Briefly on the Publication:

Thermodynamic Approach to the Discount Rate and Discounted Cash Flow Method

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A concept by Robert Wright according to which economics is a game with nature in competition for the unhealthy, positive total of winnings, raises the question of the source of capital inflow into the system. Capital cannot appear out of nothing, because that would be inconsistent with the first law of thermodynamics. At the same time, capital is depreciating in keeping with the second law of thermodynamics. The analogy with the laws governing physics, especially thermodynamics and energy transformation, is a key clue to understanding the argument of the authors of the article in question. The method known from the works of the physiocrats who saw economic growth as a result of impact of natural forces and especially photosynthesis was extended by Dobija and Renkas by a link between capital and time[1]. The latter factor is defined as the process of transformation of the primary stock of vital energy of a modern human being into the ability to do work, i.e., into human capital (p. 5).

Conceiving of time as a process rather than a lapse measured in units of time is characteristic of the authors' argument, and they reject the traditional discount formula in favour of a new one that integrates the lapse of time t (the textbook approach) with a constant a, quantifying the action of natural forces in nature, proposing $[1 + p(a)]^{-t}$.

The question remains: 'What value do the authors assign to the constant a?' Citing a range of historical data, from the interest allowed on borrowed capital in ancient Rome to observations of long-term returns on financial assets as well as human capital valuation and global biomass growth, the authors propose a = 0.08 [1/year]. After all, the measure thus adopted is only a starting point corresponding to the fair value of human labour or lent capital. The budgeting

[1] Dobija, Mieczysław, and Jurij Renkas. 2023. Thermodynamic Approach to the Discount Rate and Dis-counted Cash Flow Method. Risks 11(118). https:// doi.org/10.3390/risks11070118.

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process should, according to the experience of its participants, take into account risk factors leading to an adequate rate increase discount over a. At the same time, since the constant a is linked to the evolutionary process, it is expected that a deeper understanding of the latter may lead to a periodic revaluation of its value. In addition, linking it to the human lobar factor can bring new insights into the issue of fair compensation.

In addition to its theoretical merits' extreme importance to the discussion of our understanding of discount rates, the article gives another reason to look at it. In modern attempts to quantify non-financial aspects and disclose them in corporate reports, finding measures that link the environment in which economic activity takes place, the laws of physics that govern it, and taking into account the primordial resource of the process, such as human capital, should go beyond the textbook understanding of the role of time as a discounting factor. The article under discussion can serve as an inspiring guide in the search for new formulas to quantify environmental, social or managerial characteristics.

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