Aspirations and Socio-Economic Change in the Long Run

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Long-term Development

- Transition from high-fertility low-growth (Malthusian) to low-fertility high-growth (Modern) regime
  - Unified growth theory: Galor and Moav, 2002; Doepke & Zilibotti, 2008; Galor & Michalapoulos, 2012; Galor & Özak, 2014
  - Population groups with "desirable" traits (desire for human capital, risk neutrality, patience) proliferate at a higher rate in Malthusian times because of economic advantage $\rightarrow$ traits transmitted to offspring $\rightarrow$ spreads in the population $\rightarrow$ tips economy towards MEG
- England's transition
  - Late 1700s – early 1900s, about 8-9 generations
  - Pre-transition fertility: 1.93 for richest tercile, 1.27 for poorest (Clark & Cummins, 2014)
  - Started changing same time as growth took off

The Clark Hypothesis: *Farewell to Alms*

- "Survival of the richest"
  - Poor had fewer children, rich more, children of the rich forced down the social scale.
  - Virtues of the rich went with them through their genes (cultural transmission?)
  - Percolating virtues made industrialization possible
- Interest rates fell from 6-10% during 1150-1800 to less than 2-3%
  - $R \equiv 1 + r = (1 + g)/\beta$
  - Evidence that the population became more "patient"
- English exceptionalism
  - Same mechanism did not operate elsewhere since rich and poor had similar net fertility.

Rate of Return (Clark, 2008)

