

From Behavioural to Emotional Corporate Finance: A New Research Direction

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Presentation Structure

- Traditional Finance
- Behavioural Finance
- Behavioural Corporate Finance
- Emotional Finance
- Emotional Corporate Finance
- Implications for Technical Analysis/Hedge Fund Industry

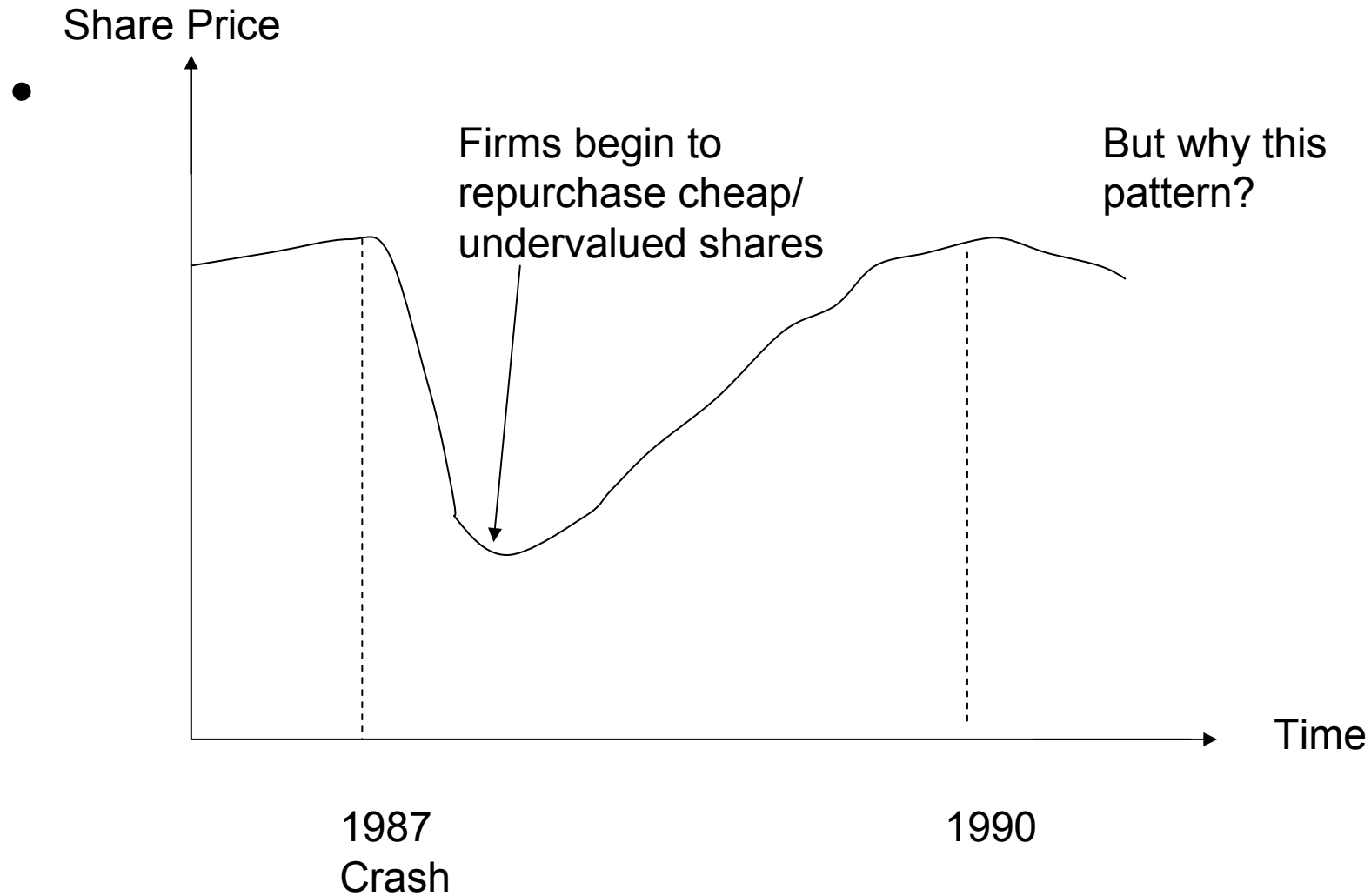
Traditional Finance

- Traditionally, financial economics models have been based on 'Homo Economicus'
- => Fully rational, *emotionless*, purely self-interested agents
- => unlimited calculating power!
- => Efficient Markets Hypothesis/CAPM => no role for Active asset allocation!!

