

Determinants of the long run growth economics essay



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What are determinants of the long-run growth and what are determinants of maintaining of long-run growth? How can be the growth of economy effected, by what factors?

As it could be seen from the production function:

$$Y = A * F(K, N)$$

There are three determinants of long-run growth of economy. K - stock of physical capital; N - stock of labor force; A - technological progress. By changing these variables the growth of a particular economy could be changed. Physical capital, human capital and technological progress have a direct effect on the economy, but there is another variable that has an indirect influence. This is an infrastructure that is created by the laws, government policies and institutions. The growth of an infrastructure is devoted to encourage, enable and co-ordinate behavior of economy subjects that causes steady accumulation of human capital, physical capital and technical knowledge, which generate sustain long-run economy growth. In order to have an increase of total output (Y) the inputs should be increased (physical capital, K, and/or labor capital, N) or improvement in productivity (development of technology, A). Production function has a diminishing marginal effect that means that with every increase of inputs the effect of this increase will be less than it was before. Let's have a look at each determinant more precisely.

Physical capital. If we give worker a more powerful tool to work then the productivity of his work will increase. Such a measure that changes the productive power of a worker is called physical capital and the process of <https://assignbuster.com/determinants-of-the-long-run-growth-economics-essay/>

providing workers with more powerful tools is termed capital deepening. Physical capital (factories, machine tools, computers or transportation equipment) expands the economy's capacity to produce goods. The stock of physical capital could be increased by investment. The necessary economic condition for making investment is savings, a share of current income from current consumption. Hence, economies with higher saving rate will invest more in their physical capital and in economy itself. The example of that over the last 50 years could be Asian countries such as Japan, Singapore, South Korea, which have had high saving rates (25-30% of GDP) had also high growth rates (5-7% of annual rates of increase of GDP per-capita). In comparison to countries such as India and Bangladesh with low saving rates (5-15% share of GDP) have also low growth rates (1-1.5% annual rates of increase in GDP per-capita). According to Jorgenson and Stiroh (2000) (after Elwell, 2006) the effect on the long-term of the U. S. economy growth is attributed to 50% of total growth to capital deepening.

Moreover, physical capital embodied with new technology will be more effective. But it will be useless without workers able to coop with it that is why the boost of workers skills is also required for effective use of such advanced equipment. Because of advancing of physical capital there are could be some improvements in human capital through a process of learning by doing as workers have access to the new physical capital embodied with new technology. Also, the accumulation of physical capital embodied with new technology could induce further advances in technology.

Physical capital contributes to growth of economy in high extend but in order to stimulate growth through accumulation of physical capital it is necessary <https://assignbuster.com/determinants-of-the-long-run-growth-economics-essay/>

to make investments in this capital, hence, to make an essential investment in physical capital the saving are crucial here, then higher saving rate, then higher investment rate which, which in turn, positively influences the overall economy growth in long-term time perspective.

Human capital. Worker's productivity could be increased by knowledge this could be done through the education in school, different courses, on-the-job training. Such knowledge helps workers to operate effectively new equipment. Increasing of the worker's knowledge is called increase in the stock of human capital. Increases in educational achievement of the average worker for the 1915-2000 in U. S. is estimated to have a direct contribution about 0.35% per year to the rate of growth of GDP per-capita, or about 20% of the 1.8% annual growth of GDP per capita in the U. S. economy. Human capital could also change due to a change in population. This type of capital has also a diminishing return to scale, with increasing numbers of workers the result of their work (output) will be less than in previous increase.

Human capital in long-run time perspective plays also important role. As it was mentioned the stock of human capital had a 20% share in economy growth in the U. S. economy from 1915 to 2000. In addition, physical capital without labor to operate it is useless. Increasing stock of human capital through education and trainings is very important to stimulate economy growth in long -run.

Technological knowledge. This is the process of putting together scarce inputs in order to produce desired goods and services. The advances in technological progress pushing back the onset of the diminishing returns

that would reduce the productivity raising and growth sustaining ability of successive increase human and capital stocks'. Recent researches show that the contribution of technological progress to U. S. economy accounts 40-50% of rate of growth of real GDP per worker hour.

At any point of time economy possesses a given stock of technological knowledge. By constantly adding to that stock it constantly expands the productive potential of the economy. That generates sustainable long-term growth of the economy.

These factors described above have a direct impact on the long-term economy growth. But what is the most important from them? As Abel and Bernanke (2000) discussed in their work that the diminishing marginal productivity of capital makes it very difficult to sustain economic growth over a long time by increasing only inputs and only advances in technological progress can keep an economy on its way to growth.

