

The Economic Growth:

Economic growth depends on many factors. Main among those factors is adherence to:

1- The rule of law. 2- Protection of property rights. 3- Contractual rights .

Laws must be: 1- clear, 2- public, 3- fair, 4- enforced, and 4- equally applicable to all members of society.

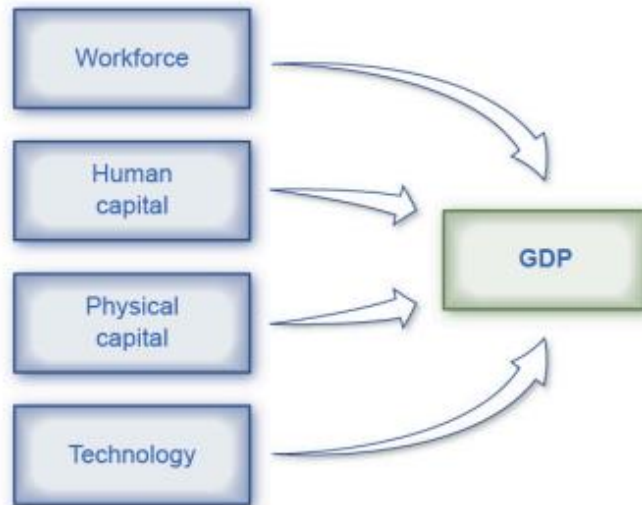
❖ Sustained long-term economic growth SLTEG:

SLTEG comes from increases in worker productivity, which essentially means how well we do things. In other words, how efficient is your nation with its time and workers? Labor productivity is the value that each employed person creates per unit of their input.

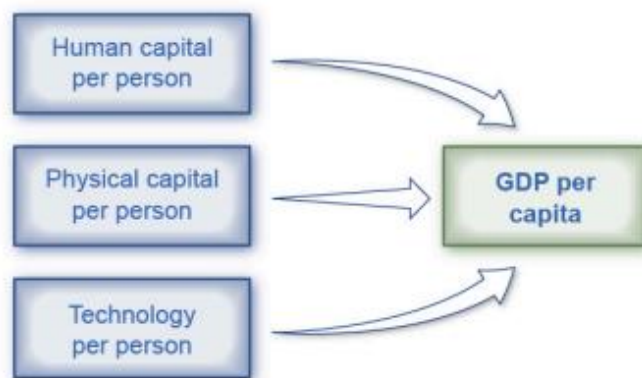
❖ Sources of Economic Growth: The Aggregate Production Function

To analyze the sources of economic growth, it is useful to think about a production function, which is the technical relationship by which economic inputs like labor, machinery, and raw materials are turned into outputs like goods and services that consumers use. A microeconomic production function describes a firm's or perhaps an industry's inputs and outputs.

In macroeconomics, we call the connection from inputs to outputs for the entire economy an aggregate production function. Components of the Aggregate Production Function include:



(a) Aggregate production function with GDP as its output



(b) Aggregate production function with GDP per capita as its output

FIGURE 7.2 Aggregate Production Functions An aggregate production function shows what goes into producing the output for an overall economy. (a) This aggregate production function has GDP as its output. (b) This aggregate production function has GDP per capita as its output. Because we calculate it on a per-person basis, we already figure the labor input into the other factors and we do not need to list it separately.

❖ The Power of Sustained Economic Growth:

Nothing is more important for people’s standard of living than sustained economic growth. Even small changes in the rate of growth, when sustained and compounded over long periods of time, make an enormous difference in the standard of living.

هیچ شتیک له گهشه‌ی ئابووری بهرده‌وام گرنه‌گر نیه به ئاستی ژیا‌نی خه‌ک. ته‌ناهه‌ت گۆر انکاریه به‌چووه‌که‌کانی ریشه‌ی گه‌شه‌کردن، کاتیک به‌رده‌وام ده‌بن و به‌ ماوه‌یه‌کی زۆر ئالۆزتر ده‌بن، جیاوازییه‌کی گه‌وره له ئاستی ژیا‌ندا دروست ده‌که‌ن.

To calculate the GDP growth rate is to apply the following formula:

$$\text{Future Value} = \text{Present Value} \times (1 + g)^n$$

Where;

Future value is the value of GDP n years later,

Present value is the starting GDP amount,

g is the growth rate, and

n is the number of periods for which we are calculating growth.

Example: See the following table:

Year	Starting GDP	Growth Rate 2.8%	Year-End Amount
1	\$2.2 Trillion ×	(1+0.028)	\$2.26 Trillion
2	\$2.3 Trillion ×	(1+0.028)	\$2.32 Trillion
3	\$2.3 Trillion ×	(1+0.028)	\$2.38 Trillion
4	\$2.4 Trillion ×	(1+0.028)	\$2.44 Trillion
5	\$2.5 Trillion ×	(1+0.028)	\$2.50 Trillion

❖ **Components of Economic Growth:**

1- Physical capital includes:

The plant and equipment that firms use as well as things like roads (also called infrastructure). Again, greater physical capital implies more output. Physical capital can affect productivity in two ways: (1) an increase in the quantity of physical capital (for example, more computers of the same quality); and (2) an increase in the quality of physical capital (same number of computers but the computers are faster, and so on).

