

**The Slowing Housing Market**  
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**By John Mauldin**

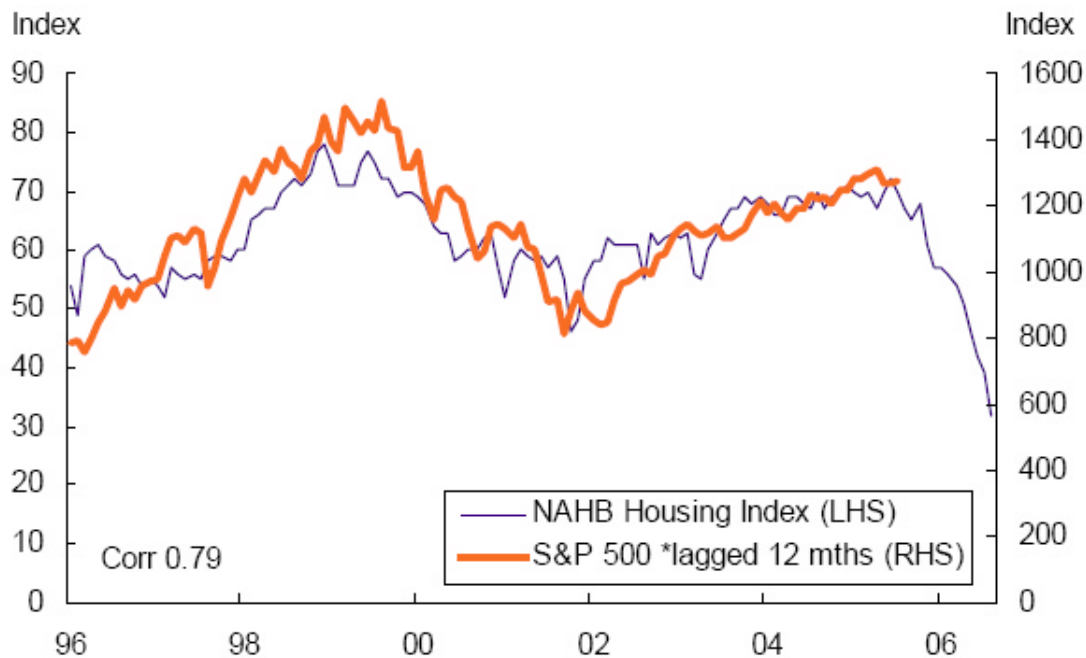
This week we revisit some ideas on how change occurs. We are in a transition in the world economy, and it sometimes helps to think about how these transitions take place. What is the mechanism for change? Can we see it coming soon enough to avoid the problems and take advantage of them?

But first, a few comments on the housing market. As we all know, this week the news on both new and existing home sales was ugly. And we should remember that the data is from last month, and anecdotal evidence suggests this month will be worse. This is going to put a damper on the economy at large. I have been writing for some time that the US economy is going to slow down or go into recession. How much of an effect will that have on the markets? We will look at two items. The first is a chart from David Rosenberg, North American economist for Merrill Lynch. Quoting:

“The chart below is rather intriguing – the NAHB homebuilders index leads the S&P 500 by 12 months and with a near-80% correlation – a correlation that over time has actually strengthened, owing to the growing influence that the real estate market has exerted on the overall economic and financial landscape over the past five years. In fact, we can trace almost two-percentage points of the 3 1/2% average annual rate in real GDP over that time frame to the boom in housing construction and home prices – the direct impact on homebuilding, the spin-offs to other sectors like real estate services, architecture, engineering, legal, etc and the multiplier impact from the ‘wealth effect’ on consumer spending, especially on home improvements and household furnishings.”

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Chart 1: NAHB housing market index and the S&P 500 ... 79% correlation



Now, if you go to the period from 1985 to 1986, there is no correlation between the housing market and the stock market. So, bulls can ignore the above chart if they like, saying that the association is a recent thing. But given other indicators of a slowing economy (the yield curve which is becoming more inverted each week, leading economic indicators, etc., all of which I have written about at length in previous issues), I think it is something we should pay attention to. As Rosenberg notes, the correlation is becoming more pronounced with time, as US economic growth depends more and more on housing.

In other published research, Rosenberg has noted that in the past, seven of the last ten housing downturns foreshadowed an outright economic recession. The lead time was long – about 20 months. The three housing downturns that did not precede a recession presaged a discernible slowing in overall economic growth within a year of the peak in starts, on average.

