Domestic production of industrial goods such as handloom weaving, for example. Role of women and children.

Allen's estimates of agricultural population described in previous lecture: total minus urban minus guess of rural-nonagricultural employment.

Estimating output not always easy either.

France has agricultural censuses (at least in 19c)

Britain and other countries no.

Not much data for output estimates. Deane & Cole used incomes.

Other possibilities based on population, or based on idea of a stable demand function dependent on population, income p.c., and price of food. Can infer fluctuations in supply if account for import/export.

Typical assumptions: income elasticity .5, own price elasticity -.6, cross price elasticity with manufactures 0.1. (Allen 09)

Assume a functional form for demand curve for food, use shift variables (population, wages, prices of other goods) to locate position of curve, then read off quantity that corresponds to historical price on that curve. Deduct imports (or add exports) and you have output.

b. Clark's estimates of labour and land productivity (1991, reproduced in Simpson chapter of PKO festschrift). I think based on physical output estimates.

1851

	labour	land
Britain	100	100
Netherlands	54	94
Ireland	47	78
France	44	82
Germany	42	56
Belgium	37	122
Sweden	37	45
Austria	32	54
Hungary	30	36
Romania	40	51
Russia	29	24

Britain appears to retain a *huge* lead in labour productivity.

What do we know about 1800-50 *growth* of Y/L in Britain?

Land productivity differences much smaller.

Other countries may be applying much more labour per unit of land.

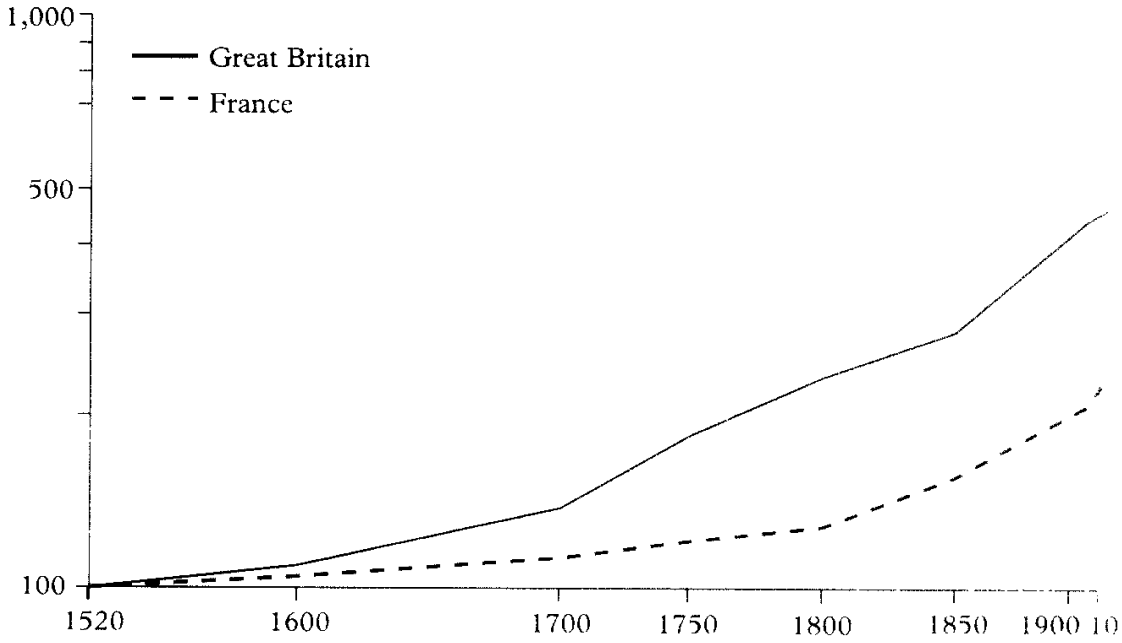
That would make sense if wages lower, rents higher.

France looks relatively average in European perspective.

Not much evidence of catch-up on Britain.

c. extra. O'Brien (EHR 1996) shares view of early divergence b/w B & F, from circa 1520. He viewed these estimates as conjectural. Note log scale means that as curves drift apart the percentage difference increases. Roughly 2:1 ratio by 1800, after which more or less parallel growth.

Conjectural estimates of labour productivity (O'Brien 1996)



Estimates based on a variety of sources and methods: Overton, O'Grada, Wrigley, LeRoy-Ladurie…

Grantham (EREH 97) reports new LF estimates for France that make productivity *growth* appear much stronger throughout 19c. Comparable to Britain.

I think these estimates, which better capture women and children (who were leaving the ag LF over time), would lower the initial *level* of productivity, and raise its subsequent *growth rate*.

