Risk Management in Volatile Markets:

Diversification Between Asset Classes as a Strategy
and
Recent Findings in Behavioral Finance

What is risk?

- An event that can effect plans negatively
- Risks (events) have associated probabilities of occurrence
- We use the impact and probability to arrive at the cost of the risk
- Then we buy insurance against that risk
- Probability of crop loss * Value of the lost crop = Cost of the risk. Insurance cost needs to be less than this cost

Risk vs Uncertainty vs Volatility

- Risk is measurable
- Uncertainty is not
- Both are *just* opinions of the observer
- Risk can be insured against
- Eg. Houses in hurricane path
- Volatility is fluctuation in parameters ‘beyond the norm’

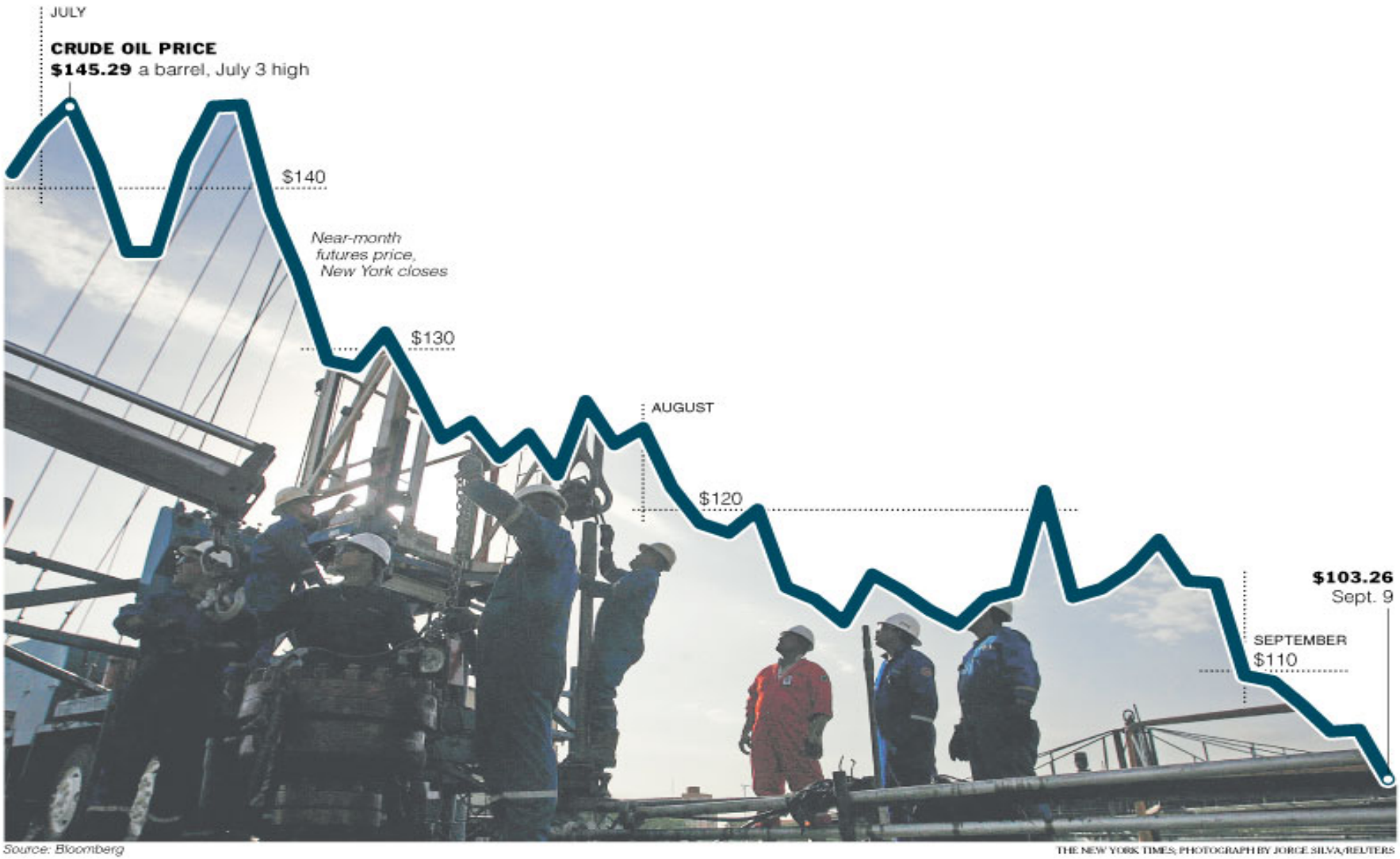
Risk vs Uncertainty vs Volatility contd

Knight argued that,

> The practical difference between the two categories, risk and uncertainty, is that in the former the distribution of the outcome in a group of instances is known (either through calculation *a priori* or from statistics of past experience), while in the case of uncertainty this is not true, the reason being in general that it is impossible to form a group of instances, because the situation dealt with is in a high degree unique. [2]

