Clark Thesis Slides

Econ 560

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Big Picture

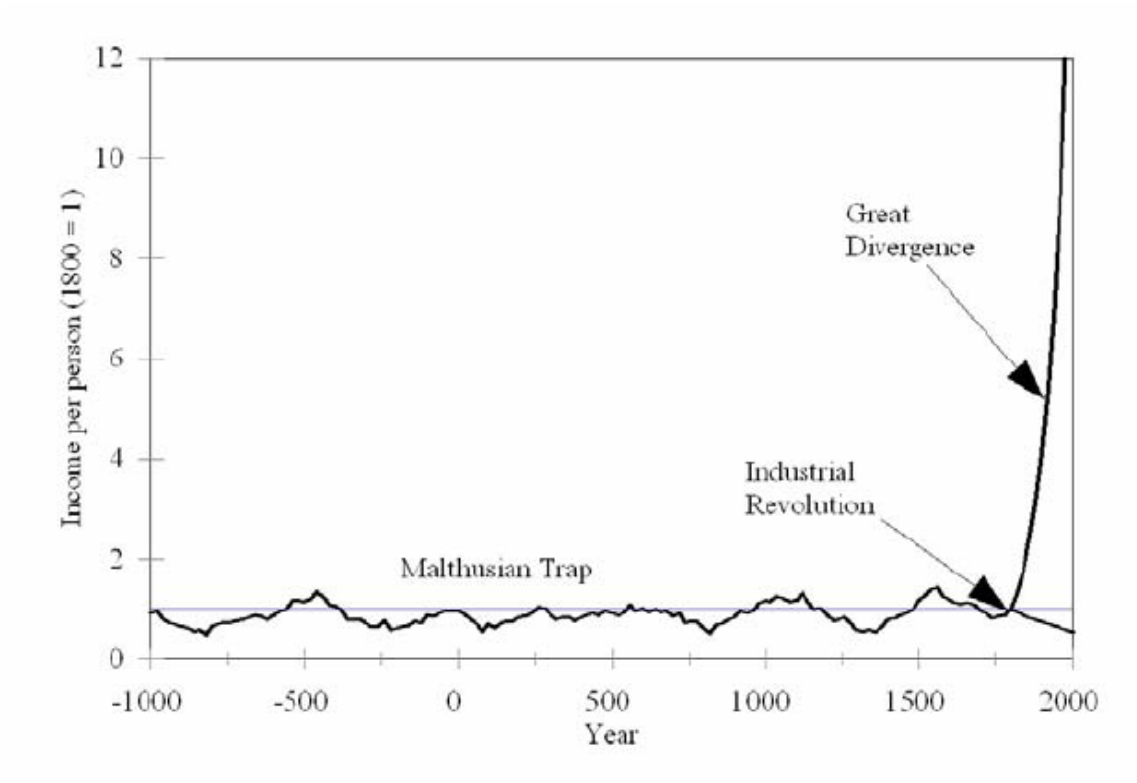


Figure: World Economic History in One Picture

Technical Progress in England

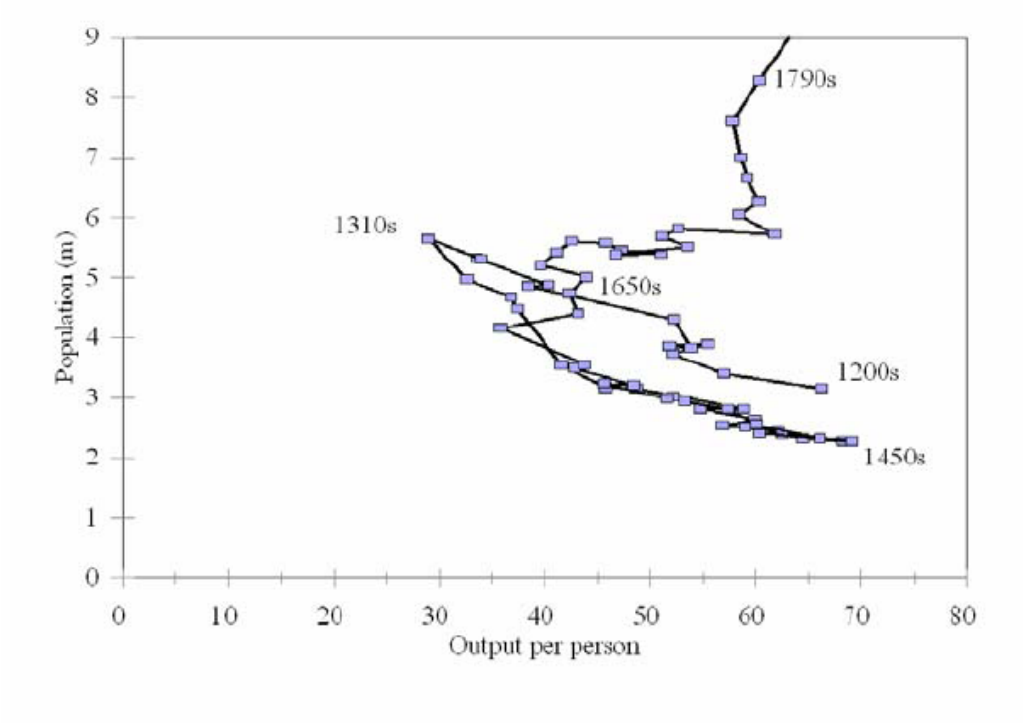


Figure: Revealed Technical Progress in England, 1200-1800

Workers' Wages in England

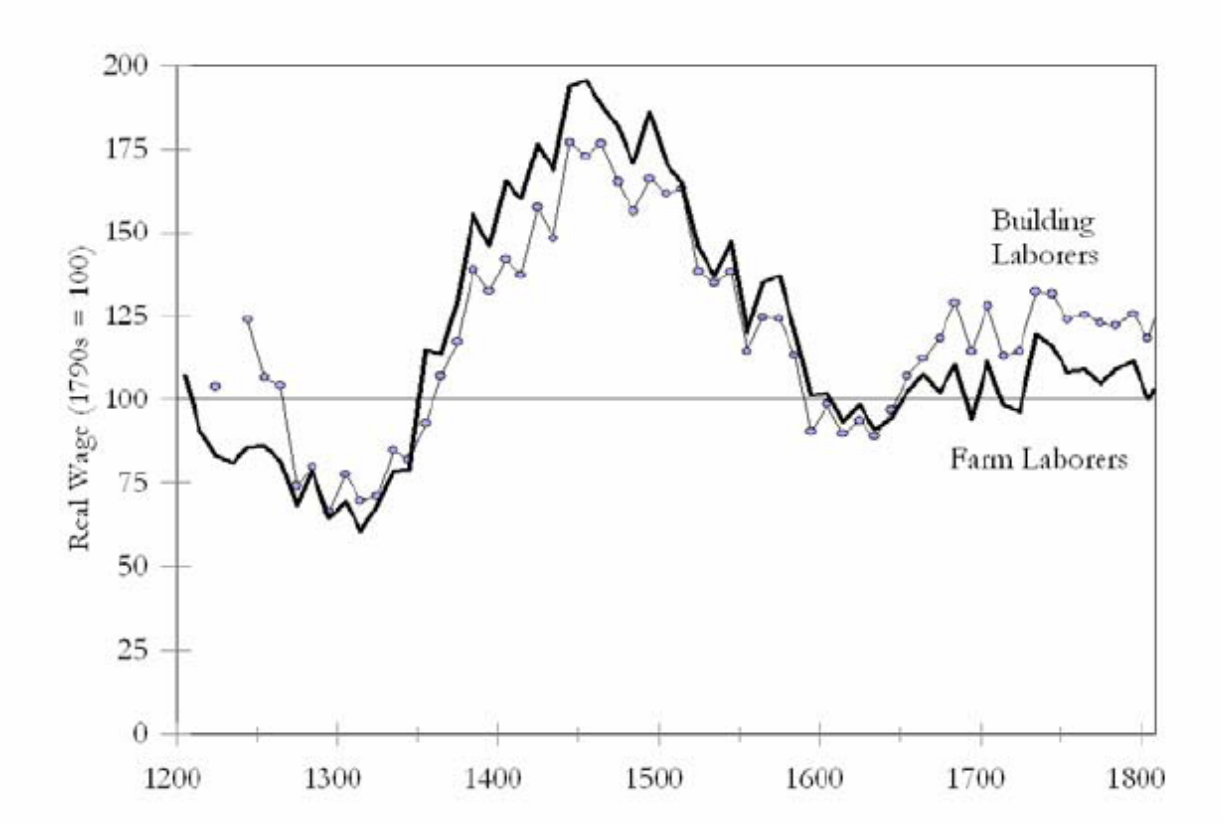
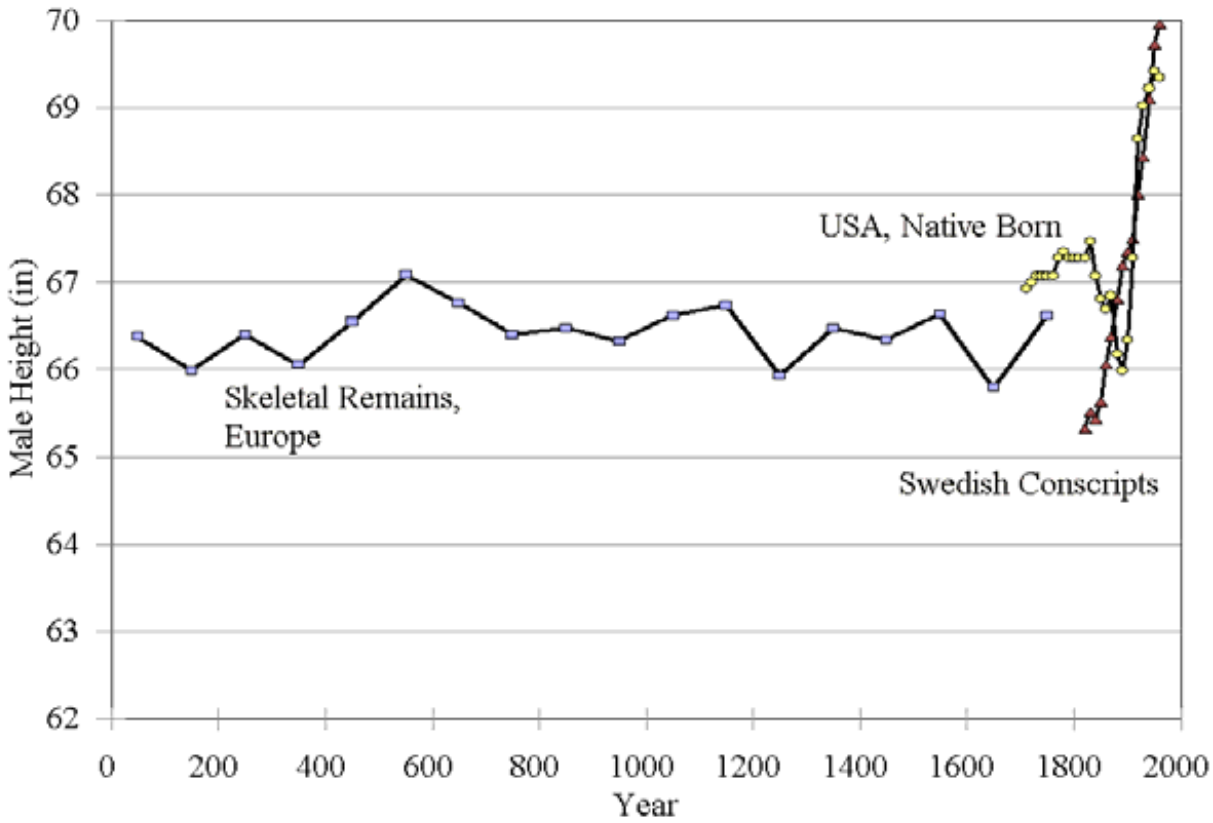


Figure: English Laborer Real Wages, 1209-1809

England and Malawi Living Standards

	England, 1800 (d.)	England, 1800 Units per day	Malawi 2001-2 (Kwacha)	Malawi 2001-2 Units per day
Wage	23.9	-	69	-
Prices				
Flour (kg)	7.5	3.2	33	2.1
Bread (kg)	5.9	4.0	46	1.5
Potato (kg)	1.2	20.4	16	4.2
Beef (kg)	17.4	1.4	123	0.6
Eggs (doz)	11.1	2.1	84	0.8
Milk (l)	2.4	9.9	48	1.4
Sugar (kg)	26.3	0.9	42	1.7
Beer (l)	4.1	5.8	93	0.7
Tea (kg)	219.5	0.1	248	0.3
Salt (kg)	9.1	2.6	24	2.8
Cost of English Basket	23.9	1.0	178	0.4

Height over Time



Labor Inputs

Group	Group or Activity	Hours
Tatuyo[k]	Shifting cultivation, hunting	7.6
Mikea[i]	Shifting cultivation, foraging	7.4
Ache[b]	Hunting	6.9
Abelam[a]	Subsistence agriculture, hunting	6.5