In contrast, according to Alwyn Young's (after Abel and Bernanke, 2000) research of economic miracle of East Asia countries, such as Hong Kong, Singapore, Taiwan, South Korea, where during the period of 1966-1991 the average real GDP growth was more than 7% per annum. Consequently, such a 7% sustained annual growth of real GDP over 25 years was translated into a nearly seven times higher level of real output at the end of the period as at the beginning. Alwyn Young states that their miraculous economic growth is contributed to rapid growth of human and physical capital in these countries, but not to technological growth in these countries. Young used a variety of data sources to develop comprehensive measures of the growth of output,

capital and labor for South Korea, Singapore, Hong Kong and Taiwan. He traced that the fast rate of economic growth in these East Asian countries was in high extent attributed to high accumulation of human and physical capital but not due to high rate of technological progress. All these four countries experienced high population growth and labor force participation rate. In addition, rapid growth of capital stock was due to high saving rate in these countries, in some cases enforced by government.

Young found that rates of growth of total factor productivity (TFP) in the four East Asian countries were not so high as it was thought. There was 2.3% for Hong Kong, 1.7% for South Korea, 2.6% for Taiwan and only 0.2% for Singapore. But on the other hand, these are good TFP growth rate (with exception of Singapore), in comparison to Italy over the same period where TFP growth was about 2.0% per annum. But the implication of the Young was that the growth in East Asia could exhaust even without help of the financial crisis in late 1990's, but these countries will not experience again such a rapid growth, unless they found a way to stimulate TFP's growth.

That was only factors that have a direct impact on the economy growth in long-run but there is a contradiction which factor is more important to long term growth. This enforces to consider other factor that might has an effect on economy growth. As it was mentioned at the beginning there is an indirect factor that also plays role in the economy growth rate. And this factor is the infrastructure for growth.

The infrastructure for growth. Accumulation of capital and knowledge directly affect the long-term growth but they cannot secure the sustainable growth of

the economy. This is not enough to provide economy with an adequate condition to be on path of sustained improvement in economic well-being. This additional support for growth of economy is the infrastructure for growth. This infrastructure includes laws, government policies, socio-economic institutions, and culture attitudes that are conducive to the business activity that stimulates sustained long-term growth of the economy.

The importance of infrastructure could be illustrated on example of Argentina. At the end of 19th century Argentina had one of the highest in the world level of per-capita income. However, by the end of 20th century, this level had decreased to less than half that of the United States. The decline is thought to be, in part, the consequence of government policies that discourage invention and investment, and undermined their economic growth.

Another example of such positive contribution to sustained long-term growth could be post-World War II Japan. Before the war their level of per-capita output was not higher 25% of the U. S. level. But after the war by implementing significant institutional reforms there was an improvement of that economy's infrastructure of growth and, it is considered, as a major reason for the dramatic acceleration in pace of Japanese economic growth. After such improving of growth infrastructure, level of per-capita of Japan had risen up to 70% of that of the United States. Such East Asian countries as South Korea, Singapore and Hong Kong are the most recent examples of the positive influence of improving in growth infrastructure for sustainable long-run growth (Elwell, 2006).

The main role in this infrastructure plays government. That because government is an institution with strong influence, positive or negative, on the structure of economy's growth infrastructure, and due to this influence government is also influencing long-term economic growth. The positive role of government is that it has special tools for allowing and forbidding. Many historians think that when government creates an infrastructure that in the same time stimulates production and investments, and economic growth occurs.

Government by enforcing laws establishes property rights and conditions of their transfer from one agent to another. And this is not a question only about real property, but also about intellectual property. Stimulation of innovation, as it is very important determinant of long-term growth, could be assured and encourage with such laws by bringing private return of the creator closer to the social return, which is often greater than private one. Such a stimulation of inventions also has positive effect on technological progress.

A government also has other tasks apart to promote economic growth. But the other things government does have likely some economic consequences. Such as taxation, operation of legal system, social safety programs, national defense all represent some use of resources that otherwise could be used directly for investment and economic growth. These are actions that lower the economic growth but increase the overall welfare of citizens.

To conclude, there are three direct factors that affect economy growth in long-run, and these factors are technological progress, physical capital and

human capital. Increasing the stock of these capitals economy experiences growth, but due to diminishing return to scale every increase in physical and human capital has less positive impact on total output and only advances in technology could change it. However, it is worth to remember and about an indirect factor which is infrastructure of growth. That is represented by government, introductions of law, economic policies provided by government, socio-economic institution. That everything contributes to long-term economy growth. Effective combination of these four factors, three direct and one indirect, assure sustainable growth of economy in long-run time perspective.