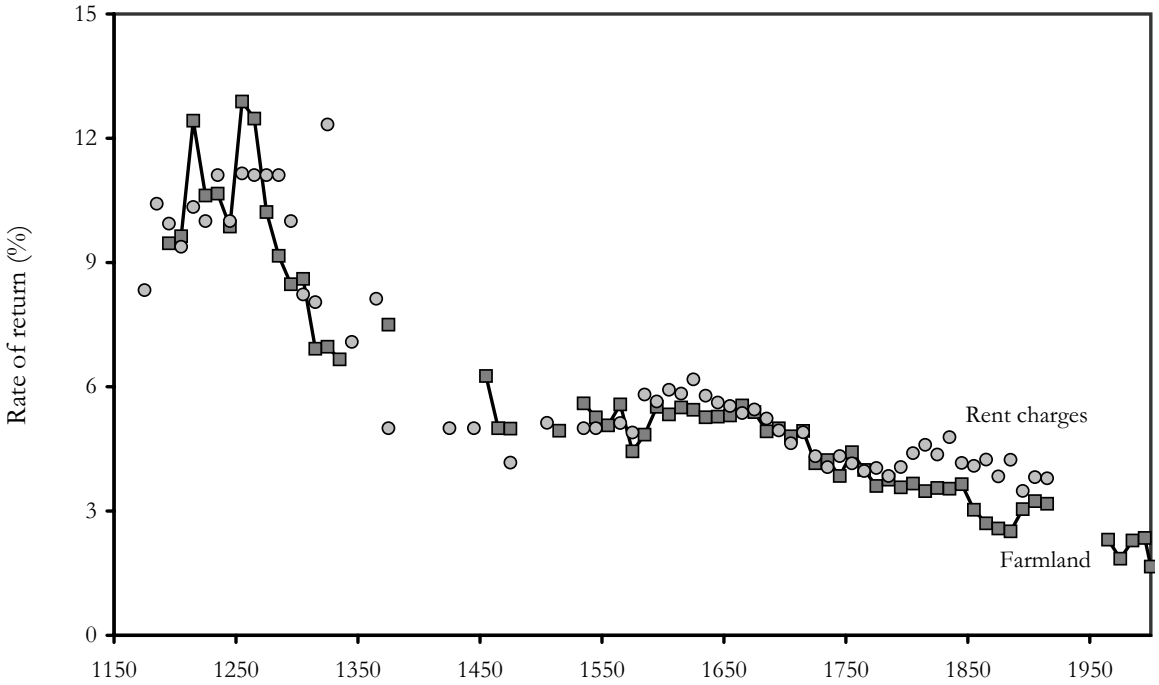
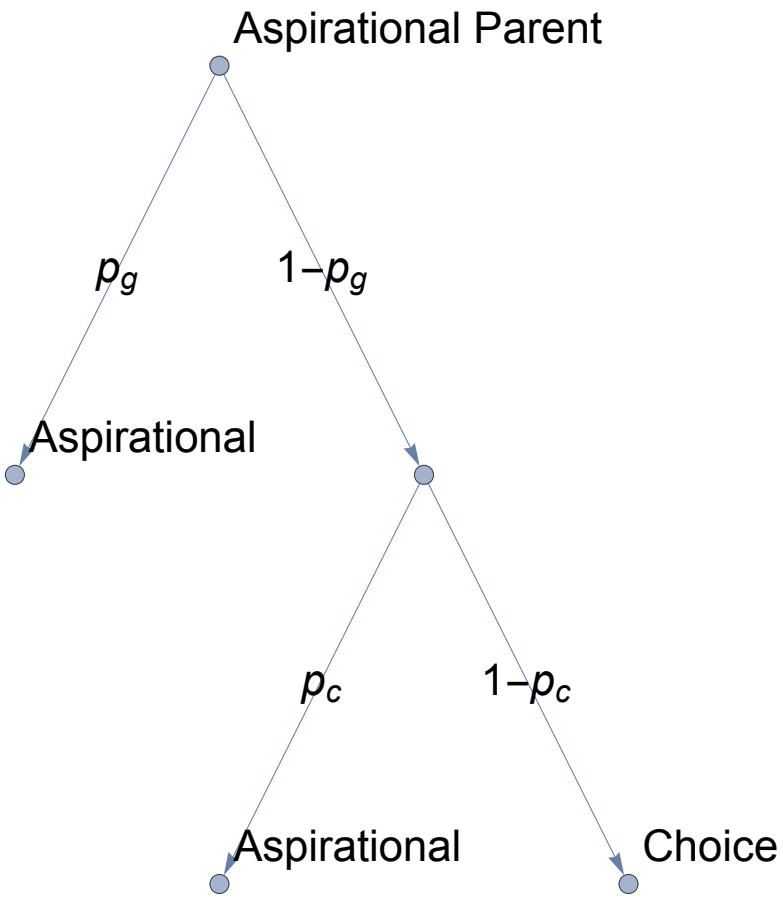


Figure 9.1 Return on land and on rent charges by decade in England, 1170–2003. For the years before 1350 the land returns are the moving average of three decades because in these early years this measure is noisy.

Model

- Intergenerational model with *aspirations* (status seeking)
- People are either aspirational or not
  - Some aspirational genetically, some culturally
  - Some by choice (indirect family influence, luck)
- Fertility with quantity-quality tradeoff
- Rich and poor fertility differ, change over time
- Genetics/culture: $p \equiv p_g + (1 - p_g)p_c$
- Behavioral genetics says $p \leq 0.5$, economics says $p \leq 0.34$

Genetic & Cultural Transmission



Decision Problem of Naïve Households

- $\mathcal{I}_t \in \{0,1\}, \quad \alpha_t = \bar{z}_t / z_t^i, \quad \epsilon \sim LN$

  $$U_t = \ln(c_{1t}) + \beta \ln(c_{2t+1}) + \gamma[\theta \ln(n_t) + (1-\theta)\ln(b_{t+1})] - \mathcal{I}_t \lambda \ln \alpha_t$$

  subject to

  $$c_{1t} + z_t + \delta n_t = (1 - \tau n_t)\epsilon_t w_t + a_t$$
  $$c_{2t+1} + n_t b_{t+1} = R_{t+1} z_t$$

- BGP interest factor under exogenous fertility

  $$R = \frac{1+g}{\beta + (1-\psi)\lambda}$$

  Aspirations works similarly to patience, "pro-capitalist"