!Kung[g]	Foraging	6.4
Machiguenga[h]	Shifting cultivation, foraging, hunting	6.0
Xavante[f]	Shifting cultivation, hunting	5.9
Aruni[c]	Subsistence agriculture	5.2
Mekranoti[f]	Shifting cultivation, hunting, foraging	3.9
Shipibo[j]	Subsistence agriculture, fishing	3.4
Bemba[d]	Shifting cultivation, hunting	3.4
Hiwi[e]	Hunting	3.0
Yanomamo[k]	Shifting cultivation, hunting, foraging	2.8
Median		**5.9**
Britain, 1800[n]	Farm laborers, paid labor	8.2
England, 1800[o]	Building Workers, paid labor	9.0
London, 1800[p]	All Workers	9.1
UK, 2000[q]	**All, 16-64**	**8.8**

Productivity Comparison

Group	Location	Staple Foods	Kcal. per hour
Mikea[f]	Madagascar	Maize	110,000
Mikea[f]	Madagascar	Tuber foraging	1,770
Mekranoti[d]	Brazil	Manioc, Sweet Potato, Banana, Maize	17,600
Shipibo[g]	Peru	Banana, Maize, Beans, Manioc	7,680
Xavante[d]	Brazil	Rice/Manioc	7,100
Machiguenga[e]	Peru	Manioc	4,984
Kantu[c]	Indonesia	Dry Rice	4,500
Hiwi[b]	Venezuela	Game (men)	3,735
Hiwi[b]	Venezuela	Roots (women)	1,125
Ache[a]	Paraguay	Palm fiber, shoots (women)	2,630
Ache[a]	Paraguay	Game (men)	1,340
Foragers, median			**4,740**
England, 1800		Wheat, milk, meats	2,600

