Economic Growth and Rising Living Standards

Chapter 8

How do we explain the fact that living standards in many less developed countries are low?

- Living standards have increased in many nations but not in others
- Can governments do anything to speed up the rise in living standards?

Economic growth: Long-Run increase in an economy’s output of goods and services

- Growth arises from shifts of the curves of the classical model

The Importance of Growth

- Achieving higher growth rate in long-run
  - Some sacrifice in short-run
- Average standard of living
  - Total output (real GDP) per person

The Importance of Growth

- Output grows faster than the population
  - GDP per capita rises
- Output grows more slowly than the population
  - Average standard of living will fall
- Economic growth is important both for low-income and developed countries
What Makes Economies Grow?

- What determines potential GDP in any given period?
  - The amount of output the average worker can produce in an hour
  - The amount of hours the average worker spends at the job
  - The fraction of the population that is working
  - The size of the population
- All else equal, if any of them increases, real GDP rises.

What Makes Economies Grow?

- Labor productivity (or just productivity)
  - Output produced by the average worker in an hour
  - Productivity = Output per hour
    - Total output (real GDP) over a period of time divided by the total number of hours that everyone worked during that period
    \[
    \text{Productivity} = \frac{\text{Total output}}{\text{Total hours worked}}
    \]

What Makes Economies Grow?

- Number of hours the average worker spends at the job: total hours worked over a period divided by the number of people who worked during the period
  \[
  \text{Average hours} = \frac{\text{Total hours}}{\text{Total employment}}
  \]
- Fraction of the population that is working (employment-population ratio)
  \[
  \text{EPR} = \frac{\text{Total employment}}{\text{Population}}
  \]

What Makes Economies Grow?

- Total output = Productivity × Average hours × EPR × Population (how?)
- Growth equation
  - Make use of a mathematical rule
  - \[\%\Delta(A \times B) = \%\Delta A + \%\Delta B\]
- \[\%\Delta \text{Total output} = \%\Delta \text{Productivity} + \%\Delta \text{Average hours} + \%\Delta \text{EPR} + \%\Delta \text{Pop.}\]

Almost all of the growth in real GDP over the last 50 years has come from population growth and productivity.
Economic Growth and Living Standards

- Growth in real GDP—by itself—does not guarantee a rising standard of living
  - Look at real GDP per capita
  - Over the long-run, living standards will depend on potential output per person
    \[ \text{Total output} = \text{Productivity} \times \text{Average Hours} \times \text{EPR} \]
    \[ \text{Population} \]
- \( \% \Delta \text{Total output per person} = \% \Delta \text{Productivity} + \% \Delta \text{Average hours} + \% \Delta \text{EPR} \)
- Growth in output per person and living standards
  - Employment–population ratio increases
  - Productivity grows

Growth in EPR

- Over the L/R the EPR rises only when total employment rises at a faster rate than the population
  - Thereby contribute to rising living standards
  - If EPR is falling, it will contribute to a drop in living standards
- For a given population growth rate
  - The greater the growth of total employment
  - The greater the rise in the EPR
  - Or the smaller the drop in the EPR
- What causes the employment to grow?
  - Classical model
    - Increase in labor supply—increase in the number of people who would like to work at any given wage.
    - Increase in labor demand
    - Combination of both

An Increase in Labor Supply

- Figure 1: An Increase in Labor Supply
- At point A, equilibrium employment level of 150
- An increase in labor supply raises employment to 180 million (at point B) although with a lower wage rate
- With more people working, real GDP rises from $10 trillion to $11.5 trillion.

An Increase in Labor Demand

- Figure 2: An Increase in Labor Demand
- If firms demand more labor, employment will increase (from 150 million to 180 million) while the wage rate rises.
Growth in EPR

- U.S. experience
  - A combination of both (increase in labor supply and increase in demand)
  - Increase in labor supply
    - Population ↑, female participation in the workforce ↑
  - Increase in labor demand
    - More and better capital equipment
    - Better education and training for workers

How To Increase Employment and the EPR

- Increase the labor supply
  - Decrease income tax rates (increases the rewards from working)
    - why economists often recommend cutting taxes to encourage more rapid growth in employment
    - Tax cut passed in June 2001
  - Cut benefits to the needy (increases the hardship of not working)
    - Families receiving welfare payments are reluctant to increase their work effort
    - Reforms in US welfare system, August 1996

How To Increase Employment and the EPR

- Increase the labor demand
  - Subsidies for education and training
  - Subsidies for the wages of disabled, college work-study participants

- Results
  - Speed the rightward shift in the labor supply and labor demand curve
  - Raise EPR
  - Raise output per person
Growth in Productivity

- Population growth: can raise real GDP but cannot raise real GDP per capita
- Growth in the average standard of living - attributed to growth in productivity
- Increase productivity
  - Capital stock
  - Investment spending
  - Human capital
  - Technological change

