Announcements

- The second referee report is due March 30th at 5pm (on "Intergenerational Occupational Mobility in Great Britain and the United States since 1850")
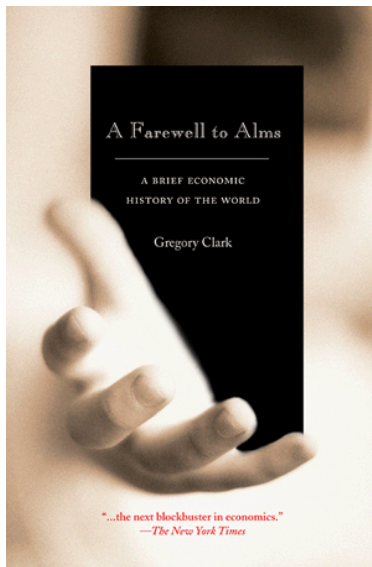- The empirical project is due April 20th at 5pm

Final Set of Readings

- Clark (2008) "A Farewell to Alms" Chapter 13
- Bleakley (2007) "Disease and Development: Evidence from Hookworm Eradication in the American South"
- Goldin and Katz (1998) "The Origins of Technology-skill Complementarity"
- Long and Ferrie (2013) "Intergenerational Occupational Mobility in Great Britain and the United States since 1850"

Clark and A Farewell to Alms

- We have taken a look at several theories of economic development and the Industrial Revolution
- Institutions: North, Thomas and others suggest that getting the right institutions is fundamental to economic growth
- The institutions story can be told either as exogenous or endogenous change in institutions
- Pomeranz: the advantage of resources (Britain having access to coal and the New World)
- Diamond: geography and ecology, countries with good environments get a head start
- Nunn, Acemoglu, Johnson, Robinson, Jha: geography and institutions

Clark's Critique of Institutions Story

- What's unsatisfactory with an exogenous institutional change story:
  - No sign of improvement in the appropriability of knowledge until Industrial Revolution is well under way
  - Institutions aren't really exogenous
- What's unsatisfactory with an endogenous institutional change story:
  - Means that what is important is what changes institutions, not the institutions themselves
  - There is no path dependence from institutional history
  - Even if you start with inefficient institutions, they will be subverted and refashioned (examples include wager of battle, interest rates)

Clark's Critique of Institutions Story

Gains from Innovation During the Industrial Revolution

Inventor	Invention	Result
John Kay	flying shuttle	Impoverished by litigation to enforce patent, house attacked by machine breakers, fled to France and died in poverty
James Hargreaves	spinning jenny	Difficulty enforcing patent, forced to flee by machine breakers
Richard Arkwright	water frame	Died wealthy but had trouble enforcing (and keeping) patents
Samuel Crompton	mule	Did not patent invention, did receive an award from parliament but never saw big success
Edmund Cartwright	power loom	Mill repossessed by creditors, factory burned by machine breakers
Eli Whitney	cotton gin	Costly litigation to enforce patent, near bankruptcy
Richard Roberts	self-acting mule	In financial trouble by end of career

Depiction of a judicial duel, Hans Talhoffer, 1459

Ashford v. Thornton, 1818
"Not guilty, and I am ready to defend the same with my life."

Clark's Critique of Multiple Equilibrium Story

- What about being stuck in an bad equilibrium in terms of institutions?
    - Argument is that if a ruler has enough power, they can maintain bad institutions that are personally profitable
    - Doesn't explain why England in the 19th century and not some other society
    - May not explain why a ruler with that much power wouldn't promote growth (and keep the rewards)
- What about being stuck in a bad human capital equilibrium?
    - Argument is that there was a switch from a bad, low human capital state to a good, high human capital state
    - Not clear what would motivate the switch before the Industrial Revolution
    - Big demographic transition occurred after onset of Industrial Revolution

Clark's Critique of Pomeranz

- Pomeranz assumes that markets and incentives are sufficient for rapid economic growth
- Pomeranz acknowledges that China had extensive markets and well-defined property rights, so he assumes the problem was an external constraint (geography)
- Clark says it can't just be the market and incentives but a change in how people responded to market incentives
- An important difference between England and China was how the mindsets of people were changing, something Pomeranz doesn't compare

Motivating Clark's Explanation of the Industrial Revolution

- In terms of institutions, technology, markets, etc. China and Japan looked like they were following similar paths to England
- Switch focus from institutional differences and geographical differences to differences in the population
- Look for differences in how populations and social characteristics evolved leading up to the Industrial Revolution
- Specifically, look at the spread of education and of certain traits in the population that promote economic growth

Differences in Social Evolution

- Measuring social evolution: interest rates, level of education
- Interest rates were low in England compared to in Asia
- In 1760, secured loans had interest rates around 15% in Japan and around 5% in England
- Literacy and numeracy were lower in Asia than in England
- Clark takes these observations as evidence that England was further along in terms of social evolution than Asia, even if Asian societies were moving in the same direction

Where does this evidence on the education of society come from?

- Not much data out there measuring actual education level
- Can find crude measures of literacy and numeracy which serve as proxies for education
- Still problems with measuring literacy and numeracy
- Indirect evidence comes from the kinds of documents that survive and how many documents survive
- Look at things like how well people could report their ages, whether they could sign their name

Refresher on Age Heaping

- Age heaping occurs when people round to ages ending in zero or five when estimating their ages.
- If everyone reported age correctly, 20 percent of the population would report an age ending in a zero or five.
- If everyone rounded, 100 percent would report an age ending in a zero or five (20 percent of these people would get lucky and actually be correct).

$$H = \frac{5}{4}(X - 20)$$

- When $X = 20$, $H = 0$ and when $X = 100$, $H = 100$.

Refresher on Age Heaping

- An alternative measure is the Whipple Index (George Whipple, 1866-1924)
- Focuses on the population between ages 23 and 62
- $Pop_{0,5}$ is the number of people with an age ending in 0 or 5
- Pop_{all} is the total population

$$W = 500 \cdot \frac{Pop_{0,5}}{Pop_{all}}$$

- $W = 100$ when 20 percent have an age ending in 0 or 5
- $W = 500$ when 100 percent have an age ending in 0 or 5

Age Heaping and Illiteracy

Figure 6. Age heaping and illiteracy in three U.S. censuses
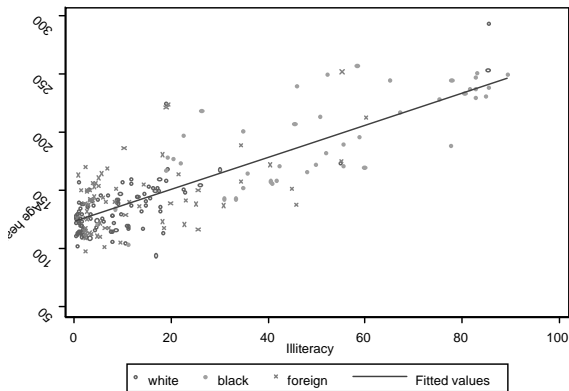
From Hearn, Baten and Crayen, age heaping is measured using the Whipple index, an observation is a state-census year

Age Heaping in the Long Run

Age Heaping Over Time

| Location	Date	Type	Group	Heaping
England	1350	Both	Rich	61
Florence, Italy	1427	Urban	All	32
Florentine territory	1427	Rural	All	53
Corfe Castle, England	1790	Urban	All	8
Corfe Castle, England	1796	Urban	Poor	14
Ardleigh, England	1796	Rural	All	30
Terling, England	1801	Rural	Poor	19
Cotton operatives, England	1833	Both	Workers	6