Figure: Calories produced per worker-hour

Reproductive Differences

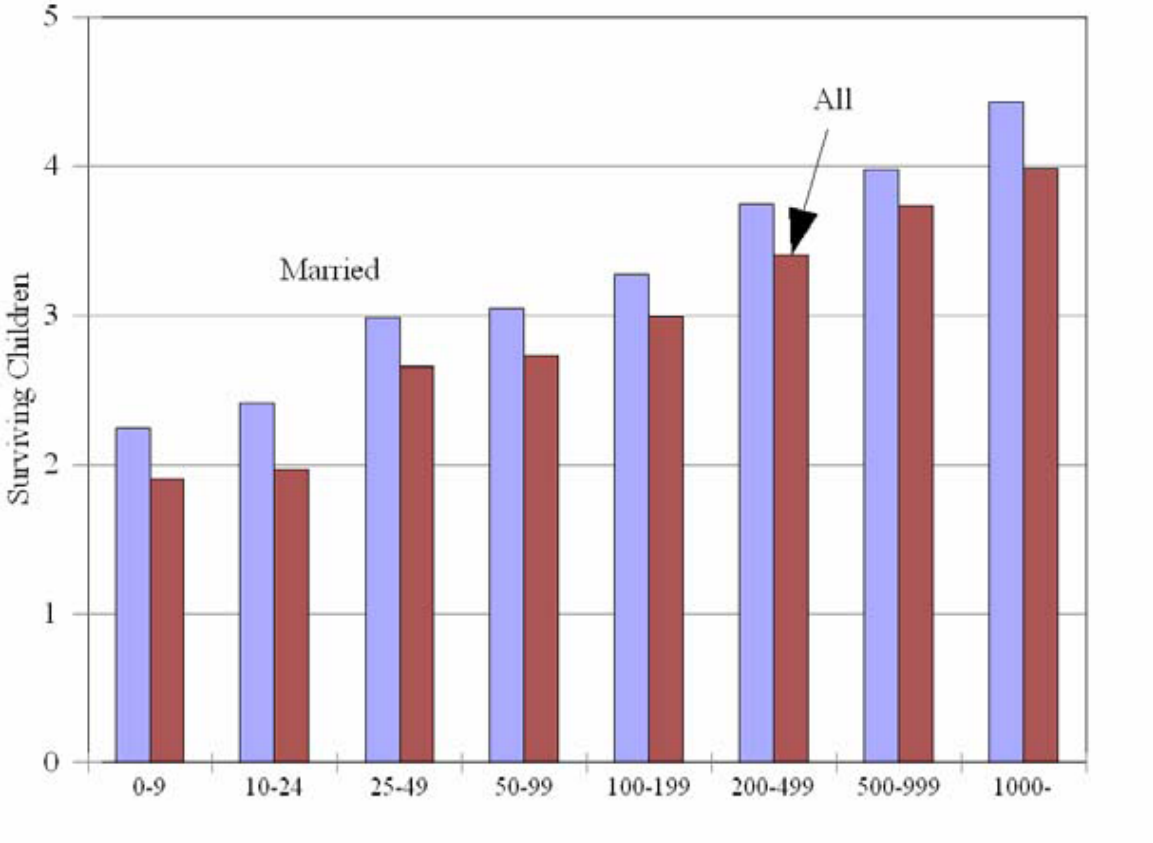


Figure: Surviving Children by Assets

Sons per Testator Type

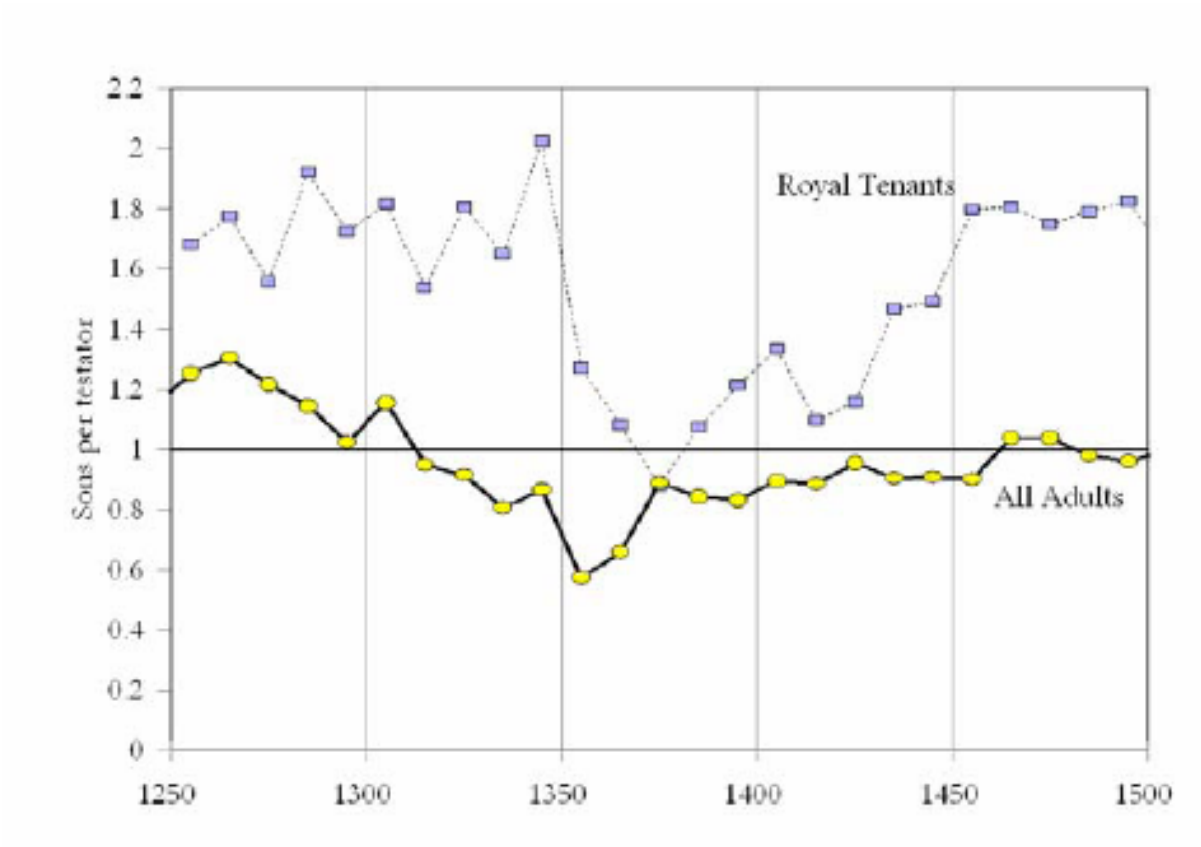


Figure: Sons per Testator by Type

Tax Burdens

Country	Period	All taxes (including church) %
England[a]	1200-1349	8-10
England[a]	1760-1859	14-16
Ming China[b]	c. 1550	6-8
Quing China[b]	c. 1650	4-8
Quing China[b]	c. 1750	8
Ottoman Empire[d]	1500-99	3.5
Ottoman Empire[d]	1600-99	3.5
Ottoman Empire[d]	1700-99	4.5
USA[c]	2000	30
England[c]	2000	37
France[c]	2000	45
Sweden[c]	2000	54

Institutional Comparison

incentives of medieval versus modern England

Economic Desiderata	**1300**	**2000**
Low tax rates	yes	no
Modest social transfers	yes	no
Stable money	yes	no
Low public debt	yes	no
Security of Property	yes	yes
Security of person	?	yes
Social Mobility	yes	yes
Free goods markets	yes	yes
Free labor markets	yes	yes
Free capital markets	yes	yes
Free land markets	yes	no
Rewards for knowledge creation	?	yes