Summary:

British agricultural revolution and French-British divergence early.

France was well behind and falling back through 18c. Unclear if labour productivity stagnant (Allen) or growing slowly (O'Brien) in France.

In 19c French productivity may have been growing, keeping up with Britain though failing to close gap.

Total Factor Productivity

Labour productivity can be affected by various factors:

Land-labour ratio
Capital-labour ratio
Technological sophistication
…

It could be perfectly rational and efficient to drive labour productivity down in order to get high yields per acre, in some circumstances. Or alternatively to use lots of land and have low land productivity, high labour productivity.

An alternative measure of sophistication or level of development of agriculture is total factor productivity, or TFP.

Can be estimated from quantities of outputs and inputs.

With assumption about elasticities / factor shares.

Or by the "dual method", based on *prices* of outputs and inputs.

With assumption about cost shares, perfect competition, constant returns to scale technology.

If the prices of inputs rise, but output prices don't, then farmers must be managing to produce same output with fewer inputs.

The difference between the growth rate of output prices and a weighted average of the growth rates of costs equals TFP growth.

The weights are the shares of each cost item in total costs.

Advantages: we have more reason to believe prices are representative, to the extent markets were integrated and law of one price holds. Quantities need not be same on different farms.

Disadvantages: one is that market power can drive a variable wedge between costs and prices.

TFP: Hoffman's estimates

Hoffman (1996, p. 85) uses the formula

$$TFP = \frac{w_1^{\nu 1} w_2^{\nu 2} \ldots w_n^{\nu n}}{p_1^{\eta 1} p_2^{\eta 2} \ldots p_m^{\eta m}} = (r + t)^s \frac{C}{P}$$

Here the *w*'s are the costs of various factors of production, such as rent on an acre of land, the cost of renting a plough horse for an hour, the wage for a labourer for an hour. And the *p*'s are the prices of agricultural outputs, like wheat, wool, mutton…

The ν's and η's are the share of each factor of production in total costs or of each output in total revenue.

The second formulation pulls out rent so as to highlight its role, adjusts for the fact that tax must also be paid on land, and subsumes the other costs and prices into indexes *C* and *P*.

s is the share of rent in total costs.

Hoffman has a fairly large sample of rental agreements on properties owned by the famous Cathedral of Notre Dame in Paris. In many cases the data are longitudinal, meaning he observes the rent on the same property repeatedly over a long time span.

He also has data on costs and prices, while he makes educated guesses about the ν's and η's from a few scattered farm accounts.

Dual estimates of TFP growth in long run in Paris Basin.