Decisions

- For naïve adults, choice of $\mathcal{I}_t$ depends on $\{\epsilon, a_t\}$

$$a_t \geq \Phi \bar{z}_t - \epsilon_t w_t.$$

  - Children from wealthier households and "especially lucky" children from poorer households choose to be so.
- Aspirational households have higher saving & bequest propensity, lower fertility propensity, given $\{\epsilon, a\}$
- Productivity dispersion needed to generate sizable fertility dispersion between highest and lowest terciles

Technologies

- Malthusian production

$$Y_t^M = \left[\mu \left(L_t^M\right)^{\rho} + (1-\mu)\left(U\left(K_t^M\right)^{\phi}\left(L_t^M\right)^{1-\phi}\right)^{\rho}\right]^{\frac{1}{\rho}}$$

- Modern ("Solovian") production

$$Y_t^S = \left(K_t^S\right)^{\alpha}\left(A_t L_t^S\right)^{1-\alpha}, \quad \alpha \in (0,1)$$

- Endogenous productivity growth

$$A_t = \begin{cases} A_{t-1} & \text{if } k_{t-1} < \bar{k} \\ A_{t-1} + \zeta\left(k_{t-1} - \bar{k}\right) & \text{if } k_{t-1} \geq \bar{k} \end{cases}$$

Dynamics

- Start with initial distribution of a_0 and share of non-aspirational households ψ_0
- Initially capital intensity low, only Malthusian technology in use
- Rich have more children than poor, more likely to be aspirational
  - Rising $1 - \psi \Rightarrow$ faster capital accumulation $\Rightarrow$ convergence growth
- At some $T > 0$, modern technology becomes productive enough: labor and capital start moving to it
- Faster wage growth, reduction in interest rate: triggers fertility transition

Transition

- Fertility
  - Starts falling as $a_t > \delta/\tau$ and $R \downarrow$, first for rich, then for poor
- When w increases
  - Substitution effect: Lower n
  - Income effect: Higher n
  - Wealth effect: Higher n
  - When $a > \delta/\tau$, total income effect dominates, n falls
- Intertemporal interest rate effect:
  - R falls as the economy switches to modern technology, lowers bequest
  - Lower n from wealth effect

