

HOW MUCH INCOME INEQUALITY IS FAIR? A STATISTICAL TELEODYNAMICS PERSPECTIVE

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ABSTRACT

Extreme economic inequality is widely seen as a serious threat to the future of stable and vibrant capitalist democracies. Yet some inequality is inevitable, even desirable and necessary, for capitalist societies to work productively. As different people have different skills, and different capacities for work, they make different contributions in a society, some more others less. Therefore, it is only fair that those who contribute more earn more. *But how much more? What is the fairest inequality of income?* This critical question is at the heart of the inequality debate. The debate is not so much about inequality per se as it is about fairness. This central question about fair inequality has remained unanswered in economics and in political philosophy for over two centuries. Mainstream economics has offered little guidance on fairness and the ideal distribution of income in a free-market society. Political philosophy, meanwhile, has much to say about fairness yet relies on qualitative theories, such as the ones by Rawls and by Nozick, which cannot be verified by empirical data. As we take steps to address extreme inequality, we need to know what the desired target inequality is -- and for this we need a quantitative, testable theory of fairness for free-market capitalism.

In a recent book, I have proposed such a normative theory, an unorthodox transdisciplinary theory that integrates foundational principles from disparate disciplines into a unified conceptual and mathematical framework that includes the key perspectives on this question -- the perspectives of political philosophy, economics, game theory, statistical mechanics, information theory, and systems engineering. I call my theory *statistical teleodynamics*, a generalization of statistical thermodynamics for economics. My theory rests on two surprising conceptual insights. One is that the concept of entropy from statistical mechanics is the same as potential from game theory, and that these represent fairness in economics and in philosophy. The other is that when one maximizes fairness, all workers enjoy the same effective utility at equilibrium in an ideal free-market society, thereby providing the moral justification for free-market economy. We prove that the fairest inequality of pay is a lognormal distribution under ideal conditions.

Comparing this theory's predictions with the inequality data from different countries, we find that for the bottom 99% of the population, Scandinavia has achieved income shares that are close to the ideal values for the past 25 years. What is even more surprising is that these societies did not know, a priori, what the fairest distribution was, and yet they seem to have "discovered" a near-ideal outcome empirically on their own. It is quite intriguing that while this theory argues the libertarian case for the ideal free-market, the theory's predictions nevertheless result in a free-market society that looks more like Scandinavia, often favored by egalitarians. Thus, this theory seems to provide the elusive middle ground that can serve as the intellectual basis to advance the current debate on extreme economic inequality.

Keywords: income inequality, statistical teleodynamics, statistical mechanics, game theory, fairness