

**Health and Wealth**

- The story of Abu is a story of a poverty trap:
  - He has no income because he is too sick to work i.e. income is a function of health: \( y_{t+1} = g(h_t), g' > 0 \), investment in health today raises income tomorrow.
  - He is sick because he cannot afford a doctor, i.e. health is a function of income: \( h_{t+1} = f(y_{t+1}), f' > 0 \), higher income today means higher investment.

**Poverty Traps**

- This type of two-way positive interaction is usually the way we model a trap.
  - Combining the two functions defined above, \( h_{t+1} = f(g(h_t)) \). Gives us a dynamic map.
  - The interesting case is where \( f(g(.)) \) is S-shaped.
  - Possibility of multiple equilibria, interpreted as a poverty trap.

**Several caveats**

- What is health? What is income?
- What is the right length of the period?
- Neither of these has to be a structural relationship: Many sick people can push themselves and work and higher income certainly does not necessarily translate into more investment
- Indeed should there be a necessary link between income and investment?
A NECESSARY CONDITION FOR A POVERTY TRAP...

- The \( f(y_i) \) map must intersect the 45° line from below. Let \( h^* \) be this point of intersection.
- Then \( f'(g(h^*))g'(h^*) > 1 \implies \frac{f'(g(h^*))g'(h^*)}{g'(h^*)} > 1 \), because \( f(g(h^*)) = h^* \).
- By continuity, the product of the elasticity of income w.r.t health and the elasticity of health w.r.t income must be > 1 over some range.