

The End of Economic Growth? Unintended Consequences of a Declining Population

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Hoover Institution, 2 June 2022

Questions

1. Should we be concerned about Earth emptying?
2. Is population size key for technological progress?
3. Does technological progress affect population growth?
4. What should a policy maker do about it?

Should we be concerned about Earth emptying?

Empty Planet

- Falling fertility rates are striking
 - concerns about population explosion shift to population implosion
- Vision of the far future
 - wistful to imagine last 1 million people on earth
 - not sure I care if they're only 2.7 times richer than us
 - natural to imagine Earth returning to its roots

Empty Planet

- Smaller population puts less stress on Earth
- Smaller population may lose technological dynamism
- The externality
 - our children are the source of new ideas
 - ideas are non-rival so can benefit everyone
 - we likely ignore that fact when we plan a family

Is population size key for technological progress?

People Generate Ideas

- More people => more ideas => faster technological progress
 - prevalence of Covid => mutations of Coronavirus => more contagious
- Yet we could make better use of the population we have
 - we hardly tap the potential ingenuity already on Earth
 - an inventor (my cousin) stressed that we need a good “seedbed”
 - makes an economic case to promote diversity (DEIB)

People Generate Ideas

- Chad might say I'm getting distracted by "level effects"
 - likely need population growth to even hope to sustain ...
 - ... a long-run constant rate of technological improvement
- Yet level effects push the problem further into the future

Does technological progress affect population growth?

Feedback to Population

- Decentralized economy (base case) population growth ...
 - ... invariant to technological change (in general could go either way)
- Planner considers population's effect on ideas
 - it's a positive externality so planner chooses a higher fertility rate
 - families may prefer 1 child; policy provides incentives for 2 or 3
 - policy rationale is weak if technological change is slow (feedback)

What should a policy maker do about it?

Optimal Policy

- Low technology per person \Rightarrow rapid technological change
 - optimal policy subsidizes fertility
 - leads to long run growth in population and technology
- High technology per person \Rightarrow slow technological change
 - optimal policy implements a smaller fertility subsidy
 - population shrinks and technological change slows

Optimal Policy

- Is there anything wrong with the second case?
- If so we should reformulate the planner's preferences
- Two dramatically different steady states
 - one has both technological change and population approaching zero
 - yet planner is indifferent between them given the right value of x
- May need to rethink our aversion to a slow-growth world