

**Abstraction** An indispensable methodological tool regarding the set of a-priori assumptions concerning economic subjects and processes. The aim of abstraction is to simplify real world complexity through the omission of economic subjects or processes which are deemed insignificant for the purpose of exposing an economic phenomenon. This is apparent in formal economic models that translate assumptions to variables, mathematical (in)equations and functions.

Since reality is subject to different interpretations and dimensions, abstraction is non-neutral and can be deployed at various levels (from Chick & Dow, 2001; Nikiforos, 2021). The appropriate level of abstraction depends on the context and economic issue at hand. Some well-known economic examples of abstraction are profit maximization, perfect information and transitive preferences.

Abstraction in Ecological Economics additionally concerns the assumed relationship between the economic and natural system. To treat the economy as a system that is embedded in a limiting biophysical system is an example of a macro level abstraction. Mathematically, this results in the decomposition of natural systems into natural capital inputs that enter production processes. Since Ecological Economics supports strong sustainability, it engages in abstraction which assumes the absence of perfect substitution between natural capital and other production inputs. Another example is the designation of ecological degradation as an unwanted byproduct of production or externality; this can be thought of as a micro level abstraction.

More recently, Ecological Economists have extended input- and externality oriented abstraction through mathematical formalization practices that relate natural systems to distribution, social reproduction and the organization of production.

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Further reading:

Backhouse, R.E. (Ed.), 1994. Reorienting the Assumptions Issue, in: *New Directions in Economic Methodology*. Routledge.

Chick, V., 1998. On Knowing One's Place: The Role of Formalism in Economics. *The Economic Journal* 108, 1859–1869.

Dwarkasing, C., 2021. An eco-Marxist reinterpretation of formal abstraction in Ecological Economics. *Relaciones Internacionales* 21–40.

*See also:* Ecosystem Services, Externalities, (Economic) Theory, Formalism, Limits, Modeling, Natural Capital, Strong Sustainability

### **Citations from definitions**

Chick, V., Dow, S.C., 2001. Formalism, logic and reality: a Keynesian analysis. *Cambridge Journal of Economics* 25, 705–721.

Nikiforos, M., 2021. Abstraction and closure: a methodological discussion of distribution-led growth. *Journal of Economic Methodology* 28, 207–230.