

Factors of production

In economics, **factors of production**, **resources**, or **inputs** are what is used in the production process to produce output—that is, finished goods and services. The utilized amounts of the various inputs determine the quantity of output according to the relationship is called the production function. There are three *basic* resources or factors of production: land, labour and capital. The factors are also frequently labelled "producer goods or services" to distinguish them from the goods or services purchased by consumers, which are frequently labeled "consumer goods". All three of these are required in combination at a time to produce a commodity

There are two types of factors: *primary* and *secondary*. The previously mentioned primary factors are land, labour (the ability to work), and capital goods. Materials and energy are considered secondary factors in classical economics because they are obtained from land, labor and capital. The primary factors facilitate production but neither become part of the product (as with raw materials) nor become significantly transformed by the production process (as with fuel used to power machinery). Land includes not only the site of production but natural resources above or below the soil. Recent usage has distinguished human capital (the stock of knowledge in the labour force) from labour.^[1] Entrepreneurship is also sometimes considered a factor of production.^[2] Sometimes the overall state of technology is described as a factor of production.^[3] The number and definition of factors varies, depending on theoretical purpose, empirical emphasis, or school of economics.^[4]

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Historical schools and factors

In the interpretation of the currently dominant view of classical economic theory developed by neoclassical economists, the term "factors" did not exist until after the classical period and is not to be found in any of the literature of that time.^[5]

Differences are most stark when it comes to deciding which factor is the most important.

Physiocracy

Physiocracy (from the Greek for "government of nature") is an economic theory developed by a group of 18th century Enlightenment French economists who believed that the wealth of nations was derived solely from the value of "land agriculture" or "land development" and that agricultural products should be highly priced

Classical

The classical economics of Adam Smith, David Ricardo, and their followers focuses on physical resources in defining its factors of production, and discusses the distribution of cost and value among these factors. Adam Smith and David Ricardo referred to the "component parts of price"^[6] as the costs of using:

- Land or natural resource— naturally occurring goods like water, air, soil, minerals, flora, fauna and merryweather that are used in the creation of products. The payment for use and the received income of a land owner is rent.
- Labor — human effort used in production which also includes technical and marketing expertise. The payment for someone else's labor and all income received from one's own labor is wages. Labor can also be classified as the physical and mental contribution of an employee to the production of the good(s).
- The capital stock— human-made goods which are used in the production of other goods. These include machinery, tools, and buildings.

The classical economists also employed the word "capital" in reference to money. Money, however, was not considered to be a factor of production in the sense of capital stock since it is not used to directly produce any good. The return to loaned money or to loaned stock was styled as interest while the return to the actual proprietor of capital stock (tools, etc.) was styled as profit. See also returns.



An advertisement for labor from Sabah and Sarawak, seen in Jalan Petaling, Kuala Lumpur

Marxism

Marx considered the "elementary factors of the labor process" or "productive forces" to be:

- Labor
- The subject of labor (objects transformed by labor)
- The instruments of labor (or means of labor).^[7]

The "subject of labor" refers to natural resources and raw materials, including land. The "instruments of labor" are tools, in the broadest sense. They include factory buildings, infrastructure, and other human-made objects that facilitate labor's production of goods and services.

This view seems similar to the classical perspective described above. But unlike the classical school and many economists today, Marx made a clear distinction between labor actually done and an individual's "labor power" or ability to work. Labor done is often referred to nowadays as "effort" or "labor services". Labor-power might be seen as a stock which can produce a flow of labor.

Labor, not labor power, is the key factor of production for Marx and the basis for Marx's labor theory of value. The hiring of labor power only results in the production of goods or services ("use-values") when organized and regulated (often by the "management"). How much labor is actually done depends on the importance of conflict or tensions within the labor process.

Neoclassical economics

Neoclassical economics one of the branches of mainstream economics started with the classical factors of production of land, labor, and capital. However, it developed an alternative theory of value and distribution. Many of its practitioners have added various further factors of production (see below).

Further distinctions from classical and neoclassical microeconomics include the following:

- **Capital** — This has many meanings, including the financial capital raised to operate and expand a business. In much of economics, however "capital" (without any qualification) means goods that can help produce other goods in the future, the result of investment. It refers to machines, roads, factories, schools, infrastructure, and ~~the~~ buildings which humans have produced to create goods and services.