Then there was an interesting, if somewhat disturbing, bit of analysis in Barron's this last week on housing. Lon Witter argues that there has not been a housing bubble but a lending bubble. Look at this data:

\*32.6% of new mortgages and home-equity loans in 2005 were interest only, up from 0.6% in 2000;

\*43% of first-time home buyers in 2005 put no money down;

\*15.2% of 2005 buyers owe at least 10% more than their home is worth (negative equity);

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- \*10% of all home owners with mortgages have no equity in their homes (zero equity);
- \*\$2.7 trillion dollars in loans will adjust to higher rates in 2006 and 2007.

Think that may portend trouble? This morning, CNBC reported that H & R Block, which has a large sub-prime mortgage division, said it would take a charge of \$61.3 million, or 19 cents a share, to reflect an increase in the number of its sub-prime mortgage customers falling behind on their loan payments. You can bet that H&R Block's woes will show up at other subprime lenders, as borrowers with less-than-stellar credit histories struggle to keep up their payments in a higher interest-rate environment. And this is just the beginning of woes, as ARM rates are set to rise precipitously on well over a trillion dollars in the next year.

For those of you who would like more news on the housing market, good friend Barry Ritholtz, writing in his blog at The Big Picture, has compiled all his recent research on the housing market into one column. It makes for sobering reading. You can get to it at [http://bigpicture.typepad.com/comments/real\\_estate\\_/index.html](http://bigpicture.typepad.com/comments/real_estate_/index.html).

And next Monday night's Outside the Box will feature some excellent research by Professor Nouriel Roubini on the housing markets and the economy. By Tuesday afternoon you can have a surfeit of news on the developing housing slump.

Everywhere one turns, you see stories about how consumer spending is slowing down in most sectors (notable exception is luxury goods). The blame is laid on energy costs, higher interest rates, and a slowdown in housing. Let's look at how these small changes in personal behavior work their way into the economy at large.

### How Change Happens

“To trace something unknown back to something known is alleviating, soothing, gratifying, and gives moreover a feeling of power. Danger, disquiet, anxiety attend the unknown – the first instinct is to eliminate these distressing states. First principle: any explanation is better than none... The cause-creating drive is thus conditioned and excited by the feeling of fear ....” Friedrich Nietzsche

“Any explanation is better than none.” And the simpler, it seems in the investment game, the better. “The markets went up because oil went down,” we are told. Then the next day the opposite relationship occurs. Then there is another reason for the movement of the markets. But we all intuitively know that things are far more complicated than that. As Nietzsche noted, dealing with the unknown can be disturbing, so we look for the simple explanation.

“Ah,” we tell ourselves. “I know why that happened.” With an explanation firmly in hand, we now feel we know something. And the behavioral psychologists note that this state actually releases chemicals in our brain which make us feel good. We become literally addicted to the simple explanation. The fact that what we “know” (the explanation for the unknowable) is irrelevant or even wrong is not important to the chemical release. And thus we look for reasons.

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And that is why some people get so angry when you challenge their beliefs. You are literally taking away the source of their good feeling, like drugs from a junkie, or a boyfriend from a teenage girl.

Thus we reason the NASDAQ bubble happened because of Greenspan. Or a collective mania. Or any number of things. Just like the proverbial butterfly flapping its wings in the Amazon that triggers a storm in Europe, maybe an investor in St. Louis triggered the NASDAQ crash.

Crazy? Maybe not. Today we will look at what complexity theory tells us about the reasons for earthquakes, disasters, and the movement of markets. Then we look at how New Zealand, Fed policy, gold, oil, and that investor in St. Louis are all tied together in a critical state. Of course, how critical and what state are the issues.

### Ubiquity, Complexity Theory, and Sandpiles

We are going to start our explorations with excerpts from a very important book by Mark Buchanan called *Ubiquity, Why Catastrophes Happen*. I HIGHLY recommend it to those of you who, like me, are trying to understand the complexity of the markets. Not directly about investing, although he touches on it, it is about chaos theory, complexity theory, and critical states. It is written in a manner any layman can understand. There are no equations, just easy to grasp well-written stories and analogies. [www.amazon.com/ubiquity](http://www.amazon.com/ubiquity).

We have all had the fun as kids of going to the beach and playing in the sand. Remember taking your plastic buckets and making sand piles? Slowly pouring the sand into ever bigger piles, until one side of the pile started an avalanche?

