

Strategy Research

Mind Matters

Forever blowing bubbles: moral hazard and melt-up

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As the US market is now back at fair value, I've been pondering what could drive the market higher. Jeremy Grantham provides some answers in his latest missive to clients. He argues that "the greatest monetary and fiscal stimulus by far in US history" coupled with a "super colossal dose of moral hazard" could generate a stock market rally "far in excess of anything justified by...economic fundamentals". This viewpoint receives support from the latest finding from experimental economics. The evidence from this field shows that even amongst the normally well behaved 'experienced' subjects, a very large liquidity shock can reignite a bubble!

■ I have long used a Minsky/Kindleberger framework for thinking about the inflation and deflation bubbles. This process ends in revulsion, when everyone has given up hope on the asset class in question. However, in the past, US authorities have short circuited the process and avoided sliding into revulsion via monetary and fiscal policy response.

■ The evidence from experimental markets (in which participants trade an equity-like asset) is that experience helps to prevent bubbles. The first time people play the game, they create a massive bubble (like the dot.com bubble).

■ The second time people play the game, they create yet another bubble. However, this seems to be driven by overconfidence that this time they will get out before the top. The third time subjects encounter the game, they generally end up with prices close to fundamental value.

■ This might suggest that bubbles should become harder to create amongst experienced market participants. Certainly, the evidence from the tech bubble shows that it was the young fund managers who got suckered in, whilst their older brethren were happier to sit it out. A good reason to keep those of us who have lived through multiple bubbles around!

■ However, new research by the godfather of experimental economics, Vernon Smith, shows that it is possible to reignite bubbles even amongst the normally staid and well behaved subjects who have played multiple bubble games. The key to this rekindling is massive liquidity creation. In fact, in his experiments Smith doubled the amount of liquidity available.

■ Now, I have no idea if the current policies of the Fed and its allies around the world constitute a large enough liquidity shock to reignite a bubble. But it certainly seems as if many market participants are now focusing upon the policy response as a key source of optimism. If this is indeed the case, then perhaps Smith's latest work could sound a warning bell about the risk of yet another bubble (and in time another crash!).

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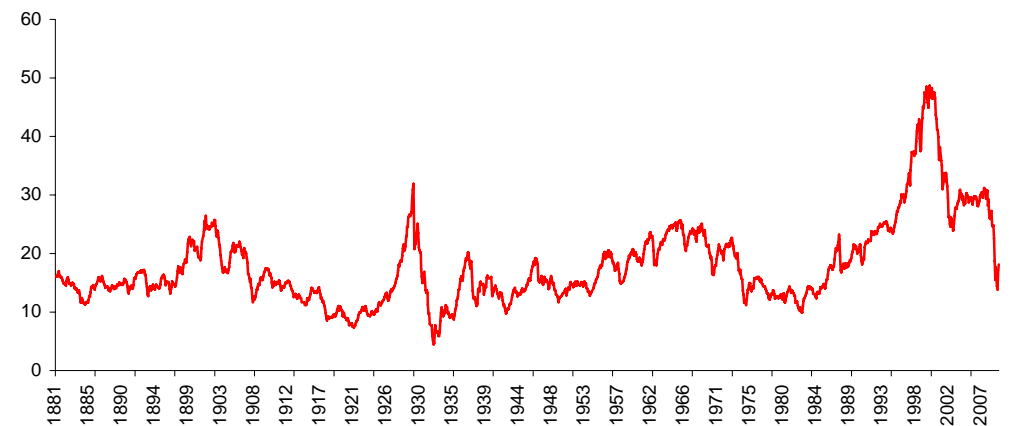
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Forever blowing bubbles: moral hazard and melt-up

In his latest missive to clients, the ever erudite Jeremy Grantham opines:

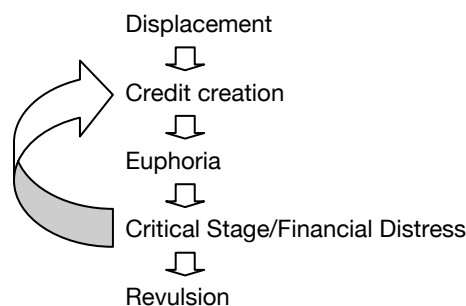
Just bear our two principles in mind. If the stock market is many times more sensitive to financial stimulus in the short term than the economy is, then we could easily get a prodigious response to the greatest monetary and fiscal stimulus by far in U.S. history. Second, if you don't think there is a special, one-off, super colossal dose of moral hazard out there today, you are sadly uninformed. The moral hazard in play today is of a massively larger order than any we have ever seen.... So by analogy to the normal Presidential Cycle effect, driven by stimulus and moral hazard, we are likely to have a remarkable stock rally, far in excess of anything justified by either long-term or short-term economic fundamentals. My guess is that the S&P 500 is quite likely to run for awhile, way beyond fair value.

US S&P500 Graham and Dodd PE (x)



Source: SG Global Strategy

According to my measures, the S&P500 is already back at fair value (having been cheap for all of about a day). This pricing doesn't sit comfortably with my analysis of the stages of a bubble. I have long used a Minsky/Kindleberger framework for understanding the dynamics of bubbles.



In 2003 the US authorities managed to bypass the slide into revulsion and skip back to credit creation and euphoria all over again, and this occurred despite the fact that US equities failed to get anywhere close to cheap. Could we be witnessing the same sort of process in action once again?

Lessons from the lab

As long time readers may recall, I am a fan of the use of experimental markets to explore the dynamics of markets. The advantage of the lab is, of course, that information can be fully controlled in a way that just isn't possible in the real world.

The major authority within this sphere is Vernon Smith (joint winner of the Nobel Prize for economics in 2002). In a recent paper Smith and his co-authors¹ explore some issues that may have lessons for the current juncture.

They start by setting up an experimental market in which investors can trade an equity with a dividend payment each period. The actual payment is uncertain, but participants are told that there are four states of the world, and all are equally likely, and they are given the payouts that correspond to the various states of the world. Calculating fundamental value is therefore a trivial task of multiplying the probabilities by the payouts, and then multiplying that answer by the number of periods left in the game. (e.g. in round 1 of 15, fundamental value = $24 \times 15 = 360$)

Probabilities and payoffs

Probability	Payouts	Expected value
0.25	0	0
0.25	8	2
0.25	28	7
0.25	60	15
		24

Source: SG Global Strategy

The chart below shows the path of fundamental value (sloping down from left to right as a dividend is paid out each period), plus the results from two games where participants trade this asset.

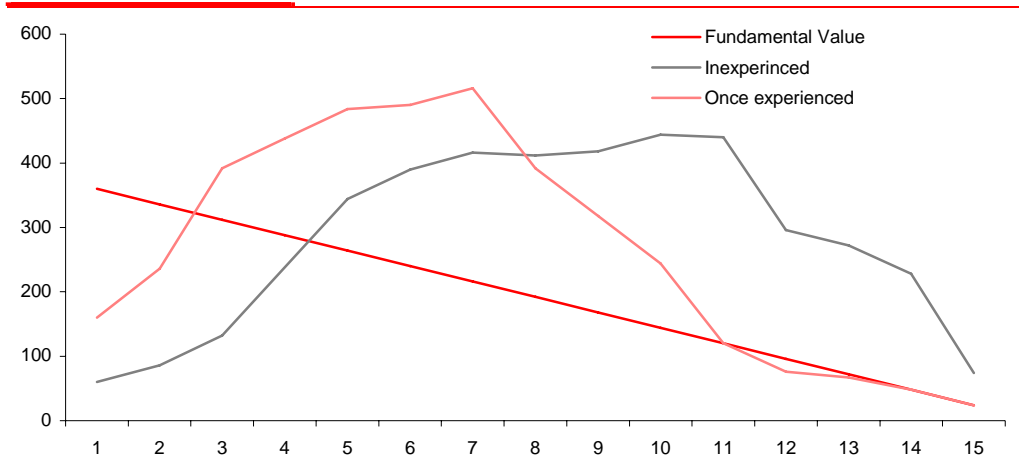
In their first encounter with this asset, participants start off by enormously undervaluing the asset, trading at an 80% discount to fundamental value in the first few periods. However, as the game progresses, a huge bubble is created. Prices that are 3 or 4 times fundamental value are not uncommon! Eventually the bubble deflates towards the end of the game. The time series generated by this run is labelled inexperienced in the chart below.