Land Prices in England and Flanders

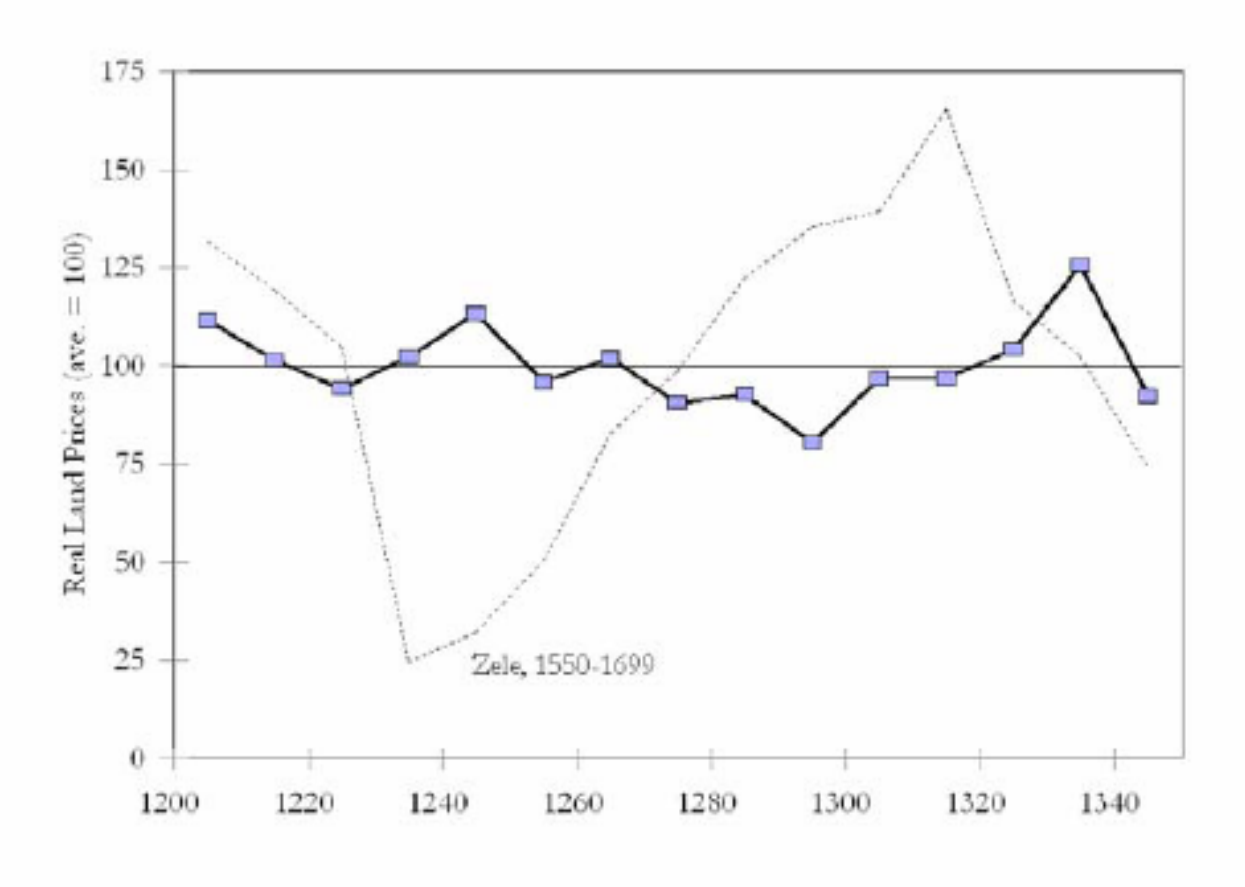


Figure: Land Prices in England

Real Rates of Return

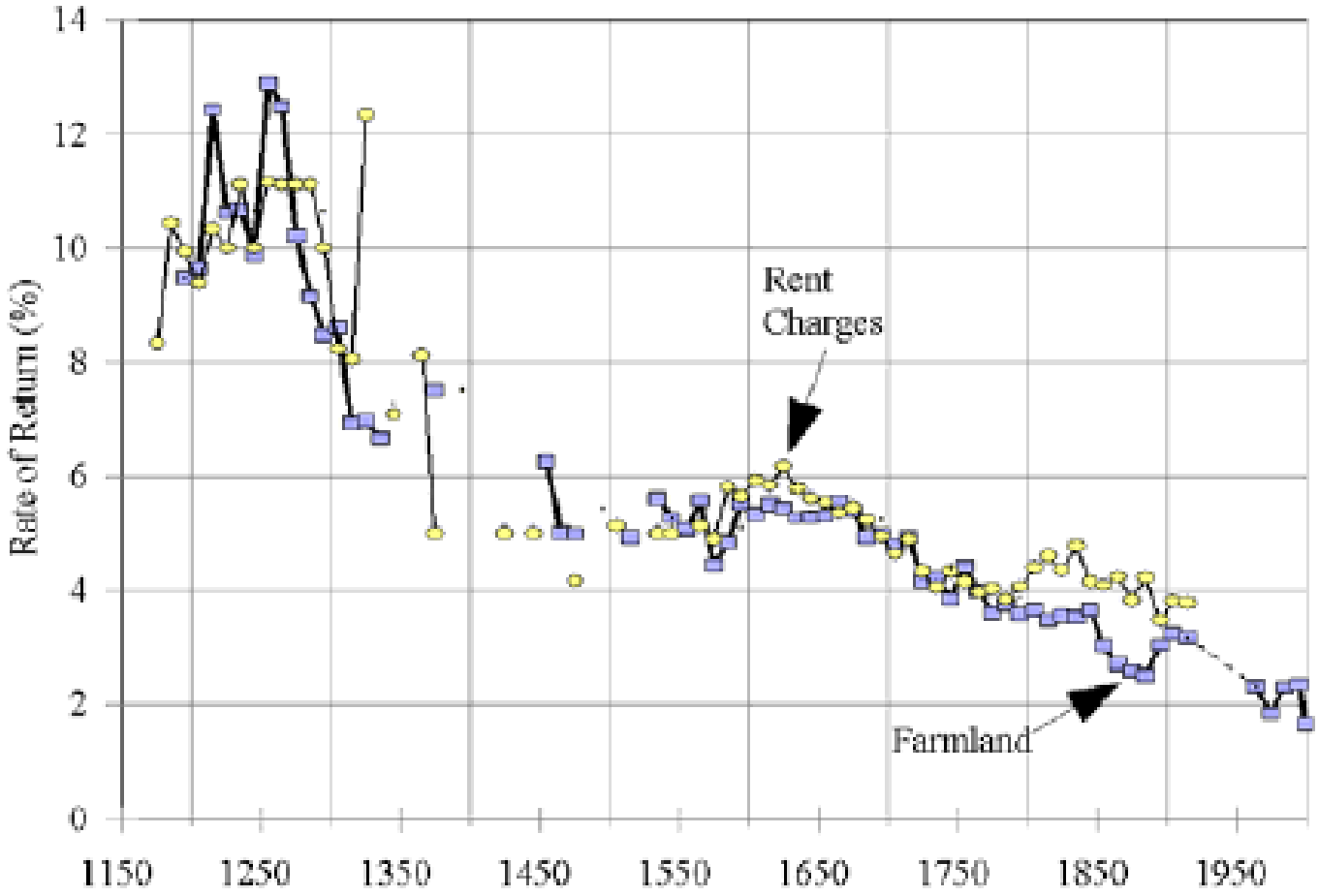


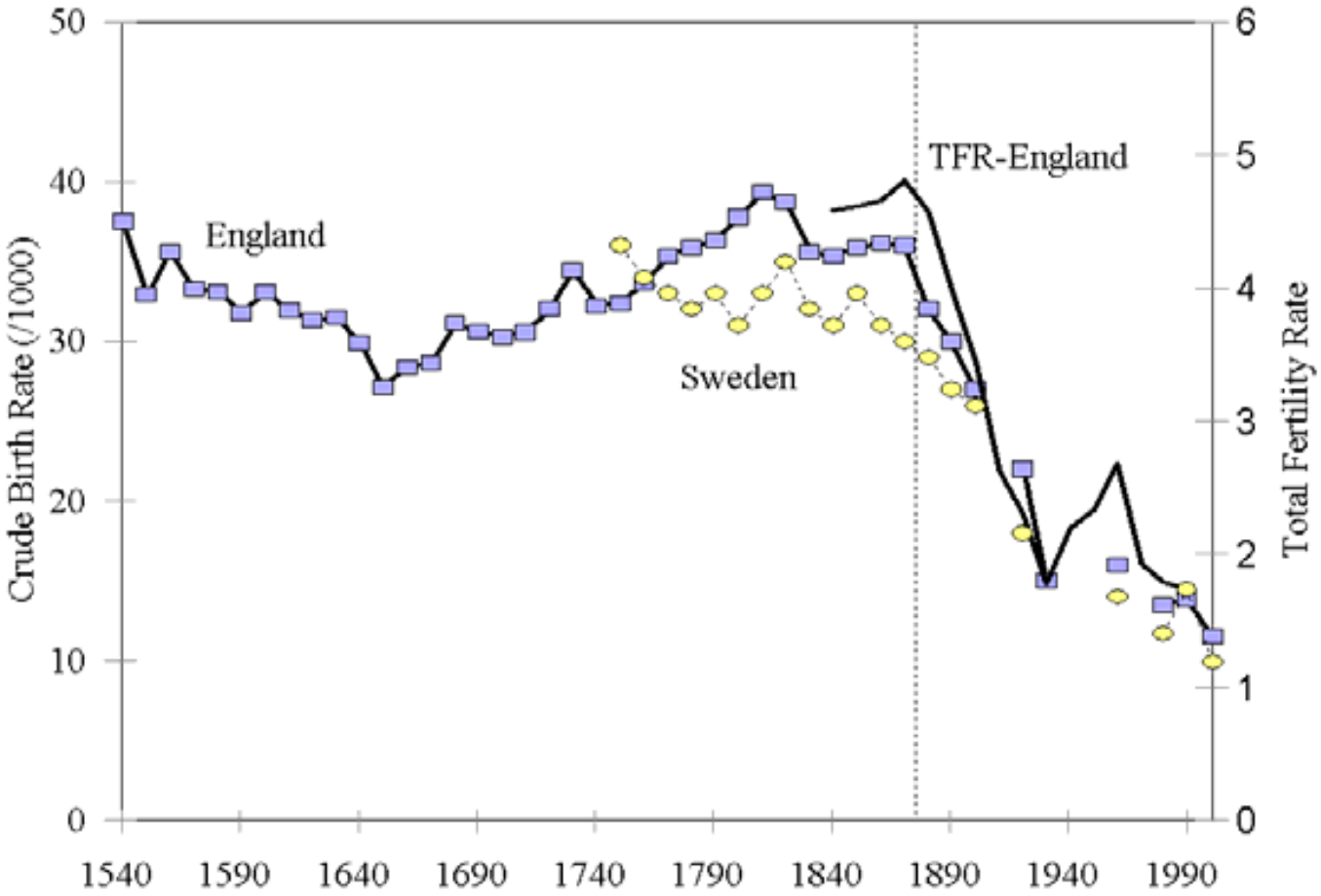
