

Realist Asset Pricing

A Copernican Revolution

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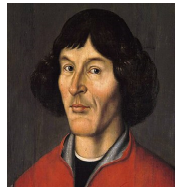
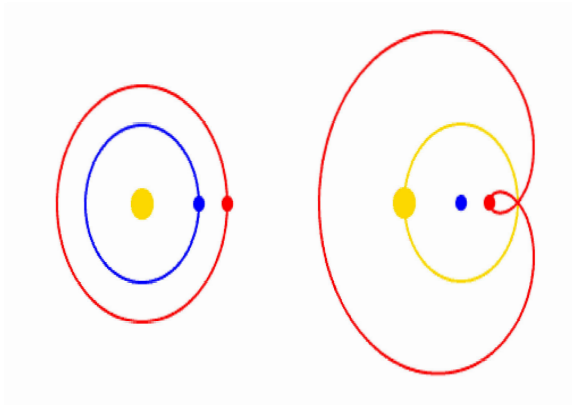
Keynote
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What must the financial world be like for asset pricing anomalies to be possible?

Firms, not investors, are the primary causal powers of asset prices
of their own stocks (a Copernican revolution in finance)

Theme

Copernicus (1543, "On the Revolutions of the Heavenly Spheres")



- 1 Scientific Crisis
- 2 Critical Realism
- 3 Transcendental Deduction

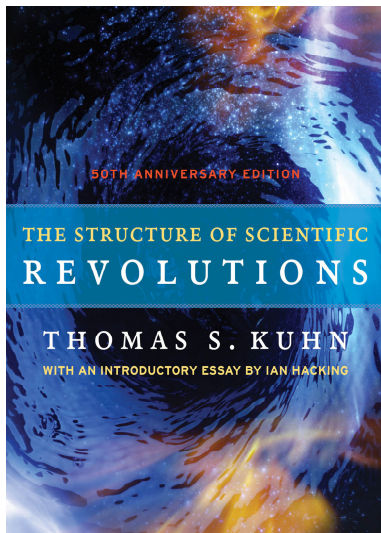
1 Scientific Crisis

2 Critical Realism

3 Transcendental Deduction

Scientific Crisis

Asset pricing in crisis since (at least) 1992: Normal versus crisis science



“The proliferation of competing articulations, the willingness to try anything, the expression of explicit discontent, **the recourse to philosophy** and to debate over fundamentals, all these are symptoms of a transition from normal to extraordinary research (my emphasis).”

the CAPM failure to be possible?

the consumption CAPM failure to be possible?

the success of empirical factor models to be possible?

the investment CAPM success to be possible?

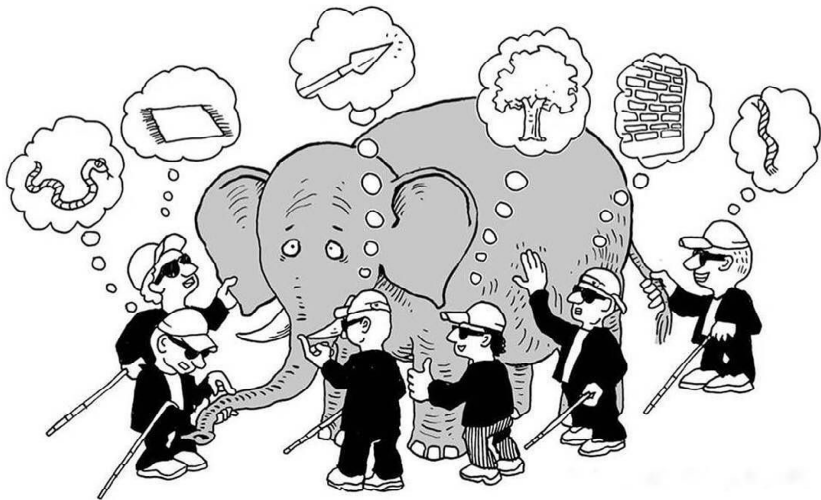
individual irrationality in household finance to be possible?

competitive asset management industry to be possible?

the macro finance success to be possible?