Volatility - Crude price variation – 9 Weeks

Next 4 weeks we need to quadruple the size of this chart



- *www.asu.edu/clas/polisci/cqrm/APSA2006/Wheeler_**Risk_Uncertainty**.pdf*

Risk Management

- Under Modern Portfolio Theory, the return on an asset is modelled as a random variable, with an expected value and variance
- Risk is defined as the standard deviation of returns
- Returns of assets are assumed to follow normal distributions
- Investors are assumed to be risk-averse
- A portfolio is a combination of assets, the return on a portfolio is the weighted average of the asset returns
- Investors seek that portfolio with maximum expected return for a given level of risk and minimum risk for a given level of expected return

Diversification

- An investor can reduce portfolio risk by holding assets which are not perfectly correlated. Diversification will allow for the same portfolio return with reduced risk.
- If all the assets of a portfolio have a correlation of 1, i.e., perfect correlation, the portfolio risk will be equal to the square of the total weighted sum of the individual asset volatilities.
- If all the assets have a correlation of 0, i.e., perfectly uncorrelated, the portfolio variance is the sum of the individual asset weights squared times the individual asset variance.
- If correlation is less than zero, i.e., the assets are inversely correlated, the portfolio variance and hence volatility will be even lesser.

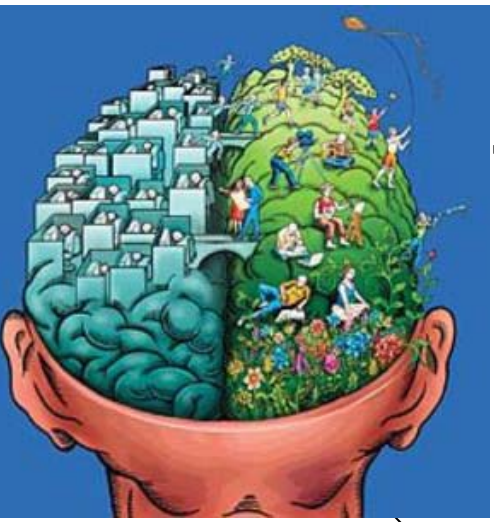
How did diversification fare recently?

- Housing 
- Stocks 
- Precious metals
- Money 

What led to this?

- A previous secular asset price inflation
  - Dot-com bust
  - Housing bust
  - Irresponsible lending
  - Loose money policies
- Crowd-like behaviour, groupthink – irrational exuberance
- Bank balance sheets out of whack
- Excess capacity in realty & industry
- Interlocked global economy increased vulerability rather than reduced it

Decision making process



Emotions/state of mind – Fear, greed, regret, surprise, confidence etc

Commitment

Past experience

Biases

Cognition

Decision Making

Reasoned Processing

Evidence gathering

Risk evaluation process

- Cognition
- Biases
- Risk evaluation
- Decision-making
- Evolved over millions of years
- They evolved in a different context – hunter gatherer days. Current modes of living/decision-making are just a fraction of the time, compared to the time over which they have evolved

Cognition & biases

- Our tendency to see data that confirm our prejudices more vividly than data that contradict them
- Our tendency to overvalue recent events when anticipating future possibilities
- Our tendency to spin concurring facts into a single causal narrative
- Our tendency to applaud our own supposed skill in circumstances when we've actually benefited from dumb luck – OVERCONFIDENCE, EGO – False Pride

