

# Market exchange rules responsible for wealth concentration

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Two Brazilian physicists have shown that wealth concentration invariably stems from a particular type of market exchange rules – where agents cannot receive more income than their own capital. The authors concluded that maximum inequalities ensue from free markets, which are governed by such seemingly fair rules.

This study, published in *European Physical Journal B*, was conducted by J. Roberto Iglesias and Rita de Almeida from the Brazilian National Institute of Science and Technology of Complex Systems, based in Porto Alegre. This Brazilian city is famous for hosting the World Social Forum, which is designed to find alternatives to economic liberalism.

To study free market models, the authors used statistical mechanics methods focusing on the dynamic of wealth exchange over time. These methods were inspired by Boltzmann's theory of kinetic energy exchange between gas molecules during collisions. They found that over time, all the available wealth is concentrated among only a few agents. This is represented by a tail-shaped graph that confirms previous studies showing that wealth distribution follows a power law. As a result, the free market is stalled with no subsequent possible exchanges of wealth, even if wealth were distributed evenly from the start.

The authors concluded that regulations for the rules of wealth exchange are necessary to avoid concentration of wealth and stalling of market exchange. For example, systems in which regulations and taxes give the poorest agent a probability of wealth gain of over 50 percent may

prevent wealth concentration and decrease inequalities. Also, the possibility of gains exceeding their own capital is crucial to permit a recovery of the poorer agents and to circumvent market stagnancy. Although such models analyse only an incomplete representation of the market and trade, further research could contribute to defining exchange rules that may help avoid future [wealth](#) concentration.

**More information:** Iglesias J.R., de Almeida R.M.C. (2012). Entropy and equilibrium state of free market models, *European Physical Journal B (EPJ B)* [DOI 10.1140/epjb/e2012-21036-1](https://doi.org/10.1140/epjb/e2012-21036-1)

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