The same participants are then invited to return to the same market and try trading the asset a second time. Far from learning from their experience in the first round, participants generally go on to create yet another bubble! This time the bubble occurred earlier in the game, and wasn't quite so pronounced as in the first game (with peak prices being around twice

¹ Thar She Blows: Can Bubbles be Rekindled with Experienced Subjects? Hussam, Porter and Smith, American Economic Review June 2008

fundamental value!). When asked why the participants created a second bubble, the most common response was they thought they could get out before the top this time!

Typical results from an asset price experimental market



Source: Smith et al, SG Global Strategy

The only tried and tested method of removing bubbles from such markets is to use players who are experienced twice over. The third time they play, you end up with a much tighter correlation between the market price and fundamental value. As Smith says “Once a group experiences trading a bubble and a crash over two experiments and then returns for a third experiment, trading departs little from fundamental value”².

Real World Evidence – Why grey hair helps!

The real world of finance (if that isn’t an oxymoron) offers us some evidence that experience can help avoid bubbles as well. In a wonderful paper, Greenwood and Nagel³ show that it was the younger fund managers who decided to invest in TMT. Their elder, more experienced brethren preferred to sit out the bubble.

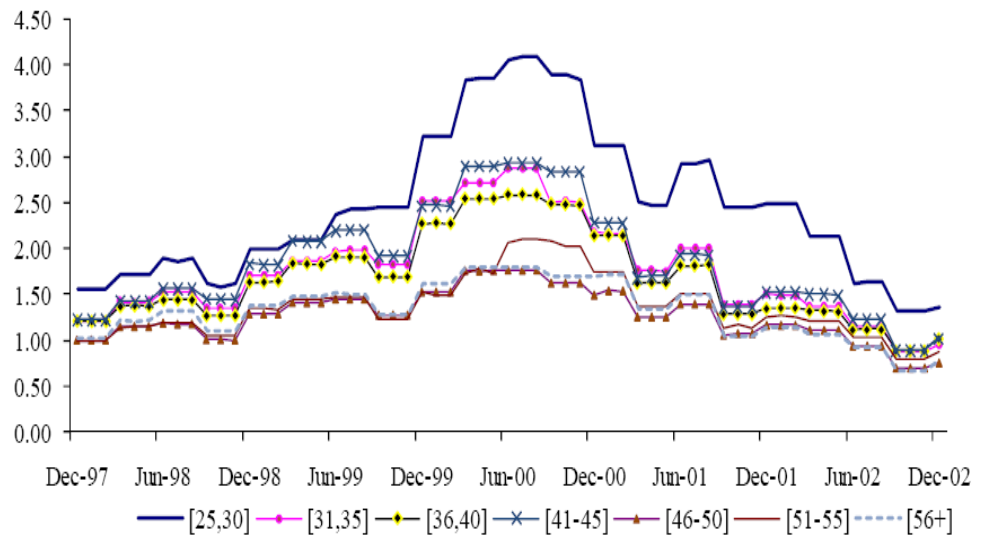
The chart below shows average price to sales (in log terms) of the portfolios managed by variously aged fund managers as a proxy for their technology holdings. It is clear that the young managers had massively higher average price to sales ratios (54x) at the height of the bubble than did the older managers (4x).

You might argue that young managers are disproportionately hired to run small-cap growth funds, so to some extent this is to be expected. However, even if you adjust the price to sales ratios for the benchmark you still find the same result. The simple truth is that the experienced fund managers did a better job of recognizing the bubble and avoiding it than the younger fund managers. So you should keep some grey hairs around the place!