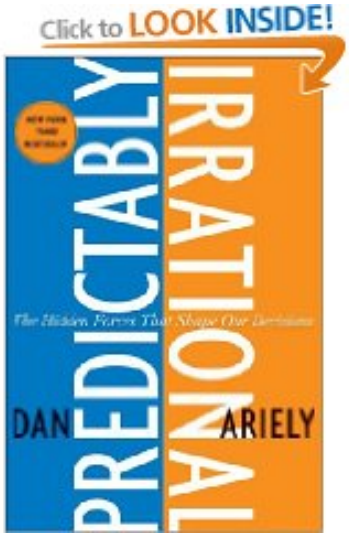
Cognition & biases Contd…

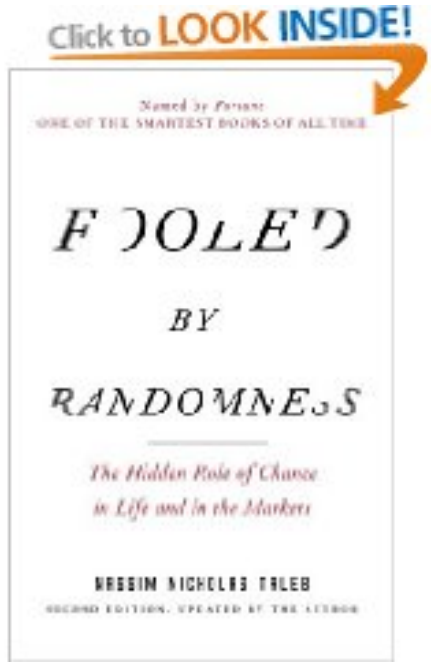
- Inability to respond to and incorporate dangers in the distant future into our decision-making
  - Discounting problem
- Value attribution – If Greenspan says something, it must be right
- Search for patterns – Belief that markets have always recovered
- Incomplete ideas of economic driving forces
- Inadequate sense of history

What can we do

- Reevaluate all assumptions
- Educate ourselves
- Be aware of our emotions
- Make notes – our plans Vs our implementations – how we get swayed by our emotions
- Be quick
- The coming investment environment is going to be very volatile
- Volatility doesn’t mean lack of returns – it means wild oscillations – big gains, big losses
- Do not get overconfident

Some books


Click to LOOK INSIDE!
PREDICTABLY IRRATIONAL
The Hidden Forces That Shape Our Decisions
DAN ARIELY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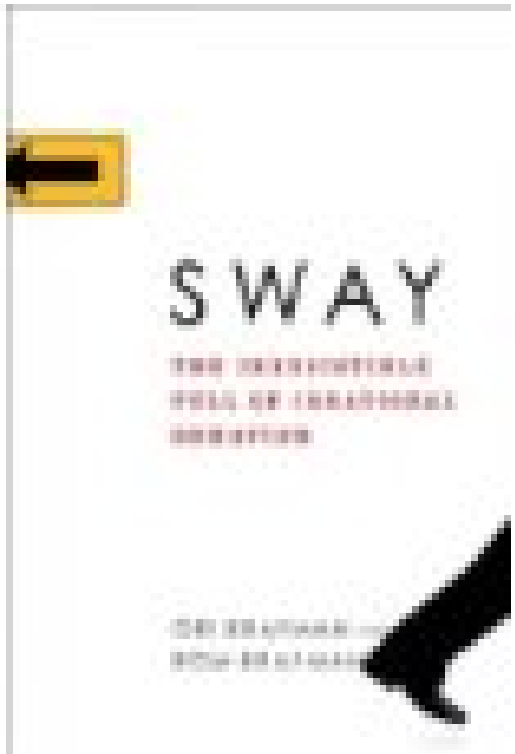
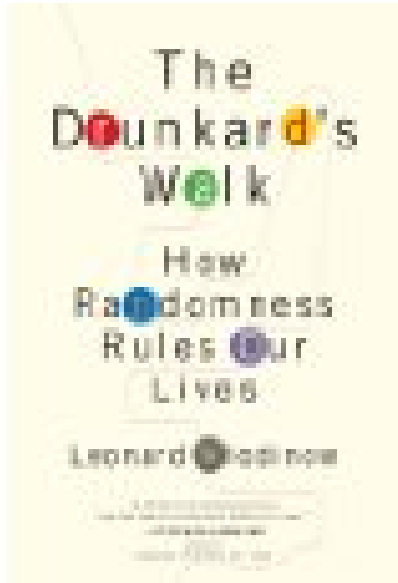
FOOLED BY RANDOMNESS
The Hidden Role of Chance in Life and in the Markets


YOUR MONEY & YOUR BRAIN
HOW THE NEW SCIENCE OF NEUROECONOMICS CAN HELP MAKE YOU RICH
"PIONEERING."
"ILLUMINATING."
JASON ZWEIG


SWAY


The Drunkard's Walk
How Randomness Rules Our Lives

Some books

- Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets (Paperback) *by Nassim Nicholas Taleb*
- The Drunkard's Walk: How Randomness Rules Our Lives *by Leonard Mlodinow*
- Your Money and Your Brain: How the New Science of Neuroeconomics Can Help Make You Rich *by Jason Zweig*
- Sway: The Irresistible Pull of Irrational behavior *by Ori Brafman and Rom Brafman*
- Predictably Irrational: The Hidden Forces That Shape Our Decisions *by Dan Ariely*

Finally….

Do not listen to experts…hear what they say, but, do your homework