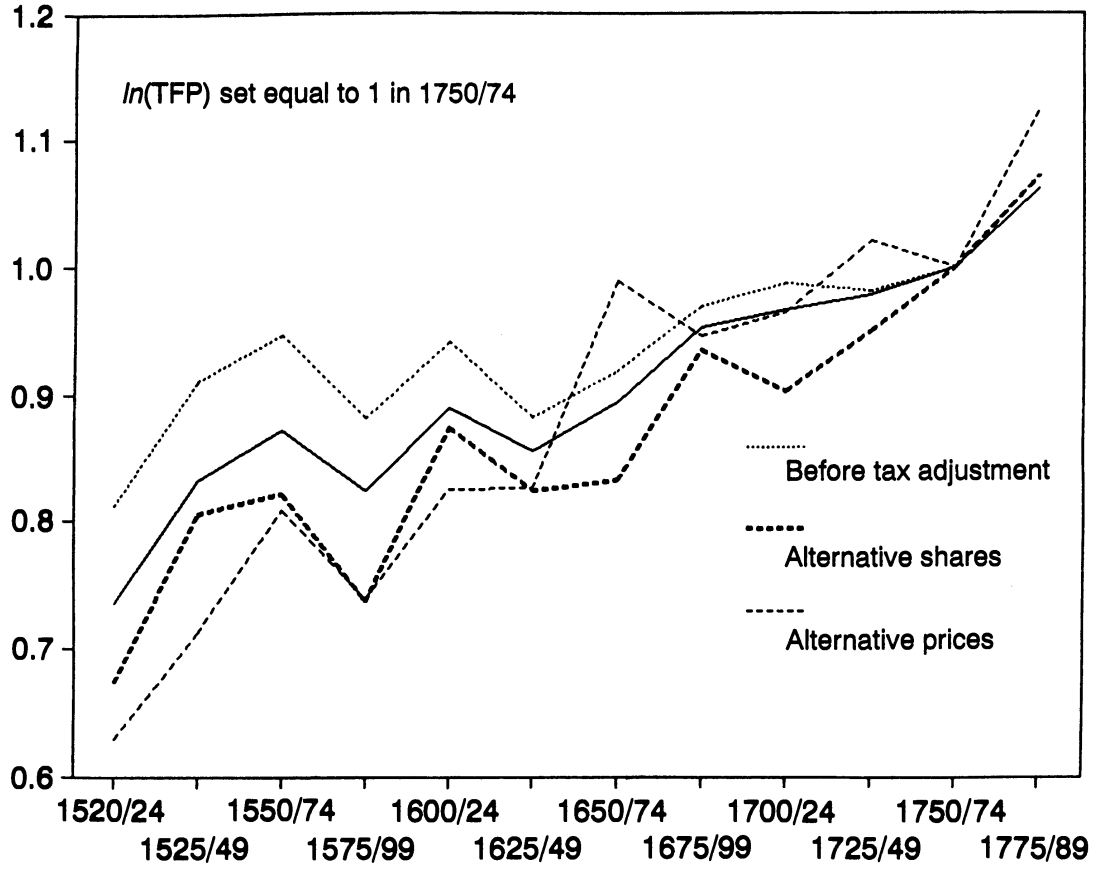


FIGURE 3

Hoffman is impressed by growth. But also by its volatility.

Growth shows French agriculture not immobile, contrary to stereotypes about rural France (and peasant-dominated agriculture more generally).

But instability and war in mid/late 16c (wars of religion), early 17c (30 Years War involvement, Frondes) capable of driving it right back down. The rapid growth of the early 16c is similarly the end of a prolonged recovery from the 100 Years War, he believes.

Some of growth from late 17c to mid 18c is overstated for technical reasons. Caused by market integration and a statistical mirage. Still, cumulative growth only a few percent.

But acceleration of late 18c end is real, he believes.

The overall TFP growth rate over the whole sample is **0.13%** p.a.

In the last quarter of the 18c it accelerated to **0.31%**.

TFP Grantham – 19c

Output based (primal) TFP growth estimates. These use the new LF estimates. And new guesses of the capital stock, part of which based on backward projection of 1965 data on structures(!).

Growth rates, % p.a.

	output	labour	capital	TFP
1789-1840	0.77	0.24	0.74	0.45
1815-1870	1.23	0.08	0.72	0.94
1840-1870	0.98	-0.16	0.98	0.81
1870-1890	0.34	-0.17	-0.32	0.54
1890-1914	0.82	-0.59	0.59	0.93
1815-1914	0.95	-0.001	0.05	0.85

Sutherland (JEH 2002) calculates TFP growth 1780-1820 for samples around Le Mans and Rouen. About 30-40% increase in total. So even faster than what Grantham calculates fro 1789-1840. Somewhat surprising. In any case confirms French agriculture not completely stagnant.

TFP Britain

Allen (cehmb) is sceptical of existing estimates.

Primal estimates indicate TFP growth rate of something like

0.3% p.a. over longer period from 1700-1850.

But rising from 0 – 0.1% in 18c. to 0.7% in first half of 19c.

Dual estimates, which he also worries about, suggest something similar.

This looks similar to France.

TFP growth appears to have been positive but slow in both B & F, accelerating in late 18c and early 19c.

This says nothing about levels, which could have been higher in B.

It is not necessarily in conflict with our findings about labour productivity.

Even if levels of TFP were same, B & F could be at two different points on the efficient frontier, with B capital-intensive and F labour-intensive, for example.

And TFP levels could be very different.

Yields

Allen & O'Grada believe Young's yield data – a measure of land productivity - show that French yields were, or at least could be, as good as British.

On the best, most-English type soil (loam), Young's data show French wheat yields of a bit over 20 bushels per acre – about same as in Britain.

This is consistent with interpretation that French agriculture was not still stuck in the middle ages, that there had been progress, even if F was using much more labour per acre to get these yields.

Also suggests France disadvantaged by having a larger proportion of soils poorly suited to arable agriculture.

ESTIMATES OF ENGLISH GRAIN YIELDS, c. 1770 TO c. 1850
(bushels per acre)

Survey	Wheat	Barley	Oats
About 1770 (Young)	23.8	32.1	37.0
Average 1790s	19.1	27.7	27.2
Typical about 1800	21.6	32.0	34.9
1794–1816 (Board of Agriculture)	22.6	32.6	36.1
About 1850 (Caird)	26.7	39.6	46.4

FRENCH WHEAT YIELDS, 1780s–1850s
(bushels per acre)

District	Young's Own	Young's Ours	Implied by Young's Yield-Seed Ratio	*Récoltes* 1815/6	*Récoltes* 1850/1
Loam	23.5	22.2	21.6	14.5	21.1
Heath	19.0	17.5	14.4	11.1	15.5
Mountain	18.0	20.2	11.0	10.6	12.6
Stony	18.0	17.3	11.2	8.6	15.9
Chalk	13.5	15.3	7.7	6.8	13.0

Capital/animal intensity

Animal husbandry was much more important in B.