² Caginalp et al (2000) Overreaction, momentum, liquidity and price bubbles in laboratory and field asset markets, Journal of Psychology and Financial Markets

³ Greenwood and Nagel (2008) Inexperienced Investors and Bubbles, available from <http://faculty-gsb.stanford.edu/nagel/pdfs/Mfage.pdf>

Value-weighted average log price/sales ratio, by age group of fund manager



Source: Greenwood and Nagel (2008)

The current context

I would argue that 2000 was the classic equity market bubble – much like the inexperienced players in Smith’s games. It was effectively a bubble of belief, those who participated really did believe in what they were doing (albeit completely wrongly). The rally in 2003 (at least at its start) was a more like the cynical bubble echo of the twice experienced players. So does this suggest that the Fed can’t inflate another bubble? It might seem like the experimental evidence would argue that twice experienced player would be more cautious. However, there are circumstances under which even experienced players can be ‘suckered’ into yet another bubble!

Back to the lab

In the aforementioned paper Smith et al explore if it is possible to cause a bubble in twice experienced subjects. The answer is a resounding “yes”. It takes some serious effort, but it can be done.

The experiment set-up is very similar, with a probability and payoff structure that is closely aligned (although not identical) to the one experienced in the earlier games. This time there are five possible states of the world, all of them equally likely, and with the payoffs shown below. Once again the calculation of fundamental value is easy.

Probability and payoffs in the experimental market

Probability	Payout	Expected value
0.2	0	0
0.2	1	0.2
0.2	8	1.6
0.2	28	5.6
0.2	98	19.6
		27

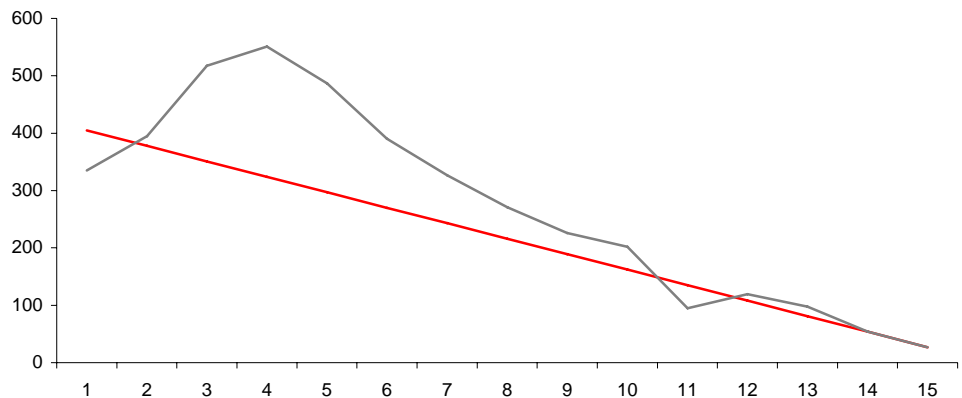
Source: SG Global Strategy

However, in order to rekindle a bubble, Smith et al halved the amount of stock distributed to participants and doubled their initial cash levels. Effectively, they create what might be termed a massive liquidity surge.

The results of these changes upon the behaviour of participants are shown in the chart below. Once again a bubble is created. The magnitude isn't quite as great as those seen in the previous experiment, but nonetheless it is indisputably present, with market prices peaking at nearly twice the level of fundamental value.

As Smith et al conclude "When important elements in the underlying market environment change for experienced subjects, a bubble can reignite.... If the environment is one of high liquidity...a bubble can be sustained...despite experience."

Back to bubbles: twice experienced investors in a new environment



Source: Smith et al, SG Global Strategy

Now I have no idea if the current policies of the Fed and other central banks constitute a large enough liquidity shock to reignite a bubble. But it certainly seems as if many market participants are now focusing upon the policy response as a key source of optimism. If this is indeed the case, then perhaps Smith's latest work could sound a warning bell about the risk of yet another bubble (and, of course, yet another crash thereafter).

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