Figure 7. Age heaping in the long run
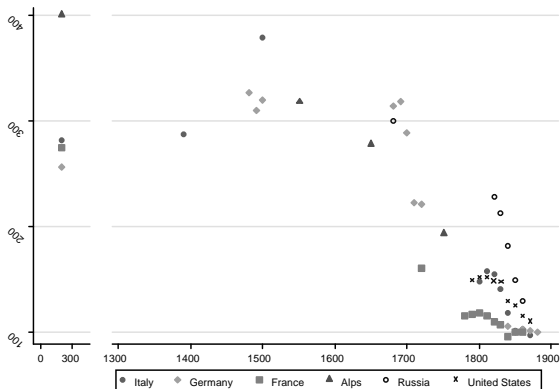
From Hearn, Baten and Crayen, age heaping is measured using the Whipple index

Age Heaping by Region
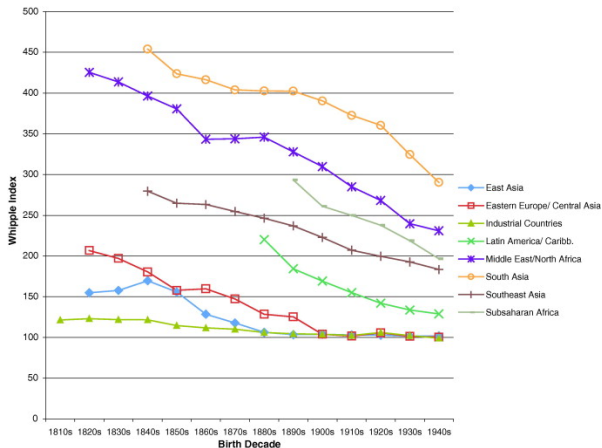
From Crayen and Baten, age heaping is measured using the Whipple index

Refresher on Measuring Literacy Rates

- Can look at volume of records as an indication of overall literacy rates (Clark compares England and India on this basis)
- Can look at the number of people that can sign or read various types of documents:
  - Percentage of grooms who signed the marriage register
  - Percentage of witnesses who signed their depositions
  - Percentage of witnesses who signed ecclesiastical court declarations
  - Number of people who could read a passage of the Bible (to get out of secular court)

Literacy Over Time

Figure 9.3   Literacy in England, 1580–1920. Data for 1750s–1920s from Schofield, 1973, men and women who sign marriage resisters; for the north, 1630s–1740s, from Houston, 1982, witnesses who sign court depositions; for Norwich Diocese, 1580s–1690s, from Cressy, 1980, witnesses who sign ecclesiastical court declarations.
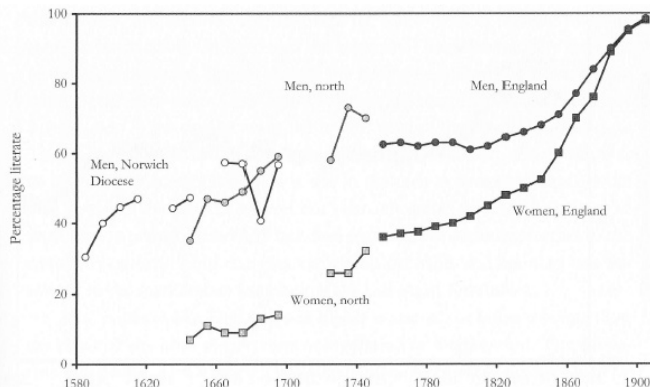
Literacy Over Time

Figure 9.3   Literacy in England, 1580–1920. Data for 1750s–1920s from Schofield, 1973, men and women who sign marriage resisters; for the north, 1630s–1740s, from Houston, 1982, witnesses who sign court depositions; for Norwich Diocese, 1580s–1690s, from Cressy, 1980, witnesses who sign ecclesiastical court declarations.
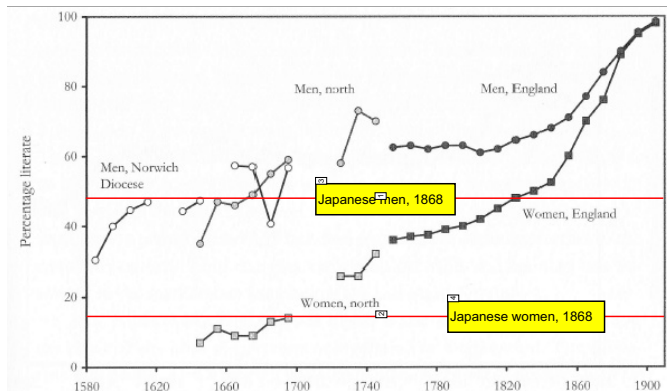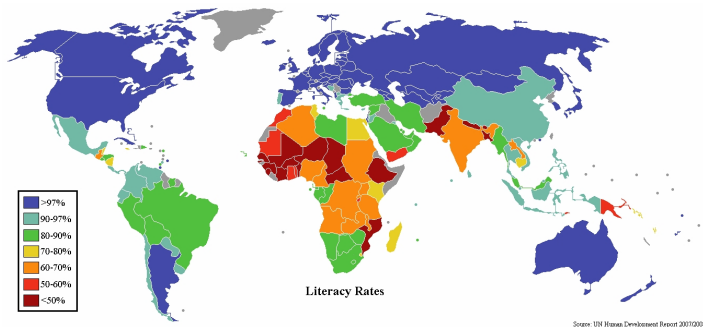
Literacy Rates

Source: UN Human Development Report 2007/2008

>97%
90-97%
80-90%
70-80%
60-70%
50-60%
<50%

Literacy by Income
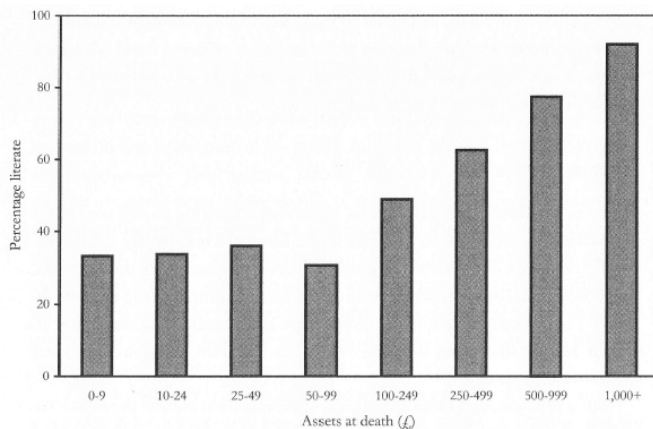
Figure 9.5 Literacy and assets of male testators in England, 1630.