But: Evidence that Agents/Markets are not fully rational!

- Market Anomalies observed in reality:
- Over- and under-reaction to news
- Long-run abnormal returns
- Excessive volatility (beyond news volatility)
- => **Behavioural Finance/ Behavioural Corporate Finance**
- => role for active asset allocation !!

Over/under-reaction and long-run abnormal returns



- The Path to Emotional Finance/ Emotional Corporate Finance

Starting Point 1: Traditional Corporate Finance

- Traditional approach: homo economicus: Fully rational, self-interested, maximisers of expected utility
- => Efficient capital markets
- => Focus on Agency/incentive problems in CF: self-interested managers: “rent-seeking with guile”: moral hazard: effort-shirking, diversion of assets, perks: eg Jensen and Meckling.
- Corporate Debt: aligns managers and investors:

Starting point 2: Behavioural Finance

- Behavioural Finance (1980's): recognised that *investors* may not be fully rational:
- Human beings: imperfect, biased, flawed, *emotional* (conscious emotions)...
- => financial markets inefficient: over-reaction/under-reaction/mispricing/bubbles/excess volatility etc etc....

Focus of Behavioural Finance

- Taking findings from psychology:
 - Scholars have focused on the following biases:
 - Overconfidence
 - Regret
 - Loss aversion (prospect theory).
-
- (Heuristics/rules of thumb/mental shortcuts/framing).

Starting Point 3:

Behavioural Corporate Finance

- Late 1990's –
- Scholars began to examine Behavioural *Corporate* Finance (Shefrin, Thaler, De Bondt...)
- Managers not fully rational, not fully-self interested.
- OC and investment decisions (negative NPV projects taken?)
- OC and capital structure (excessive debt?)
- OC and dividends (unclear)
- Market timing (rational managers exploiting irrational investors)....

Behavioural Challenge

- Effect of combining managerial and investor psychology?
- What if managers *and* investors are overconfident?

Exciting Paradigm shift!!

- **Emotional Finance**: Taffler and Tuckett (2005), Eshragi and Taffler (2009).
- Applied to the Financial markets:
- Analyzes the effect of *unconscious*, infantile emotions on investors' decisions.
- *Freud's* theory of phantastic objects => stock market bubbles and crashes?
- Hedge Funds: boom and bust.

Emotional Corporate Finance

- Brand new !
- As BCF developed from BF (psychologically biased markets/investors => biased mgrs)
- ECF adds to EF by considering *unconscious*, infantile emotions in corporate managers.
- Particularly: projects as phantastic objects? Initial “love” of the project, followed by sudden project “hatred”? Concorde...
- => volatility of performance (especially if we add in emotional investors too!!!)

EF: “Phantastic Object”

(see eg: Taffler and Tuckett (2003; 2008))

- Psychoanalytical approach
- => Unconscious emotions
- **Phantastic Object** => “mental representation of something which in an imagined scene fulfills the protagonist’s deepest desires to have exactly what she wants when she wants it.”
- Aladdin’s lamp.
- **Phantastic Investments ?**: Tulip-mania, South-sea bubble, 19th C Railroad stocks, internet dot.com bubble.
- Hedge funds as “phantastic objects” !!!
- Madoff.....

EF: Anatomy of a bubble/crash

- Freud: Paranoid-schizoid and depressive states
- **1. PS phase:**
- New, mysterious, exciting 'objects' (eg dot.com stocks)
- Everybody falls 'in love' with these stocks
- Reality is suspended:
- Pleasure and pain split out from each other
- Perceived infallibility/ no risk!
- Experts' views are sacrosanct.

