FULBRIGHT UNIVERSITY VIETNAM

FULBRIGHT SCHOOL OF PUBLIC POLICY AND MANAGEMENT

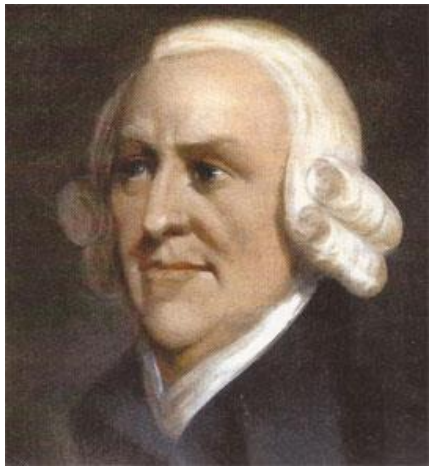
Economic Growth

Development Policy

Summer 2023

Adam Smith The Wealth of Nations (1776)

- The sources of economic growth are s*pecialization* and the *division of labor.*
- Smith anticipated modern manufacturing:
  - Skills develop when performing repeated tasks: “learning by doing” – we now call this dynamic increasing returns
  - The assembly line: no time lost switching between tasks; speed and precision
  - Mechanization of simple tasks (capital equipment)
- Specialization and the division of labor depend on the size of the market → Smith never assumed that everything produced will automatically find a market



Adam Smith

Hla Myint and 'Vent for Surplus" in Southeast Asia

- Southeast Asia traditionally exported plantation crops (rubber, coffee, rice) bringing land into production (recall Southeast Asia's land-abundant past)
- Myint was an early proponent of export-led growth (opposed to the export pessimism of Gunnar Myrdal)
- Export markets create opportunities to realize economies of scale → example of shrimp and catfish in MRD
- Profitability drives capital investment, which increases productivity and profits (recall the Lewis Model).

Hla Myint

The neoclassical growth model

- Neoclassical economists assume full employment and savings always equal to investment
- The neoclassical growth model made other assumptions to keep the math simple
  - The economy consists of one sector (no movements from agriculture to industry)
  - Constant returns to scale and diminishing returns to capital
  - Technology changes over time but at a constant rate.
  - The labor force grows at the same rate as the population (all labor is employed)

