

Occupational Choice and the Spirit of Capitalism

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The Question:

- Before the industrial revolution in Britain, enormous concentration of wealth within a small elite.
- Theories of inequality and development would suggest that wealthy and educated elite should be well-placed to profit from new, investment-based technologies.
- But in fact, industrialists rose from the middle class, and ultimately replaced the aristocracy as the economically dominant group.
- What explains the changing fates of different social classes after the industrial revolution?

Are Cultural Aspects Important?

- Marx: economic relationships are the “base of society.” Culture and ideology merely reflects the material interests of the class in control of the means of production.
- Weber: culture and religion are key driving forces of the process of industrialization in the nineteenth century.
- Both Marx and Weber: a one-way relationship, albeit in opposite directions.
- This paper: the link runs both ways. Material conditions shape values (and their family transmission), but also values influence economic behavior (occupation, labor supply and investments).

Our Approach:

- Theory of endogenous preference formation.
- Parents influence their children's leisure and time preferences.
- Preference formation interacts with occupational choice and labor supply decisions.
- Analyze how incentives for preference formation vary across social classes.

Key Findings:

- Choice complementarity between:
 - Patience and steep income profiles.
 - Leisure taste and unearned income.
- Endogenous sorting and stratification.
- Pre-industrial upper class develops high leisure preference, but little patience.
- After industrial revolution, the patient middle class overtakes the upper class (but ultimately turns lazy).

Related Literature:

- Becker and Mulligan (1997): Agents invest in their own patience. One-time choice. Perfect capital markets.
- Bisin and Verdier (1998, 2002), Fernandez and Fogli (2005), Saez-Marti and Zenou (2004): Cultural transmission.
- Galor and Moav (2002), Clark and Hamilton (2004): Natural selection as an engine for growth.
- Heckman et al. (2000), Carneiro and Heckman (2004), Segal (2004): Non-cognitive skills (such as patience) matter for economic success; family transmission is important.

Outline:

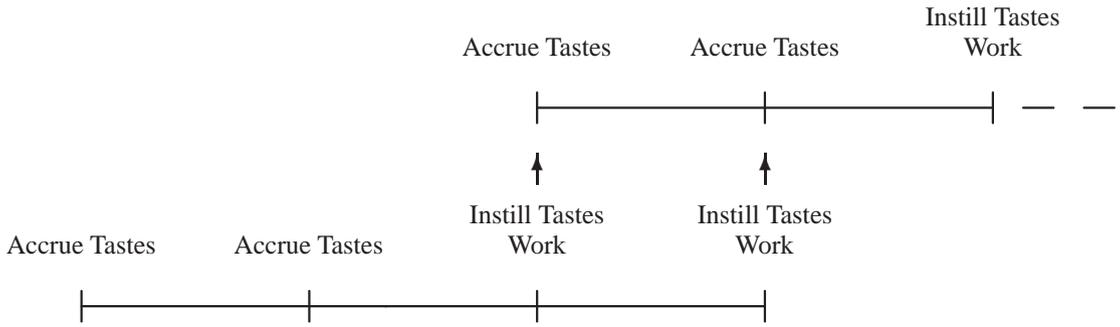
- Preference formation and occupational choice (*pre-industrial economy*).
- Preference formation, occupational choice, and capital accumulation (*industrial revolution*).
- Historical evidence and discussion.

Preference Formation in an Economy with Missing Financial Markets

- Overlapping generations.
- Decision problem with interaction of occupational choice and preference formation.
- A finite number of occupations (e.g., worker/artisan).

Demographics:

- People live for four periods, two as children and two as adults.
- Each parent has one child.
- Children's preferences are formed when young.



Professions and Preferences:

- Profession i defined by income profile $\{y_{1,i}, y_{2,i}\}$.
- Leisure taste A and patience B are state variables for a dynasty.
- Young adults invest time l_A and l_B in forming their children's preferences.
- The value function for the case of no capital income:

$$v(A, B) = \max_{i, 0 \leq l_A, l_B \leq 1} \left\{ (1 - B) (\log(y_{1,i}n_1) + A(1 - n_1)) \right. \\ \left. + B (\log(y_{2,i}n_2) + A(1 - n_2)) \right. \\ \left. - l_A - l_B + zv(A', B') \right\}.$$

The Evolution of Preferences:

- Laws of motion for leisure taste and patience:

$$\begin{aligned}A' &= \nu \bar{A} + (1 - \nu)A + g(l_A), \\ B' &= \nu \bar{B} + (1 - \nu)B + f(l_B).\end{aligned}$$

- The parameters satisfy $\bar{A}, \bar{B} > 0$ and $0 < \nu < 1$.
- The preference production functions f and g are increasing, weakly concave, and satisfy $f(0) = g(0) = 0$.

Analytical Results:

- The value function is additively separable in its arguments, $V(A, B) = h(A) + v(B)$, where:

$$h(A) = \max_{l_A, n} \{ \log(n) + A(1 - n) - l_A + zh(A') \} ,$$

$$v(B) = \max_{i \in I, l_B} \{ (1 - B) \log(y_{1,i}) + B \log(y_{2,i}) - l_B + zv(B') \} .$$

- Same incentives for accumulating leisure taste across professions.

Analytical Results:

- Value function for patience:

$$v(B) = \max_{i \in I, l_B} \{ (1 - B) \log(y_{1,i}) + B \log(y_{2,i}) - l_B + z v(B') \}.$$

Analytical Results:

- Value function for patience:

$$v(B) = \max_{i \in I, l_B} \left\{ (1 - B) \log(y_{1,i}) + B \log(y_{2,i}) - l_B + z \left((1 - B') \log(y_{1,i'}) + B' \log(y_{2,i'}) - l_{B'} + z^2 v(B'') \right) \right\}.$$

Analytical Results:

- Value function for patience:

$$v(B) = \max_{i \in I, l_B} \left\{ (1 - B) \log(y_{1,i}) + B \log(y_{2,i}) - l_B + z v(B') \right\}.$$

- Higher B implies choice of steeper income profile and vice versa.
- $v(B)$ is piece-wise linear and convex.
- The optimal l_B is increasing step function.
- Within a dynasty, monotonic convergence in patience and occupation.
- Steady state B increasing in steepness of income profile.
- Multiple steady states possible.