Scientific Crisis

Transcendental deduction: The fundamental structure of the elephant



Firms, not investors, are the primary causal powers of asset prices of their own stocks (my Copernican moment)

A stratified, dappled world:

	Macro finance	Micro finance
Buy-side	The consumption CAPM	Behavioral finance (household finance)
Sell-side	The investment CAPM	The investment CAPM (cross-sectional asset pricing)

Emergentism resolves most debates (that arise only from imposing the causal structure of one stratum onto another)

In an open system, EMH as truism, but empty

1 Scientific Crisis

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What must the world be like for science to be possible?

Open-systemic, differentiated, stratified (emergent) ontology

Open versus closed systems, the role of experiment in causal tendencies (the powers theory of causation)

Differentiated: The domains of the empirical, actual, and real

- The real domain: Generative mechanisms, causal powers (objects of science; the causal criterion of reality)

Emergentism: Complexly stratified, dappled, multiply caused

Small-scale models for approximate, local closures

Critical Realism

What is the relation between individuals and society?

The individualism-holism (agency-structure, micro-macro) debate, Udehn (2001)

Mill's (1843) **psychologism**: "The laws of the phenomena of society are, and can be, nothing but the laws of the actions and passions of human beings united together in the social state ([1974], p. 879)"

Jevons (1871), Menger (1871), Walras (1874): Rational choice

Comte (1830–42), Marx (1887), Durkheim (1897), Weber (1922):
Sociology is a separate field from psychology

Emergentism/dualism: Transformational model of social activity
(Bhaskar 1979, Archer 1995, Lawson 1997, Elder-Vass 2010)

- 1 Individuals with non-relational properties (individuals)
- 2 Individuals, relations to physical environment (PE)
- 3 Individuals, relations to PE, other individuals
- 4 Individuals, relations to PE, other individuals, social context
- 5 Individuals, relations to PE, other individuals, social context, social structures with causal inference
- 6 Individuals, relations to PE, other individuals, social context, social structures with causal inference; **lower-level social entities** with non-relational properties, relations to PE, social context, high-level social structures with causal inference

1 Scientific Crisis

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Transcendental Deduction

The consumption-investment debate

In the Arrow-Debreu economy, the consumption CAPM and the investment CAPM deliver identical expected returns:

$$R_{ft} + \beta_{it}^M \lambda_{Mt} = E_t[R_{it+1}] = \frac{E_t[\Pi_{it+1}]}{1 + a(I_{it}/A_{it})}$$

whereas in the data:

$$R_{ft} + \beta_{it}^M \lambda_{Mt} \neq E_t[R_{it+1}] = \frac{E_t[\Pi_{it+1}]}{1 + a(I_{it}/A_{it})}$$

The investment CAPM works: Zhang (2005), Liu, Whited, and Zhang (2009), Hou, Xue, and Zhang (2015)

\$1 billion question: Why does the consumption CAPM fail?

Transcendental Deduction

Two dogmas of the consumption CAPM: Anthropocentrism, reductionism



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Transcendental Deduction

The consumption CAPM: Reductionism

The Lucas (1976) critique calls for causality in macroeconomics

Microfoundation installs intentionality (first principles) as causes

Micro-reductionism: A unified, ultimate model (“a FORTRAN program”) as the end goal of all economics (Lucas 1987)

Intentionality yes, but no microfoundation, with the representative agent as idealization (Hoover 2010)

Macro-reductionism: Impossible to trace every investor, so work with the marginal investor, **Lucas's demon** (1978)

Emergentism: Refuting the consumption CAPM in micro finance, but accepting it for macro finance

Transcendental Deduction

The two dogmas in the CAPM: Anthropocentrism, reductionism

Anthropocentrism follows from Markowitz (1952)

