Technological Change and the Evolution of Finance

Discussion at DNB conference on ‘Distributional implications of the crisis and policy responses’

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This does not reflect the views of the Bank of England

Plan for today

- Overview of model and results
- Key assumptions
- Alternative explanations

Overview of model

- Two overlapping generations. Utility function defined over land and second-period consumption $U\left(c_{t+1}^{i}, L_{t}^{i}\right)=c_{t+1}^{i}+v\left(L_{t}^{i}\right)$
- Production by low- and high-skill labour, tangible and intangible capital $Y_{t}=\left[\eta_{t}\left(H_{t}^{\alpha} h_{t}^{1-\alpha}\right)^{\rho}+\left(1-\eta_{t}\right)\left(K_{t}^{\alpha} l_{t}^{1-\alpha}\right)^{\rho}\right]^{\frac{1}{\rho}}$
- Technological progress is a rise in the exponent on intangibles and skilled labour $\frac{\partial Y}{\partial \eta}>0$

Key assumptions

- Intangible capital produced exogenously by skilled workers $H^i_{t+1} = \beta h^i_t$
- Can't finance intangibles outside the firm
- High-skilled households earn more
- Income elasticity of housing demand less than unity

Key results

- Fall in the tangible capital share reduces demand for funds and hence interest rates
- These funds cannot go to produce more intangibles
- So they go into mortgages - lent from rich to poor - and bid up land prices
- This is not inefficient
  - If we assume that default is costly and increasing in leverage, leverage is costly
- Taxing mortgages lowers interest rates and raises investment
  - Do we really want to lower the natural interest rate now?

Importance of key assumptions

- Production and financing of intangibles
  - If intangible capital were elastic, when interest rates fell high-skilled agents could choose to produce more intangibles rather than consumption, instead of lending to the poor.
  - True even without outside financing
- Utility quasi-linear in consumption
  - Lower land share and hence higher saving rate for the rich
  - If utility were homothetic, rich agents wouldn't lend to poor. No increase in leverage from higher inequality.
  - High-wage households are highly leveraged in many countries
  - Bequests and life-cycle savings more important sources of loanable funds

Alternative explanations

- How important is this mechanism quantitatively?
- How is it to be distinguished from others qualitatively?
  - A rise in the share of land in production (move towards service economy (Karadi and Koren (2008))
  - Anything else that lowers interest rates (e.g. demographics) will raise land prices and maybe leverage
  - Financial deregulation may raise leverage and wage inequality (Philippon and Reshef (2012))
- Two suggestions
  - Look at implications for investment and profit shares
  - Replace intangibles with land in production function