Animals are like capital: require sacrifice/investment to buy or rear, yield services (manure, traction) (wool, milk) over long time, must be maintained and eventually replaced…

Estimates of livestock share of agricultural production (meat, dairy, hides, wool…) c. 1850.

E&W	59
Ireland	42
France	32
Spain	26
Portugal	35
Denmark	46
Sweden	47
Norway	51

Source: Simpson chapter in PKO festschrift

(O'Brien (EHR 96) cites late 19c figures indicating 75% of UK agr output was animal products, vs. 50% for F.)

Animals' contribution in the form of traction not reflected in this.

B animal dung available as much as two or three times as much.

B draft power 156 hp equivalents per 1000 ha, vs. 36 in F.

O'Brien says we cannot document it, but he is convinced that this had been the case for a long, long time. Goes back to lower population density in Britain after Black Death, ability to devote more land to fodder. Plus climate slightly better for fodder crops.

Multiple self-reinforcing equilibria.

Many livestock => fertiliser
Fertiliser => good yields
High yields => less land needed for grain
Less grain land => more fodder crops for animals

More animals => more power for ploughing, other soil improvements => good yields / high productivity of labour

High yields / high productivity => high incomes => high consumption demand for meat and dairy.

Summarising the productivity data

Labour productivity is key. Britain seems to have had an agricultural revolution *preceding* the IR, with growth slowing down by late 18c.

Levels very high in European comparison.

Brit yields per acre not extraordinary in European comparison. Getting them with so little labour is what was impressive. Animal husbandry important in this.

French labour productivity levels seem to have been much lower than British.

Labour productivity growth rates may have diverged in early modern period and into 18c. After that, hard to say b/c of uncertainty about LF estimates. Possibly F kept up w/ Britain in 19c, without closing gap.

French yields, on good soil, perhaps about same as British in late 18c.

Likely due to higher input of labour, since labour productivity low.

France following path of labour intensification.

Britain capital/animal intensification.

French TFP growth rates were not zero. Agriculture there did develop over time.

In fact, TFP growth (not necessarily levels) apparently comparable to British rates of improvement both early and late, if we believe the numbers.

TFP *levels* may have been considerably lower in France.

Again, France behind but not completely stagnant.

4. Sources of productivity gain

New crops

Maize, potatoes (New World crops) high yielding
Fodder and nitrogen-fixing crops, some introduced to Britain from abroad: sainfoin, turnips, swedes, clover…
Requires knowledge, experimentation, adaptability.

Better crops (better breeds)

Selective choice of seed.
New breeds of livestock that matured faster or had other good qualities developed through selective breeding.
Requires time, active experimentation.

Improve soil fertility – manure, fertiliser, nitrogen

Mineral or guano fertiliser really only *after* this period.
Manure the key, thus connection between animal husbandry and arable.
Nightsoil maybe, but actually cities provided manure of horses and dairy cattle.
Nitrogen-fixing crops like legumes, clover.

New rotations of crops, incl. convertible husbandry

Grain in particular tends to exhaust soil, depleting stock of key minerals/nutrients. => you just cannot grow wheat on the same soil, year after year.
Rotations ensure soil not exhausted.
Convertible husbandry alternates arable with pasture.
Old, old rotation might be alternating wheat and fallow (either annual or periods of several years). New rotation might be something like wheat-turnips-barley-clover or grass. Eliminates fallow.
Required experimentation, adaptation to local circumstance.

Improve other soil properties

Drainage – requires significant investment of capital (ditches, tiles to line them, labour to dig them, etc.) with long-run payoff.
Marling – adding lime reduces acidity, which I think makes manure more effective as fertiliser. Also can improve texture of soil.
Deep ploughing – aeration important for heavy, wet soils.
Irrigation – not so relevant in Britain, but in many other places vital.
Requires investment, hence funds, long-run horizon.

More capital

Drainage, water and erosion control
Roads
Buildings
Fences/hedges
Implements (which can be better rather than just more)
Livestock – which you can think of as capital b/c supplies power and fertiliser.
Requires an investible surplus or access to capital market, willingness to use it, long-run planning horizon.

Better organisation

The specific examples typically discussed are about scale.

Economies of scale due to indivisibilities of investments like drainage.