Interest Rates Over Time

Interest Rates Over Time and Place

Country	Period	Interest Rate
Babylonia	500 BC	16-20
Greece	100 BC	10
Rome	200	9-12
India	800	15
England	1200-1349	9.5
Germany	1200-1349	10.7
Italy	1200-1349	10.7
Japan	1600	15
England	1600	5-6
England	1750	4-5

$$r = \rho + d + \psi g_y$$

ρ: time preference rate

d: default risk premium

ψg_y: expected annual growth in income

Time Preference Rates

- Consider a paper by Reyes-Garcia et al., "The Origins of Monetary Income Inequality: Patience, Human Capital, and Division of Labor"
- Their basic argument:
  - In a self-sufficient society, patience is exogenously determined and people rely on folk knowledge for human capital
  - With the establishment of schools, patient and impatient people sort themselves
  - Patient and impatient people start to acquire different types of human capital, different jobs and different outcomes

Time Preference Rates

- They're going to test their theory by looking at foraging-farming societies in the Bolivian Amazon
- They ask people to make choices about small rewards today or bigger rewards later on
- The rewards are either in the form of money or food
- The choices reveal time preferences
- Let's make these choices ourselves over at https://pollev.com/jmparman
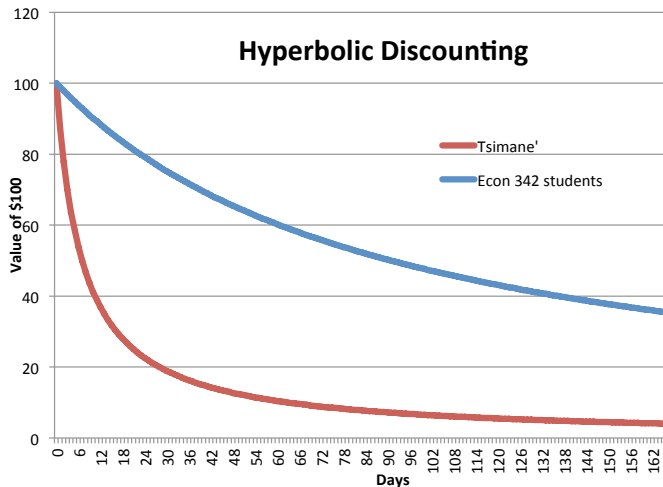
Time Preference Rates

Choice values and associated discount rates for questions used to elicit rates of private time preference for money and food

| Question | Reward values (B$) | | Delay (days) | Rate at indifference | |
	Today	Later		k	r
Money					
5	8.0	8.5	157	0.00040	.00039
3	6.7	7.5	119	0.0010	.00095
4	6.9	8.5	91	0.0025	.0023
1	5.5	7.5	61	0.0060	.0051
8	5.4	8.0	30	0.016	.013
7	4.1	7.5	20	0.041	.030
6	3.3	8.0	14	0.10	.063
2	3.1	8.5	7	0.25	.14
Candy					
4	16	17	157	0.00040	.00039
3	13	15	153	0.00101	.00094
1	11	15	61	0.0060	.0051
7	11	16	28	0.016	.013
6	8	15	21	0.042	.030
5	7	17	14	0.102	.063
2	6	17	7	0.26	.15

"Rate at indifference" indicates the value of hyperbolic (k) and continuously compounded exponential (r) discount rates at which immediate and delayed rewards are of equal value.
US$1.00 ≈ B$6.00.

Exponential Discounting

Value of $100 / Days

Tsimane'

Econ 342 students

Announcements

- Office hours tomorrow will end early at 10:45am (I need to give a lecture in INRL 300 at 11am)
- The second referee report is due March 30th at 5pm (on "Intergenerational Occupational Mobility in Great Britain and the United States since 1850")
- The empirical project is due April 20th at 5pm

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Time Preference Rates

Time preference survey results

Today	Future	Delay (days)	Rate at indifference		Spring 2016		Spring 2018	
			k	r	Today vote share	Later vote share	Today vote share	Later vote share
8	8.5	157	0.0004	0.00039	100	0	81	19
6.7	7.5	119	0.001	0.00095	92	8	82	18
5.5	7.5	61	0.006	0.0051	71	29	38	62
5.4	8	30	0.016	0.013	19	81	15	85
4.1	7.5	20	0.041	0.03	13	87	4	96
3.3	8	14	0.1	0.063	7	93	0	100
3.1	8.5	7	0.25	0.14	0	100	0	100
	Mean for Tsimane':		0.143	0.1				

Time Preference Rates

Hyperbolic Discounting
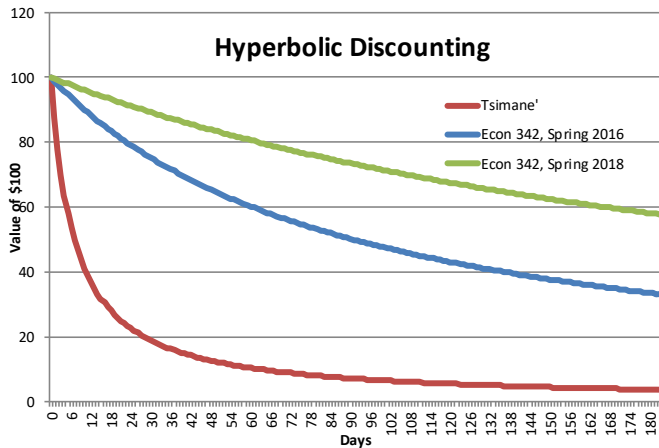
$$PV = 100 \cdot \frac{1}{1 + k \cdot t}$$

Time Preference Rates
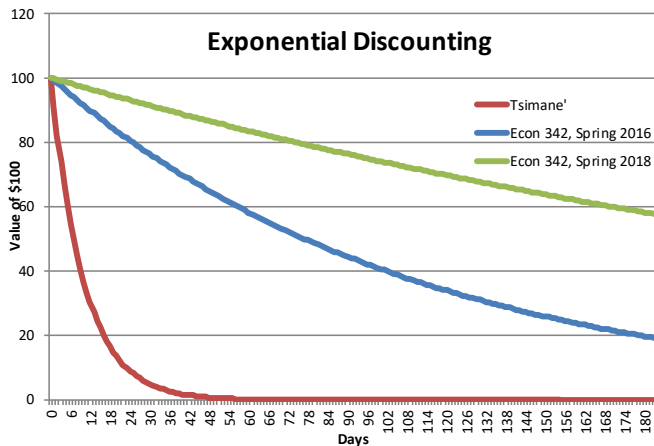
$$PV = 100 \cdot e^{-r \cdot t}$$

Time Preference Rates

Relation between impatience and the accumulation of different types of human capital

Explanatory variable	Dependent variable (type of human capital)	
	Schooling	Folk knowledge
Impatience	−0.547 (0.278)**	0.011 (0.004)***
Age	−0.096 (0.017)***	0.001 (0.0003)***
Male	1.592 (0.542)***	0.024 (0.012)***
R^2	0.31	0.39
n	406	309

** Significant at the 5% level.
*** Significant at the 1% level.

Time Preference Rates

Table 5
Comparison of indicators of well-being in 2004 between patient and impatient participants during 1999–2000 (results of two-tailed t test)

Outcomes	Impatient ($n=38$)	Patient ($n=25$)
Income from		
Barter	6.55	6.82
Sales	49.63	9.88
Wages	23.68	152.24***
Credit	32.47	65.04*
Individual wealth		
Modern physical assets	538.55	652.04
Traditional physical assets	199.21	178.00**
Total physical assets	783.03	882.44
Nutritional status		
BMI	23.14	23.42
ZAM	−0.77	−0.42**
ZSF	−0.71	−0.56
ZWT	−1.02	−0.83*
Self-reported days ill	6.8	3.5**

  * Significant at the 10% level.
  ** Significant at the 5% level.
  *** Significant at the 1% level.