Outcome with Unearned Income:

- Consider upper-class dynasty owning land x .
- Labor effort not strictly required; however, monitoring increases return on the land:

$$y_1 = \underline{r}x + (\bar{r} - \underline{r})xn_1,$$

$$y_2 = \underline{r}x + (\bar{r} - \underline{r})xn_2.$$

- Dynasty optimally chooses constant labor supply,
 $n_1 = n_2 = n$.
- Value function still separable.
- Dynasty will not invest in patience.
- Dynasty will work less and invest more in leisure tastes than a dynasty relying only on earned income.

General Equilibrium in Economy with Land:

- Workers, artisans, and landowners.
- Landowners are fraction a of population, and own equal fraction of land.
- Lower classes can choose profession.
- Initially, everyone has the same preferences.

Technology:

- Output can be produced with two technologies, the “agricultural” technology and the “artisan” technology.
- The agricultural technology uses unskilled labor L and land X :

$$Y_A = L^\alpha X^{1-\alpha}.$$

- The artisan technology uses only skilled labor H :

$$Y_M = H.$$

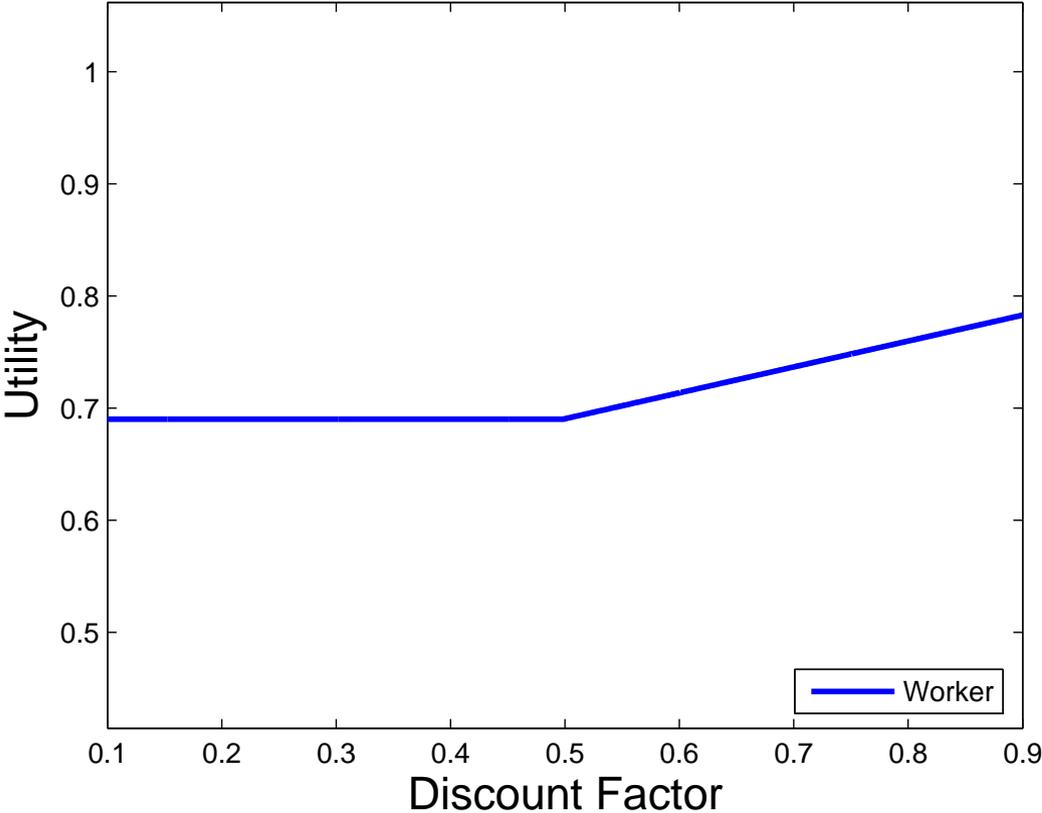
- The two technologies produce perfect substitutes:

$$Y = Y_A + Y_M.$$

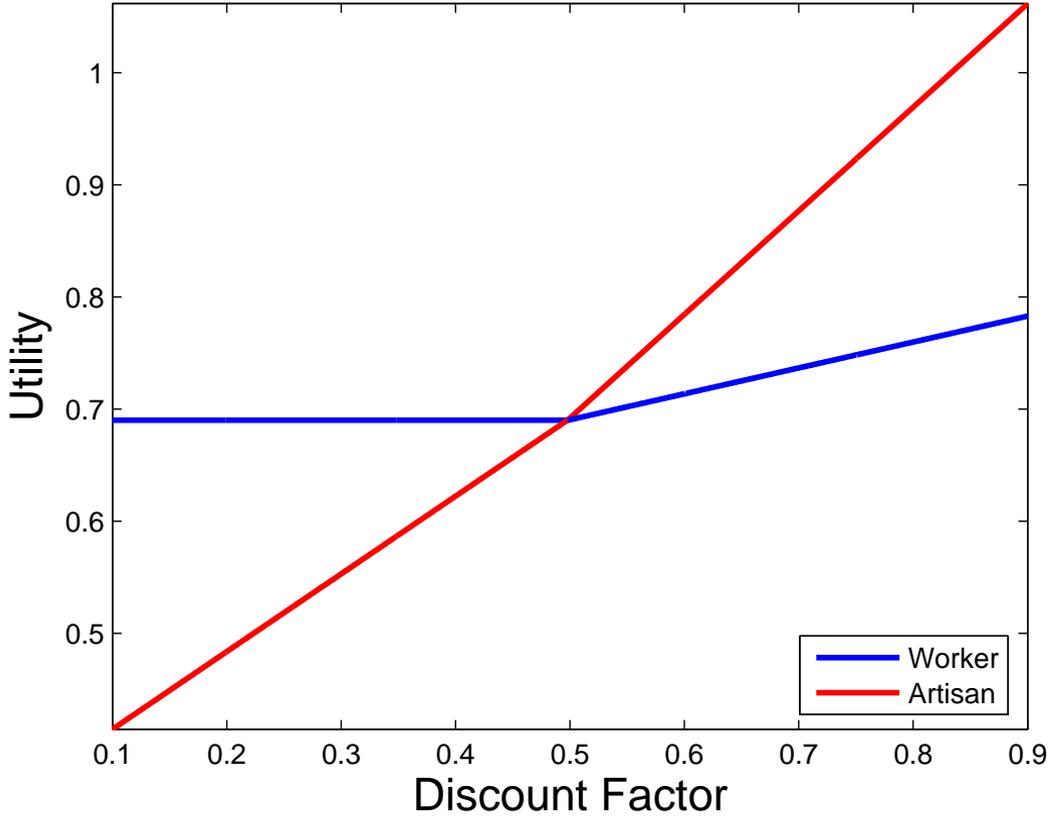
Skilled versus Unskilled Labor:

- Unskilled workers supply one unit of unskilled labor in each period.
- Skilled workers (artisans) supply one unit of skilled labor in the first period, and $n > 1$ units in the second period.
- Captures importance of education and experience for skilled workers.
- Skilled and unskilled wages depend on fraction of lower classes that chooses artisan profession. Determined in general equilibrium.

