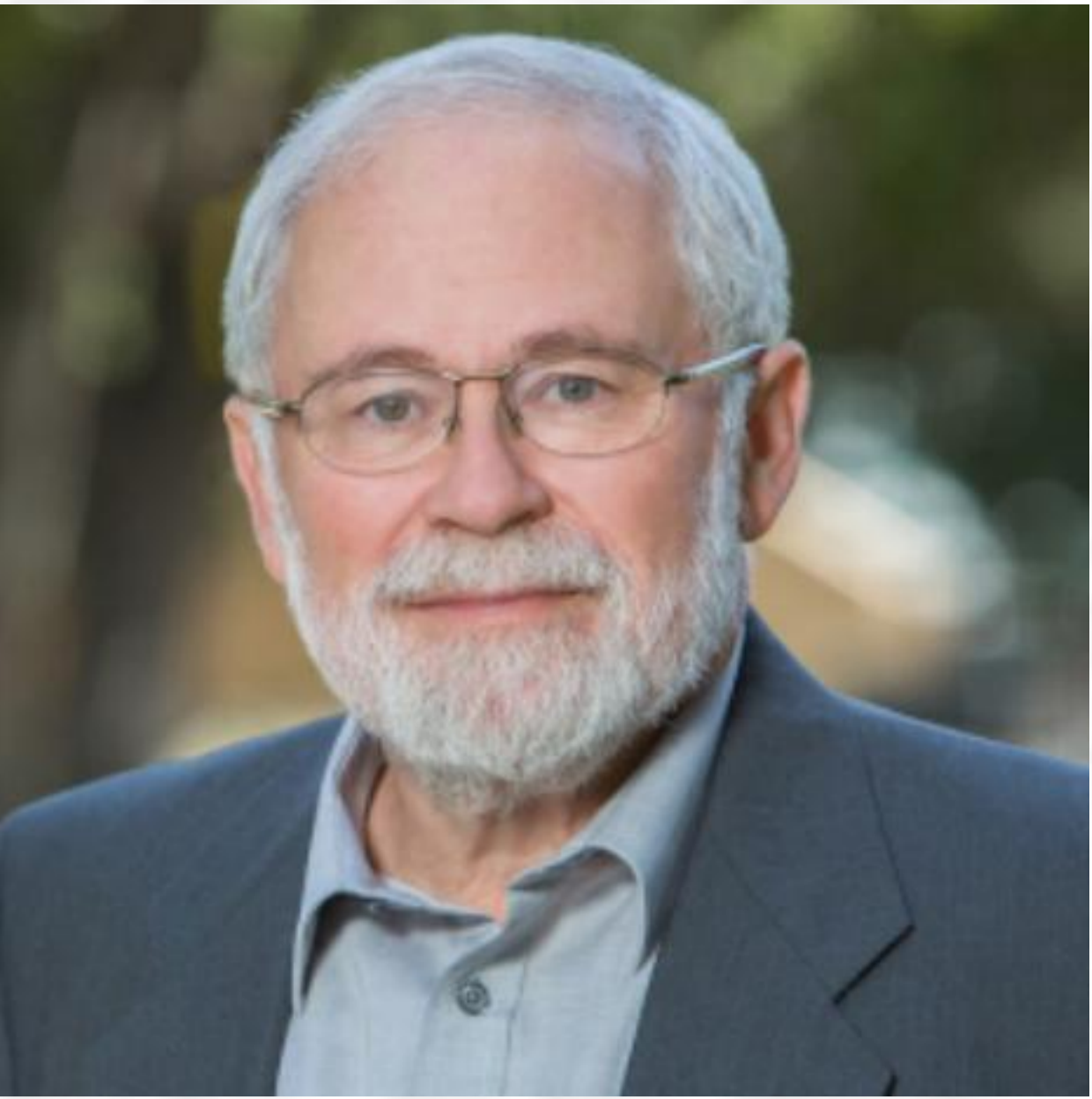


David Kreps

a game theorist, economist and professor at the Graduate School of Business at Stanford University.



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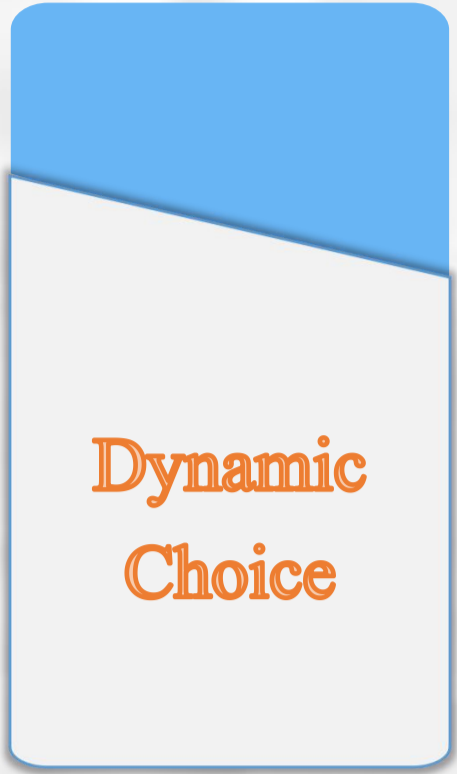


Our Website

David Krerps is the winner of the 1989 John Bates Clark Medal, given to reward his outstanding contribution in three areas:
Dynamic Choice, Game Theory and Asset Pricing.