Time Preference Rates

- Back to the main point of Reyes-Garcia et al., "The Origins of Monetary Income Inequality: Patience, Human Capital, and Division of Labor"
- Their basic argument:
    - In a self-sufficient society, patience is exogenously determined and people rely on folk knowledge for human capital
    - With the establishment of schools, patient and impatient people sort themselves
    - Patient and impatient people start to acquire different types of human capital, different jobs and different outcomes
    - This leads to divergence within a society (income inequality)
- Clark is going to tell a somewhat related story about differences in traits and economic development across countries

Driving Social Evolution

- Clark is focusing on these traits that seem to be important for economic growth: education, patience, etc.
- Perhaps a necessary condition for industrialization is having a large enough percentage of the population possessing these economic virtues
- This raises the question of how these traits are developed and how they arise or spread throughout the occupational distribution
- Clark's main focus in on how these traits diffuse throughout the population, arguing that the diffusion process is all about fertility patterns

Simple Example of Diffusion Process

- Let's say there are three groups making up a population: A, B and C
- Group A has growth-promoting characteristics
- All three groups initially have 100 people in them
- However, group A is growing at 10 people every generation, group B is staying the same size and group C is shrinking by 10 people every generation
- What percentage of the population in each generation has the growth-promoting characteristics?

Simple Example of Diffusion Process

Generation	A	B	C	Percentage with Trait
1	100	100	100	33
2	110	100	90	37
3	120	100	80	40
4	130	100	70	43
5	140	100	60	47
6	150	100	50	50
7	160	100	40	53
8	170	100	30	57

Simple Example of Diffusion Process

- We can think of the bottom third of the income distribution as the lower class, the middle third as the middle class and the top third as the upper class
- After the first generation, the growth-promoting characteristics begin to diffuse to the middle class
- After roughly ten generations, the growth-promoting characteristics have diffused throughout the entire middle class
- If we assume that some upward mobility exists, this diffusion process would be even quicker
- Note that this depends on the upper class not being able to expand to accommodate all of the extra kids

Driving Social Evolution

- This social evolution story requires establishing a couple of key empirical facts:
    - Those relevant economic virtues (education, patience, etc.) are most prominent among wealthier individuals
    - Wealthier individuals have higher fertility rates than poorer individuals in England
    - Wealthier individuals don't have higher fertility rates than poorer individuals in other societies
- We've already looked at links between literacy, numeracy, patience and wealth
- Let's take a look at Clark's evidence on fertility rates

Evidence of Fertility Rates and Income
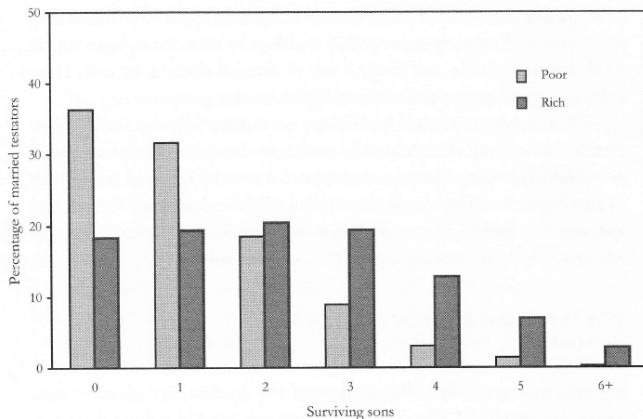
Figure 14.8 Percentage of men with particular numbers of sons, England, 1585–1638.

Evidence of Fertility Rates and Income
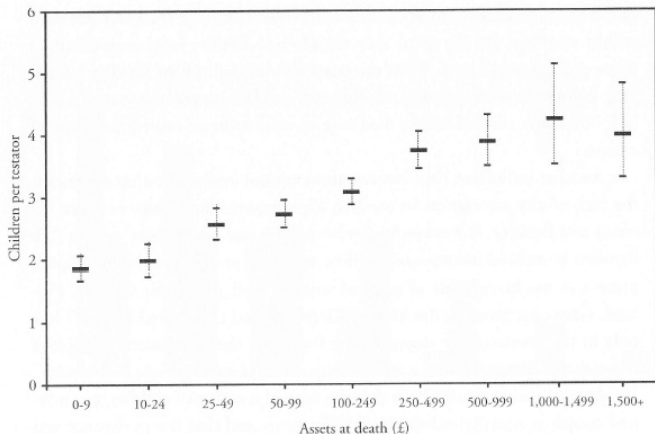
Figure 14.7 Surviving children as a function of wealth in England, circa 1620. The bands for each wealth class show the range of values within which we can be 95 percent confident that the true numbers of surviving children per testator lay.

Evidence of Fertility Rates and Income
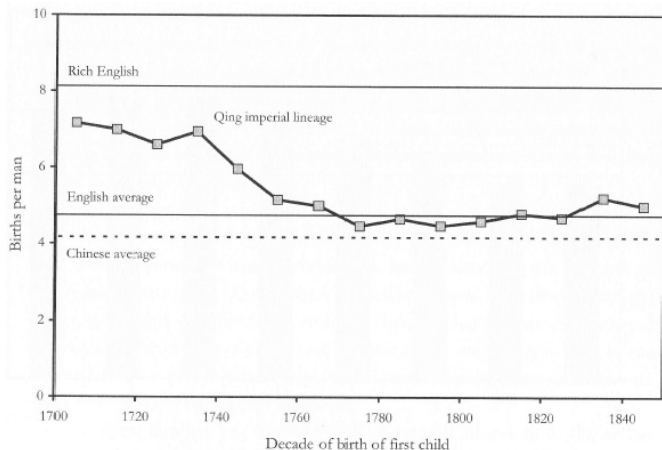
Figure 13.4 Male total fertility rate for the Qing imperial lineage.

Evidence of Fertility Rates and Income
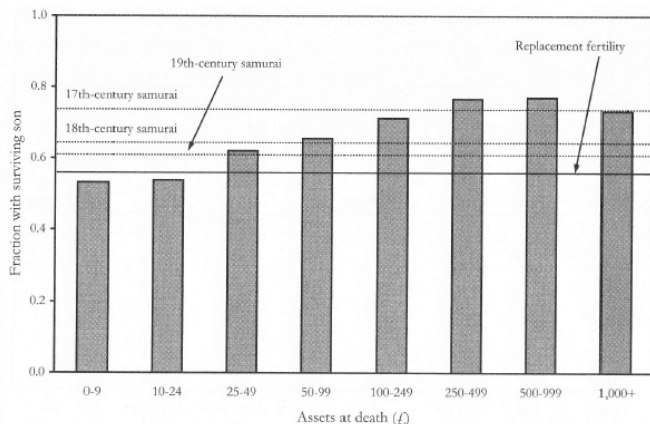
Figure 13.3   Samurai net fertility by century compared to English net fertility 1620–38 by size of bequest.
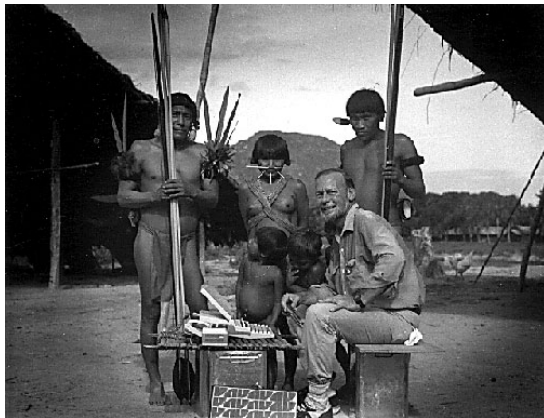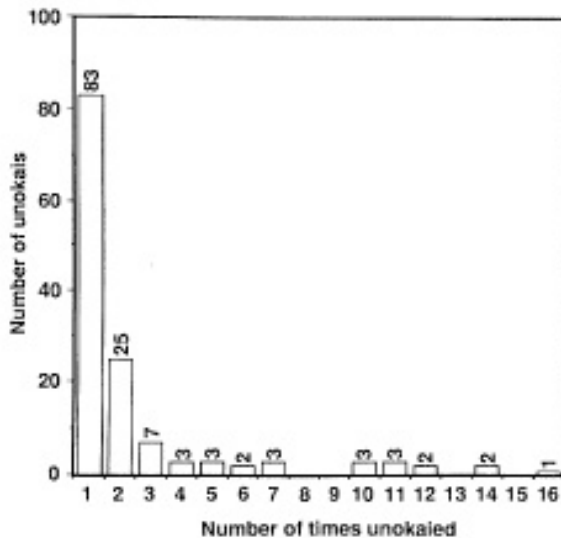
Marriage and the Yanomamo

