Rreview on MS 2472, *"A dynamic theory of economics: What are the market forces?" by Alia Asha Dannenberg, Lukema Oy and Matti Estola, Faculty of Health Sciences, University of Eastern Finland and Anna Dannenberg, Department of Modern Languages, University of Helsinki.*

The authors of the paper intend to improve the production process by optimizing the flow of production. A special force (F) will either accelerate or slow down the production process. The flow of production corresponds to momentum (p); work and special force (F) follow the Newton laws of mechanics: $\dot{p} = F$.

Comment 1:

The problem has already been solved in (1495) by Luca Pacioli introducing double entry accounting, e.g. of monetary and productive accounts. The income (Y) of the company are the products (G) sold at the market. The costs (C) are labor input (W) of the workers. The sum of monetary and productive accounts is always zero!

Monetary account	Productive account
Y = 120 €	G = - 120 €
C = - 100 €	W = 100 €
S = 20 €	I = - 20 €

The monetary surplus is S = 20 € and the investment in production is – 20 €. Work input (W) by the labour force regulates the speed of production.

Comment 2:

The question remains, whether the laws of mechanics correspond to the laws of economics.

a. In mechanics, systems without forces conserve energy and momentum.
b. Systems with non-frictional forces conserve only energy, momentum is coupled to force by $\dot{p} = F$.
c. Systems with frictional forces generate heat and do not conserve mechanical energy; these systems follow the laws of thermodynamics.

Energy corresponds to capital in economics [1, 2]:

A. In non-profit companies with Y – C = 0 without inner forces, capital and flow of production are constant. This corresponds to mechanical systems without forces (a).
B. In non-profit companies with Y – C = 0 with inner forces, only capital is constant. The flow of production is coupled to the flow of consumption according to $\dot{p} = F$. This corresponds to (b) in physics, and *this is the economic condition in the paper above*.
C. In companies with profits, Y – C = S, capital grows after each cycle by the surplus (S). Since capital is not constant, Newton's mechanics is invalid. Companies that generate profit are like systems producing heat; economic laws correspond to the laws of thermodynamics, like in (c). [1, 2].

[1] Yakovenko, V. M. & J. B. Rosser, J. B. (2009) *Colloquium: Statistical Mechanics of Money, Wealth and Income,* Rev. Mod. Phys. 81, 1703
[2] Mimkes, J., (2006) A thermodynamic formulation of economics, in *Econophysics & Sociophysics*: Trends & Perspectives, Chakrabarti, B. K., Chakraborti, A. & Chatterjee, A. (Eds.), WILEY-VCH, Germany

The paper must be renamed: ***"A dynamic theory of economics without economic growth"***