Imagine, Buchanan says, dropping one grain of sand after another onto a table. A pile soon develops. Eventually, just one grain starts an avalanche. Most of the time it is a small one, but sometimes it builds up and it seems like one whole side of the pile slides down to the bottom.

Well, in 1987, three physicists named Per Bak, Chao Tang, and Kurt Weisenfeld began to play the sandpile game in their lab at Brookhaven National Laboratory in New York. Now, actually piling up one grain of sand at a time is a slow process, so they wrote a computer program to do it. Not as much fun, but a whole lot faster. Not that they really cared about sandpiles. They were more interested in what are called nonequilibrium systems.

They learned some interesting things. What is the typical size of an avalanche? After a huge number of tests with millions of grains of sand, they found out that there is no typical number. "Some involved a single grain; others, ten, a hundred or a thousand. Still others were pile-wide cataclysms involving millions that brought nearly the whole mountain down. At any time, literally anything, it seemed, might be just about to occur."

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It was indeed completely chaotic in its unpredictability. Now, let's read this next paragraph slowly. It is important, as it creates a mental image that may help us understand the organization of the financial markets and the world economy. (Emphasis mine.)

“To find out why [such unpredictability] should show up in their sandpile game, Bak and colleagues next played a trick with their computer. Imagine peering down on the pile from above, and coloring it in according to its steepness. Where it is relatively flat and stable, color it green; where steep and, in avalanche terms, ‘ready to go,’ color it red. What do you see? They found that at the outset the pile looked mostly green, but that, as the pile grew, the green became infiltrated with ever more red. With more grains, the scattering of red danger spots grew until a dense skeleton of instability ran through the pile. **Here then was a clue to its peculiar behavior: a grain falling on a red spot can, by domino-like action, cause sliding at other nearby red spots.** If the red network was sparse, and all trouble spots were well isolated one from the other, then a single grain could have only limited repercussions. But when the red spots come to riddle the pile, the consequences of the next grain become fiendishly unpredictable. It might trigger only a few tumblings, or it might instead set off a cataclysmic chain reaction involving millions. The sandpile seemed to have configured itself into a hypersensitive and peculiarly unstable condition in which the next falling grain could trigger a response of any size whatsoever.”

Something only a math nerd could love? Scientists refer to this as a critical state. The term critical state can mean the point at which water would go to ice or steam, or the moment that critical mass induces a nuclear reaction, etc. It is the point at which something triggers a change in the basic nature or character of the object or group. Thus, (and very casually for all you physicists) we refer to something being in a critical state (or the term critical mass) when there is the opportunity for significant change.

“But to physicists, [the critical state] has always been seen as a kind of theoretical freak and sideshow, a devilishly unstable and unusual condition that arises only under the most exceptional circumstances [in highly controlled experiments]... In the sandpile game, however, a critical state seemed to arise naturally through the mindless sprinkling of grains.”

Thus, they asked themselves, could this phenomenon show up elsewhere? In the earth's crust triggering earthquakes, wholesale changes in an ecosystem, or a stock market crash? “Could the special organization of the critical state explain why the world at large seems so susceptible to unpredictable upheavals?” Could it help us understand not just earthquakes, but why cartoons in a third-rate paper in Denmark could cause worldwide riots?

He concludes in his opening chapter: “There are many subtleties and twists in the story ... but the basic message, roughly speaking, is simple: The peculiar and exceptionally unstable organization of the critical state does indeed seem to ubiquitous in

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our world. Researchers in the past few years have found its mathematical fingerprints in the workings of all the upheavals I've mentioned so far [earthquakes, eco-disasters, market crashes], as well as in the spreading of epidemics, the flaring of traffic jams, the patterns by which instructions trickle down from managers to workers in the office, and in many other things. At the heart of our story, then, lies the discovery that networks of things of all kinds – atoms, molecules, species, people, and even ideas – have a marked tendency to organize themselves along similar lines. On the basis of this insight, scientists are finally beginning to fathom what lies behind tumultuous events of all sorts, and to see patterns at work where they have never seen them before.”

Now, let's think about this for a moment. Going back to the sandpile game, you find that as you double the number of grains of sand involved in an avalanche, the probability of an avalanche is 2.14 times as unlikely. We find something similar in earthquakes. In terms of energy, the data indicate that earthquakes simply become four times less likely each time you double the energy they release. Mathematicians refer to this as a “power law” or a special mathematical pattern that stands out in contrast to the overall complexity of the earthquake process.