If you dig a drainage ditch next to your strip, it will drain the neighbouring strip as well – a positive externality. If your ditch empties into your downhill neighbour's land, you inundate it – a negative externality.

An efficient drainage system needs to take into account an entire topographically-defined area.

To realise it requires a big investment.

Either coordinate with neighbours, or internalise externalities in big farm.

Possibility of economies of scale due to better organisation of labour through specialisation and/or team production.

Note how many of these improvements require, or would at least be facilitated by, complete individual control over farmland. Where ownership is joint or contested, or where your rights to *use* your land are restricted even if ownership is clear, it can be difficult to experiment or to introduce innovations.

5. Pre-modern property rights and their problems

An example of NIE analysis in practice

What we understand well:

> Simple private property in which farmer owns and controls his land, or rents it from someone else in the same way as he might hire other factors of production, and seeks to maximise profit. He can use, improve, buy/sell property as he likes.
>
> Arguably, this sort of capitalist farming is what emerged early in Britain, starting as far back as end of Middle Ages. Land ownership became relatively concentrated, and landowners rented out large farms to capitalist tenants (who provided working capital – hence capitalists) on long term leases.

But lots of interesting and apparently inefficient arrangements observed in agriculture. Sharecropping, for example, which was important non-British contexts, parts of France. Why?

Organisation of typical medieval village.

> Lord's demesne
>
> Peasant lands
>
> > Waste and/or common – devoted to pasture / woods / wet. Lord could have rights here too.
> >
> > Arable – divided into scattered strips in open fields
> >
> > > example of Neuviller (disc. below): 2010 strips in 263 hectares of arable (out of 441 total ha in village)
> > >
> > > *Consider maps in Daunton, Progress and Poverty, ch. 4.*

Two problems with this set-up, which are in principle separable

> a. Coordination, which arises from open fields and scattered strips
>
> b. Incentives, which arise (or don't) from common property
>
> A third problem is small size of holdings, which might be true even without (a) and (b). Small scale a problem if indivisibilities of investment, for example.

Commons: property rights are dispersed, unclear

"Tragedy of commons"

> There is an optimal rate of exploitation of a resource but we aren't likely to achieve it with common property. Each individual calculates only private marginal benefits and costs, taking everyone else's actions as given.
>
> No private property => no market => no prices => no proper incentives.
>
> Result can be, for example, overgrazing of common pasture resulting in undernourished livestock or even ruin of the common altogether. Or deforestation as result of wood gathering. Or overfishing.
>
> Imagine that the value of each sheep grazed on common pasture is given by (120-S), where S is the number of sheep.
>
> Total value of the flock is S(120-S), which is maximised when 120-2S=0 or S=60.
>
> Now imagine two agents, a and b, with numbers of sheep Sa and Sb. a takes b's number of sheep as given and maximises
>
> Sa(120-Sa-Sb), which gives 120-2Sa-Sb = 0 or Sa=60-Sb/2.
>
> b does likewise.
>
> The Nash equilibrium is where Sa = Sb = 40. The total flock is therefore 80, when a total of 60 would have maximised its value. In this sense the commons is "tragically" overexploited.

But custom can regulate, monitor, enforce appropriate use of common resources. "Stinting".

> In fact it's not clear that tragedies of the commons occurred with any regularity, historically.

Still, custom may not promote or even permit efficient use of resources by those who value them most. Unclear whether private arrangements can circumvent.

> And collective ownership will still complicate change, investment.
>
> Hold-up problem: one recalcitrant or opportunistic individual can either block change or seek to appropriate surplus as concession for his participation.

Coordination

Unfenced ("open") scattered strips create coordination problems.

Need convenient access to your strip, without either trampling others' crops or walking all round field.

Need to turn ploughing team at end of furrow, same problem of trampling if there are standing crops.

Need to let livestock graze stubble and manure arable once the harvest is in – impossible if some crops still standing. Requires agreement on what will be grown and when.

Other possible problems such as fungus/rot spreading – perhaps from crops on the ground (reaped but not collected) to standing crops? Weeds.

Many investments such as drainage will benefit others as much as you => requires coordination.

Custom dictated that everyone with strips in a certain field would follow same rotation and would coordinate time of key operations. Even if land was privately owned, its use was not completely free. Property rights not complete.

Agreeing an coordinating a change could be very difficult. Hold-up problem again.

Further problem of scattered strips: inefficiency of moving self, animals, and equipment from one place to another.