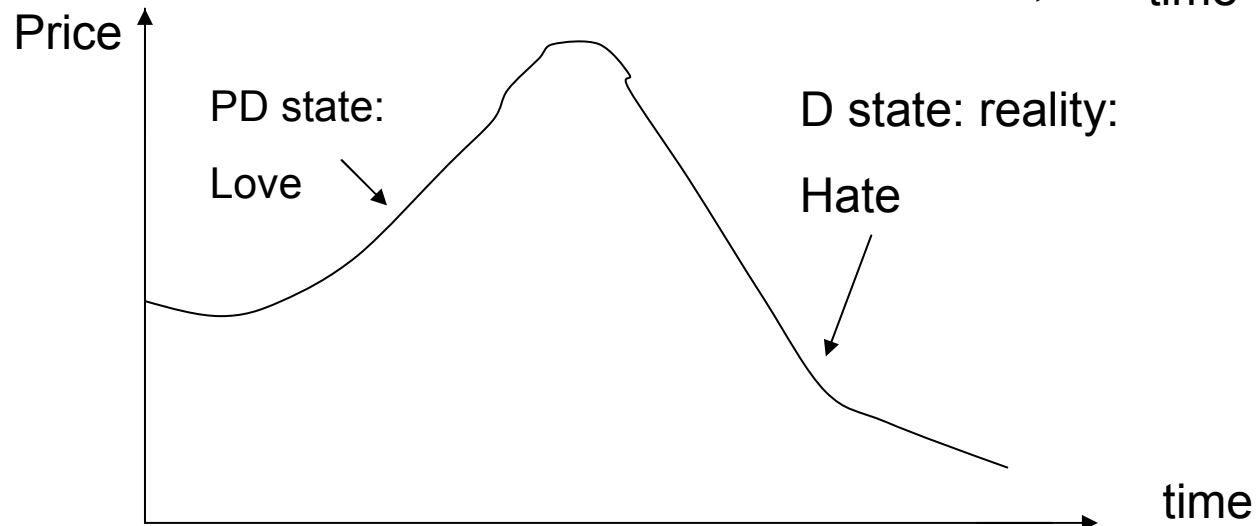
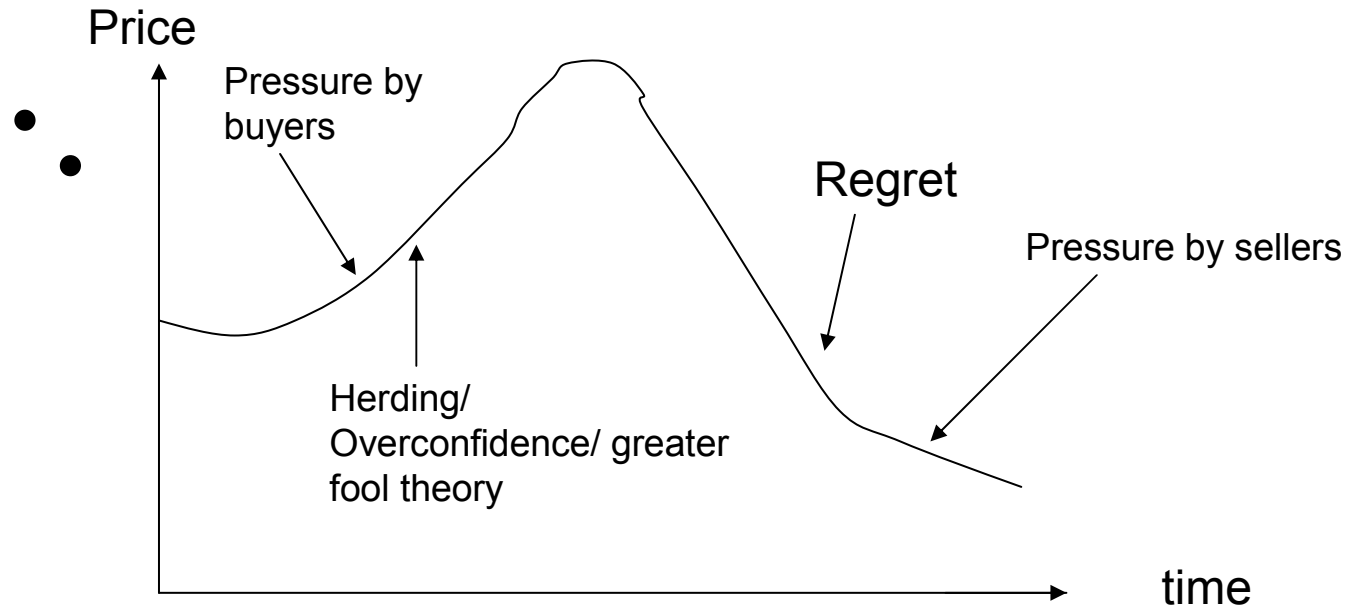
Anatomy of bubble/crash (continued)