- **Fixed capital**— This includes machinery factories, equipment, new technology buildings, computers, and other goods that are designed to increase the productive potential of the economy for future years. Nowadays, many consider computers software to be a form of fixed capital and it is counted as such in the National Income and Product Accounts of the United States and other countries. This type of capital does not change due to the production of the good.
- **Working capital**— This includes the stocks of finished and semi-finished goods that will be economically consumed in the near future or will be made into a finished consumer good in the near future. These are often called inventory. The phrase "working capital" has also been used to refer to liquid assets (money) needed for immediate expenses linked to the production process (to pay salaries, invoices, taxes, interests...) Either way the amount or nature of this type of capital usually changes during the production process.
- **Financial capital**— This is simply the amount of money the initiator of the business has invested in it. "Financial capital" often refers to his or her net worth tied up in the business (assets minus liabilities) but the phrase often includes money borrowed from others.
- **Technological progress**— For over a century economists have known that capital and labor do not account for all of economic growth. This is reflected in total factor productivity and the Solow residual used in economic models called production functions that account for the contributions of capital and labor yet have some unexplained contributor which is commonly called technological progress. Ayres and Warr (2009) present time series of the efficiency of primary energy (exergy) conversion into useful work for the US, UK, Austria and Japan revealing dramatic improvements in model accuracy. With useful work as a factor of production they are able to reproduce historical rates of economic growth with considerable precision and without recourse to exogenous and unexplained technological progress, thereby overcoming the major flaw of the Solow Theory of economic growth.^[8]

Ecological economics

Ecological economics is an alternative to neoclassical economics (see: Neoclassical economics). It integrates, amongst other things, the first and second laws of thermodynamics (see: Laws of thermodynamics) to formulate more realistic economic systems that adhere to fundamental physical limitations. In addition to the neoclassical focus on efficient allocation, ecological economics emphasizes sustainability of scale and just distribution. Ecological economics also differ from neoclassical theories in its definitions of factors of production, replacing them with the following:^{[9][10]}

Matter: The material from which products are produced. Matter can be recycled or reused through refining or reforming, but it cannot be created or destroyed, placing an upper limit on the amount of material that can be withdrawn and used. Consequently, the total amount of available matter is fixed, and once all the available matter is used, nothing more can be produced without recycling or reusing matter from prior products.

Energy: The physical but non-material inputs of production. We can place different forms of energy onto a scale of utility depending on how useful it is for creating a product. Due to the law of entropy, energy tends to decrease in utility over time. (e.g. electricity, a very useful form of energy, is used to run a machine that builds a stuffed bear. In the process, however, electricity is converted to heat, a less useful form of energy). Like matter, energy can neither be created nor destroyed, and thus there is also an upper limit to the total amount usable energy.

Design intelligence: A factor that incorporates the knowledge, creativity, and efficiency of how goods are created - the better the design, the more efficient and beneficial the creation is. Designs are usually improvements on their predecessors, since our store of accumulated knowledge grows with time. One possible neoclassical analogue of design intelligence is technological progress.

Integral to ecological economics is the following notion: at the maximum rates of sustainable matter and energy uptake, the only way to increase productivity would be through an increase in design intelligence. This provides the basis for a core tenet of ecological economics, namely that infinite growth is impossible.^[9]

A fourth factor?

As mentioned, recent authors have added to the classical list. For example, J.B. Clark saw the co-ordinating function in production and distribution as being served by entrepreneurs; Frank Knight introduced managers who co-ordinate using their own money (financial capital) and the financial capital of others. In contrast, many economists today consider "human capital" (skills and education) as the fourth factor of production, with entrepreneurship as a form of human capital. Yet others refer to intellectual capital. More recently, many have begun to see "social capital" as a factor as contributing to production of goods and services.

Entrepreneurship

Consider entrepreneurship as a factor of production, leaving debate aside. In markets, entrepreneurs combine the other factors of production, land, labor, and capital, to make a profit. Often these entrepreneurs are seen as innovators, developing new ways to produce and new products. In a planned economy, central planners decide how land, labor, and capital should be used to provide for maximum benefit for all citizens. Of course, just as with market entrepreneurs, the benefits may mostly accrue to the entrepreneurs themselves.

The sociologist C. Wright Mills refers to "new entrepreneurs" who work within and between corporate and government bureaucracies in new and different ways.^[11] Others (such as those practicing public choice theory) refer to "political entrepreneurs", i.e., politicians and other actors.