Ages	Unokais			Non-unokais		
	n	Number of wives	Average number of wives	n	Number of wives	Average number of wives
20–24	5	4	0.80	78	10	0.13
25–30	14	13	0.93	58	31	0.53
31–40	43	49	1.14	61	59	0.97
>41	75	157	2.09	46	54	1.17
Total	137	223	1.63	243	154	0.63

Fertility and the Yanomamo

Ages	Unokais			Non-unokais		
	n	Number of offspring	Average number of offspring	n	Number of offspring	Average number of offspring
20–24	5	5	1.00	78	14	0.18
25–30	14	22	1.57	58	50	0.86
31–40	43	122	2.83	61	123	2.02
>41	75	524	6.99	46	193	4.19
Total	137	673	4.91	243	380	1.59

Percentage of male deaths caused by warfare

Sources: Keeley, Lawrence (1996). *War Before Civilization: the Myth of the Peaceful Savage.* New York: Oxford University Press. *as referenced in* Pinker, Steven (2002). *The Blank Slate.* New York: Penguin.
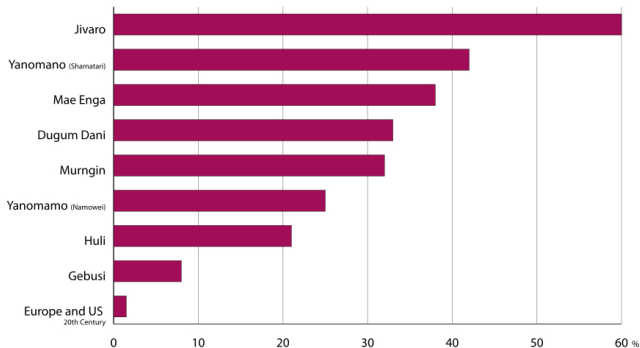
Brief Recap of Clark's Thesis

- Clark points to a social evolution as underlying the Industrial Revolution
- What distinguished England from other countries at the time of the Industrial Revolution was a higher prevalence of behaviors and attitudes conducive to economic growth (education, patience, thrift, etc.)
- The reason the behaviors and attitudes were more prevalent had to do with fertility patterns

Brief Recap of Clark's Thesis

- Education, patience, and other characteristics were most prominent among the wealthy
- The wealthy had substantially more children than the poor, leading to downward mobility among the wealthy offspring
- This downward mobility led to the diffusion of the desirable behaviors and attitudes throughout the income distribution
- Eventually you have a population capable of industrialization

Critiquing Clark

- *A Farewell to Alms* has received a substantial amount of criticism both within economics and in the popular press
- The *European Review of Economic History* devoted an entire issue to critiques of the book (several are posted on Blackboard if you want to see them)
- Robert Allen has a review in which he essentially tries to refute just about every aspect of the book (also posted on Blackboard)
- The social evolution arguments draw the most criticism but other aspects of the book often come under fire as well
- We'll quickly review Deirdre McCloskey's critique

McCloskey's Critique of Clark

- Clark is trying too hard to make shifts in norms and culture have a purely economic and evolutionary basis
- Focus on numerical data limits what he can actually say
- "Not the commercial virtues inherited by people but the virtues praised by people is what's required."
- Non-Europeans did quite well when they moved to places in which bourgeois values are honored
- The biological diffusion process is too quick (other critiques say the opposite)

Announcements

- The second referee report is due **today** at 5pm (on "Intergenerational Occupational Mobility in Great Britain and the United States since 1850")
- The empirical project is due April 20th at 5pm
- Pay attention to what each part is asking for (tables, figures, amount of explanation, etc.)
- Each part should be presented on its own and numbered (rather than trying to integrate the parts together)
- Graphs and tables should be produced by you from raw data, not reproduced from another source
- Remember to turn it in as a well-formatted pdf

The Clark hypothesis: Rich people are better and drive out the poor

1.	*A.*	*2.*	*B.*	*3.*	*C.*	*4.*
Rich breed more	→	Rich people's values spread	→	More patience, work, ingenuity	→	**Enrichment of all**
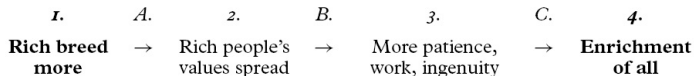
McCloskey's Critique of Clark

The Classes and the Virtues

Aristocrat Patrician	Peasant Plebeian	Bourgeois Mercantile
pagan	Christian	secular
Achilles	St. Francis	Benjamin Franklin
pride of being	pride of service	pride of action
honor	duty	integrity
forthrightness	candor	honesty
loyalty	solidarity	trustworthiness
courage	fortitude	enterprise
wit	jocularity	humor
courtesy	reverence	respect
propriety	humility	modesty
magnanimity	benevolence	consideration
justice	fairness	responsibility
foresight	wisdom	prudence
moderation	frugality	thrift
love	charity	affection
grace	dignity	self-possession
subjective	objective	conjective

From McCloskey, "Bourgeois Virtue", 1994

McCloskey and Bourgeois Virtue

- So how is McCloskey establishing the 'virtues praised by people'
- A typical economist's approach would be to say let's see which virtues get priced more highly in markets
- But is this a sensible approach given McCloskey's bigger question?
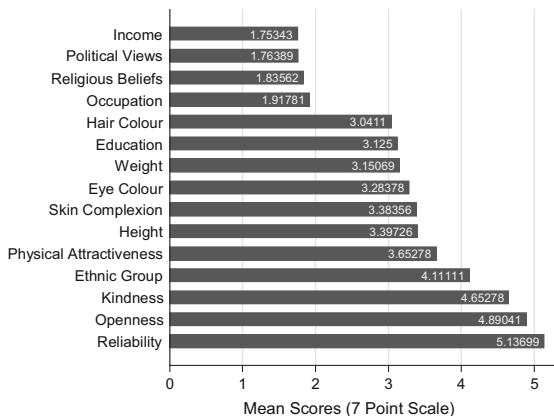- Is it even possible to find markets that price virtues?