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So what happens in our game? “...after the pile evolves into a critical state, many grains rest just on the verge of tumbling, and these grains link up into ‘fingers of instability’ of all possible lengths. While many are short, others slice through the pile from one end to the other. So the chain reaction triggered by a single grain might lead to an avalanche of any size whatsoever, depending on whether that grain fell on a short, intermediate or long finger of instability.”

Now, we come to a critical point in our discussion of the critical state. Again, read this with the markets in mind (again, emphasis mine):

“In this simplified setting of the sandpile, the power law also points to something else: the surprising conclusion that even the greatest of events have no special or exceptional causes. **After all, every avalanche large or small starts out the same way, when a single grain falls and makes the pile just slightly too steep at one point.** What makes one avalanche much larger than another has nothing to do with its original cause, and nothing to do with some special situation in the pile just before it starts. **Rather, it has to do with the perpetually unstable organization of the critical state, which makes it always possible for the next grain to trigger an avalanche of any size.**”

Now, let's couple this idea with a few other concepts. First, Nobel Laureate Hyman Minsky points out that stability leads to instability. The more comfortable we get with a given condition or trend, the longer it will persist; and then when the trend fails, the more dramatic is the correction. The problem with long-term macroeconomic stability is that it tends to produce unstable financial arrangements. If we believe that tomorrow and next year will be the same as last week and last year, we are more willing to add debt or postpone savings for current consumption. Thus, says Minsky, the longer the period of

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stability, the higher the potential risk for even greater instability when market participants must change their behavior.

Relating this to our sandpile, the longer that a critical state builds up in an economy, or in other words, the more “fingers of instability” that are allowed to develop a connection to other fingers of instability, the greater the potential for a serious “avalanche.”

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Or, maybe a series of smaller shocks lessens the long reach of the fingers of instability, paradoxically giving rise to even more apparent stability. As the late Hunt Taylor wrote:

“Let us start with what we know. First, these markets look nothing like anything I’ve ever encountered before. Their stunning complexity, the staggering number of tradable instruments and their interconnectedness, the light-speed at which information moves, the degree to which the movement of one instrument triggers nonlinear reactions along chains of related derivatives, and the requisite level of mathematics necessary to price them speak to the reality that we are now sailing in uncharted waters.

“Next, we know things have been getting less, not more, turbulent, and that the tendency towards market serenity (complacency?) has been increasing. This is counterintuitive. It’s not as though the 21st century has been lacking in liquidity shocking events. Since the bursting of the tech bubble, we’ve had a disputed Presidential election, 9/11, the collapse of Enron and Worldcom, the invasion of Afghanistan, the war in Iraq, US\$70 oil, the largest debt downgrade in history and the failure of Refco, to name just a few. There seems to be an inverse correlation between market complexity and market stability, for now anyway....

“I’ve had 30-plus years of learning experiences in markets, all of which tell me that technology and telecommunications will not do away with human greed and ignorance. I think we will drive the car faster and faster until something bad happens. And I think it will come, like a comet, from that part of the night sky where we least expect it. This is something old.

“But I have learned to trust my eyes and ears and overrule my heart, when I have to. **Everywhere I look, technology is making things faster, more efficient, safer. I cannot find the law of physics or economics that says it cannot happen in financial markets as well.** I think, because risk will be lower, return will be as well. And savvy investors may have to seek additional risk, and manage it well, in order to earn an excess return. This is something new.

“I think shocks will come, but they will be shallower, shorter. They will be harder to predict, because we are not really managing risk anymore. **We are managing uncertainty** – too many new variables, plus leverage on a scale we have never



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encountered (something borrowed). And, when the inevitable occurs, the buying opportunities that result will be won by the technologically enabled swift.”

As I read through this again, I think I have an insight. It is one of the reasons we get “fat tails.” In theory, returns on investment should look like a smooth bell curve, with the ends tapering off into nothing. According to the theoretical distribution, events that deviate from the mean by five or more standard deviations (‘5-sigma event’) are extremely rare, with 10 or more sigma being practically impossible, at least in theory. However, under many applications, such events are more common than expected; 15 or more sigma events have happened in the world of investments. Examples of such unlikely events would be Long Term Capital or any of a dozen bubbles in history. Because the real-world commonality of high-sigma events is much greater than in theory, the distribution is “fatter” at the extremes (“tails”) than a truly normal one.