The Solow model of growth

$$Y = TK^{\alpha}L^{1-\alpha}$$

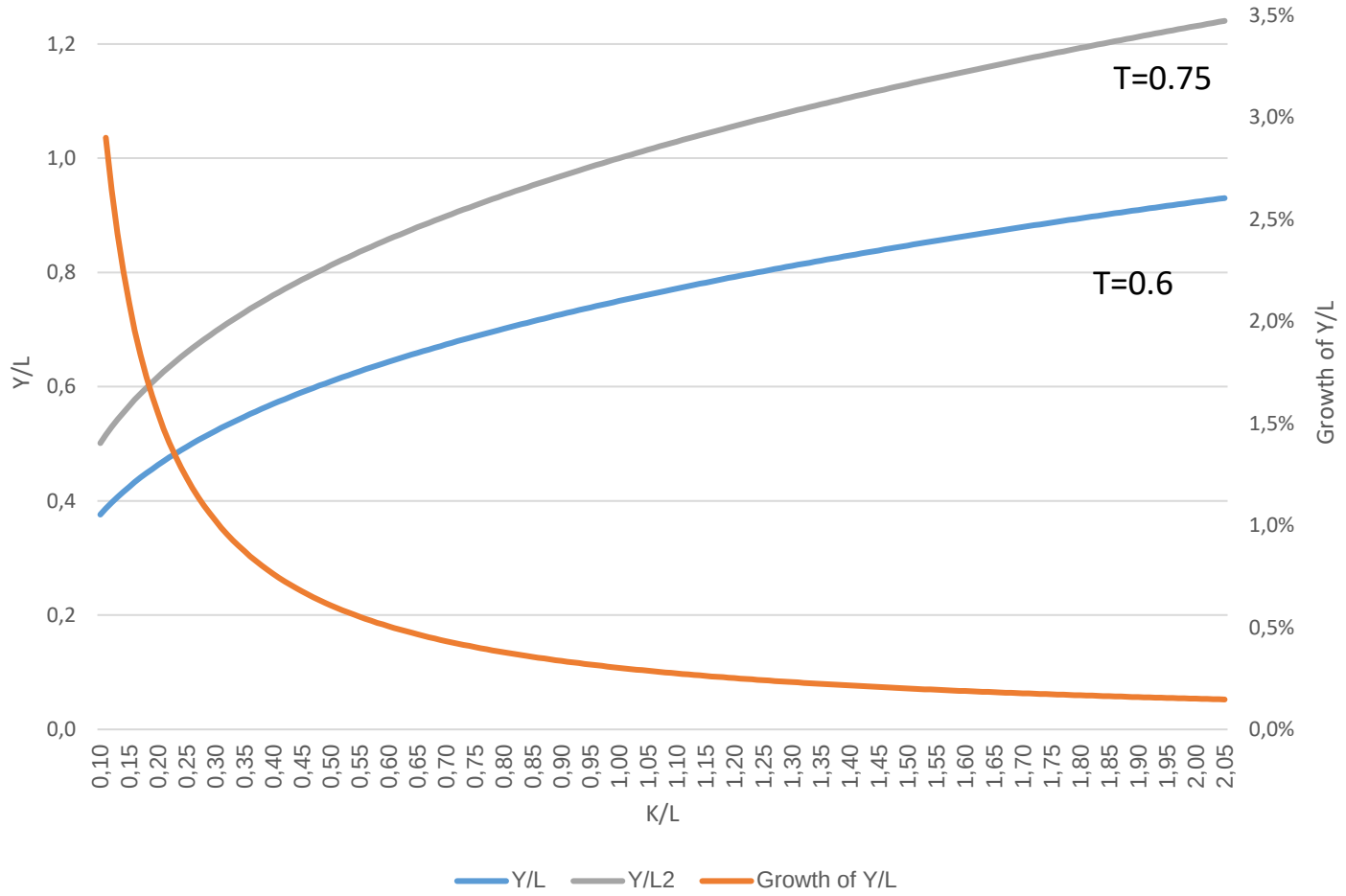
- where Y is income (GDP), T is constant technological progress (constant), K is capital and L is labor.
- α is the elasticity of output with respect to capital, and (1- α) is the elasticity of output with respect to labor
- Because α + (1- α) = 1, we know the system has constant returns to scale and diminishing returns to capital and labor.
- Increasing K and L by 1% results in a 1% increase in Y

Labor productivity in the Solow model

$$\frac{Y}{L} = \frac{TK^{\alpha}L^{1-\alpha}}{L} = T(\frac{K}{L})^{\alpha}$$

- Y/L is labor productivity (output per person). Let's call that q
- K/L is the capital-labor ratio (the amount of capital per worker). Let's call that k.
- $q = T(k)^{\alpha}$ or labor productivity is equal to technology applied to the capital-labor ratio, growing at a constant rate but less than one.
- The level of labor productivity (q) depends on the amount of capital per worker (k)
- But there are diminishing returns to capital so the rate of growth of q is slower when the capital-labor ratio is higher (α is less than 1).

At higher levels of K/L, more capital does not increase labor productivity (Y/L)



- Labor productivity growth quickly declines to zero
- Technology still raises the level of labor productivity, but not the growth rate of labor productivity

Source: Frances Stewart 2019

The neoclassical growth model

- Classical economists like Adam Smith and Hla Myint emphasized capital investment, the division of labor and trade as the sources of economic growth.
- Neoclassical growth models use some restrictive assumptions that changed the growth policy agenda for a generation
  - The assumption of diminishing returns to capital led many economists to conclude that investment doesn't matter.
  - The assumption that technology is external to investment led economists to see technology as unrelated to economic policy
  - The assumption of a single sector blinded economists to the importance of the manufacturing sector in the early stages of development
  - The assumption of full employment led to the conclusion that poor countries had to trade-off between investment and consumption

What does the Solow model mean?