Why did this system exist in the first place?

a. Back in the mists of time, some communal ethos dictated not just that every household have a fair, equal allotment of land, but that they each have the *same* allotment, hence a bit of Field 1, a bit of Field 2, right to the common pasture and waste…

b. Common flock and pasture – probably economy of scale due to indivisibility. One skilled shepherd can manage quite a large flock, which is quite a big saving compared with each HH supervising its own sheep. But one big flock requires one big pasture. Could explain at least the commons.

c. Commons/waste – possible equity considerations. Even the poorest with little or no land have equal access, certain minimum endowment guaranteed in this way even if for some reason other land lost or divided among too many heirs.

d. Scattered strips – debate

i. McCloskey says they were inefficient but provided insurance b/c all strips unlikely to do poorly in same year if scattered across various types of terrain in various locations growing various things. Storage too expensive as a way of providing insurance.

ii. Fenoaltea says this kind of insurance, which actually makes everyone worse off on average by reducing output, too expensive to be plausible. Instead the point was to spread peak labour demand out in time. If all your land in one location under one crop, harvest will all need to happen at one moment. This will exceed your HH labour, forcing you to turn to non-existent market and supervise non-family labour, which has little incentive to max output for you. HH farm is efficient in avoiding this supervision/transaction cost type of problem. So scattered strips were actually efficient. Which is why they persisted for so long.

Hoffman's (1996 book) discussion supports Fenoaltea's claim that one couldn't necessarily trust hired labour in peasant villages, nor assume strong communal bonds always at work.

These are examples of institutional analysis.

We look at the institution, try to understand the behavioural incentives it implies for individuals, try to see what function it may have served and what problems it created.

Sometimes this leads to some kind of empirical test.

Greif's approach is to use formal game theory to model institutions. He says quantitative tests are not very powerful and that we want to construct an "analytic narrative" supported by game theory that describes the institution.

Since Young's time it has been alleged that this traditional system was grossly inefficient. Enclosure, private property, consolidation, large scale the key to increasing productivity.

The evidence not nearly so convincing, as we shall see.

Why did such pre-modern arrangements last so long?

Older wisdom: because of tenacious resistance to change esp. in France. Political power of smallholders and legal confusion. Lack of enabling legislation like British parliamentary enclosure rules.

Newer wisdom: because the old arrangements were not very inefficient, gains from enclosure were not very large.

6. Property and property rights in Britain and France

I cannot find figures for average farm size in B and F. There are figures from 1910 which show land labour ratio in B was twice that in F. Not the same as farm size, which was much bigger in Britain from an early date.

Allen (cehmb) data on Britain only.

Middle Ages: demesnes of several hundred acres, serf holdings ca. 30 acres

1700: avg farm – including all types, tiny and giant, 65 acres

1800: 150 acres in South, 100 in North

Daunton (P&P, p.62) from Mingay

Distribution of land ca. 1790

Great owners (>5k acres)	20-25%
Greater squierarchy (1-6/7k)	25-33
Smaller owners (<1k)	42-55
of whom small owner-occupiers	15-20

France by contrast perhaps 50% of land worked by peasant households who own or rent.

Why concentration in Britain more than France?

Recall Brenner story from Approaches. Neither demographic nor commercialisation forces explain European developments in Middle Ages and early modern period. Cannot explain how same situation produced different outcomes, e.g. disappearance of serfdom in West and its strengthening in East.

Instead it was political (even armed) conflict between classes that determined different outcomes.

In Britain lords were successful in limiting the rights of smallholders to hereditary tenure, commons rights, immunity from taxation. This led to consolidation of landholdings, large estates. Which led to capitalist tenant farming. Which led to agricultural productivity increase.

In France peasants were much more successful in preserving their position. The state became involved, seeing tax base in the peasantry, whom it supported against lords – who were a rival power anyway.

Britain

Enclosure = process of consolidating individual land holdings in arable and eliminating commons by allocating to individuals. Often associated with physically enclosing the new holdings for keeping animals in/out, hence enclosure.

Allen (cehmb) says about 45% of land in England enclosed already by 1500.

By 1700, only 29% still open fields or common.

These early enclosures were *voluntary*, at least in the sense that they didn't rely on appeal to higher authority, official coercion.

In 18-19c *parliamentary* enclosures become common.

Parliamentary enclosure rules allowed a majority of landownership to request a mandatory enclosure. Since landownership concentrated, might be a small number of individuals vs. majority of smallholders.

These enclosures could be enforced against the wishes of a minority.

Marxist view

Enclosures both created a class of landless labourers, i.e. a proletariat, and were a source of primitive accumulation of capital – class robbery. The bourgeoisie, in this view, were using their control over parliament post 1641 to push through change.

Two aspects: consolidation of scattered strips and enclosing the resulting larger plots; and privatising the commons and waste.

