

**ECONOPHYSICS: USING STATISTICAL PHYSICS CONCEPTS TO OFFER INSIGHTS INTO
ECONOMIC QUESTIONS**

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ABSTRACT

To a physicist, the most interesting thing about economics is that it is dominated by fluctuations in quantities of economic interest. Because big economic shocks affect the economy around the world, the possibility of an economic “meltdown” is one that we must take seriously. Big changes in big money affect not only people with large amounts of it, but also those who have very little of it — those on the margins of society.

Finding ideas that serve to address economic problems can potentially help in making progress on unsolved physics problems. A good example is turbulence. If we take a bucket of water and disturb the surface, energy is added to the system on a big scale. This energy then dissipates over progressively smaller scales. This is an unsolved physics problem; many empirical facts can be stated, but there is incomplete understanding. The economy is analogous to this example of turbulence. One can add information on a big scale to an economic system—e.g., the news of who wins a presidential election—and that information is dissipated on smaller and smaller scales. The way that you handle the “turbulence” associated with this dissipation of information in a financial market may help us understand how to approach turbulence in our physics research.

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