- Critical point at which reality intrudes =>
- => Depressive state
- Understand risk!
- => love turns to hate!
- Revulsion
- Looking for scapegoats/blaming others.
- *(But what triggers the critical point?)*

BF versus EF

- BF focusses on cognitive biases and *conscious* emotions (overconfidence, pride, regret, anger....)
- EF focusses on unconscious emotions:
- Critics of BF => many biases to appeal to!
Rather piecemeal!
- EF provides a unified framework?
- PS = overconfidence.....?
- DS = regret.....?

BF versus EF explanations



Internet bubble
Chinese Stock
Market

Next steps for EF?

- Extend to ECF.
- Taffler's work very descriptive and case – based (ex post)
- => scope for modelling
- Predictive ability?

Modelling of EF/ECF?

- Emotional Trajectory/path: but...
- Currently, EF lacks formal modelling (Dow 2008)
- Modelling could help explain nature and timing of events that cause the switch between euphoric phantasy and onset of panic.
- Paper presents first rudimentary attempts at a model.....

Model: Phantasy, investment appraisal, and project performance

- Self-interested corporate manager (risk-neutral/zero discount rate):
- New investment opportunity
- Initial required investment $I > 0$.
- Mgr decides a) whether to take the project, and b) then exerts effort in developing the project towards success.
- Moral Hazard: effort-shirking.

ECF

- Manager initially (unconsciously) views the project as a phantastic object:
- Characteristics over and above its financial performance (excitement/euphoria).
- Mgr continues in this phantasy, unless the project has a failure at a point in its life...
- => euphoria is destroyed: mgr switches to project hatred...

Timeline and details of model

- **Date 0:** Investment opportunity: required investment $I > 0$.
- If mgr takes project, issues a proportion equity to outsiders $1 - \alpha \in (0,1)$
- Mgr retains a stake α .
- Mgr views as project as “phantastic” object, with phantasy parameter $\theta \geq 0$.
- At date 0, mgr views project as infallible: certain to succeed over both periods.
- This phantasy remains as long as project succeeds.
- Investors share mgr’s phantasy: mkt value $>$ Fundamental value.

Timeline (continued)

- **Date 0.25:** mkt becomes rational, and understands mgr's motivations.
- Investors switch from project phantasy to hatred, parameter $-\Delta$.
- **Date 0.5:** mkt's hatred disappears => MV= FV
- The manager ignores mkt, and continues in his project phantasy.
- **Date 1:** Managerial effort level (stage 1) e_1

- Cost of effort $c(e) = \beta e^2$

Effect of effort

- Project succeeds or fails with equal probability
- Success income $R(1 + \gamma e_1)$
- Failure income = zero
- Mgr's phantasy: $(1 + \theta)R(1 + \gamma e_1)$.
- **Date 2:** first stage outcome: if success, phantasy parameter continues: mgr still thinks project is infallible. $(1 + \theta)R(1 + \gamma e_2)$.
- If fails, mgr switches to project hatred: $\phi \leq 0$.
- =>
 $(1 - \phi)R(1 + \gamma e_2)$.

Solving game

- Backward Induction:
- Mgr's expected date 2 payoff (following date 1 success):

$$\Pi_2 = \alpha(1 + \theta)(R + \gamma e_2 R) - \beta e_2^2$$

- Following date 1 failure

$$\Pi_2 = \frac{1}{2} \alpha(1 - \phi)(R + \gamma e_2 R) - \beta e_2^2$$

Manager's optimal effort levels

$$e_1^* = e_2^S * = \frac{\alpha(1+\theta)\gamma R}{2\beta}$$

$$e_2^F * = \frac{\alpha(1-\phi)\gamma R}{4\beta}$$

Proposition 1: *If the project succeeds at the end of date 1, the manager's project phantasy is maintained throughout => same effort in date 1 and date 2.*

If the project fails at the end of date 1, mgr switches from project-phantasy to project-hatred => effort falling from date 1 to date 2.