Figure: Rates of return on land and rent charges

Interest Rates Across Regions, 1200

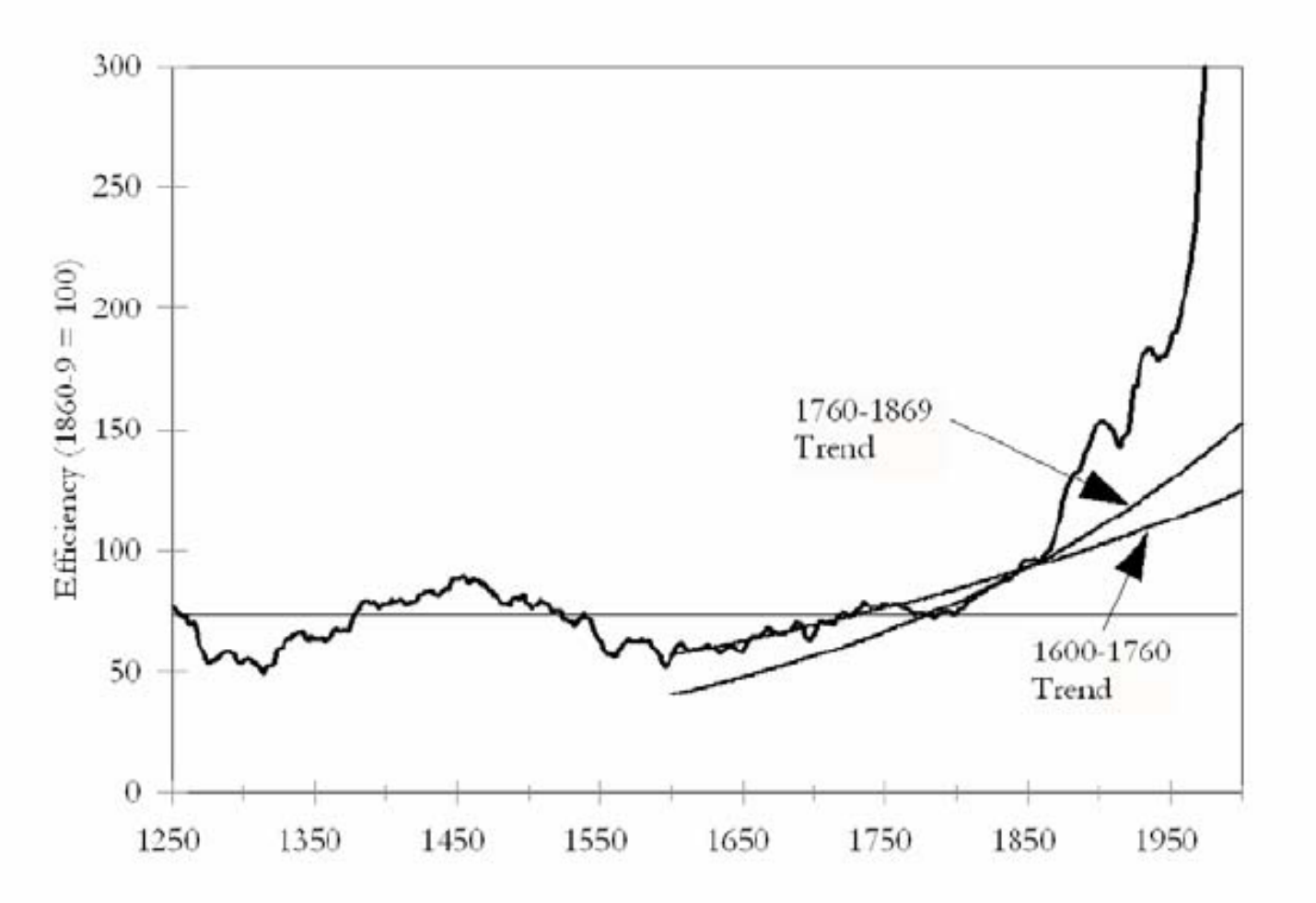
Place	Land	Rent Charges
England	10.0	9.5
Flanders	-	10.0
France	11.0	-
Germany	10.2	10.7
Italy	10.1	10.7

