ANDREW W. LO, ADAPTIVE MARKETS

"IT TAKES A THEORY TO BEAT A THEORY"

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A
ndy Lo is Professor of Finance in MIT's Sloan School of Management and Director of its Laboratory for Financial Engineering. That is to say, he is one of the leading financial economists at work today. That is why his new book represents so significant a break with mainstream, conventional theory, whose inadequacies were dramatized by the Global Financial Crisis of 2008 ("GFC")and the subsequent Great Recession.

From the perspective of an insider, Lo recounts the emergence to intellectual dominance of the Efficient Market Hypothesis and the Rational Expectations Hypothesis. Jointly, these doctrines served to eliminate by construction any role for the state other than enforcement of contracts entered into by economic agents pursuing their own self-interest and assumed to know in advance the full consequences of their actions. They fostered the development and proliferation of Dynamic Stochastic General Equilibrium ("DSGE") models for policymakers, models with three extraordinary attributes:

- Persistent equilibrium as the consequence of the optimizing behavior of a rational representative agent

- The absence of any financial system (defining out of existence the locus of the GFC and the source of the Great Recession), since that representative agent would simultaneously be both borrower and lender

- Any deviations from equilibrium could only be the result of an external shock: the more extreme the shock, the more rapid the return to equilibrium.

As has long been recognized by critics outside the citadel—and more than a few on the inside—EMH and REH depend on extreme abstraction from the real world and from the nature of the human beings who inhabit that world. But, as Lo emphasizes, nonetheless they have held position as paradigms that have defined and conditioned research agendas for a long generation, while foisting on policy makers a model of a macro-economy that could be relied upon (with the occasional nudge of an independent central bank) to deliver the best of all possible economic worlds.

The consummate failure of their legitimate offspring, the DSGE models, to account for the GFC and its consequences was a necessary condition for the reopening of the economic and financial mind. It was not enough.

> *As Lo emphasizies, "it takes a theory to beat a theory": point assaults on specific vulnerabilities of the dominant paradigm are not enough.*

And an alternative theory is what Lo offers: the "Adaptive Markets Hypothesis." To do so, he rolls back generations of economists who pursued physics as the model (at least physics before the quantum theory).

The search for deterministic laws as universal as gravity and the identification of agents as mindless as the molecules of thermodynamics have defined the scope and purpose of economics and finance since the "marginalist" revolution some 130 years ago. Lo directly confronts the mathematical instantiation of neoclassical economics that saw off Keynes' assault on the economic thinking that had failed in the face of financial crisis and economic depression in the 1930s, an achievement forever associated with the work of the great MIT economist Paul Samuelson.

In its place, Lo proposes that we look to evolutionary biology as the relevant, framing metaphor for understanding the behavior of markets—markets for goods, and services, and money and capital—and of the human beings that populate and depend upon those markets.

Open-ended adaptation by purposeful agents to an ever-evolving context where quantifiable risk fades into uncertainty and, beyond uncertainty, into impenetrable ignorance: this is the guiding vision Lo offers. And we should honor, not disdain, the "heuristics"—the rules of thumb—that humans have developed as instruments for negotiating this unstable landscape. In turn, we should be open to methodological alternatives for exploring the space of inherently complex, evolving market systems, including agent-based models, in addition to facing the increasingly forbidding challenge of extending closed form, analytical models to encompass heterogeneous agents reflexively responding to each others actions, all operating under varying degrees of uncertainty.

Readers of Lo's work will benefit from his introduction to a host of scholars who have gone before: Herbert Simon, Daniel Kahneman and Abram Tversky, Marvin Minsky, E. O. Wilson, Steven Pinker, Richard Nelson and Sidney Winter, among them. Most important, they will find a comprehensive frame for considering the world in which they are themselves irretrievably embedded.

Much is at stake here, for the twin disciplines of economics and finance and for the world at large. Full disclosure: I write as a co-founder of the Institute for New Economic Thinking, established to sponsor desperately needed intellectual responses to the Global Financial Crisis, with initial funding from George Soros and subsequent support from Jim Basillie of the Centre for International Governance Innovation.

Andy Lo's book—and the broader research program and policy perspective that it represents—confirm the relevance of INET's mission. Allies on that mission are, indeed, to be found in an academic citadel of economics and finance.