Current Research Interests



What is Dynamic Choice? In Dynamic Choice theory, we divide time into two periods, now and future. For example, you have certain money and you can decide how to spend these money in the two period freely.





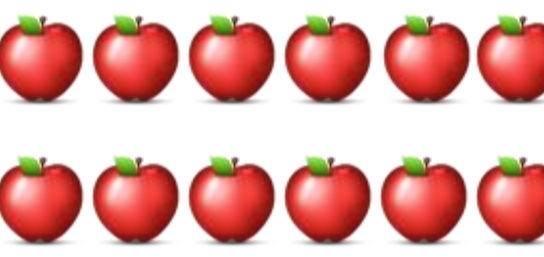
Dynamic Choice

Kreps' contribution is creating a new model about Dynamic Choice with Uncertainty.

In his model, a decision maker is "resolution seeking" or "resolution adverse":

- ▷ "resolution seeking" hate uncertainty, e.g. students who try to learn their grade before it's publicly announced
- ▷ "resolution adverse" prefer uncertainty, e.g. an individual who prefers not to know about terminal illness

Example Consider a situation in which the flip a fair coin determines the consumption in two period, "resolution seeking" prefer that the coin is tossed at the beginning of period 1; "resolution adverse" prefer that the coin is tossed at the beginning of period 2.

Flip a coin \ Period		
Period 1		
Period 2		No Apple

Standard Model: $EU = \sqrt{c_1 + c_2}$
(ct represents consumption in period t)
 $EU = 50\%EU_{number} + 50\%EU_{flower}$
 $= \frac{1}{2}\sqrt{(4+12)} + \frac{1}{2}\sqrt{4+0} = 3$

Kreps' Model: $EU = E_1(E_2(\sqrt{c_1 + c_2}))^\alpha$
(People are "resolution seeking" when $\alpha > 1$, and "resolution adverse" when $\alpha < 1$)
If $\alpha = 2$,
 $EU = \frac{1}{2}(\sqrt{16})^2 + \frac{1}{2}(\sqrt{4})^2 = 10$, when the coin is tossed at the start of period 1;
 $EU = (\frac{1}{2}\sqrt{16} + \frac{1}{2}\sqrt{4})^2 = 9$, when the coin is tossed at the start of period 2

Kreps is one of the greatest leaders in the developement of game theory.

Game Theory



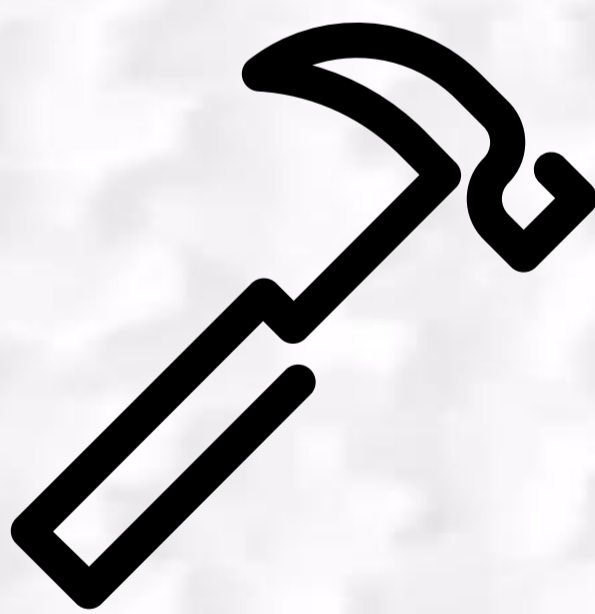
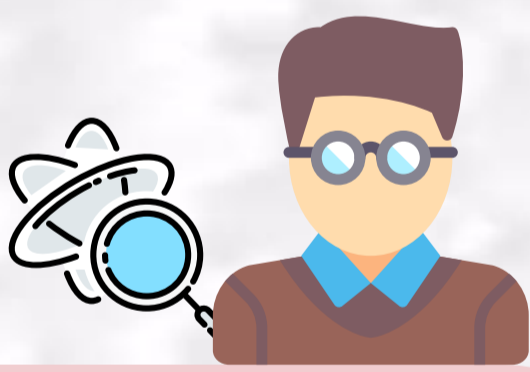
Sequential Rationality



Belief Consistency



Sequential Equilibrium



Better than



Trembling Hand Equilibrium

Fundamental theory of asset pricing:

A market is only complete, if and only, the market has a martingale measure with no arbitrage.

Asset Pricing

What is arbitrage?



- **Arbitrage (finance):** profit arose from simultaneous purchase and sale of an asset due to price differences across different market.
- e.g. 黄牛票 (ticket scalping)

What is martingale?



- a gambling strategy of continually doubling the stakes in the hope of an eventual win that must yield a net profit.
- fair gamble- future expected value always equal to current value

Martingale theory of asset pricing:

- Kreps makes use of this idea and formulates the so-called "martingale theory of asset pricing".
- According to martingale measure, future price of an asset (stocks or derivatives) can be predicted based on previous asset price movement under the condition of risk neutral.
- Contributions:.
 - (1) It eliminates the problem of arbitrage in asset pricing. .
 - (2) Investors do not need to worry about sudden price change or arbitrage in the selling and buying process. They can plan their own optimal-consumption portfolio, especially for those who are risk-averse.