Figure: Rate of Return on Capital and Land, 1200-1349

Demographic Revolution



Industrial Revolution



Industrial Revolution

Sector	Efficiency Growth Rate (%)	Share of national income	Contribution to National Efficiency Growth Rate (%)
All Textiles	-	0.11	0.24
Cottons	*2.4*	*0.06*	*0.18*
Woolens	*1.1*	*0.04*	*0.05*
Iron and Steel	1.4	0.01	0.02
Coal Mining	0.2	0.02	0.00
Transport	1.2	0.08	0.09
Agriculture	0.3	0.30	0.07
Identified Advance	-	0.51	0.42
Whole Economy	-	1.00	0.40

Gains from Innovation

Innovator	Device	Result
John Kay	Flying Shuttle, 1733	Impoverished by litigation to enforce patent. House destroyed by machine breakers 1753. Died in poverty in France.
James Hargreaves	Spinning Jenny, 1769	Patent denied. Forced to flee by machine breakers in 1768. Died in workhouse in 1777.
Richard Arkwright	Water Frame, 1769	Worth £0.5 m at death in 1792. By 1781 other manufacturers refused to honor patents. Made most of money after 1781.
Samuel Crompton	Mule, 1779	No attempt to patent. Grant of £500 from manufacturers in the 1790s. Granted £5,000 by Parliament in 1811.
Reverend Edmund Cartwright	Power Loom, 1785	Patent worthless. Factory destroyed by machine breakers. Granted £10,000 by Parliament in 1809.
Eli Whitney (USA)	Cotton Gin, 1793	Patent worthless. Later made money as a government arms contractor.
Richard Roberts	Self-Acting Mule, 1830	Patent revenues barely covered development costs. Died in poverty in 1864.

