September 17, 2020

Of Forest Fires and Markets

Dear Client,

The devastating forest fires in California, Oregon and Washington have been top of the news recently. For good reason. Over 3 million acres have burned and 4,000 homes have been lost. Destruction of that magnitude is hard to grasp.

As with any calamity it is natural to question why this happened. There are multiple theories. Today we focus on the camp that fingers poor forest management as creating the conditions (critical state) that made the forests vulnerable to a catastrophic event.

One of us once talked with a professional forester about fire risk. He said that large fires were far more common in the Northwest than in the East. His reasoning was that the forests are much larger in the Northwest with fewer road breaks and natural barriers to stop the spread. Conditions are also drier. Conditions put the forests in the Northwest in a critical state more often than in the East, raising the probability of large fires.

Forests are filled with trees and trees can burn, so any forest is susceptible to fires. As Mark Buchanan points out in his excellent book *Ubiquity*, “When a fire starts, it doesn’t yet know how big it will become. Fires spread as they do because any forest has the organization of the critical state, and how far any particular fire goes is largely a matter of chance.” Buchanan continued, “First, forests are made of trees, and, left to themselves, these trees will with time increase in number. Second, once in a while, some tree somewhere will catch fire. Third, this fire will spread to other trees nearby.”

Fires are a natural element in the evolution of a forest. Fires create opportunity for old trees to be replaced by younger trees. Fires clear the deadwood, twigs, brush and bark that has accumulated over years and make room for new growth. As Buchanan puts it “The trouble is that fires are an indispensable component of the natural dynamics that keep forests in that state, so by suppressing them, the Forest Service has instead driven the forests into an even more unstable state, a supercritical state, with a high density of burnable material everywhere.”

So, the possibility of a large fire event increases when smaller fires are suppressed. It's like adding grains of sand to a sandpile. Eventually the sandpile collapses with the addition of a single grain of sand. As with the sandpile, the forest had to reach this supercritical state before a big event could happen. That did not mean it was guaranteed to happen, but with the right circumstances it was possible. You don't get huge forest fires in swamps in Louisiana or Florida. The swamps never get to the supercritical state.

The current situation in the Northwest is the result of the forest conditions getting to a supercritical state. The fact that the fires are so large is a matter of chance. The lesson here is that once a forest reaches the supercritical state an enormous fire is possible. This is not to say that this ensures a large fire, just that if a fire starts it has the potential to be large. Unfortunately for the citizens out West this time the potential became a reality.

Buchanan outlines how researchers from Cornell University studied 4,284 fires in the U.S. from 1986 to 1995 and determined that the size of fires correspond to a remarkably strong power law. For every doubling of the size of the area covered by a fire it becomes about 2.48 times as rare. So, for every 200-acre fire there are 2.48 100-acre fires.

You are probably catching on to how we will relate the current market environment to the critical state that preceded the recent forest fires. Before making the obvious connection, we will point out that market declines, like fires and earthquakes, are subject to power laws. Instances of volatility tend to cluster, and declines don't know how far they will spread. The cascading effects of price declines can lead to more declines and have the potential for liquidity to withdraw from the market. The current market structure has heightened this dynamic and amplified the rips and dips. At Grey Owl we have taken to saying, "down 20% is the new down 10%."

Yes, the current conditions of the market environment have put the market in a supercritical state that increases the possibility of another sharp drawdown. Years of excessive monetary policy and a massive build-up of debt have us in a fragile position. The potential for a market dislocation rises further if you couple that with a recent increase in volatility and momentum trends, and numerous signs of excessive speculation. By no means do these conditions ensure another incident like we had earlier this year, but they do have us in a position where that is possible.

The recent drawdown in the NASDAQ was among the fastest 10% drawdowns ever. Over 10% in three sessions. Markets have rebounded some in the past couple sessions, so the recent drop may just be a small brush fire that gets contained quickly. Even if that is the case the reaction to the decline has not yet been sufficient enough to erase the critical state conditions that were present before the decline.

The tricky situation for investors is that markets can ignore the deleterious long-term monetary policy and debt conditions for a long time. In fact, they may even embrace more extreme measures. The recent volatility and technical trends have raised investor concern. That said, investor risk appetite can change quickly. If we see new-found signs that the market is embracing risk-taking, we will be much more constructive on increasing risk exposure despite our long-term concerns about the critical state of the market.

Best Regards,

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