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Chance favors the concentration of wealth, U of M study shows

New model isolates the effects of chance in an investment-based economy

Most of our society's wealth is invested in businesses or other ventures that may or may not pan out. Thus, chance plays a role in where the wealth of a society will end up.

But does chance favor the concentration of wealth in the hands of a few, or does it tend to level the playing field? Three University of Minnesota researchers have built a simplified model that isolates the effects of chance and found that it consistently pushes wealth into the hands of a few, ever-richer people.

The study, "Entrepreneurs, chance, and the deterministic concentration of wealth," is published in the July 20 issue of the journal *PLoS ONE*.

The researchers simulated the performance of a large number of investors who started out with equal amounts of capital and who realized returns annually over a number of years. But wealth did not remain equal, because each year an entrepreneur's return was a random draw taken from a pool of possible return rates. Thus, a high return did not guarantee continuing high returns, nor did early low returns mean continuing bad luck.

Even though all investors had an equal chance of success, the simulations consistently resulted in dramatic concentration of wealth over time. The reason: With compounding capital returns, some individuals will have a string of high returns and, given enough time, will accumulate an overwhelming share of the wealth.

This appears to be a fundamental feature of economies where wealth is primarily generated from returns on investment (for example, through business ownership and growth), the researchers said.

"Predictions from this model about how wealth is distributed were more accurate than predictions from classic economic models," said first author Joseph Fargione, an adjunct professor of ecology, evolution and behavior in the university's College of Biological Sciences.

The model predicts that the rate at which wealth concentrates depends on the variation among individual return rates. For example, when variation is high, it would take only 100 years for the top 1 percent to increase their share of total wealth from 40 percent—a recent level in the United States—to 90 percent.

Healthy economies support diverse entrepreneurial efforts, leading to high economic growth. But concentration of wealth reduces diversity, and with it the most likely growth rate for a country's economy, according to the researchers.

"The implication is that nations with diverse economies should tend to outcompete on the world stage those with large concentrations of wealth, such as monarchies, or established democracies that have allowed their wealth to concentrate," said author Clarence Lehman, associate dean for research in the College of Biological Sciences.

But while the rate of wealth concentration was increased by high variation among individual investors' returns, it bore no relation to the average economic growth.

"This leads to the surprising finding that wealth will concentrate due to chance alone in growing, stagnant or shrinking economies," said author Steve Polasky, professor of applied economics in the College of Food, Agricultural and Natural Resource Sciences.

The simulation results showed wealth concentrating regardless of economic cycles of growth and recession and regardless of whether wealth is split between two offspring every generation. As wealth concentrates with a few individuals, the growth of the economy will depend more and more on the returns of those few, making the economy less resilient to disruptions in their investments, the researchers said.

"The irony is that the economic diversity that helps ensure the presence of some successful enterprises and spurs economic growth could be lost if the success of these enterprises undermines economic diversity," said Fargione. "To retain the benefits of a diverse capitalist economy, we need economic policies that counter what seems to be the innate tendency for economies to concentrate wealth and become less diverse."

The simulations showed that a tax (or other mandatory donation to the public good) on the largest inherited fortunes would short-circuit the over-concentration of wealth. But the researchers stress that their point is to advocate not a particular policy, but a policy that accomplishes the goal of protecting long-term economic stability.

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