Pricing Virtue

Fig. 1 Mean Scores (X axis 7 point likert scale): Higher score reflects greater importance placed on trait by recipient

From Whyte and Torgler, "Selection criteria in the search for a sperm donor" J. of Bioeconomics 2015

Pricing Virtue

Table 4 Determinants of recipients' inner value preferences relative to exterior attributes

Dependent Variable	(Kindness -Income)	(Kindness - Occupation)	(Kindness - Physical Attractiveness)	(Reliability - Income)	(Reliability - Occupation)	(Reliability - Physical Attractiveness)
Age	−0.077**	−0.061*	−0.015	−0.061***	−0.047	−0.002
Education	0.208	0.166	0.189	−0.121	−0.100	−0.114
Household's Annual Wage	−0.195	−0.248	−0.165	0.001	−0.066	0.029
Health	0.077	−0.028	−0.152	0.154**	0.055	−0.078
Happiness	−0.233**	−0.051	−0.245	−0.290	−0.072	−0.284
Heterosexual Couple	1.081	1.321	−0.136*	0.760	0.989	1.033**
Same-sex Couple	0.379	0.393	0.170	0.605	0.729	0.440
Religion (Atheist)	1.037***	0.794**	−0.214	1.479***	1.101	0.140
Agreeableness	−0.008	0.075	−0.303	0.028	0.196	−0.231
Conscientiousness	−0.312	−0.168	−0.037	0.621	−0.482	−0.341
Emotional Stability	0.247	0.144	0.043	0.501	0.257	0.225
Extraversion	−0.009	0.237	0.010	0.009	0.156	−0.058
Openness	−0.511***	−0.763***	−0.347	0.033	0.181	0.221
N	64	65	64	66	66	65
R−squared	0.2876	0.2791	0.1491	0.2344	0.1613	0.1262
Ramsey's RESET Prob > F	0.3070	0.3654	0.6090	0.5414	0.8742	0.1585

TABLE 4—USER BEHAVIOR SUMMARY STATISTICS

	Men	Women
Users	3,004	2,783
First-contact behavior		
Profiles browsed	385,470	172,946
First-contact e-mails	49,223	14,178
(Percentage of browses)	12.7	8.2
Matching		
First contacts that lead to match	2,130	914
(Percentage of first contacts)	4.3	6.4
E-mails exchanged until match is achieved		
Mean	11.6	12.6
Median	6	6
SD	22.8	26.3

From Hitsch, Hortacsu and Ariely, "Matching and Sorting in Online Dating" AER 2010

Pricing Virtue

Table 3—Binary Logit Estimates

| | Preference of men | | | | Preference of women | | | |
| | (1) | | (2) | | (3) | | (4) | |
	Estimate	SE	Estimate[a]	SE[a]	Estimate	SE	Estimate[a]	SE[a]
Age	−0.0598	0.0023	−0.0605	0.0041	−0.0098	0.0034	−0.0095	0.0077
Age difference (+)	−0.0007	0.0002	−0.0007	0.0004	−0.0016	0.0002	−0.0016	0.0006
Age difference (−)	−0.005	0.0001	−0.0051	0.0003	−0.0063	0.0004	−0.0064	0.0011
Single; mate divorced[b]	−0.0461	0.0231	−0.0446	0.0273	−0.0718	0.0316	−0.0688	0.033
Both divorced	0.0959	0.0275	0.0961	0.0285	0.1728	0.0305	0.1789	0.0392
Both "long term"	0.0177	0.0178	0.0191	0.0199	0.2388	0.0258	0.2398	0.0322
Both have children	0.1874	0.0271	0.187	0.0532	0.2039	0.0298	0.1973	0.0366
Neither has children	−0.2649	0.0224	−0.264	0.0333	−0.3636	0.0334	−0.3681	0.0423
Has photo	−0.0657	0.0341	−0.0623	0.0522	0.1318	0.0457	0.1365	0.0576
Looks rating	0.5604	0.0144	0.5631	0.0201	0.5848	0.0211	0.5842	0.0269
"Very good" looks	0.5719	0.0396	0.5763	0.0545	0.5516	0.0555	0.5578	0.0688
"Above average" looks	0.2738	0.0363	0.2773	0.0412	0.1733	0.0495	0.1761	0.0627
"Other" looks	0.1742	0.2044	0.1682	0.2096	0.0842	0.2073	0.0519	0.2263
Height	−0.1421	0.0066	−0.1423	0.0101	0.1831	0.0093	0.1826	0.0149
Height difference (+)	−0.0018	0.0037	−0.0044	0.0095	−0.0096	0.0006	−0.0098	0.0011
Height difference (−)	−0.0099	0.0005	−0.0099	0.0008	−0.0227	0.0093	−0.0296	0.0186
BMI	−0.3962	0.028	−0.3932	0.0474	0.1332	0.0499	0.1354	0.0618
BMI[2]	0.0043	0.0006	0.0042	0.0009	−0.0007	0.001	−0.0006	0.0013
BMI difference (+)	0.0034	0.0008	0.0034	0.0011	−0.0103	0.0008	−0.0108	0.0013
BMI difference (−)	−0.0101	0.0005	−0.01	0.0012	0.0022	0.0009	0.0025	0.0011
Education (years)	−0.0031	0.0056	−0.0037	0.0067	0.047	0.0076	0.0472	0.0095
Education difference (+)	−0.0039	0.001	−0.0039	0.0011	−0.0086	0.0012	−0.0087	0.0016
Education difference (−)	−0.0026	0.0008	−0.0027	0.001	−0.0022	0.0013	−0.0021	0.0016
Income ($ 1,000)	0.0053	0.0012	0.0054	0.0013	0.0164	0.0029	0.0163	0.0031
Income (>50)[c]	−0.0027	0.0019	−0.0028	0.0019	−0.0062	0.0035	−0.006	0.0035
Income (>100)[c]	−0.0047	0.0021	−0.0046	0.0021	−0.0082	0.0016	−0.0082	0.0016
Income (>200)[c]	−0.0018	0.0034	−0.0018	0.0037	0.0074	0.0018	0.0075	0.0019
Income difference (+)	6.31E-06	4.07E-06	6.01E-06	6.31E-06	−1.20E-05	3.15E-06	−1.28E-05	3.90E-06
Income difference (−)	1.17E-08	2.53E-06	−5.11E-08	3.39E-06	1.04E-05	6.00E-06	1.21E-05	6.73E-06
Income "Only accountant knows"	0.3332	0.0453	0.3349	0.0516	1.0913	0.1285	1.085	0.1418
Income "What, me work?"	0.2838	0.0542	0.2825	0.0541	0.7155	0.1439	0.7064	0.1564

TABLE 3—BINARY LOGIT ESTIMATES (*Continued*)