Growth in the Capital Stock

- ↑ capital per worker (total capital stock divided by the labor force), ↑ productivity
- If the capital stock grows faster than the labor force
  - Capital per worker rises
  - Labor productivity rises
- If the capital stock grows more slowly than the labor force
  - Capital per worker falls
  - Labor productivity falls

Growth in the Capital Stock

- Figure 4: Capital Accumulation and the Production Function

Investment and the Capital Stock

- Rate of planned investment spending in the economy - determines
  - How fast the capital stock rises
  - Whether it will rise faster than the labor force
- Stock variable - quantity at a moment in time
  - Capital stock—the total amount of plant and equipment that exists in the economy
- Flow variable - process over a period of time
  - Investment spending—the amount of new capital being installed over some time interval
    - Adds to the capital stock over time
Investment and the Capital Stock

- Depreciation reduces the capital stock
  - Investment > depreciation
  - Capital stock will.....
- For a given rate of depreciation and a given growth rate of employment, a higher rate of investment spending - faster growth in
  - Capital per worker
  - Productivity
  - Average standard of living

How to Increase Investment

- Government
  - Target businesses
  - Target households
  - Target its own budget
- Target businesses - Increase the incentive to invest
  - Reduce business taxes
  - Specific investment incentives
- Shift the investment demand curve rightward
  - Faster growth
    - Physical capital
    - Productivity
    - Output per capita

Target Businesses

- Figure 5 An Increase In Investment Spending
- Interest Rate
- Supply of Funds (Saving)
- Original Demand for Funds ($I^*_1$)
- New Demand for Funds ($I^*_2$)
- Trillions of Dollars Per Year

How to Increase Investment

- Target Households - Increase incentive to save
  - Drives down the interest rate
- Government can increase incentive to save
  - Decrease capital gains tax
    - Capital gain: profit you earn when you sell an asset
  - Switch to consumption tax
  - Change transfer payments system
- Shift supply of funds curve rightward
  - More funds available for investment
- Faster growth
  - Capital stock
  - Living standards
Target Households

- Figure 6: An Increase In Savings

How to Increase Investment

- G↑ completely crowds out C and IP
  - G ↓ will have the opposite effect
- Shrink the budget deficit or rise surplus
  - Reduce interest rates
  - Increase investment
- Faster growth in the capital stock
- Important proviso about the Budget Deficit
  - A reduction in budget deficit or an increase in budget surplus (even if IP↑) are not necessarily pro-growth measures
  - Government investment
    - New capital
    - Maintenance of existing capital
- Effect of deficit reduction depends on which government programs are cut

Deficit Reduction and Investment Spending

- Figure 7: Deficit Reduction and Investment Spending

Human Capital and Economic Growth

- Human capital—skills and knowledge possessed by workers
- Increase in human capital
  - Production function shifts upward
  - Productivity increases
  - Output increases
  - Increases the average standard of living
- Human capital
  - Stock variable that increases by flows of investment
- Human capital investments
  - Businesses
  - Government
  - Households
Technological Change

- Technological change
  - Invention or discovery of new inputs, new outputs, or new production methods
  - Shift the production function upward
  - Enables any given number of workers to produce more output
- The faster the rate of technological change
  - The greater the growth rate of productivity
  - The faster the rise in living standards

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Technological Change

- Rate of technological change
  - Depends on firms’ total spending on R&D
- Policies that increase R&D spending (like enhancing patent protection)
  - Increase the pace of technological change.

Growth Policies: A Summary

- Classical Model
  - Fiscal policy
    - No demand-side effects
    - Supply side effects
  - Employment ↑ (EPR growth rate ↑)
    - Examples: T ↓, employment subsidies
      - LS ↑, LD ↑

Growth Policies: A Summary

- Capital (Human & Physical) ↑ and R&D ↑, productivity growth rate ↑
  - Investment tax credit, corporate profits tax ↓
    - IP ↑
  - Tax incentives to ↑ savings
    - r ↓ → IP
  - G ↓, T ↑, Transfer payments ↓
    - r ↓ → IP
Economic Growth in LDCs

- Three common characteristics
  - Very low real GDP per capita
    - Trade-off between consumption and capital goods
    - Poorest LDCs cannot reduce consumption below current levels
      - They cannot produce enough capital to keep up with rising population
  - High population growth
    - Cruel circle
  - Poor infrastructure
    - Lack of domestic and foreign investment
      - Low capital and productivity growth

- Problem faced in some LDCs
  - Growth in capital stock is not fast enough to increase capital per worker
    - No productivity growth
  - Increase K
    - Might not be possible, if C is at lowest possible level
      - Apply force
      - Cut C of the wealthy
      - Restrict population growth (ex: China)
      - Foreign assistance (IMF, World Bank)