Perceived returns, risks of loss and Minsky’s financial instability hypothesis

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Eric Barthalon, Executive Director, Allianz Investment Management SE, April 14-16th, 2010
Structure of Allais’ behavioral model (1965) and its relevance to Minsky’s financial instability hypothesis

- « Expectations » = Present value of the sequence of historic rates of change → driver of economic behavior
- We forget the past as we discount the future → exponential weighting of past rates of change

- High when prices move up rapidly, when time is « full » → short memory
- Low when prices fall persistently, when time is « empty » → long memory
- → Positive feedback, but natural instability of exuberant « expectations »

- Lower and upper thresholds
- Non-linear move in between these thresholds
- → Inevitable burst when upper threshold is reached
Twist #1:
Psychological vs physical time

« An hour talking with a pretty girl sitting on a park bench passes like a minute but a minute sitting on a hot stove seems like an hour »

Albert Einstein

« A year riding a bull market passes like a week but a week fighting a bear market seems like a year »

Wall Street proverb?
Model’s outputs:
different measures of Minsky’s « expectational climate »

- Perceived return
  - All observations
  - Natural signs unchanged

- Perceived risk of loss
  - Down days only
  - Absolute values of negative returns, zeros otherwise

- Perceived volatility
  - All observations
  - Absolute values
In Japan, the absence of large cumulative drawdowns pushed downside risk awareness to historic lows in late 1978...
In a bubble, the gap between the perceived equity return and the risk-free rate is probably too large to be closed by policy.
A long-term view on the perceived risk of loss in the US equity market: uniqueness of the 1993 break

"The subjective cause [of crises] is probably linked to this capacity that men have to forget received impressions. Little by little, new generations, who have not directly suffered the ills produced by the last crisis, come to the management of affairs. A deposit of excitable material then re-forms in society". Vilfredo Pareto, Cours d’Économie Politique, 1896

PERCEIVED RISK OF LOSS ON U.S EQUITIES - COWLES COMMISSION STOCK INDEX CHAINED WITH S&P 500 AFTER 1928

Monthly rate, log scale

March 1993

0.55%
Extreme valuations coincided with record low perceived risk of loss.
In the USA, the absence of large cumulative drawdowns pushed the perceived risk of loss to historic lows in 1993...
...at a time when the differential between the perceived equity return and the risk-free rate widened

**PERCEIVED RETURNS: S&P 500 vs NASDAQ**

- **44% a year (memory: 5.3 years)**
- **19% a year (memory: 8.2 years)**

In a bubble, the gap between the perceived equity return and the risk free rate is probably too large to be closed by policy.
Do Minski’s “fundamentals“ – like the assuredness of cash-flows – explain the fall in the perceived risk of loss? NO!

The perceived risk of cash-flow contraction is derived from non-financial corporate EBITDA (as per NIPA) and down quarters only.
« Stability breeds instability » in numbers

1-High single digit perceived equity return

2-Risk of loss on equity falling to record low level

3-Widening differential between perceived equity return and risk-free rate
An example of non-linear response: margin debt at the NYSE tends to increase with the perceived equity return.
From 2002-2003 onwards margin debt has remained higher than implied by the perceived equity return: why?

**MARGIN DEBT AND PERCEIVED EQUITY RETURNS**

- **Margin debt to M3 ratio**
- **In-sample estimate based on S&P and Nasdaq perceived returns**
- **Out-of-sample forecast**

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Another example of non-linear response: flows of funds in equity mutual funds
Once bitten, twice shy: as the perceived equity return has fallen, investors have fled equity mutual funds.
Given the lower equity perceived return, the equity risk premium should be higher (the PE should be lower)

USA: S&P 500 / CYCLICALLY-ADJUSTED PE

- Cyclically-adjusted PE
- In-sample estimate based on perceived return
- Out-of-sample forecast
…all the more so that the perceived risk of loss remains high by historical standards
Potential interaction between price movements, the perceived equity return and the S&P 500’s PE

<table>
<thead>
<tr>
<th>Movements over 6 months relative to March 31st, 2010</th>
<th>Perceived equity return</th>
<th>Cyclically-adjusted PE</th>
<th>Equilibrium cyclically-adjusted PE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current</td>
<td>3.39%</td>
<td>25.14</td>
<td>14.99 (-40.4%)</td>
</tr>
<tr>
<td>-20%</td>
<td>1.59%</td>
<td>19.68</td>
<td>12.39 (-37.0%)</td>
</tr>
<tr>
<td>-25%</td>
<td>1.19%</td>
<td>18.45</td>
<td>11.81 (-36.0%)</td>
</tr>
<tr>
<td>-30%</td>
<td>0.79%</td>
<td>17.22</td>
<td>11.23 (-34.8%)</td>
</tr>
</tbody>
</table>
Moral hazard: a case, if not the ultimate case, of adaptive expectations?
Rational vs adaptive expectations: the right debate?

Risk

Lucas: “This REH will not be applicable in situations which Knight called uncertainty. … In cases of uncertainty, economic reasoning will be of no value.”

Minor form of expectations: rational

Uncertainty

Knight: “It is a world of change in which we live, and a world of uncertainty”

Major form of expectations: adaptive

Allais’ contribution: variable duration of memory, variable elasticity, bounded non-linear response
Appendix 1: Measuring the present value of the past as a proxy for expectations

**Uncertainty**
- Data
- Some function...
  - ... describing the learning process
- Adaptive expectations

**Allais (1954), Cagan (1954)**
- Inflation rates
- Exponential average
  - We forget the past as we discount the future
  - Path-dependent, fixed lag structure, constant elasticity
  - CONSTANT DURATION OF MEMORY

**Allais (1965) & AIM SE**
- Monthly returns (usd)
- Dynamic exponential average
  - The faster asset prices move up, the faster we forget the past
  - Path-dependence, variable lag structure, variable elasticity, non-linear
  - VARIABLE DURATION OF MEMORY
Appendix 2: the Minsky (70’s)-Kindelberger (1978) model of financial instability

Legitimate increase in the expected return on capital employed

Increase in credit demand & supply (dom. & for., bank & non-bank)

Deteriorating credit quality: from hedge to Ponzi finance

Euphoria fostered by lack of budgetary constraint

Leverage effect on profits

High valuations explained by « new era », new models, not by credit

Liquidity illusion: money velocity (overtrading) vs quantity of money

Greed, adaptive expectations: the cycle is dead

Warnings by officials & wise men

Swindles & other criminal activities

Stealth turning point

Failure of large short players

Distressed selling, forced liquidation

Lender of last resort, moral hazard
Appendix 3: Home prices inflation and mortgage rates

USA: Perceived rate of appreciation of home prices and mortgage rates

- Mortgage rates
- In-sample estimate based on the perceived rate of appreciation of home prices lagged 19 months
- Out-of-sample forecast
- Perceived risk of loss