Debate about whether dividing up the commons effectively expropriated smallholders and landless labourers for whom access to the commons was important to their livelihood. Use of commons and later division of commons proportional to landholding, but in practice, supposedly, use prior to enclosure was more egalitarian, guaranteed a sort of minimum endowment for even the poorest. They lost this, if held no other land, in enclosure process.

France

I don't have data on farm size or consolidation, but no one seems to contest the claims that

peasants owned or otherwise controlled much of France's land

their holdings were typically small (in many cases too small for self-sufficiency)

open fields and scattered strips predominated

However, there is debate about whether this was truly bad for productivity (discussed below).

And there is debate about whether it was the *peasants* who blocked consolidation and enclosure in France.

Hoffman (1996, p. 26) example

1782 village of La Grande Paroisse has commons in form of a large meadow, which is leased out to provide income for the village.

The revenue went to pay (part of) the village's tax assessment. This disproportionately benefited the larger landowners who would have been responsible for most of the tax payments (which were meant to be proportional to landholdings).

Smallholders and day labourers propose to continue leasing out the commons but use revenue to pay a schoolmaster, a vicar, and leave a bit left over as income to individual residents. Villagers had no blind attachment to communal ownership and exploitation *per se*.

They were blocked by three prosperous larger landholders, who were explicit about how it would disadvantage them.

More generally, often the case that the well-off benefited more from the commons than the small fry. Often the case that landowners blocked change, not peasants, even if they (landowners) *claimed* to be safeguarding the poor.

Hoffman second example

Villages of Roville and Neuviller in Lorraine

King's intendant De la Galaizière, local seigneur and landowner, organises enclosures 1768-71:

consolidate landholdings, divide commons, enclose, redraw access roads and paths…

Also deals with drainage problem to stop wasteful defensive ploughing of very deep furrows around every strip, which end up permanently flooded; furrows coordinated from one plot to next to aid drainage, direction and link-up of furrows has to be maintained.

In agreement with local landowners

Highly successful – rents increase substantially after re-organisation. Rents of a religious order that held land in the area increased 55% in aftermath of changes (perhaps 32% adjusting for inflation).

Classic dispute arises – villagers complain that they have lost out from division of commons where they pastured their herd.

1781 shepherd leads flock through barriers and into enclosed field that used to be commons.

Court finds against, imposes fine on shepherd and village.

But appeal to higher court (parlement of Nancy) successful, judgment reversed.

This takes years – lawsuit still going at time of Revolution. Rhetoric about grazing rights of smallholders. But in fact the judges in the parlement were themselves seigneurs and landowners with grazing rights on the commons in (other villages in) this area! And you have to wonder how the villagers had the resources to pursue the legal case so far and long.

Moreover, real obstacle to the enclosures were landowners who tried to hold up the process.

De la Galaizière already in conflict with some local landowners, parlement of Nancy. Has authorisation from King, but worries about legal appeals. Wants voluntary agreement of everyone.

He has to take most expenses on himself to win agreement.

Pays legal and surveying expenses (about 1/3 of total costs)

All new roads made on his land.

Purchased land of hold-outs for above-market prices, effectively a bribe. Biggest bribe recipients were rich landowners.

Total costs 33,000 livres.

Compares with increase in total value of all land in the villages (capitalised higher future rental income) of 29,000-76,000 livres. Anywhere from half to all of the gain was lost in the cost of implementation.

De la Galaizière was a net loser in all of this, because he paid full costs but got only part of benefits. Had he not been forced to pay the bribes, he would have turned a profit even taking all the legal and surveying expenses on himself. Buying off the opposition is what would have killed off the project.

Not to worry, he was eventually compensated by the government. But an example of how the system of land tenure could be difficult to change.

Hoffman does not believe peasant households were steeped in some ancient communal ethos, opposed to all change. Property rights were contested, and change was difficult. But it was the seigneurs as often as the peasants who blocked change. Hoffman also thinks peasant households sometimes found ways around problems of the land tenure system, such as swapping plots so as to cultivate larger consolidated areas, even if ownership didn't change.

Rosenthal story about irrigation

Two sorts of problems.

1. Individuals have overly secure property rights and can block useful change. It may be that the ability to *change* property rights, rather than their clarity or security, is the key to progress.

Horwitz' interpretation of American law was that it changed property rights to suit whatever was needed for technical change, growth, modernisation. There were no other deep principles it upheld.

2. Conflicting jurisdiction claims make this even harder to resolve.

The Revolution

One sentence summary: did not do anything to facilitate enclosure, confirming security of individual property rights, confirmed small peasant households in ownership of a large share of all land.

So French-British differences persisted.