	(1)		(2)		(3)		(4)	
	Estimate	SE	Estimate[a]	SE[a]	Estimate	SE	Estimate[a]	SE[a]
White; mate black	−0.8301	0.0861	−0.831	0.1051	−0.743	0.1195	−0.7426	0.1529
White; mate Hispanic	−0.2821	0.0367	−0.2873	0.04	−0.5752	0.0897	−0.5749	0.0924
White; mate Asian	−0.4952	0.0436	−0.4983	0.0604	−1.5952	0.2408	−1.6153	0.2854
White; mate other	−0.135	0.0375	−0.1397	0.0408	−0.5677	0.0742	−0.5624	0.0806
Black; mate white	−0.235	0.3701	−0.2214	0.5134	−1.5937	0.3806	−1.1607	0.4257
Black; mate Hispanic	−0.2358	0.4211	−0.2251	0.4657	−1.6185	0.8779	−2.7724	2.5201
Black; mate Asian	−0.6856	0.4609	−0.6981	0.5075				
Black; mate other	0.1764	0.4215	0.1793	0.5399	−0.8192	0.5738	−0.9328	0.8192
Hispanic; mate white	−0.3843	0.1436	−0.351	0.19	−0.6522	0.2303	−0.4896	0.2645
Hispanic; mate black	−0.3787	0.3549	−0.6907	0.6551	−0.8487	0.5082	−0.6407	0.5446
Hispanic; mate Asian	−0.3161	0.2548	−0.2811	0.2799				
Hispanic; mate other	−0.1886	0.2058	−0.1591	0.2493	−0.6777	0.3829	−0.5726	0.3771
Asian; mate white	−0.4617	0.3055	−0.3412	0.3569	−0.0291	0.4627	0.284	0.4246
Asian; mate black					−0.7563	9.0588	−0.4601	0.738
Asian; mate Hispanic	−0.0645	0.421	−0.0475	0.3277	−0.4781	0.5994	−0.228	0.4573
Asian; mate other	0.0383	0.4442	0.1108	0.5107	−0.374	0.5701	−0.1002	0.5644
Same religion	0.1792	0.0218	0.1799	0.0236	0.2918	0.0264	0.2846	0.0306
1/Pr(get reply)			0.0008	0.0007			0.0333	0.0763
Log-likelihood	−72,073.70		−72,093.10 (2,401.7)		−48,998.90		−49,041.40 (1,434.4)	
Observations	242,478				196,363			
Individuals	3,004				2,783			

We constructed an attractiveness rating for the photos posted by the site users. This measure is based on the evaluations (on a scale from 1 to 10) provided by 100 students at the University of Chicago.
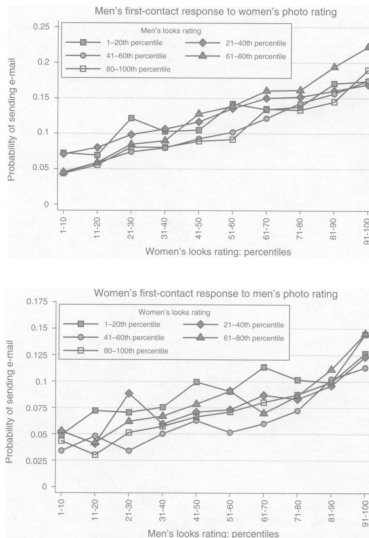
Pricing Virtue

Figure 1. Evidence for/against Strategic Behavior

Pricing Virtue

Thus, even if unattractive men (or women) take the cost of rejection and composing an e-mail into account, this perceived cost is not large enough such that the net expected benefit of hearing back from a very attractive mate would be less than the net expected benefit of hearing back from a less attractive mate. These results suggest that...strategic behavior is of little importance in online dating.

Pricing Virtue

- Online dating and sperm donation aren't going to get us at historical shifts in the prices of virtues
- We'll take two very different looks at pricing virtue
- First, we'll consider a survey by Siwan Anderson, "The Economics of Dowry and Brideprice" (Journal of Economic Perspectives, 2007)
- Then we'll return to McCloskey's various writings, including "The Discreet Virtues of the Bourgeoisie" (History Today, 2006)

Pricing Virtue

- Anderson is going to look at the prevalence and determinants of brideprices and dowries
- **Brideprice** - transfer from the family of the groom to the family of the bride, present in two thirds of preindustrial societies (Murdock, 1967)
- **Dowry** - transfer from the family of the bride to the family of the groom, less prevalent in terms of number of societies, more prevalent in terms of population
- These transfers can be large and vary substantially

Pricing Virtue

Table 1

Prevalence of Brideprice in Contemporary Societies

Country	Years	Paid a brideprice	# Observations
Rural China	1950–2000	79%	451
Urban China	1933–1987	9%	586
Taiwan	1940–1975	53%	964
Rural Thailand	1950–1978	93%	248
Urban Thailand	1950–1978	79%	395
Cairo (Egypt)	1940–1976	93%	919
Damascus (Syria)	1940–1976	84%	1164
Kinshasa (Zaire)	1940–1976	96%	694
Tororo (Uganda)	1940–1976	95%	781
Urban Iran	1971–1991	99%	511
Uganda	1960–1996	73%	1657
Rural Uganda	1960–1980	98%	155
Rural Uganda	1980–1990	88%	364
Rural Uganda	1990–1996	65%	226
Urban Uganda	1960–1980	96%	93
Urban Uganda	1980–1990	79%	379
Urban Uganda	1990–1996	46%	440
Turkey	1944–1993	29%	6519
Rural Turkey	1960–1975	46%	127
Rural Turkey	1975–1985	37%	205
Rural Turkey	1985–1998	23%	286
Urban Turkey	1960–1975	34%	210
Urban Turkey	1975–1985	24%	367
Urban Turkey	1985–1998	12%	650

Source: Information for rural China comes from Brown (2003); for urban China, from Whyte (1993); for Taiwan, from Parish and Willis (1993); for Thailand refer to Cherlin and Chamratrithirong (1988). Statistics for cities of Egypt, Syria, Zaire, and Uganda are from Huzayyin and Acsádi (1976), and for Iran, see Habibi (1997). The data used for the statistics from Uganda and Turkey are from the Demographic Health Surveys.

Table 2

Prevalence of Dowry in Contemporary Societies

Country	Years	Paid a dowry	# Observations
Rural India	1960–1995	93%	1217
Rural India	1970–1994	94%	1842
Rural Pakistan	1970–1993	97%	1030
Pakistan	1986–1991	87%	1300
Rural Bangladesh	1945–1960	3%	2303
Rural Bangladesh	1960–1975	11%	3367
Rural Bangladesh	1975–1990	44%	3745
Rural Bangladesh	1990–1996	61%	1065
Rural Bangladesh	2003	76%	1279

Source: Information for the first sample from rural India comes from the NCAER (National Council of Applied Economic Research, India) data provided by Vijayendra Rao. The second sample is from the Survey on the Status of Women and Fertility (SWAF) by the Population Studies Center, University of Pennsylvania. For Pakistan, the first sample is from the SWAF, the second from the surveys of the World Bank's Living Standards Measurement Study. The Bangladesh data for the earlier years is from the Matlab RAND Family Life Surveys; the final sample, for the year 2003, is from Suran, Amin, Huq, and Chowdury (2004).

Pricing Virtue

Table 3

Marriage Transfers from the Groom's Side

Society	Time period	Average payments	Magnitude of average payments
Germanic Tribes:			
Visogoths (Spain)	9th century		1/10 husband's wealth (Quale, 1988)
Lombards (Italy)	9th century		1/4 husband's wealth (Quale, 1988)
Franks (France)	9th century		1/3 husband's wealth (Quale, 1988)
Asia:			
Rural interior provinces (China)	1960–2000	538 yuan (1985)	82% of value of household durables (Brown, 2003)
Rural south west (China)	1983–1987	700 yuan (1987)	1.1 × per capita annual income (Harrell, 1992)
Rural east Szechwan	1966–1981	109 yuan (1980)	1 × per capita annual income (Lavely, 1988)
Middle East:			
Palestine	1920s	£49 (1925)	8 years of income for landless agricultural laborer (Papps, 1983)
Urban Iran	1971–1991	1,807,200 Iranian rials (1980)	$7059 (Habibi, 1997)
Sub-Saharan Africa:			
Rural Zimbabwe	1940–1995	8–9 cattle	2–4 × gross household annual income (Dekker and Hoogeveen, 2002)
Bantu tribe (southern Africa)	1955	100 goats	Larger than average herd size per household (Gray, 1960)
East African herders	1940–1978	15–50 large stock	12–20 × per capita holdings of large stock (Turton, 1980)
Uganda	1960–2001	872,601 shillings (2000)	14% of household income (Bishai and Grossbard, 2006)