Productivity in Book Production

Productivity with Alternative Weights

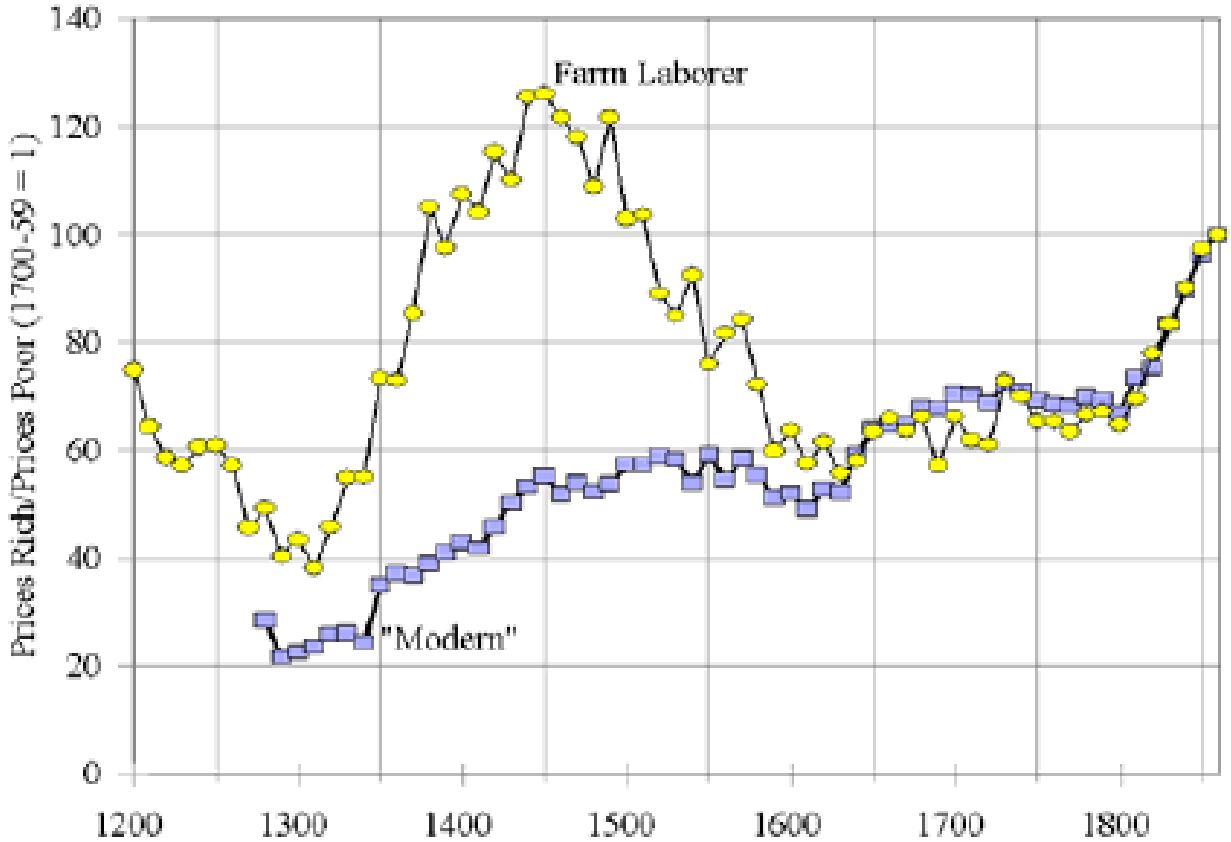


Figure: Productivity Growth with Alternative Consumption Weights

Forager vs Laborer Output Profiles

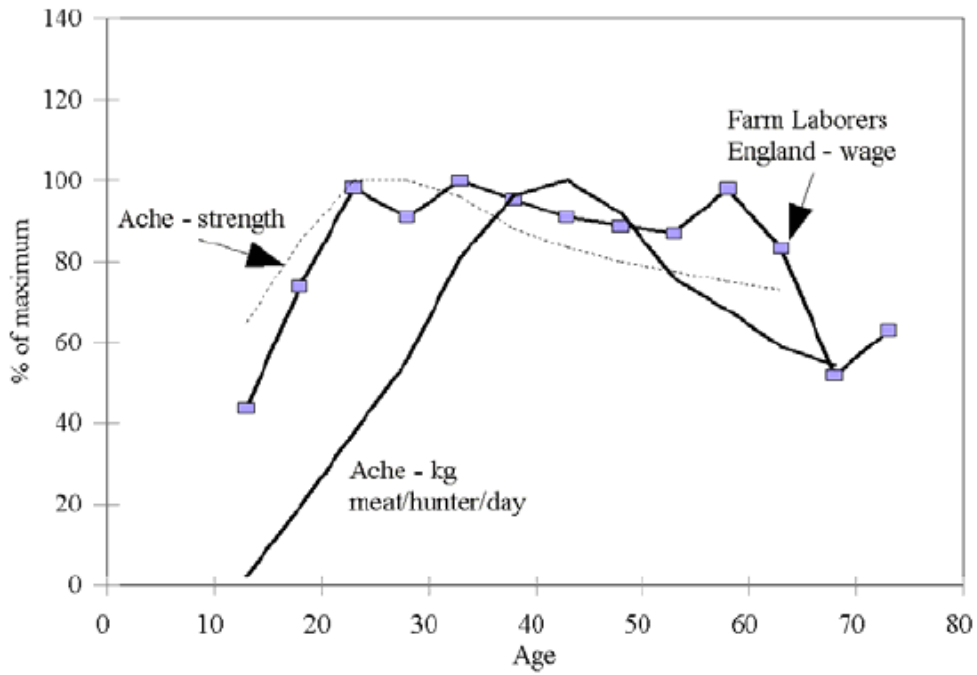


Figure: Forager versus Laborer Output

Literacy and Assets

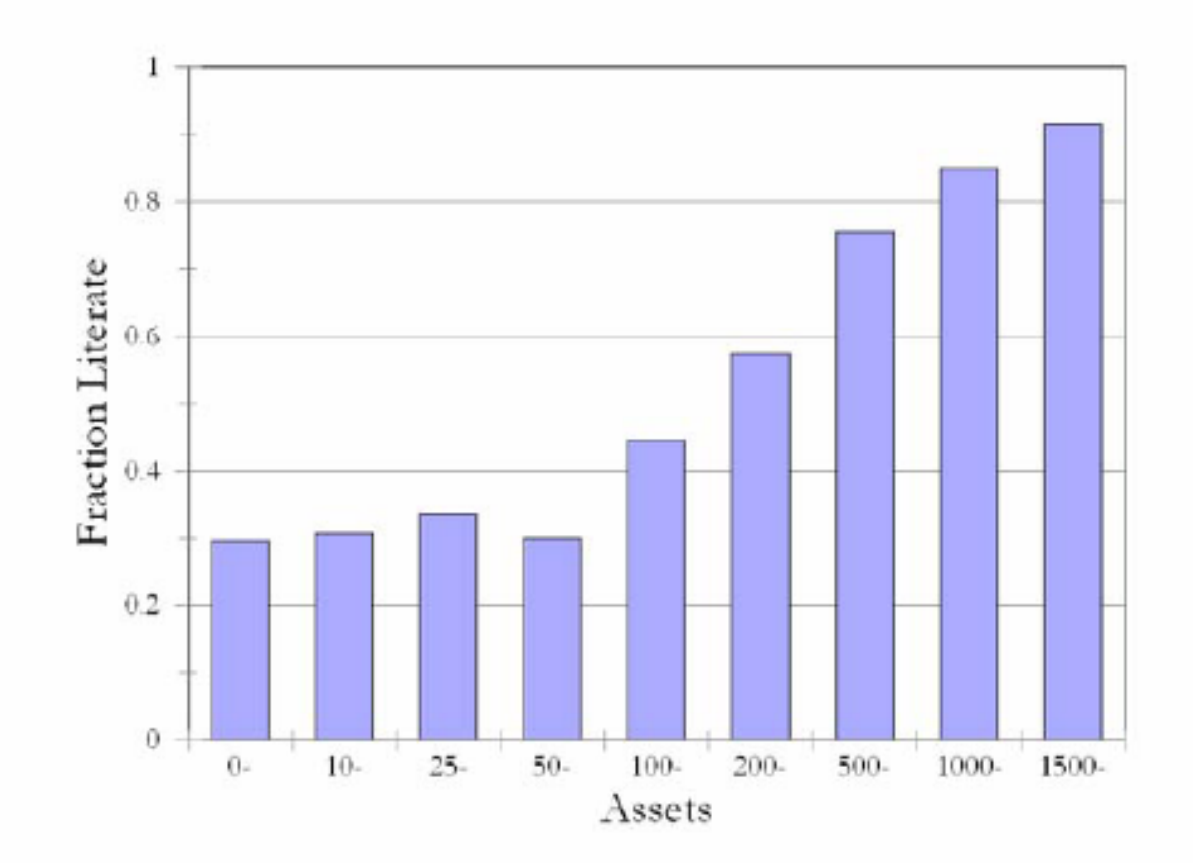


Figure: Literacy and Assets, 1630

Great Divergence

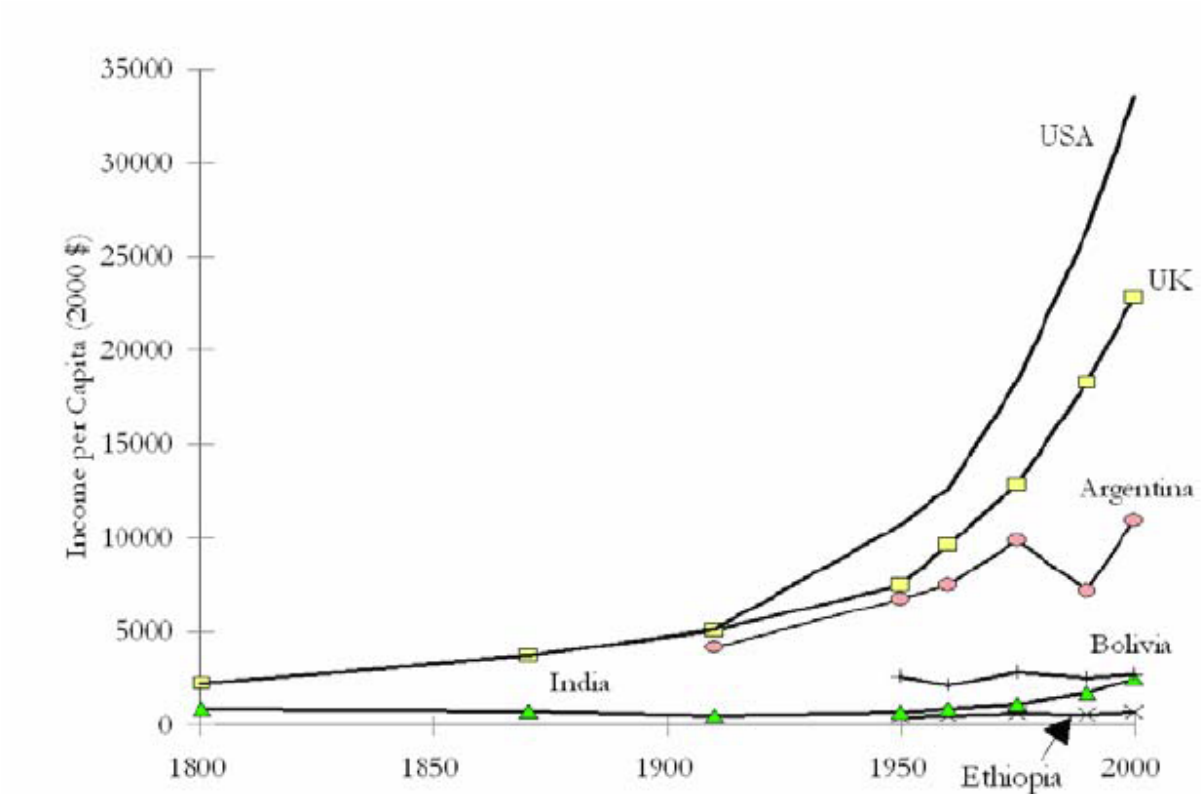


Figure: The Great Divergence

Cost of Spindles

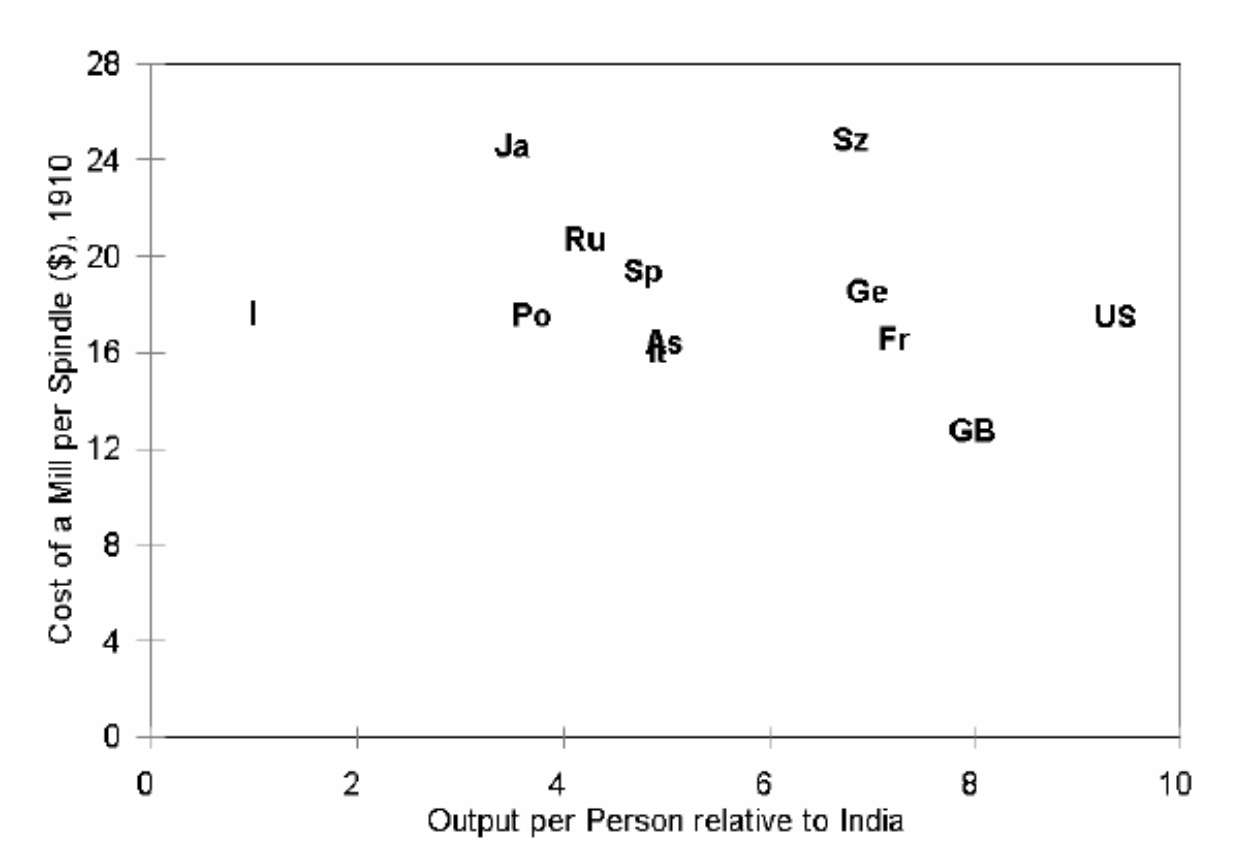


Figure: Estimated Purchase Price of Spindles

Cost of Spindles

CAPITAL AND LABOR PRODUCTIVITY IN SPINNING 20S YARN: INDIA AND JAPAN, 1890–1938

Period	Pounds of Yarn per Worker-hour		Pounds of Yarn per Spindle-hour	
	India	Japan	India	Japan
1890–1894	0.75	0.80	0.027	0.026
1895–1899	0.79	0.89	0.028	0.036
1900–1904	0.80	1.35	0.026	0.039
1905–1909	0.78	1.42	0.029	0.040
1910–1914	0.75	1.63	0.027	0.044
1915–1919	0.73	1.91	0.026	0.042
1920–1924	0.92	1.88	0.027	0.042
1925–1929	1.13	2.56	0.034	0.042
1930–1934	—	3.54	—	0.048
1935–1938	0.90	3.99	0.030	0.045