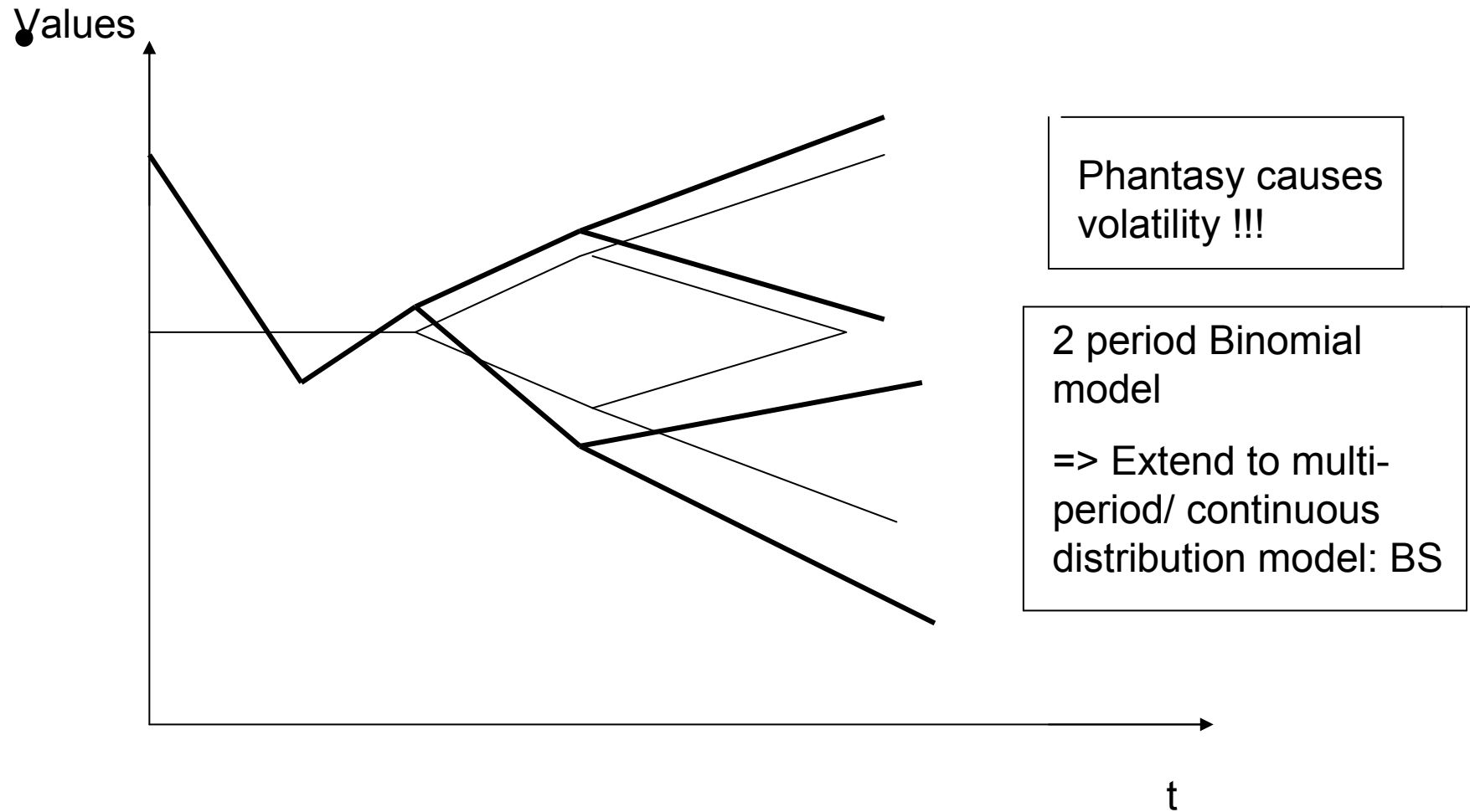
Date 0: investment decision

- Manager invests iff

$$\Pi_1 + \Pi_2 = 2(1 + \theta)R + (2\alpha - \alpha^2) \frac{(1 + \theta)^2 \gamma^2 R^2}{2\beta} - I \geq 0.$$

- Bounded rationality/phantasy: At date 0, mgr thinks project succeeds for sure.
- Phantasy may be value-reducing (negative NPV as mgr overvalues project) or value-adding (overvalues project, but works harder due to phantasy).