7. Did property rights, and enclosures, really matter so much?

Evidence from Britain suggests benefits of enclosure exaggerated.

Evidence for efficiency gain was from increases in rental income that came with enclosure.

Problems with this claim

Young exaggerated b/c he wanted to promote enclosure. It tended to benefit larger landholders.

This was also true of some French landowners, who sought justification for self-interested redistributions.

(Presumably b/c they got a share of commons proportional to their private landholdings in both cases.)

Rent can double even if efficiency increases by much less, because land is the *residual claimant*.

If wage and return to capital don't change, all of increased efficiency goes to land. That is nature of rent.

Suppose rent is just 10% the value of output. Now let output rise by 10% due to enclosure, with the entire increment goes to land. Rent doubles, without anything like doubling efficiency.

Clark (JEH 98)

Historians looking at well-documented cases of British enclosures in late 18c

a) lazy – relied on little actual evidence

b) failed to account for generalised increases in *all* rents (irrespective of new enclosure) in a period of rising agricultural prices

c) failed to account for how change of ownership and/or cultivation could eliminate tithe requirement. Benefits owner but no efficiency improvement.

True increases in rent much less than doubling. Clark's alternative data indicate much smaller increases.

Clark calculates that gains from enclosure (which was expensive b/c of building roads, fences, paying costs of commissioners) were not better

than alternative uses of funds. This until mid 1700s, just when last wave of enclosures starts.

Allen careful comparison suggests little gain in pure efficiency from enclosure.

Yields in bushels per acre.

	Open	enclosed	pct gain
Heavy arable district			
Wheat	19.7	20.2	2.2
Barley	26.5	31.8	20.0
Oats	23.5	33.0	40.4
Beans	18.8	22.2	18.1
Avg.	21.2	24.1	14.7
Light arable district			
Wheat	20.0	19.7	-1.5
Barley	27.0	29.3	8.5
Oats	26.5	32.5	22.6
Beans	19.9	18.1	-9.0
Avg.	23.4	24.7	5.6
Pasture district			
Wheat	20.9	21.9	4.8
Barley	28.0	32.2	15.0
Oats	36.9	38.1	3.3
Beans	22.4	23.4	4.5
Avg.	24.7	26.7	8.1

For wheat, there is hardly any advantage at all.

More generally, percentage improvements in yields are modest. The only really striking one is oats in the heavy arable district.

This doesn't mean enclosure completely useless, b/c it could permit a more easy conversion to something like convertible husbandry, greater livestock production, greater value of output. It just didn't directly increase yields of main crops very much. A facilitator of productivity growth through structural change.

Allen (2009 book) also documents at least some cases of collective (rather than individual) agricultural innovation.

Oxfordshire villages as a whole decided to experiment with sainfoin. At first voluntary, later made compulsory with help of landlord's agent, who threatened non-cooperators with making life difficult.

This suggests dispersed ownership and small scale not the insuperable obstacle to experimentation and innovation.

Grantham and Hoffman say many alleged problems could be circumvented in France too.

> for example by exchanging leased plots of land so as to have contiguous area for cultivation.
>
> Land cultivated didn't have to correspond with land owned or rented.
>
> With ownership not same as cultivation, small farm size didn't have to mean diseconomies of small scale.

Grantham calculates costs of enclosure. There was no law making it easy to override minority opponents.

8. What, then?

What then would be the deep explanation for British advantages?

Many small effects could have added up to something big, either by cumulation or interaction.

Capital (animal) intense vs. labour intense form of agriculture seems to be key.

> This could have to do with population density (further back in history, possibly to de-population of Britain post Black Death).
>
> And wool production for woollen industry.
>
> Is there some way that peasant HHs cannot or will not make the switch to animal husbandry? Indivisibilities or minimum threshold investments?

And perhaps w/ enclosure too.

> It's not that enclosure magically increases productivity of particular activities, but that it facilitates switching activities.

Perhaps Smithian growth through greater specialisation

> Access to large markets for particular products, including animal products, could lead to move away from subsistence, specialisation in production for market. This could lead to adoption of best techniques and organisation for those particular specialisations. (Or, perhaps, through learning by doing, to better techniques for any particular specialisation.)
>
> Access to large markets driven by

market integration

transport infrastructure

urbanisation

incomes (which could be high due to industry / trade)

We will discuss in another lecture how Britain had advantages along these dimensions.

Grantham (JEH 89) argues that French farmers responded to market opportunities. In locations from which urban markets were accessible, they worked harder, invested more, switched crop mix towards marketable goods. All this raised productivity, though it did not involve any revolutionary change, completely new techniques.

Ambiguity about how important property rights were in either Britain or France frustrating.