The Unimportance of Accurate Financial Knowledge

Simulations of the behavior of individual financial traders show that imperfect market knowledge increases risk but not overall losses.

By **Marric Stephens**

According to Francis Bacon's famous quotation, knowledge is power. But for Arthur de Magalhães of the Federal Center for Technological Education of Minas Gerais, Brazil, it is not necessarily wealth. While modeling the emergence of financial-market dynamics, de Magalhães derived a counterintuitive result: traders with accurate knowledge of an asset's value did not, on average, accrue more wealth than less-informed peers [**1**].

To investigate the market effect of imperfect knowledge, de Magalhães simulated the behavior of a few hundred individual traders. At each time step, the traders chose whether to buy or sell an asset whose price varied according to demand and to a random external influence. Some traders acted based on the difference between the asset's current price and its predicted price at the next time step. Other traders judged the price against the long-term average value of the asset. In both groups, each trader differed in how accurately they determined the asset's value.

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De Magalhães found that the model reproduced statistical patterns seen in real markets for the asset-price variation and the distribution of returns on an investment. But the model diverged from expectations when it came to the traders' individual performances. Although the least knowledgeable forecasters played riskier games, exhibiting greater variance in their returns, on average they increased their wealth by about as much as more knowledgeable traders. De Magalhães thinks that a more detailed model, incorporating traders' resource limitations and operating costs, could yield the intuitive relationship between knowledge and success. But, he says, the fact that his simplified version defied expectations could give insight into how markets work.

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REFERENCES

1. A. R. Bosco de Magalhães, "Wealth dynamics in a market with information asymmetries," **Phys. Rev. E 107, 014305 (2023).**