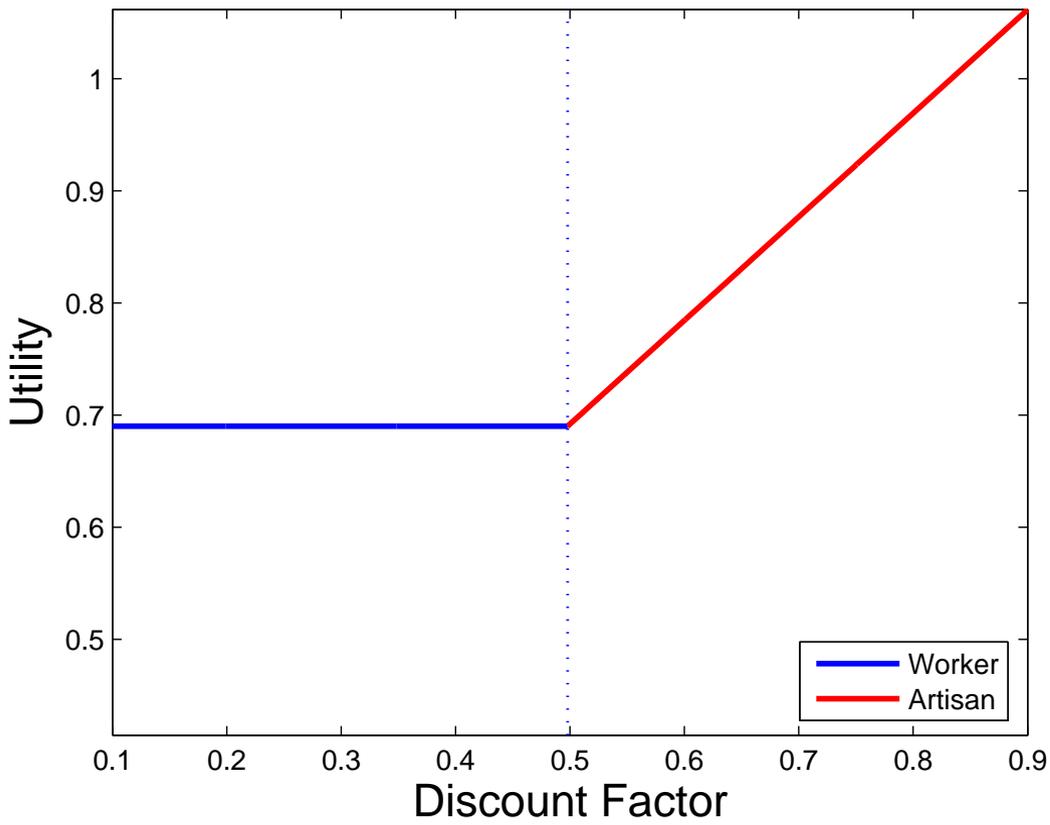
Patience Value for Worker:



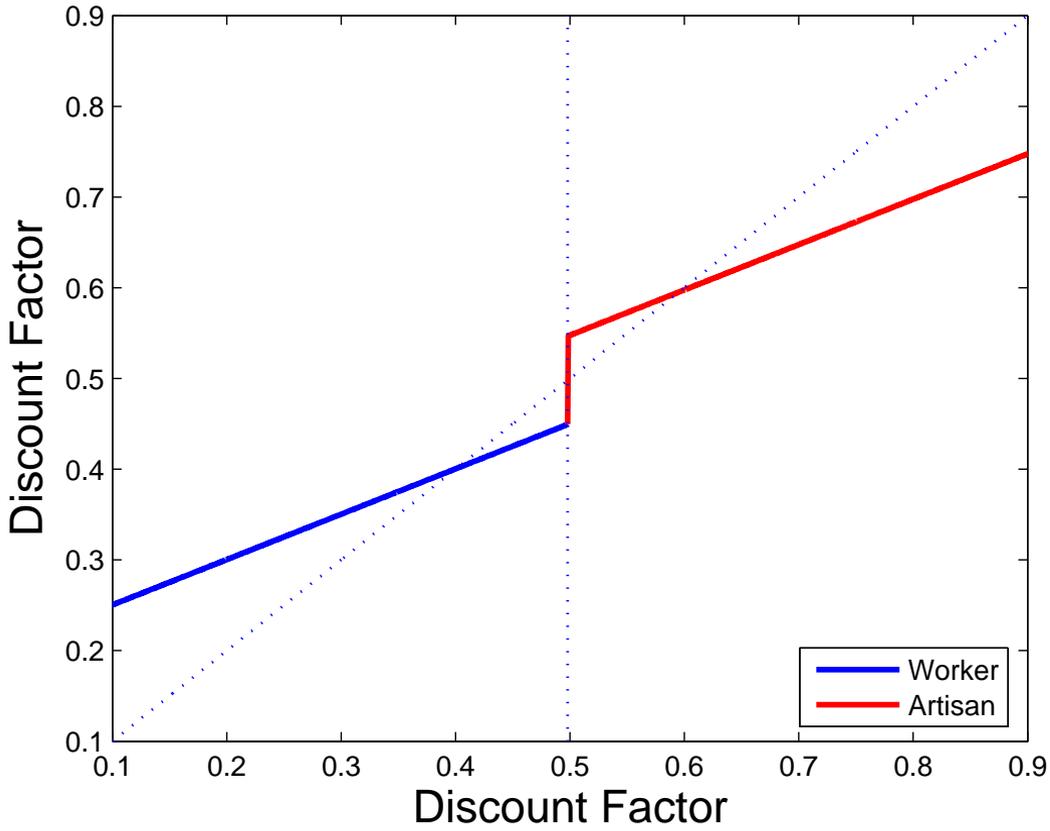
Patience Value for Worker and Artisan:



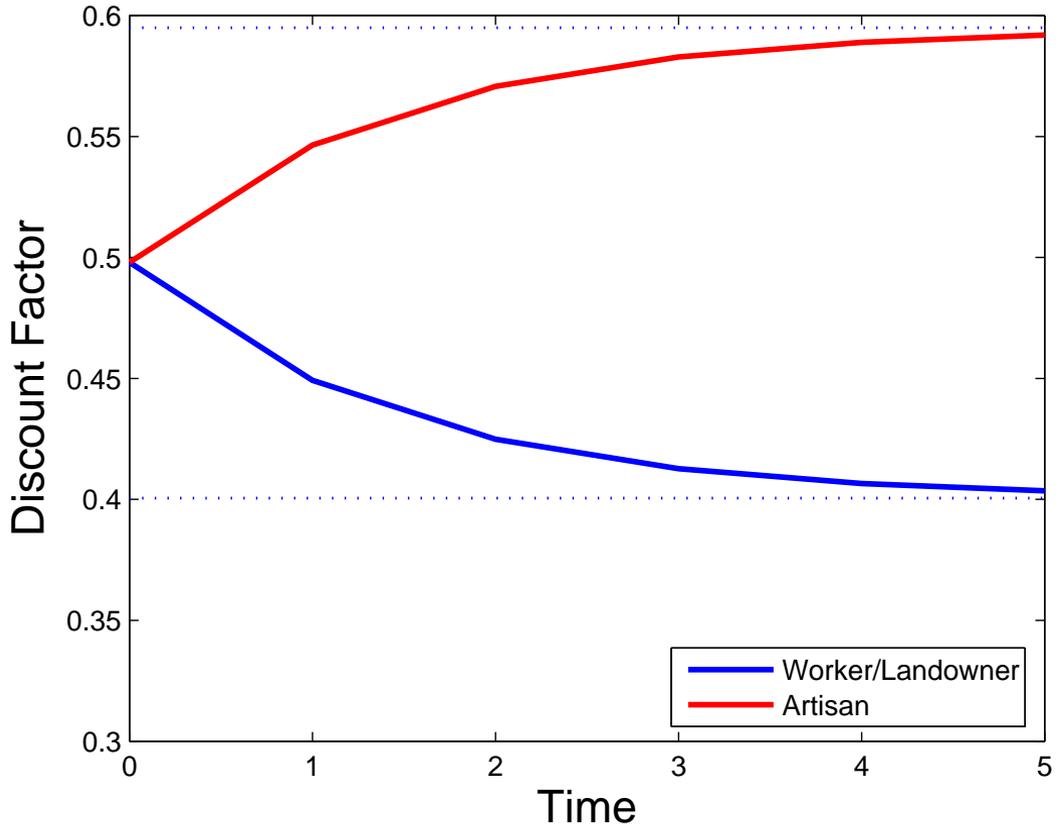
Patience Value Function with Occupational Choice:



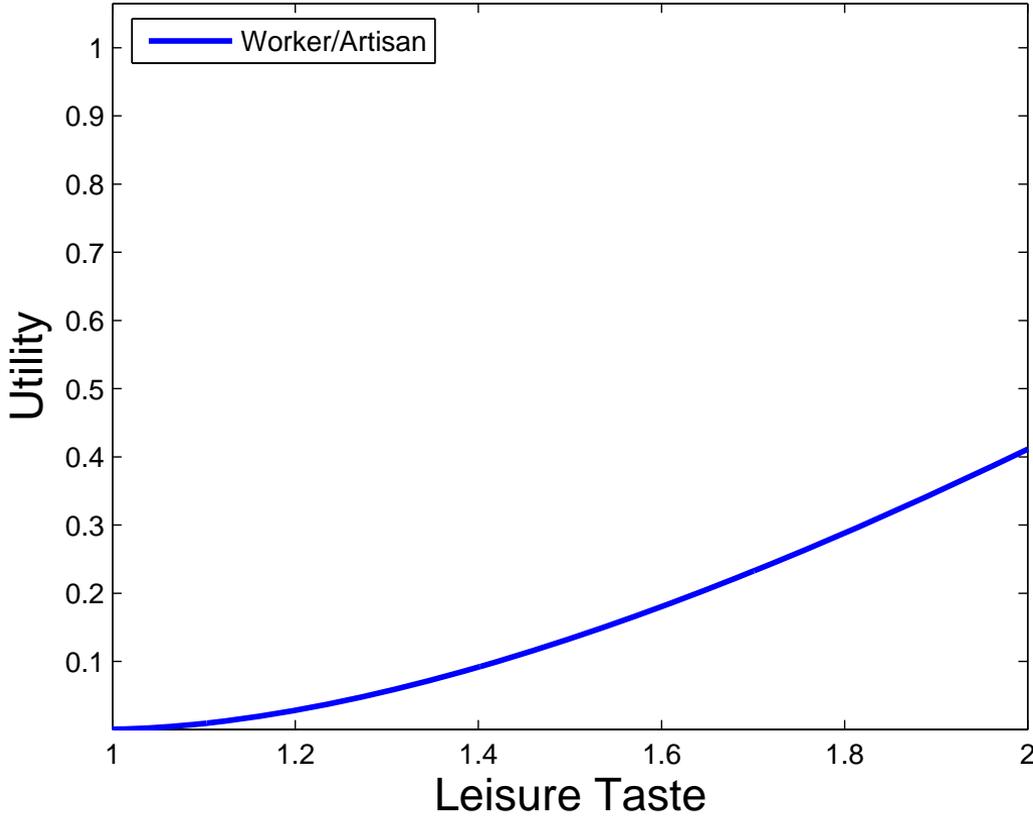
Decisions on Patience:



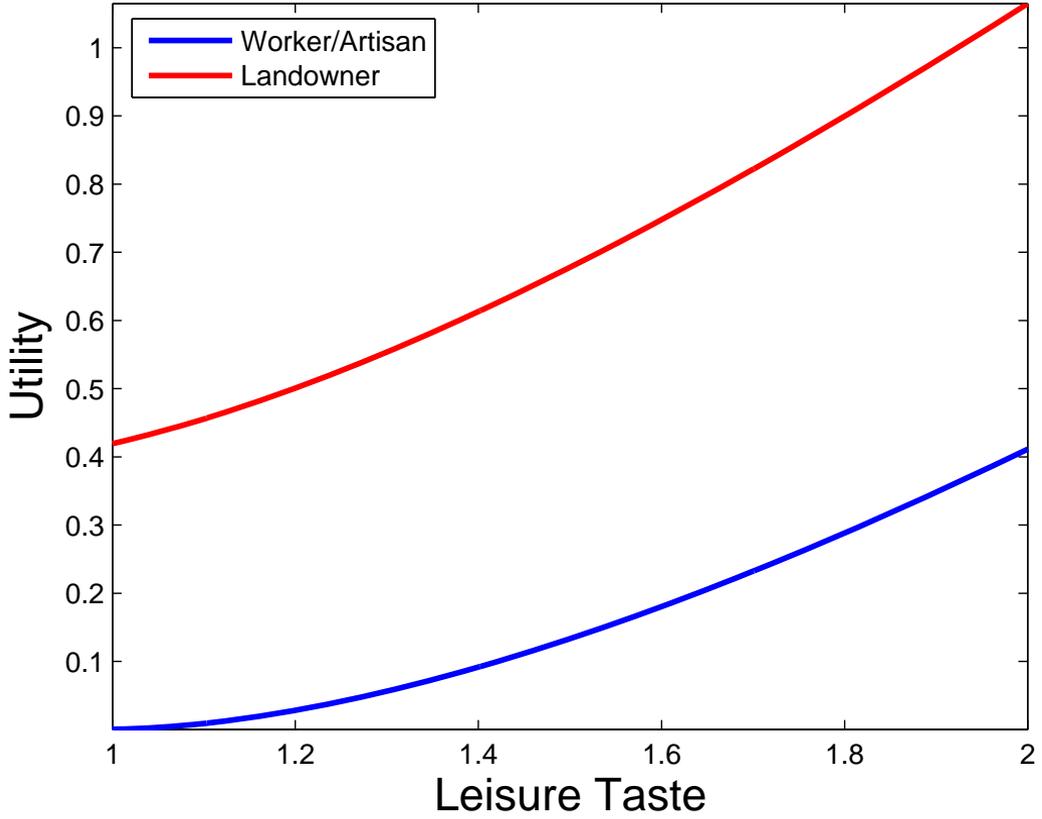
Patience over Time, Workers/Landowners vs Artisans:



Leisure Taste Value for Worker/Artisan:



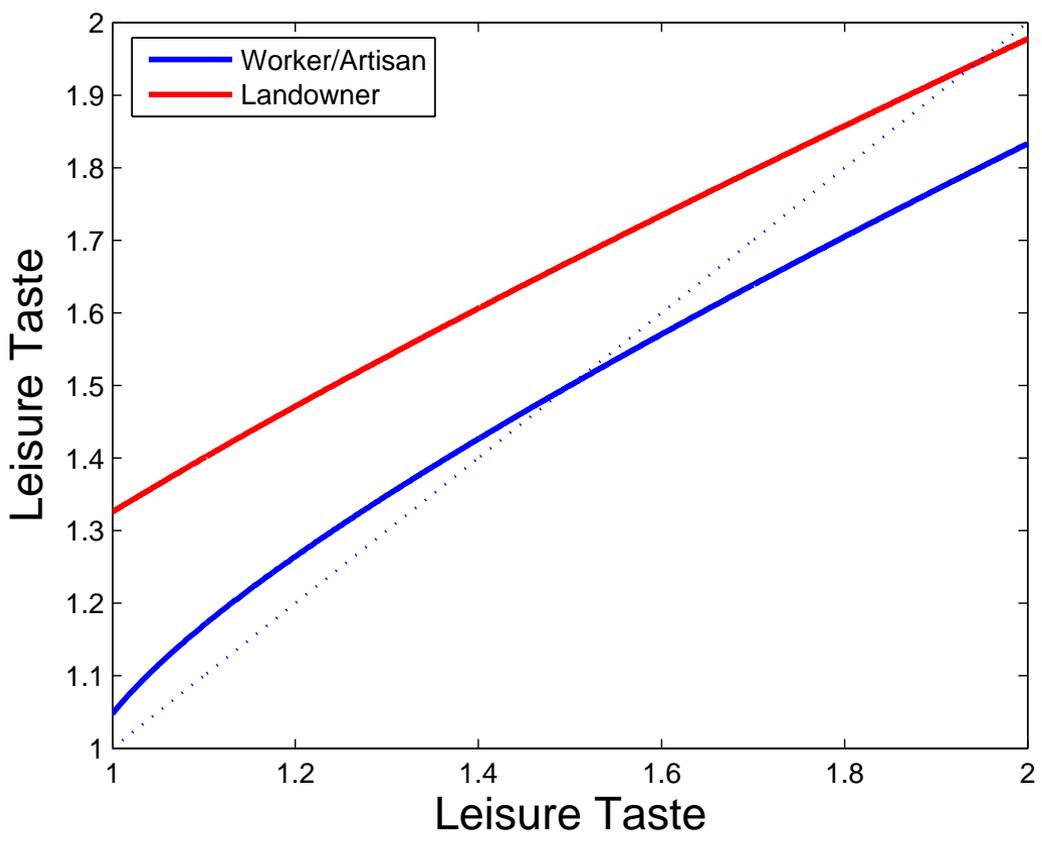
Leisure Taste Value for Worker/Artisan and Landowner:



Decisions on Leisure Taste for Worker/Artisan:



Decisions on Leisure Taste for Worker/Artisan and Landowner:



The Role of Financial Market Access:

- Incentive to invest in patience differs across occupations because consumption smoothing is not possible.
- If members of each cohort can trade in perfect credit market, income profiles no longer matter.
- Stratification in time preference only occurs if there are frictions in financial markets.
- More generally: steepness of *utility profiles* determines incentives.

The Introduction of a Capitalist Technology

- Before industrialization, preferences matter only for occupational choice and labor supply.
- If new accumulation-based technology arrives, preferences matter for wealth accumulation.
- Middle-class bourgeoisie has *Spirit of Capitalism*.
- Artisans turn into industrialists, and leave the landed aristocracy behind.

The Accumulation Technology:

- An RK technology is introduced.
- Investment takes place when young; people may continue to work in existing professions even when investing.
- As for landowners, monitoring investment increases returns.
- Investment is irreversible; fraction $1 - \delta$ is left to next generation (entrepreneurial dynasties as in Caselli and Gennaioli, 2004).