Notes: The figures for India for the years 1925–1929 are a from a sample of some Bombay mills in 1929 only. We show later that in Bombay there was little increase in output per worker between 1907 and 1938. The figures for India from 1935–1938 are for 1949, because figures for the intervening years are not available. As can be seen there is no growth in labor productivity in India between 1920 and 1949.
Source: Clark, "Textile History."

Bombay Textile Industry

Year	Gross profit rate on fixed capital %	Industry size m. spindle-equivalents	Output per worker 1905-9 = 100	Output per worker Japan 1905-9 = 100
1907-9	6	3.1	100	100
1910-4	5	3.4	103	115
1915-9	7	3.7	99	135
1920-4	8	4.0	94	132
1925-9	0	4.5	91	180
1930-4	0	4.4	104	249
1935-8	2	3.9	106	281

Figure: Bombay Cotton Textile Industry, 1907-38

Profits and Rationalization

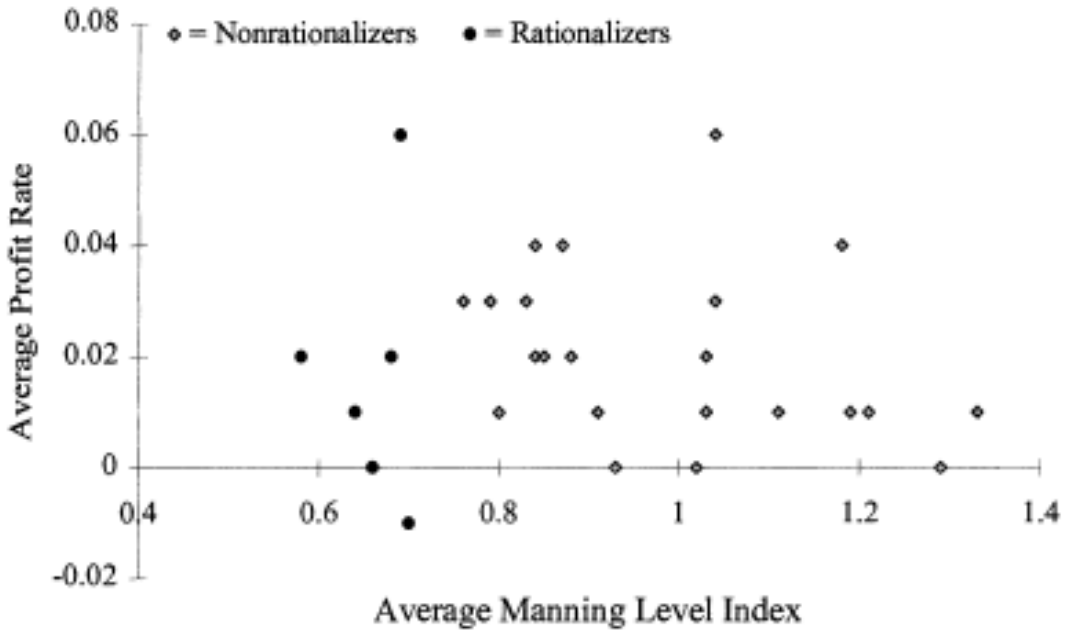


FIGURE 1
AVERAGE PROFIT RATES AND MANNING LEVEL INDICES, 1935–1938

Notes: These are the average profit rates and manning level indices, L_i / L_o, of the 27 firms for which we have profit data in the period from 1935 to 1938. The rationalizing firms are those identified by the Bombay Labour Officer as having successfully "rationalized" their production (File 81(3) Textile Labour Enquiry Committee, Extracts on Rationalization, vol. 3, p. 2). Toyo Podar is the only rationalized firm not included here as there are no published profit data.