Aggregation (macro-reduction): Investors have **homogeneous expectations (beliefs)**, holding the same optimal, tangent portfolio

Maki's realism: Diversification as one causal mechanism

Anomalies: Diversification not the primary causal mechanism

Macro-reduction: All factors must be aggregate

Micro, accounting-based factors from the investment CAPM

Transcendental Deduction

Behavioral finance: Psychologism



The consumption CAPM-behavioral finance **common ground** has recently reappeared (thin vs. thick psychologism)

Cochrane (2011): $E_t[M_{t+1}R_{t+1}] = 1$, non-rational E_t , exotic M_{t+1}

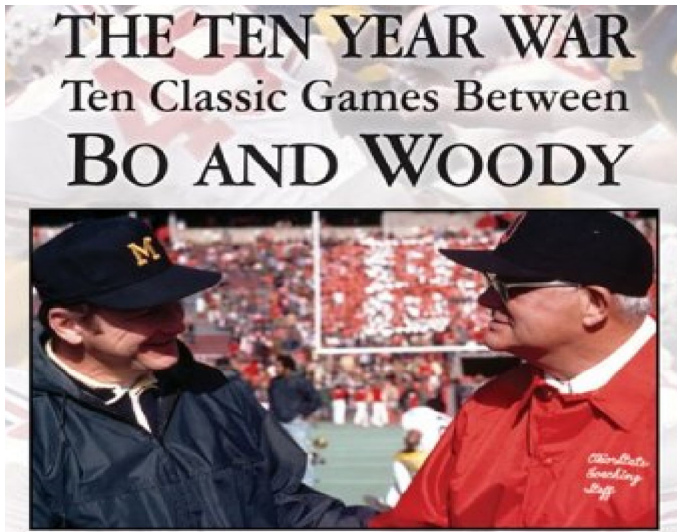
Barberis (2018): Psychologically realistic (extrapolation, overconfidence, prospect theory)

“Behavioral” models work through covariances too: The covariance-characteristic dichotomy is really meaningless

(Thick) psychologism, (weak) reductionism

Transcendental Deduction

Beyond Fama's empiricism: The Ten Year (Factors) War



Fama and French (2018, p. 237, my emphasis):

“We include momentum factors (somewhat reluctantly) now to satisfy insistent popular demand. We worry, however, that opening the game to factors that seem empirically robust but lack theoretical motivation has a destructive downside: the end of discipline that produces parsimonious models and **the beginning of a dark age of data dredging** that produces a long list of factors with little hope of sifting through them in a statistically reliable way.”

The end of the dark age started in 1993, ended in 2015 (q):

- The 3-factor model: Unification in the empirical domain
- The q -factor model: Causation in the real domain

Transcendental Deduction

Anthropocentrism: Squeezing epicycles into the Ptolemaic model

Fama and French (1996, p. 57):

“[The] empirical successes of [the three-factor model] suggest that it is an equilibrium pricing model, a three-factor version of Merton’s (1973) intertemporal CAPM (ICAPM) or Ross’s (1976) arbitrage pricing theory (APT). In this view, SMB and HML mimic combinations of two underlying risk factors or state variables of special hedging concern to investors.”

No causation between “risk factors” and (unspecified) ICAPM states

Ptolemy’s epicycles: “ad hoc, degenerating” (Lakatos 1978)

The investment CAPM supersedes the 3-, 5-, and 6-factor models

What must the financial world be like for asset pricing anomalies to be possible?

Firms, not investors, are the primary causal powers of asset prices of their own stocks (a Copernican revolution)

A moderate position in the individualism-holism debate

A new financial ontology: The consumption CAPM (macro finance), behavioral finance (household finance), the investment CAPM (cross-sectional asset pricing)

Emergentism resolves most debates (that arise only from imposing the causal structure of one stratum onto another)

Conclusion

Immanuel Kant (1784, "What Is Enlightenment?")