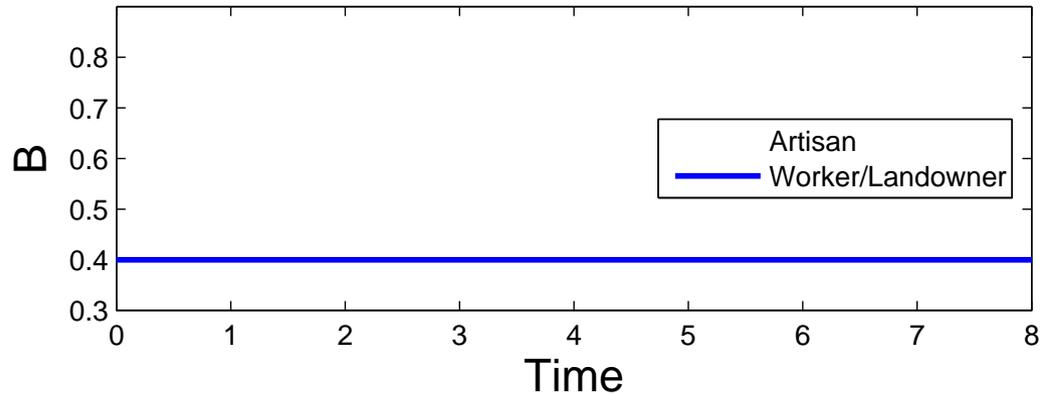
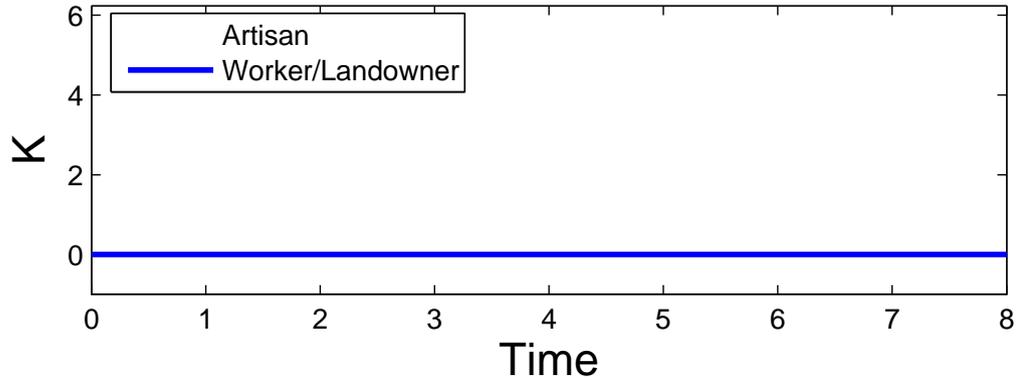
Interaction of Technology with Endogenous Preferences:

- Complementarity between being patient and investing.
- Relationship with leisure taste more complicated:
 - Low appreciation for leisure (“work ethic”) leads to more investment and higher returns.
 - However, investing ultimately increases leisure taste due to capital income (the “Buddenbrooks” effect).

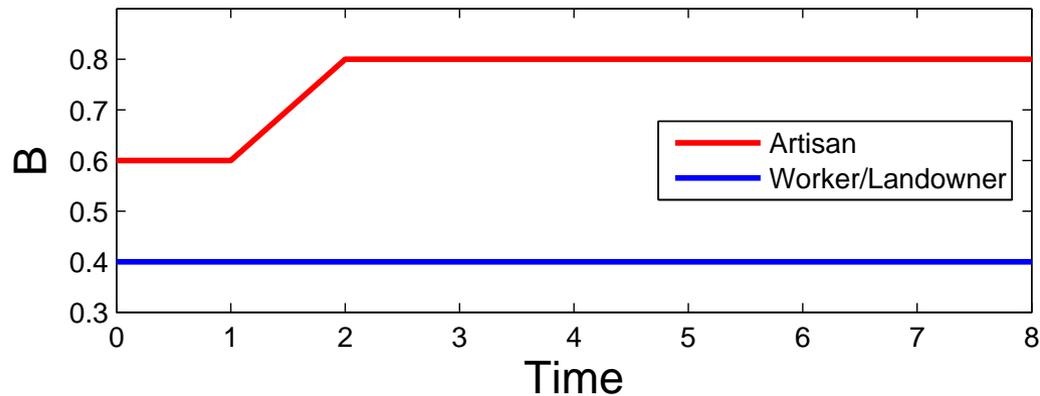
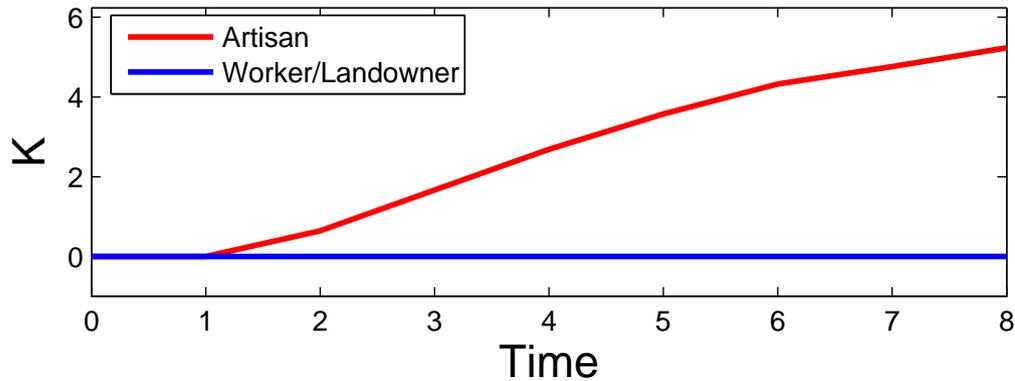
Evolution of the Three-Class Economy:

- Artisans invest in new technology, landowners and workers do not.
- No change in preferences of landowners and workers.
- Artisans-turned-capitalists get even more patient after the switch of technologies, but ultimately turn lazy and become rentiers.
- Faster growth for new entrepreneurs than for their born-rich descendants.