Effect of mgr/investor phantasy on time-series of project values



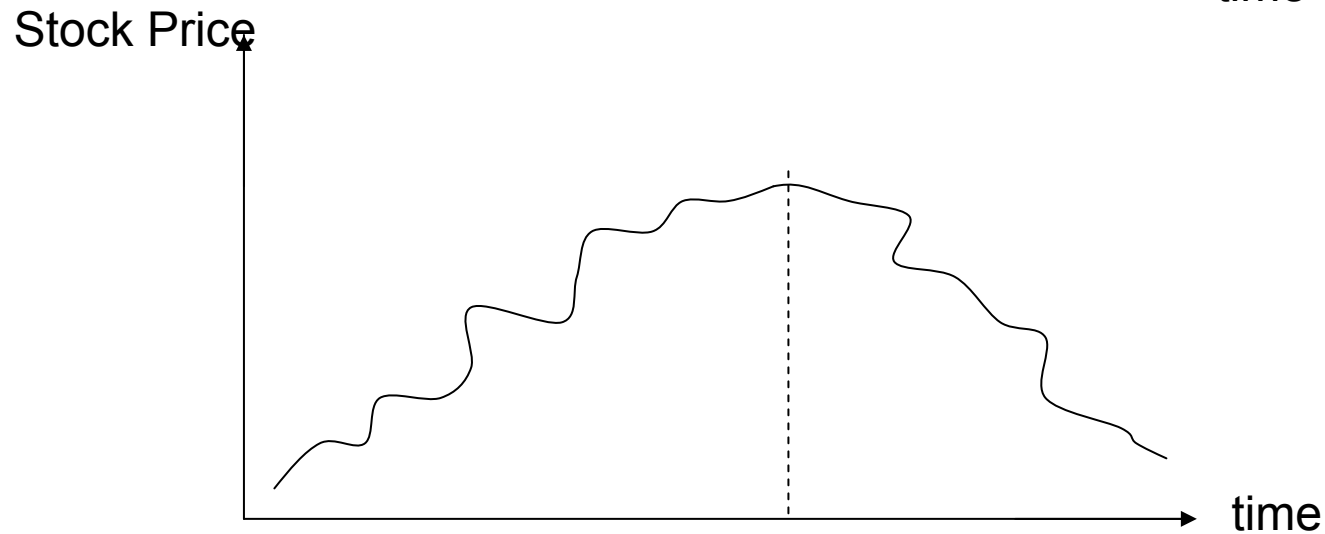
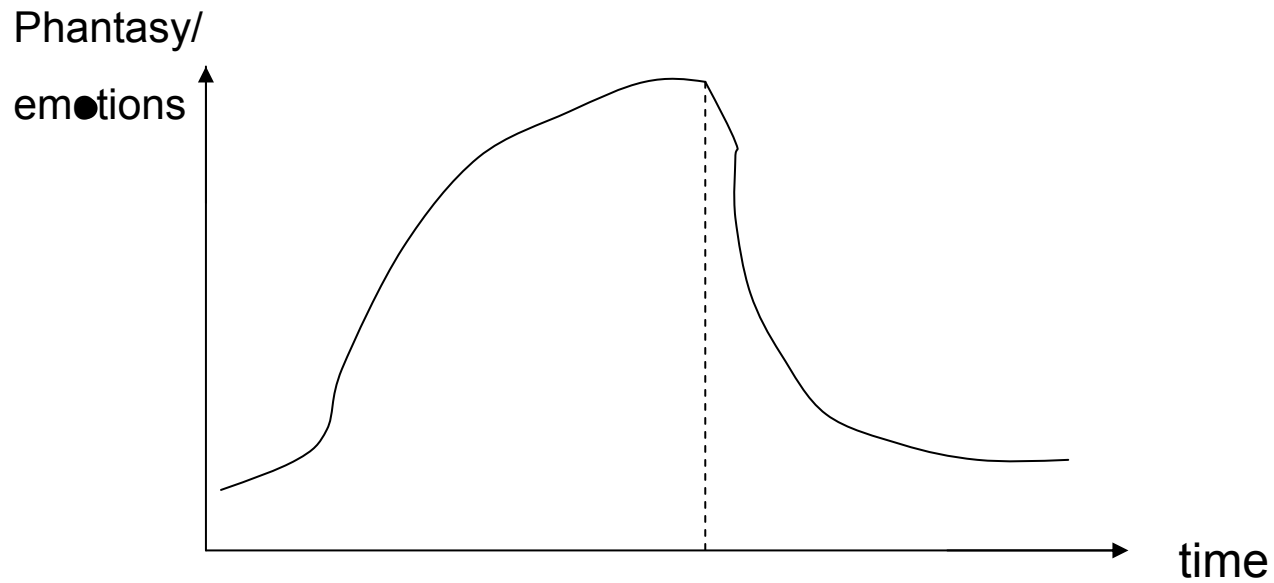
Implications for Technical analysis/Hedge Funds 1