Table 4

Marriage Transfers from the Bride's Side

Society	Time period	Average payments	Magnitude of average payments
Historical Europe:			
Athens	6th Century BC		10% bride's father's wealth (Quale, 1988)
Mediterranean Jews	969–1250	150–1500 dinars	800 dinars could maintain a family for 30 years (Goiten, 1978)
Tuscany	1415–1436	125.5 florins	20% bride's household wealth (Botticini, 1999)
Urban Tuscany	1420–1436	1507.7 lire	6× annual wage of skilled worker (Botticini and Siow, 2003)
Florence	1475–1499	1430 florins	3× average fiscal wealth per household (Molho, 1994)
Colonial Latin America:			
Mexico	1640–1790	1000–5000 pesos	Equal to the cost of 3–16 slaves (Lavrin and Couturier, 1979)

Pricing Virtue

**South Asia:**

Rural Karnataka (India)	1960–1995	66,322 Rupees (1995)	6× annual village male wage (Rahman and Rao, 2004)
Rural Uttar Pradesh (India)	1960–1995	46,096 Rupees (1995)	3× annual village male wage (Rahman and Rao, 2004)
Rural south-central India	1920s–1980s	4,792 Rupees (1983)	68% of total household assets before marriage (Rao, 1993)
Rural Uttar Pradesh (India)	1970–1994	$700	7× per capita annual income (Jejeebhoy and Sathar, 2001)
Rural Tamil Nadu (India)	1970–1994	$769	8× per capita annual income (Jejeebhoy and Sathar, 2001)
Delhi (India)	1920–1984	>50,000 Rupees (1984)	4× annual male income (Paul, 1986)
Rural Bangladesh	1996	12,700 Taka (1996)	62% of average annual household gross income (Esteve-Volart, 2004)
Rural Pakistan	1986–1991	18,196 Rupees (1991)	1.13 × annual household income (Anderson, 2005)
Urban Pakistan	1986–1991	32,451 Rupees (1991)	1.23 × annual household income (Anderson, 2005)

Pricing Virtue

According to Chojnacki (2000), the Renaissance marriage market valued maturity in grooms, chaste youth in brides, and family wealth and prominence for both. – Anderson, Journal of Economic Perspectives, 2007

Pricing Virtue

> *Typically, in India, the most important quality...for a groom is the ability to earn a living, often reflected in his educational level (Caldwell, Reddy, and Caldwell, 1983; Billig, 1992). – Anderson, Journal of Economic Perspectives, 2007*
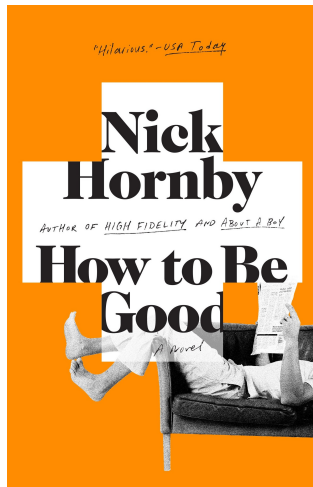
'How to Be Good', we're going to call it. It's about how we should all live our lives. You know, suggestions. Like taking in the homeless, and giving away your money, and what to do about things like property ownership and, I don't know, the Third World and so on. – Nick Hornby, How to Be Good (2001)

...in the nineteenth century, 'bourgeois' became the most pejorative term of all, particularly in the mouths of socialists and artists, and later even of fascists. – Johan Huizinga, The Spirit of the Netherlands, 1935

McCloskey's Evidence
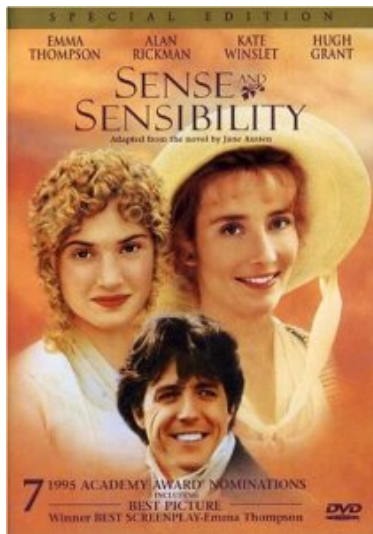
In 1811 Jane Austen's best characters show both sense and sensibility. They calculate their marriage prospects but take a serious, almost Puritan attitude toward their ethical maturation. Austen's little stage is the gentry. But her ethical world is bourgeois. – McCloskey, The Discrete Virtues of the Bourgeoisie, 2006

McCloskey's Evidence

Contrast the world of Shakespeare. The warm virtues, Love and Courage, Faith and Hope, the virtues praised most often by Shakespeare, and least by Adam Smith, are specifically and essentially non-calculative. – McCloskey, The Discrete Virtues of the Bourgeoisie

McCloskey's Evidence
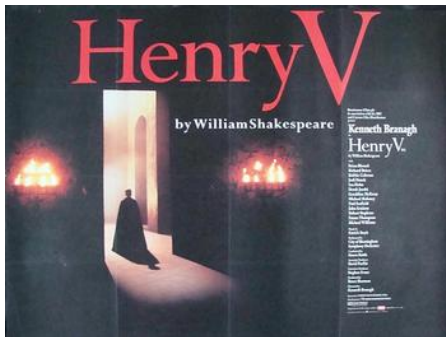
If we are marked to die, we are enow
To do our country loss; and if to live,
The fewer men, the greater share of honour.
...
But we in it shall be remember'd,
We few, we happy few, we band of brothers;
For he to-day that sheds his blood with me
Shall be my brother; be he ne'er so vile,
This day shall gentle his condition:
And gentlemen in England now a-bed
Shall think themselves accursed they were not here,
And hold their manhoods cheap whiles any speaks
That fought with us upon St Crispin's Day. –
Shakespeare, Henry V, 1599

McCloskey's Evidence

This is not bourgeois, Prudential rhetoric. It counts not the cost. – McCloskey, The Discrete Virtues of the Bourgeoisie
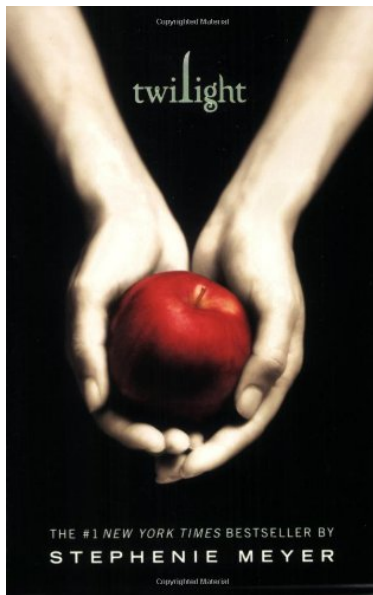
Some More General Points to Consider on Clark

- Data on reproduction rates by income is sparse for everywhere but England
- Are the virtues (patience, hard work, literacy and so on) genetic, a product of parenting, a product of peer groups, lasting traits, etc.?
- Is there a quantifiable way to link these virtues to growth in productivity?
- Why did the virtues initially arise among the wealthy?
- What other mechanisms are there for developing these virtues?