Simulated Transition

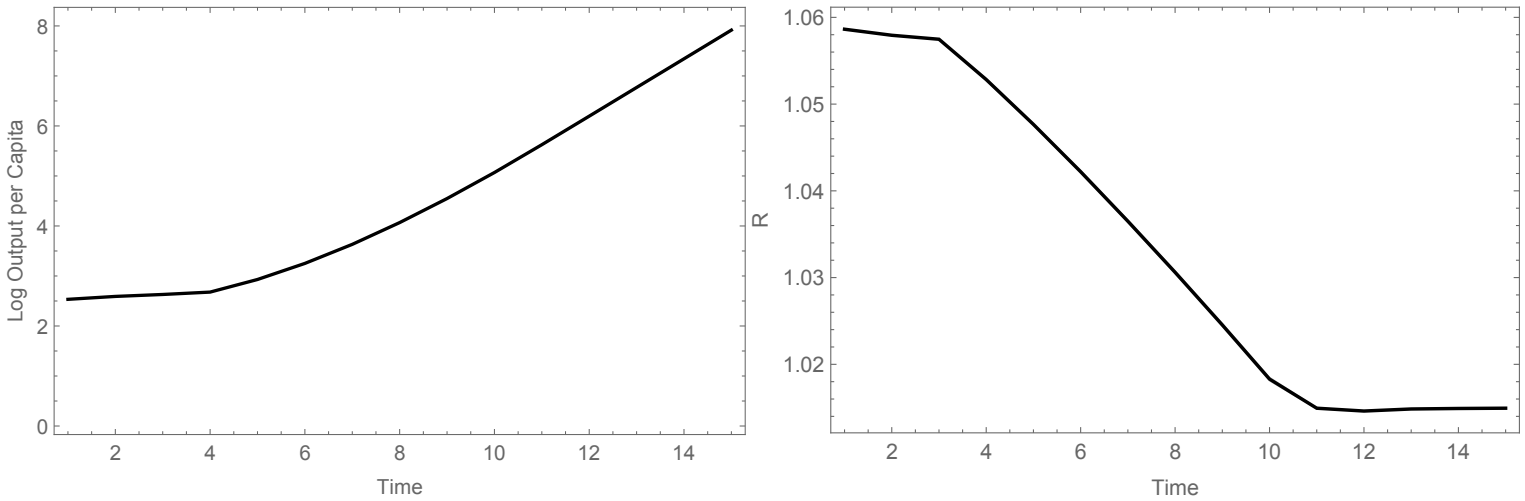


Figure: Output and Interest Rate

Simulated Transition

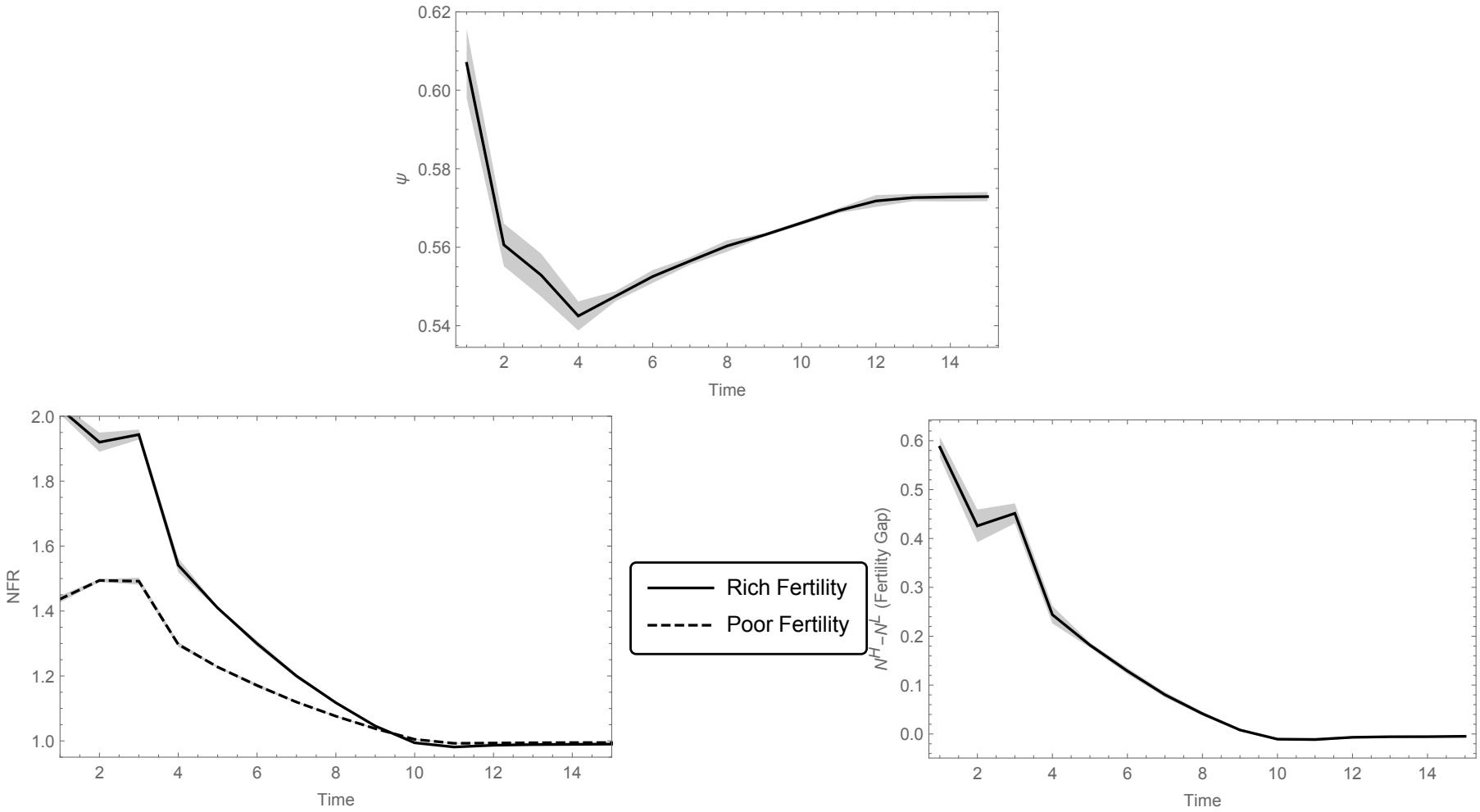


Figure: Aspirations & (Net) Fertility

Fertility Differential

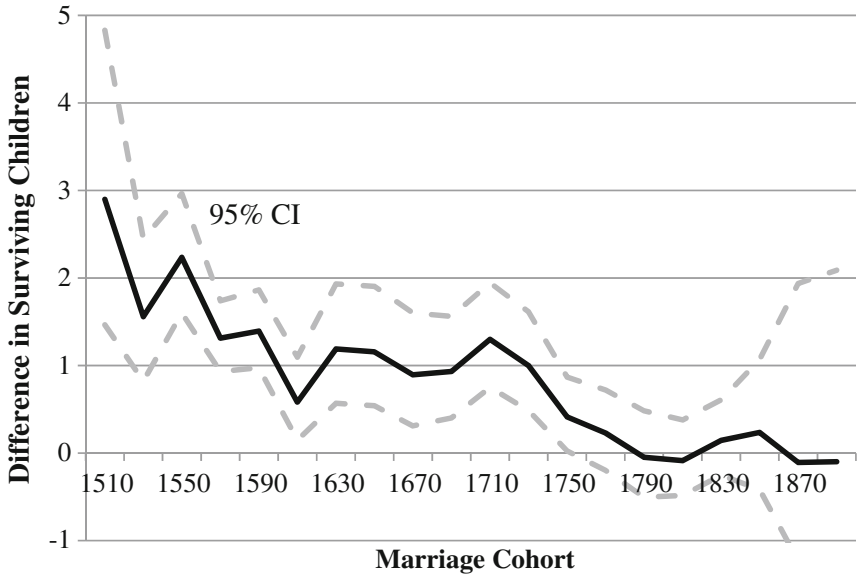


Fig. 8 Net fertility differences, top minus bottom tercile, 1500–1879. Source is Table 5. Source: Testator database

Figure: Clark & Cummins (2014)

Preliminary Results

- Transmission of pro-capitalist traits can account for some features of the English fertility transition, 2/3 of the Malthusian fertility gap.
- *Counterfactual 1*: What if $p = 0$?
  - Choice by itself explains much of the transition $\Rightarrow$ genes/culture less important.
- *Counterfactual 2*: What if $p = 1$?
  - Again little difference to transition. But no one aspirational, rich have higher fertility in the long run.
- Conclusion
  - Little about the English success and fertility pattern is due to genetics, much due to conventional economic advantage from intergenerational wealth transmission
  - None of this assumes the rich started out so only because of better genetic endowments

Going Forward

- Better distinction between genetic and cultural transmission
  - Dominant (non-aspirational) vs recessive (aspirational) genes
  - Genetic versus non-genetic aspirations background
  - Culture: socialization at home vs outside
- Better calibration of Malthusian production
  - Directly target long-run interest rates using β, λ and ψ_0
- Counterfactual 3
  - If pre-industrial fertility gap were lower, how much would it postpone IR?
  - Historical fertility gap in other countries?
- Problems: Timing of the transition by wealth tercile, why were interest rates so high?