- EF suggests an emotional trajectory (roller-coaster!) affecting stock price trends, returns and volatility.
- In boom times, people 'love' their magical investments and under-estimate risk
- In down times, reality intrudes, and people fully understand risk.
- My Model: EF => emotions amplify volatility

Implications for Technical analysis/Hedge Funds 2

- Can we use EF framework to predict emotional trajectory => predict stock market?
- When does love turn to hate?
- Do all investors turn at the same time?
- Is the timeframe the same across all bubbles and crashes?

EF, modelling and predictability?



EF, modelling and predictability?

- Coppock Indicator (Bereavement time 14 months \Leftrightarrow remarkable predictive power in stock markets)
- Leading and Lagging (behavioural) indicators
- **Chaos Theory** (Mandelbrot: Bernice Cohen: “Edge of Chaos”)
- Cohen describes Jeckell and Hyde Investors
- \Rightarrow not all rational at once
- Nobody is fully rational at any time!

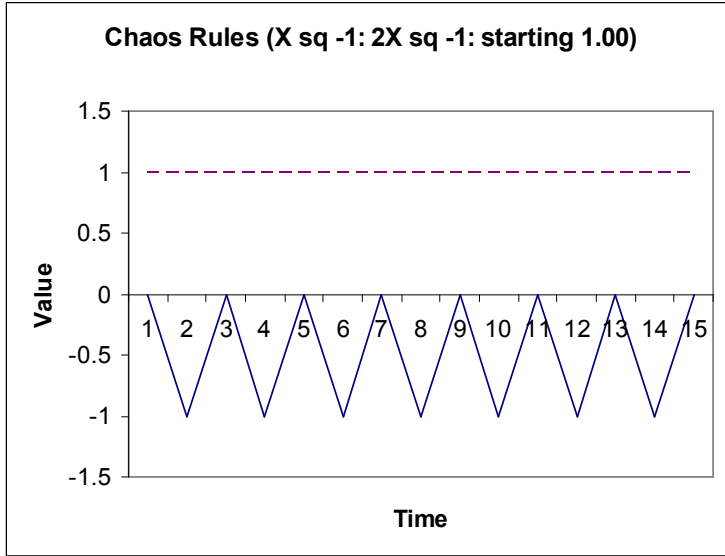
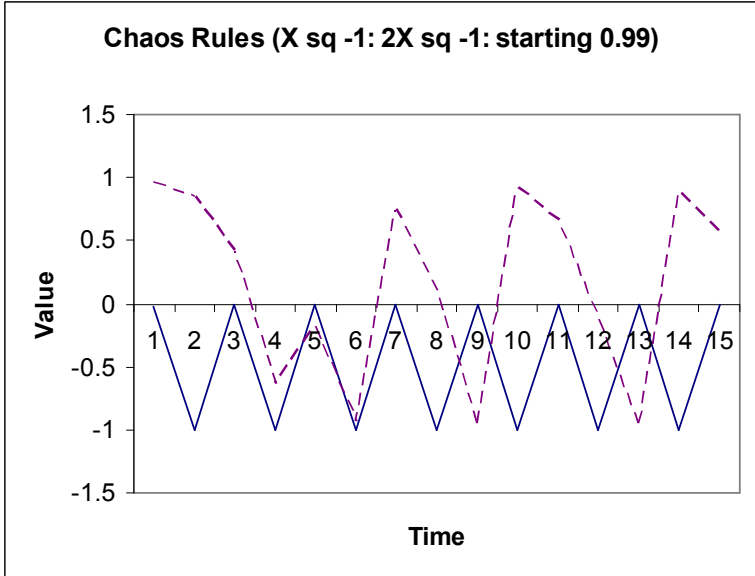
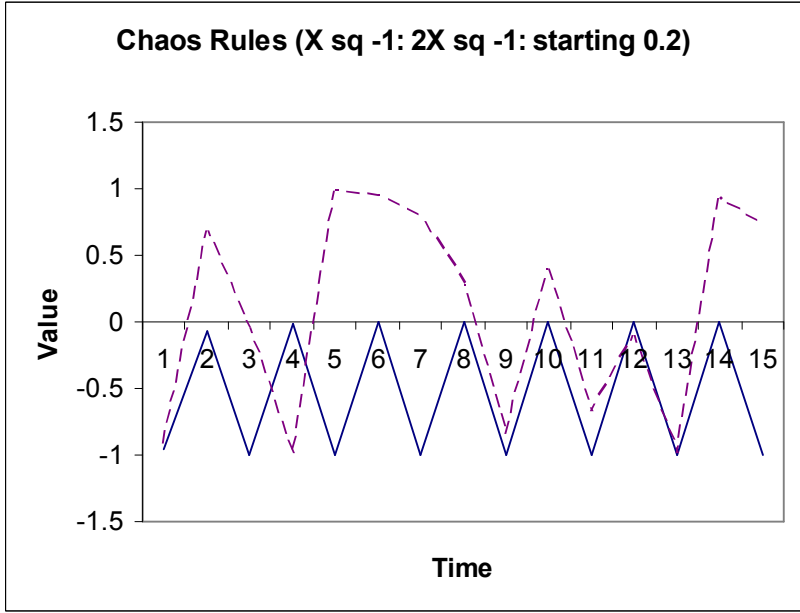
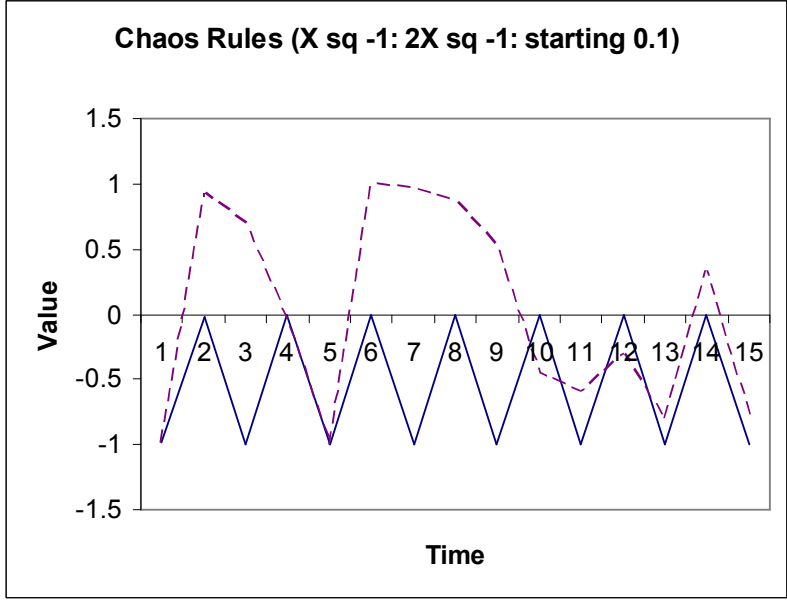
Chaos Rules (Bernice Cohen book)

- Chaotic patterns can be explained by simple mathematical rules (iterations)

$$: X^2 - 1$$

$$: 2X^2 - 1$$

But pattern sensitive to starting point !!



Summary and future research

- EF is a natural development from BF.
- BF: cognitive biases/emotions: piecemeal approach
- EF: Unconscious emotions: emotional trajectory/bubbles + crashes/volatility
- EF provides a framework for understanding bubbles and crashes
- But no formal models yet \Leftrightarrow predictive ability?