Much controversy rages about the benefits produced by entrepreneurship. But the real issue is about how well institutions they operate in (markets, planning, bureaucracies, government) serve the public. This concerns such issues as the relative importance of market failure and government failure

In the book *Accounting of ideas*, "intequity", a neologism, is abstracted from equity to add a newly researched production factor of the capitalist system. Equity, which is regarded part of capital was divided into equity and inequity. Entrepreneurship was divided into network related matters and creating related matters. Network related matters function in the sphere of equity and creating related matters in spheres of inequities.^[12]

Natural resources

Ayres and Warr (2010) are among the economists who criticize orthodox economics for overlooking the role of natural resources and the effects of declining resource capital.^[8] See also: Natural resource economics

Energy

Exercise can be seen as individual factor of production, with an elastication larger than labor.^[13] A cointegration analysis support results derived from linear exponential LINEX production functions!^[14]

See also

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| ▪ <u>Conditional factor demands</u> | ▪ <u>Labour economics</u> |
| ▪ <u>Cost of production theory of value</u> | ▪ <u>Marginal factor cost</u> |
| ▪ <u>Diminishing returns</u> | ▪ <u>Means of production</u> |
| ▪ <u>Economic inequality</u> | ▪ <u>Microeconomics</u> |
| ▪ <u>Economics terminology that differs from common usage</u> | ▪ <u>Pareto principle</u> |
| ▪ <u>Factor payments (economics)</u> | ▪ <u>Production relations</u> |
| ▪ <u>Factor market</u> | ▪ <u>Production theory basics</u> |
| ▪ <u>Factor world</u> | ▪ <u>Productivity model</u> |
| ▪ <u>Labor demand</u> | ▪ <u>Productivity world</u> |
| ▪ <u>Labor theory of value</u> | ▪ <u>Resource-Based View</u> |
| | ▪ <u>Social metabolism</u> |

References

1. Paul A. Samuelson and William D. Nordhaus (2004). *Economics*, 18th ed., "Factors of production", "Capital", "Human capital", and "Land" under Glossary of Terms.
2. O'Sullivan, Arthur, Sheffrin, Steven M. (2003). *Economics: Principles in Action* Upper Saddle River, New Jersey 07458: Pearson Prentice Hall. p. 4. ISBN 978-0-13-063085-8
3. Michael Parkin; Gerardo Esquivel (1999) *Macroeconomía* (in Spanish) (5th ed.). Mexico: Addison Wesley. p. 160. ISBN 968-444-441-9

4. Milton Friedman (2007). *Price Theory* (<https://books.google.com/?id=BxaSUfPV2WkC&pg=PA201>). Transaction Publishers. p. 201. ISBN 978-0-202-30969-9
5. Classical price theory follows "costs of reproduction" and does not allow for "factor" gains. The great questions of Rent, Wages, and Profits must be explained by the proportions in which the whole produce is divided between landlords, capitalists, and labourers, and which are not essentially connected with the doctrine of value. (Ricardo Johnson, David, 1820; 1951, "The Works and Correspondence of David Ricardo", edited by Piero Sraffa, 10 Volumes, Cambridge: Cambridge University Press 1951–1955, VIII, p. 197.
6. Adam Smith (1776), *The Wealth of Nations*, B.I, Ch.6, Of the Component Parts of the Price of Commodities in paragraph I.6.9.
7. "Das Kapital", chapter 7, section 1.
8. Robert U. Ayres; Benjamin Warr (2009). *The Economic Growth Engine: How Energy and Work Drive Material Prosperity*. Edward Elgar Publishing. ISBN 978-1-84844-182-8
9. Eric Zencey (2012). *The Other Road to Serfdom & the Path to Sustainable Democracy* U of New England. ISBN 978-1-58465-961-7.
10. Herman Daly; Joshua Farley (2011) *Ecological Economics: Principles and Applications* Washington: Island. ISBN 978-1-59726-681-9
11. "White Collar: The American Middle Classes," 1956. Oxford: Galaxy Books, pp. 94–100.
12. Pienaar, M.D. (2014). *Intequisms: Accounting of ideas* chap. 6. Centurion: Africahead, 2nd edition, Kindle eBook, Amazon.com.
13. R. Kümmel: *The Productive Power of Energy and its Taxation* (http://energiesteuernet/artikel/pdf_artikel/portotalk.pdf), 4th European Congress Economy and Managers of Energy in Industry Porto, Portugal, 27.-30. Nov 2007.
14. R. Stresing; D. Lindenberger; R. Kümmel (2008) "Cointegration of Output, Capital, Labor and Energy" (http://www.wi.uni-koeln.de/fileadmin/user_upload/Publikationen/Working_Paper/EWI_WP_08-04_Cointegration-of-Output.pdf) (PDF). *European Physical Journal B* **66** (2): 279–287.

Further reading

- *AP U.S. History (condensed)* 2007.
 - "Produktionsfaktoren" (in German). Google Knol. Archived from the original on 2010-01-23. Retrieved 2010-02-16.
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