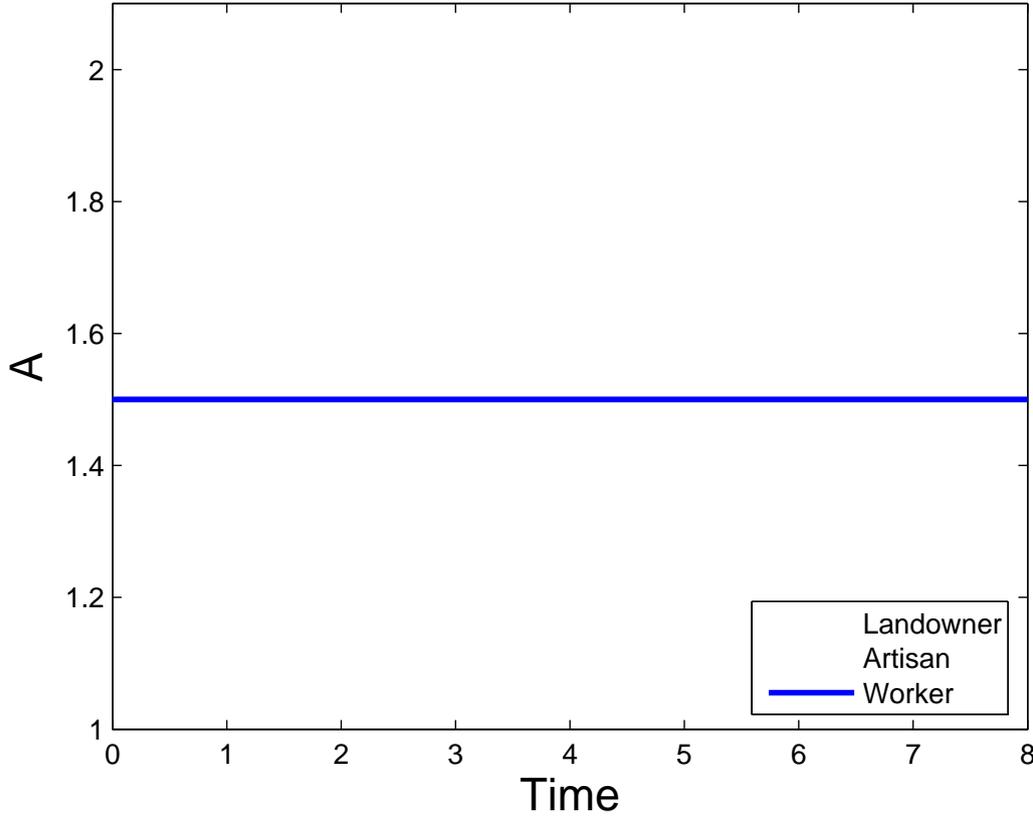
Capital and Patience of Workers, Landowners,



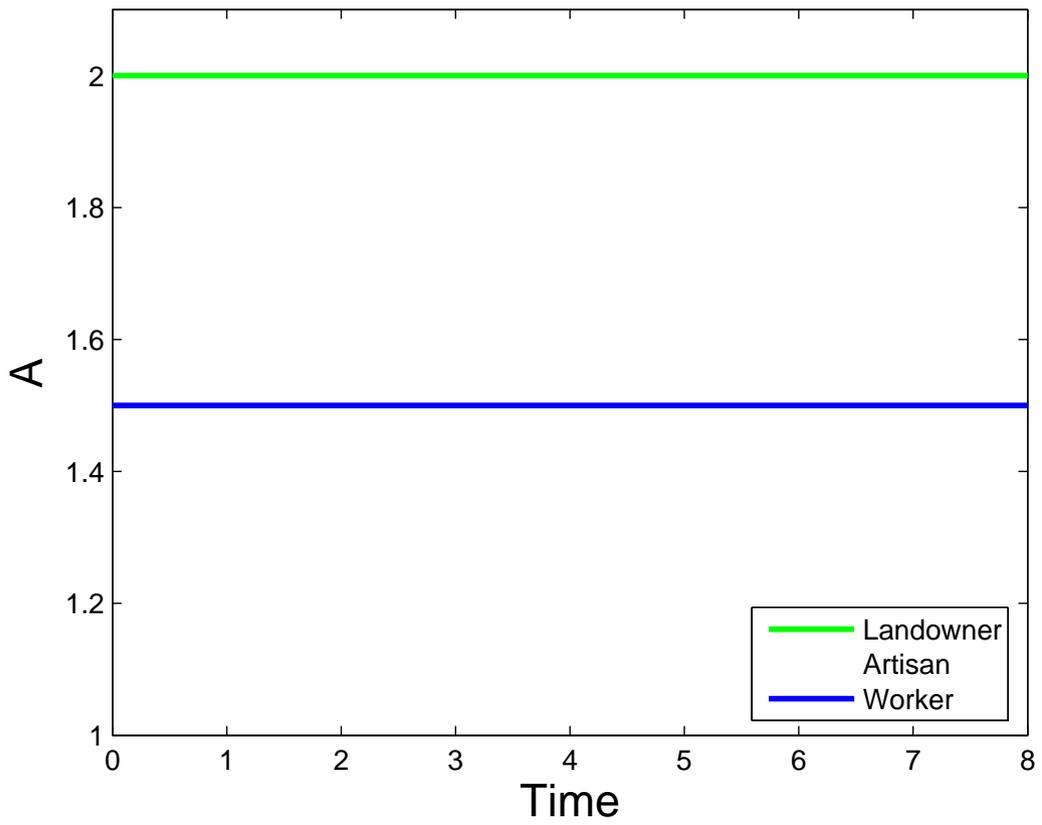
Capital and Patience of Workers, Landowners, and Artisans:



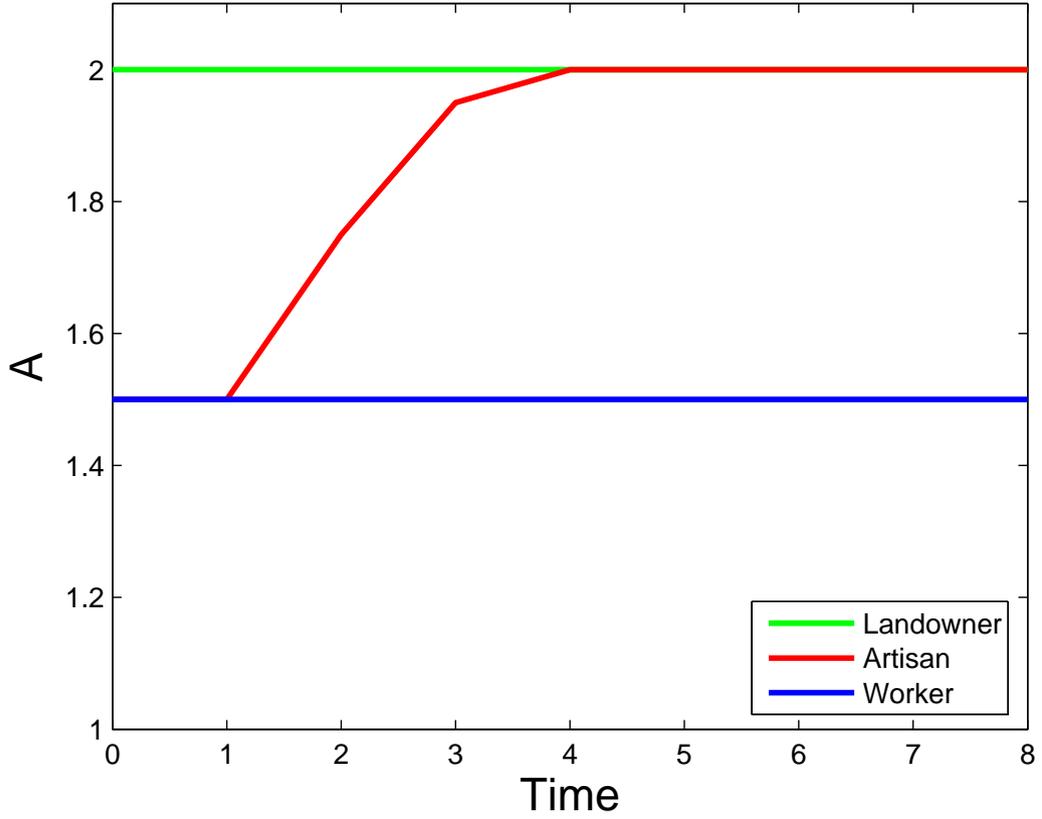
Leisure Taste of Workers,



Leisure Taste of Workers, Landowners,



Leisure Taste of Workers, Landowners, and Artisans:



Historical Application

Who were the New Industrialists?

- Only 2.3 percent of founders of large industrial undertakings came from peerage and landed gentry.
- 85 percent came from the middle class.
- 12 percent came from working class.
- Higher share of middle class than upper class became entrepreneurs.
- Relative to wealth share, representation of upper class is tiny.

Subsequent Decline of the British Upper Class:

- Until about 1880, fewer than 5000 landowners still owned more than 50 percent of all land. About 1400 of them were titled.
- Of the ca. 200 individuals who died between 1809 and 1859 with a wealth above one million Pounds, 95 percent were members of the landed elite.
- Increasing debt burden forced many families to sell all or parts of their estates before 1914.
- Only 7 percent of wealthiest individuals (more than one million Pounds) who died between 1909 and 1919 were members of the old elite.

Adam Smith on the Upper Class:

- *“The situation of such a person naturally disposes him to attend rather to ornament which pleases his fancy, than to profit for which he has so little occasion. The elegance of his dress, of his equipage, of his house, and household furniture, are object which from his infancy he has been accustomed to have some anxiety about.”*
- *“A merchant is accustomed to employ his money chiefly in profitable projects; whereas a mere country gentleman is accustomed to employ it chiefly in expense. The one often sees his money go from him and return to him again with a profit: the other, when once he parts with it, very seldom expects to see any more of it.”*

Differences in the Nature of Pre-Industrial Professions:

- In the pre-industrial world, the earning profiles of artisans were steeper than those of agricultural workers and landowners.
- Apprenticeship (4-12 years), journeymanship (4-5 years), admission to mastership, investment to open a new shop.
- “Unless he was able to count on substantial inheritance or fortunate marriage, a journeyman’s primary interest was to amass capital for opening their shop or business” (Epstein, 1991).

Can Different Skills Explain the Observations?

- Many middle-class entrepreneurs had previous experience in manufacturing and in the new industrial sectors.
- But many others entered new fields. Yeomen and farmers well represented.
- 27 percent came from the lower ranks of the middle class: “shopkeepers, self-employed craftsmen, cultivators of various kind.”
- In a number of sectors, owning land and experience in managing it was a major advantage.

Can Commitment to Managing the Estate Explain the Observations?

- Many aristocrats had little day-to-day involvement in the management of their estates, and had ample time for travel and politics.
- Members of the upper classes who did not own estates (i.e., second and third sons) did not become industrialists either.

Professional Choices of Cambridge Graduates:

	1752–1799	1800–1849	1850–1899
Church	60	62	38
Land-Owning	14	14	7
Teaching	9	9	12
Law	6	9	14
Administration	3	1	6
Medicine	1	2	7
Banking	0	0	2
Business	0	0	5
Other	7	3	9

Other Evidence for Lack of Patience:

- If patience really differs across classes, would expect aristocracy to invest little in other financial assets as well.
- Well before the Industrial Revolution, same pattern for holding of government debt: Mostly held by urban middle classes, little contribution from aristocracy.
- Same pattern for early public companies such as East India Company.
- Widespread borrowing and mortgaging to finance consumption.

Wealth Corrupts:

- Cunningham (1980): explosion in leisure activities of bourgeois middle class in late 19th century.
- Bailey (1989): “At mid-century the Victorian middle class had been suspicious of the moral temptations of a beckoning leisure world. By the end of the century prescriptions had become more permissive—from ‘Be virtuous and you will be happy’ to ‘Be happy and you will be virtuous’—and middle class leisure grew more expansive and assured” (p.110).

The Buddenbrooks Effect:

- Alfred Marshall: *“It would at first sight seem likely that business men should constitute a sort of caste; ... But the actual state of things is very different. ... When a man has got together a great business, his descendants often fail, in spite of their great advantage... ... When a full generation has passed ... then the business almost invariably falls to pieces. ... ”* (pp. 299-300).
- Evidence from Nicholas (1999) from a sample of 1149 British business leaders born between 1789 and 1937. Third-generation entrepreneurs underperformed relative to firm founders or managers”(p. 706–7).

Weber and the Role of Religion:

- Weber thought that the teachings of specific religious denominations led to the “Spirit of Capitalism.”
- Story based on (seemingly exogenous) differences in interpretation of the Bible.
- Religious instruction may have been a tool to instill specific preferences.

Conclusions and Extensions

- Preference formation interacts with occupational choice and investment decisions.
- Choice complementarities result in stratification of preferences and “leapfrogging” of one social class over another.
- Differences in patience are reinforced by interaction with capitalist technology.
- In contrast, differences in leisure taste are mitigated. Possible explanation for the “Rise and Fall of Families.”