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The mathematical economics of compound interest: a 4,000-year overview

Michael Hudson

+ Author & Article Information

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Sketches the history of economic thought regarding the self-expanding growth of investments through the accrual of compound interest. Exercises that calculate such growth in terms of "doubling times" have already been found in Babylonian textbooks from c. 2000 BC. Although compound interest was not permitted to be charged in practice (each loan matured at a given date), investors could keep ploughing back their funds into new loans. Through the ages, this essentially logarithmic principle has described how loan capital grows independently of the ability of debtors (or the economy at large) to pay. It has been expressed by dramatists such as Shakespeare, by novelists, and by eighteenth-century actuaries and economists. Before the contrast between "geometric" and "arithmetic" rates of increase were made famous by Malthus in his description of population growth tendencies, it was formulated with reference to the work on public debt by Richard Price. This principle is incompatible with "equilibrium" theories of self-regulating debt, or ideas that economies can automatically adjust to its growth over time.

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