

The Endogenous Growth Theory

The endogenous growth theory is the concept that economic growth is due to factors that are internal to the economy and not because of external ones. The theory is built on the idea that improvements in innovation, knowledge, and human capital lead to increased productivity, positively affecting the economic outlook.

The Endogenous Growth Theory is based on the following assumptions:

1. The theory emphasizes the need for the government to provide incentives and subsidies for businesses in the private sector. It motivates businesses to invest in research and development so they can continue to drive innovation.
2. There are increasing returns to scale by investing in human capital through education or training programs which in turn improve the quality of labor, which increases productivity.
3. The government should enact policies that help entrepreneurs, which creates new businesses and new jobs.
4. Investments should also be made to improve infrastructure and manufacturing processes in order to achieve innovation in production.
5. Intellectual property rights, such as copyrights and patents, are incentives for businesses to expand their operations.

Given the above assumptions, the endogenous growth theory was first created due to deficiencies and dissatisfaction with the idea that exogenous factors determined long-term economic growth. In particular, the theory was established to refute the neoclassical exogenous growth models, as it made predictions about economic growth without factoring in technological change.

The endogenous growth theory challenges such an idea by placing importance on the role of technological advancements. Since long-term economic growth is derived from the growth rate of economic output per person, it would depend on productivity levels. In turn, productivity would depend on the progress of technological change, which relies on innovation and human capital; these factors are considered internal to an economy, not external. The same idea can be shown as through the following diagram:



The above diagram shows that the Knowledge, Innovation and Human Capital are all interrelated to each other in determining the economic growth endogenously (internally).

Versions of Endogenous Growth Models:

The theory of Endogenous Growth has different versions given by different economists which are as follows:

1. Arrow Model *(Kenneth Joseph Arrow - an American economist)*

Also known as the AK model of economic growth, the arrow model is used to explain economic changes as a result of innovation and technology. The "learning by doing" model is also used in the arrow model to explain how self-practice and innovation result in productivity and improved human capital. It is because learning by doing leads to a decrease in labor required to create a unit of output.

2. Uzawa–Lucas Model *(Hirofumi Uzawa - a Japanese Economist; Robert Emerson Lucas Jr. - an American economist)*

The Uzawa-Lucas model explains how economic growth, in the long term, is attributed to the accumulation of human capital. In order to produce human capital, education should be used. Therefore, the model assumes that human capital is the only input element in the education sector. It also assumes that economic output is developed by using physical capital and human capital. As a result, the ratio of physical capital to human capital is the measurement used to determine the total capital in an economy.

3. Romer Model *(Paul Michael Romer- an American economist)*

The Romer model considers changes to technology to be endogenous. Therefore, technological advancements lead to economic improvements. Additionally, the model also assumes that innovative ideas are a very important part of economic growth. Combining improvements to human capital and existing knowledge can create innovative ideas to enhance the production of goods in an economy.

Limitations of the Endogenous Growth Theory

The exogenous growth theory often draws criticisms for relying on assumptions that cannot be assessed accurately, and there is no empirical evidence to validate the theory. In some endogenous growth models, some may also argue that the difference between physical capital and human capital is not distinct. Others may also argue that the endogenous growth theory disregards the role of organizations and places too much weight on human capital