2- Human capital:

Refers to the skills and knowledge that make workers productive. Human capital and physical capital accumulation are similar: In both cases, investment now pays off in higher productivity in the future.

3- Technology:

Is the “joker in the deck.” Earlier we described it as the combination of invention and innovation. When most people think of new technology, the invention of new products like the laser, the smartphone, or some new wonder drug come to mind. In food production, developing more drought-resistant seeds is another example of technology.

❖ **Capital Deepening:**

When society increases the level of capital per person, we call the result capital deepening.

The idea of capital deepening can apply both to:

- 1- Additional **human** capital per worker, and
- 2- Additional **physical** capital per worker.

Recall that one way to measure human capital is to look at the average levels of education in an economy.

❖ **Economic Convergence:**

Some low-income and middle-income economies around the world have shown a pattern of convergence, in which their economies grow faster than those of high-income countries.

❖ **Arguments That Convergence Is neither Inevitable nor Likely**

If the economy's growth depended only on the deepening of human capital and physical capital, then we would expect that economy's growth rate to slow down over the long run because of diminishing marginal returns. However, there is another crucial factor in the aggregate production function, which is technology. Developing new technology can provide a way for an economy to sidestep the diminishing marginal returns of capital deepening. Figure 2 shows how.

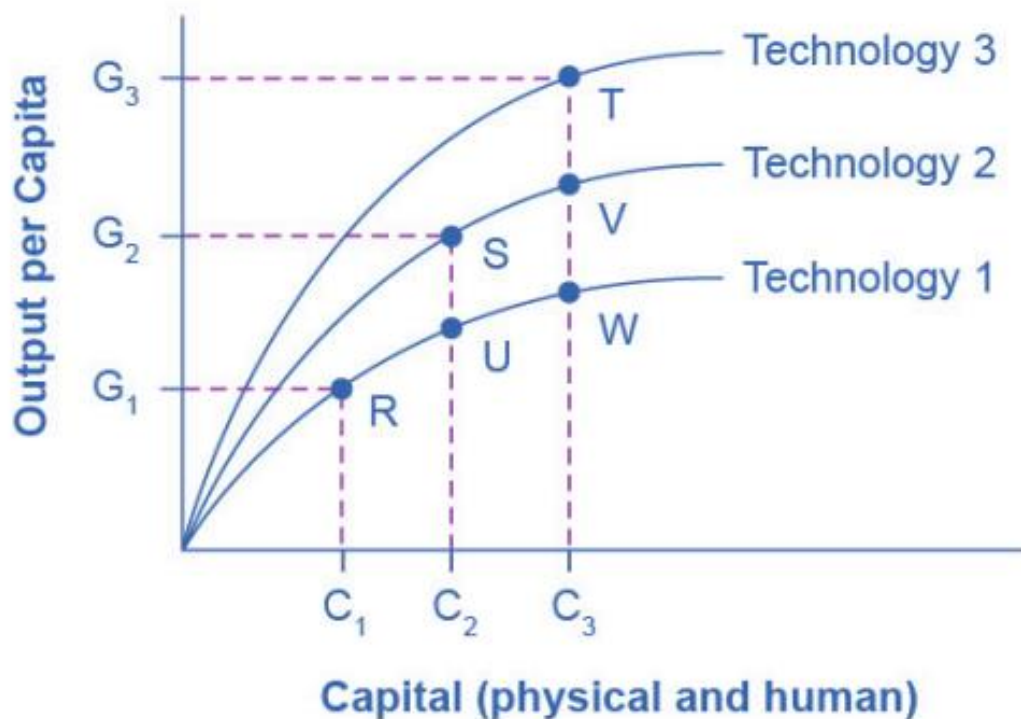


Figure 2 Capital Deepening and New Technology

Imagine that the economy starts at point R, with the level of physical and human capital C_1 and the output per capita at G_1 . If the economy relies only on capital deepening, while remaining at the technology level shown by the Technology 1 line, then it would face diminishing marginal returns as it moved from point R to point U to point W. However, now imagine that capital deepening is combined with improvements in technology. Then, as capital deepens from C_1 to C_2 , technology improves from Technology 1 to Technology 2, and the economy moves from R to S. Similarly, as capital deepens from C_2 to C_3 , technology increases from Technology 2 to Technology 3, and the economy moves from S to T. With improvements in technology, there is no longer any reason that economic growth must necessarily slow down.