Thus, the build-up of critical states, those fingers of instability, is perpetuated even as, and precisely because, we hedge risks. We try to “stabilize” the risks we see, shoring them up with derivatives, emergency plans, insurance, and all manner of risk-control procedures. And by doing so, the economic system can absorb more body blows which would have been severe only a few decades ago. We distribute the risks and the effects of the risk throughout the system.

Yet as we reduce the known risks we see, we lay the seeds for the next 10 sigma event. It is the improbable risks that we do not yet see which will create the next real crisis. It is not that the fingers of instability have been removed from the equation. It is that they are in different places and are not yet seen.

A second related concept is from game theory. The **Nash equilibrium** (named after John Nash) is a kind of optimal strategy for games involving two or more players, whereby the players reach an outcome to mutual advantage. If there is a set of strategies for a game with the property that no player can benefit by changing his strategy while (if) the other players keep their strategies unchanged, then that set of strategies and the corresponding payoffs constitute a Nash equilibrium.

### A Stable Disequilibrium

So we end up in a critical state of what Paul McCulley calls a “stable disequilibrium.” We have “players” of this game from all over the world tied inextricably together in a vast dance through investment, debt, derivatives, trade, globalization, international business, and finance. Each player works hard to maximize his own personal outcome and to reduce his exposure to “fingers of instability.”

But the longer we go, asserts Minsky, the more likely and violent an “avalanche” is. The more the fingers of instability can build. The more that state of stable disequilibrium can go critical on us.



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Go back to 1997. Thailand began to experience trouble. The debt explosion in Asia began to unravel. Russia was defaulting on its bonds. (Astounding. Was it less than ten years ago? Now Russian is awash in capital. Who could anticipate such a dramatic turn of events?) Things on the periphery, small fingers of instability, began to impinge on fault lines in the major world economies. Something that had not been seen before happened. The historically sound and logical relationship between 29- and 30-year bonds broke down. Then country after country suddenly and inexplicably saw that relationship in their bonds begin to correlate, an unheard-of event. A diversified pool of debt was suddenly no longer diversified.

The fingers of instability reached into Long Term Capital Management and nearly brought the financial world to its knees.

And now we manage for that risk. If (when) General Motors defaults on its bonds, the risk is now spread through thousands of funds and investors. Yes, they will lose, but that is the known risk they are taking. They take the risk for the equivalent of an insurance premium.

And yet, back to our opening theme, even as investors can hedge the potential collapse of the sub-prime mortgage markets and the slowing of the housing markets, it is more difficult to hedge the risks of a serious slowdown in consumer spending that would result. You just try and see what the results will be and avoid the oncoming train.

### **Birthdays, Salsa Lessons, Quattrone, and Stratfor**

This week my oldest son has his 25<sup>th</sup> birthday, and most of the kids will be in town for a Saturday night celebration. The twins, now 21, are driving down from Tulsa. Later tonight, I have a “date” with them. We are going to go to a local Mexican food hangout (Gloria’s, with some of the best food in Texas). On Friday nights, they give salsa dancing lessons, and the twins have made me promise to take them. I see margaritas in my future, and hopefully your analyst will not embarrass himself too much. The twins are natural, and quite strikingly beautiful, so my hope is that no one will be looking at me in any event. But it promises to be a lot of fun.

I do not know Frank Quattrone, and never expect to meet him, but I was glad to see that they essentially dropped what I think was one of the more egregious examples of unwarranted prosecution after two trials failed to produce anything other than large legal bills for the defense. The new prosecutors did the right thing by walking away. Maybe this will signal a return to a time when prosecutors actually went after the real bad guys rather than trying to get into the limelight by going after big fish on small flimsy charges. From these cheap seats, it looks like Frank’s real crime was being successful. Good luck to him on whatever he decides to pursue next.

And finally, if you have not yet subscribed to Stratfor, then you should. I have gotten them to extend their half-off sale for the next few days. They are the single best consistent source for geopolitical news and analysis I know of. Given the risky nature of

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the world, the insights they provide can be more than worth the price of admission. If you are reading about it in the newspapers or on TV, it is too late to act. George Freidman and his large international team at Stratfor are ahead of the news. You can learn more at <https://www.stratfor.com/offers/060810-mideastcrisis/index.php?camp=060810-mideastcrisis&ref=060810-mideastcrisis-a>.

The Rangers are getting ready to play Oakland. If we don't sweep, I think the season is over. Realists would point out that it already is. But maybe we can get a fat tail, 10 sigma event and finish strong. Stranger things have happened in baseball. Have a great week.

Your hoping he doesn't throw his hip out analyst,

John Mauldin