- The main conclusion is that economic growth should be faster in poor countries (lower K/L) and slower in rich countries (higher K/L).
- We should see convergence in incomes over time between poor and rich countries (we will discuss this I the next class).
- The savings rate affects the *level of income* at the steady state (higher K/L at the steady state), but not the *rate of economic growth*, which is external to the model (technological change and the rate of population growth)
- Investment always equals savings and there is no unemployment → a supply side model with no role for demand
- A higher investment rate can't raise the rate of growth: growth is largely explained by technology, which is not explained.

Neoclassical growth model with endogenous technology

- The conclusions of the Solow model were increasingly at odds with the real world
  - Poor countries were not converging with the rich
  - Technology has a direct relationship to labor productivity and is not constant or the same for every country
  - Constant returns to scale and diminishing returns to capital were but not very realistic
- "Endogenous growth theory" drops the assumption of constant returns to scale and diminishing returns to capital.
  - The investment rate matters because diminishing returns will not set in at higher K/L ratios
  - If there are positive externalities from research and development activity, then returns to capital will not fall (Romer).
  - Or education, or trade, or infrastructure or any other reason that prevents Y/L from falling as K/L rises

Old wine in new bottles?

- Endogenous growth theory seeks to explain the absence of diminishing returns to capital within the neoclassical framework
  - Remember Adam Smith, the division of labor, increasing returns to scale and the accumulation of capital
  - Nicholas Kaldor (1957): Technological progress is not separate from K, it is embedded in it.
- When diminishing returns to capital set in, new inventions come along and increase the productivity and capital
  - New inventions simulate investment, raising investment rate and growth rate
  - Countries grow at different rates because they are on different production functions, using different technologies

What is missing in these stories about growth? Government

- Throughout history, governments have played an important role in accelerating and holding back growth.
- The US developed as a manufacturing power due to Alexander Hamilton's tariffs on manufactured imports
- Japan, Korea, Taiwan and China have all benefited from government support for domestic industries.
- Infrastructure, investment in research, higher education can move the economy onto a different production function.
- Taiwan semiconductor industry developed from government research laboratory that bought outdated technology from the US.

What is missing in these stories about growth? Demand

- Demand side: Neoclassical growth theory assumes supply always equals demand
  - There is no unemployment and savings always equals investment
  - But development starts from a condition of surplus labor and low productivity, which cannot be assumed away
- Exports are crucial to growth because demand is not sufficient in the domestic market

What is missing in these stories about growth? Manufacturing and modern services

- In one sector models the rate of productivity growth is an average of all sectors
- But in the real world, labor productivity growth depends on the rise of manufacturing and modern services
- Potential for increasing returns to scale is not equal in all sectors
- If labor is crowded into traditional services growth will slow down

Measuring Total Factor Productivity Growth (TFP)

- TFP use the Solow Model to estimate growth that is not a result of adding more capital or labor per worker
  - Interpreted as a measure of technological change (which is outside of the model)
  - But maintains assumption of diminishing returns to capital and labor and constant returns to scale
- Technology is not embodied in capital investment (no relationship between the level of investment and the rate of technological change)

Policy implications

- Neoclassical growth models have limited policy implications: technology is exogenous (external) to the model and the rate of investment does not affect the rate of growth
- New growth theory returns to the lessons of the past: capital investment, technological change and trade
- But policy implications are still limited: It leaves out government, demand and intersectoral movements of labor
- Savings are still automatically equal to investment
- Total factor productivity is not a reliable measure of the rate of technological change

Discussion questions

1. What are the assumptions of the neoclassical growth model? Are they relevant to economic growth in Vietnam?

2. What are the factors relevant to economic growth that are not addressed in the Solow Model or “new” growth theory?