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- **Supplement 3 to Slides 1: Endogenous Information-Gathering**

Supplement 3: Endogenous Information-Gathering

- Recall our question:
 - What explains the high rates of return to the rich?
- Two broad groups of answers:
 - The rich have access to better **information** on rates of return
 - The rich have **physical** access to better rates of return.

Investing in Investment

- A theory of individual-specific r :
 - Higher individual wealth \Rightarrow higher rate of return on it.
 - More effort spent on gathering information.

Investing in Investment

- A theory of individual-specific r :
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- Compare/contrast with “efficiency wage” models:
 - **Deliberate** investment in information yields the higher rate unlike nutrition-efficiency, but similar to dynamic incentives
 - Payoff is **multiplicative** (on r) as opposed to additive other “efficiency-wage” models generate level effects

A Model of Investing in Investment

- Individuals with more financial wealth will spend more effort finding good rates of return on it.

- Simplest model of this:

$$\sum_{t=0}^{\infty} \delta^t \frac{c_t^{1-\theta} - 1}{1-\theta},$$

where $\theta > 0$, and

$$c_t = (1 + r_{t-1})F_{t-1} + w(1 - e_t) - F_t,$$

and

$$r_t = \Psi(e_t)$$

- F : financial wealth, w : wage rate, and e : informational effort.
- Ψ concave.

A Model of Investing in Investment

- Familiar Euler equation for choice of F_t :

$$\left(\frac{c_{t+1}}{c_t}\right)^\theta = \delta r_t$$

- Slightly less familiar Euler equation for choice of e_t :

$$\left(\frac{c_{t+1}}{c_t}\right)^\theta = \delta \frac{F_t}{w} \Psi'(e_t).$$

- **Proposition.** Individuals with a higher ratio of F to w earn a higher rate of return, and grow faster, even if the effect on their savings rate is ambiguous.

- **Proof.** Combine the two Euler equations and definition of r to see that

$$r_t = \frac{F_t}{w} \Psi'(e_t) = \Psi(e_t)$$

for all t . Now prove the proposition by contradiction.

- **Note:** s and r reinforce each other when $\theta < 1$.

A Model of Investing in Investment

- Or you can have your cake and eat it too. Consider

$$c_t = r_{t-1}F_{t-1} + w - z_t - F_t,$$

where $r_t = \Phi(z_t)$ (e.g., paying an expert to do your research).

- Then Euler equation for z is given by

$$\left(\frac{c_{t+1}}{c_t}\right)^\theta = \delta F_t \Phi'(z_t),$$

- **Proposition.** Those with higher F earn higher rates of return.
- PS: Contrast the two propositions.