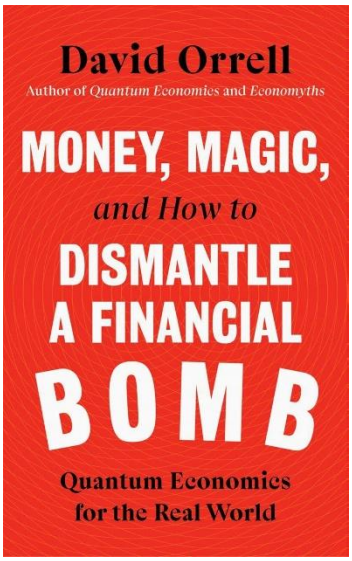
The Quantum Nature of Money Gives the Lie to Financial Capitalism

a review from Dick Burkhart of

Money, Magic, and How to Dismantle a Financial Bomb: Quantum Economics for the Real World



By David Orrell (2022)

Financial capitalism, as described by Michael Hudson, has engineered a devastating escalation of inequality and societal dysfunction over the last 40 years in countries worldwide. How has it shielded itself from serious political reform? Mainstream economics has played a key role – by misrepresenting the true nature of money. It's not just a "medium of exchange" but also a tool for speculation, debt slavery, ponzi schemes, and booms, busts, and crashes.

Applied mathematician and financial analyst David Orrell uses simple mathematical models from quantum mechanics (not the physics) to show how money works in the real-world, versus the fake world of neoclassical theory. He is part of a growing movement to transform both economic theory and practice to reflect reality. The purpose is to upend the global financial system to take on the global crises of the 21st century in a far more effective and equitable manner. Along the way we learn not just how finance actually works but engaging stories related to money from the Manhatten Project all the way back to the Greeks.

Economists have portrayed money as representing a kind of "utility" or worthy measure of intrinsic value. Turns out that this is actually an assumption, with skethcy evidence at best, making their argument circular. In practice money is a measure of power, a topic carefully avoided by conventional economics, just as money itself is taboo. Orrell endorses the observation of peak oil guru Nate Hagens that "The energy/credit/growth dynamic is the least understood but most important phenomenon driving the current global economic and ecological situation"(p 8).

Actually a few economists do understand this, under the rubric "biophysical economics", but they have been sidelined by the many. Similarly, only a few, like

Steve Keen, understand the math of complexity and nonlinearity. Instead most are "arrested in the stage of Aristotelian equilibrium" (p 12), which ignores all dynamics (the sometimes chaotic but still comprehensible changes over time) except for reversions to supposed states of equilibrium from events portrayed as external shocks.

By contrast system dynamics models a variety of forces internally by using historical data to estimate parameters for suitable systems of nonlinear partial differential equations. Keen used a simple 3 variable, 9 parameter nonlinear system to predict likelihood of the financial crash of 2008 (not the exact timing or magnitude but prominent features. See the book "Can We Avoid Another Financial Crisis"). More generally this complexity approach deals with what Orrell calls "propensities", which are like mathematical probabilities, replacing certainties.

The issue with probabilities is determining the probability distributions, which often rely on guesswork, sometimes combined with simulations. The results are often better understood from analyzing the dynamics of a variety of scenarios than trying to compute expected values and standard deviations or covariance matrices. This is also true for cellular automata, which model interactions in discrete steps instead of continuous time.

The simple quantum models introduced by Orrell are based on a new kind of dualism – between the subjective and the objective. Aristotelian logic represents the objective approach, or the calculating "left brain", while the subjective is the "right brain" - holistic and more comfortable with propensities and gut feelings than either / or certainties. A simple "quantum gate" is called a superposition of two very different states, which "entangles" them, characterized by the propensity toward one state or the other. When superposition is measured the result is one of the two states, realized with the probability (for repeated measurements) specified by the propensity.

It is this new parameter – the propensity – that enables such quantum models to represent real-world behavior much better. For example, equilibrium is represented by a normal, or Gaussian, distribution, as the variable in question reverts to its expected value over time. But the corresponding quantum gate yields a bimodal distribution – a random walk where the variable tends to either increase or decrease over time, until the next "measurement" places it at a new starting point. Orrell points out that stocks often behave this way, except that the period of persistent loss or gain is unknown.

Another application is to more realistic supply and demand curves, each of which now represents a probability curve as a function of price, with the location of the maximum of the joint probability determining the most likely price, not the intersection of the two curves. Likewise, many of the results of behavioral economics, such as "risk aversion" contradict the "economic man" postulated by mainstream economics but can be modeled by quantum logic. Another correctable failure is that people in the real-world do not respond to the "prisoners dilemma" game as predicted by classical logic. Thus the Cold War game theory developed by the RAND corporation and John Von Neuman ran into serious issues.
Outside of finance, the biggest current failure of economics, as noted by Orrell, is in its grossly simplistic and unrealistic modeling of the likely economic effects of climate change. William Nordhaus was awarded a Nobel Prize for this work but Steve Keen has shown its absurdity – because it ignores likely tipping points as projected by the IPCC and the consequent scale of the damage. However this is not surprising because Nordhaus is notorious, apparently out of ignorance and arrogance (see "The Limits to Growth Revisited" by Ugo Bardi), for trashing the system dynamics developed by Jay Forester for the famous limits-to-growth studies of the 1970s. In my judgment this is the best applied math in economics ever done, noting that its business-as-usual scenario forecast the period of crisis now upon us, a period arrived at by more empirical but also nonlinear means by Peter Turchin.

As to another "financial bomb", Orrell is definitely pessimistic. He basically says it's coming so prepare for the fallout, noting that most people say yes to a "sustainable economy" but that "getting there is going to require some painful political confrontation" (p 295). On the plus side is the example provided by the response to COVID-19: "a controlled demolition of the world economy". Other worthy ideas would be to include housing and other asset prices in inflation indices or taxation of asset price increases in excess of inflation, or new forms of debt cancellation.

Unmentioned would be central bank creation of money to invest in the real economy instead of speculative assets, perhaps a public investment bank for social housing, for example. National digital currencies are already being tested but it might take a global digital currency, backed by the world's major economies and resources, with all debts created and controlled by a new democratically governed global financial authority, not private banking.

Orrell concludes that “the good news, though, is that we have control over the money illusion, because this is one we invented” (p 310). It’s an illusion of independence – we think that “putting to work will magically make our problems go away”(p 311) instead of observing and mastering its quantum behavior.