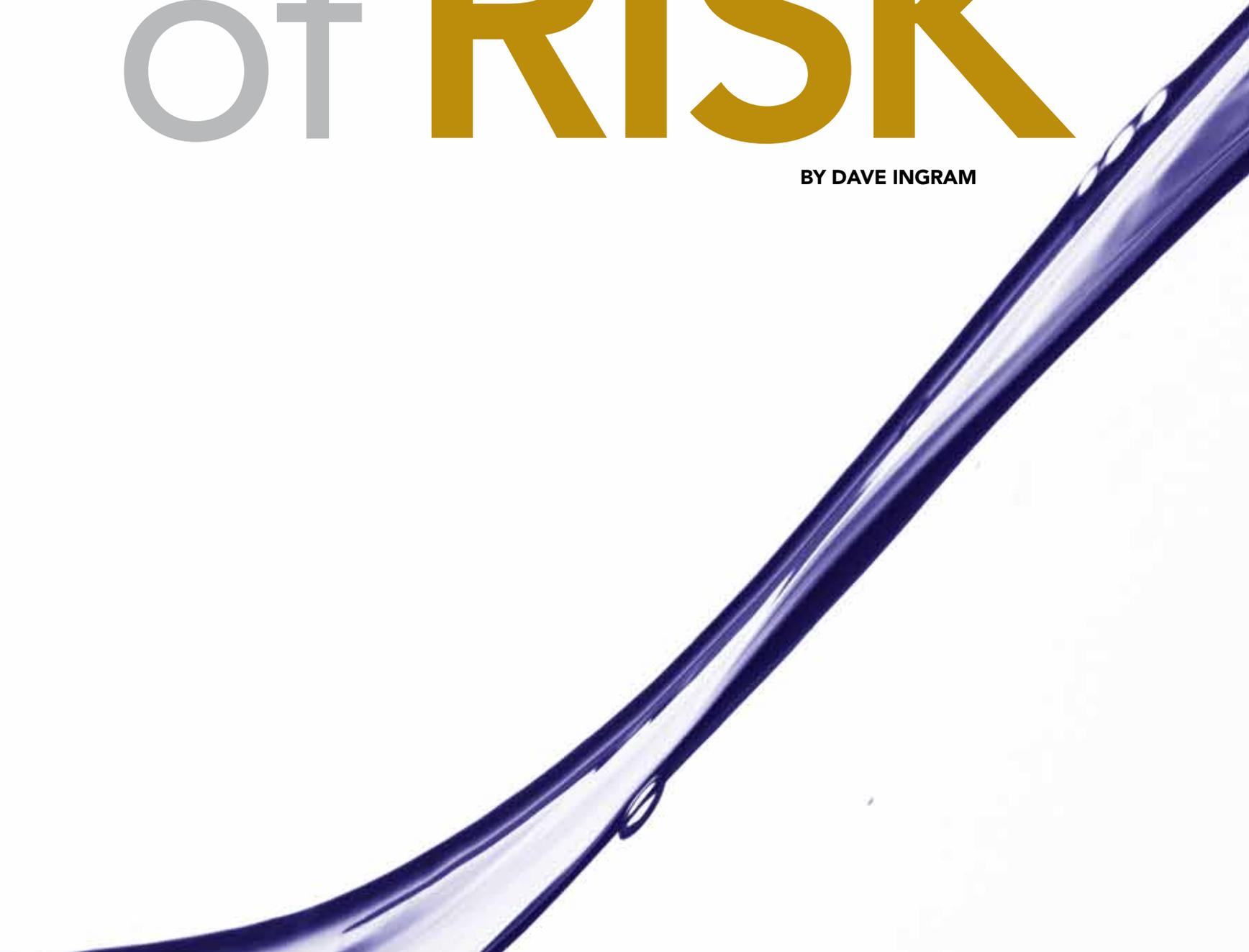


the many

STAGES

of **RISK**

BY DAVE INGRAM





THE AUTHOR OF THIS ARTICLE likens the stages of risk to a sine wave. Read on to find out the definition of each stage.

Modelers usually work with one model of the world and from that model we try to infer the amount of risk. This practice has been looking more and more suspect with the frequency of the events that are either totally outside of the models or at best at a very, very low frequency.

But if there is a major difference between the world and the model, what should you do? Some react to that by making totally outrageous comments about how unlikely the event that just happened was. “We were seeing things that were 25-standard deviation moves, several days in a row,” David Viniar, Goldman’s chief financial officer, said to the *Financial Times*.

Some modelers have been using a two-stage model, called a regime-switching model, to

better capture the increased volatility that seems to occur during some periods of time. That has increased the ability of the models to stay within 10 standard deviations of reality. It would be even better if there was a way of thinking that could also keep management that close to the real risk environment.

Discussions of the financial crisis have also favored the two-stage approach to the world. In those discussions the two stages are Normal and Dreadful. All of the activity of adjusting regulations is focused upon the idea of making the Dreadful stage much less likely.

But there is an operational problem with trying to fix things with that two-stage view. It paints the risk as a cliff situation. Once you pass the edge, there is nothing that you can do. So keeping away from the edge is the full

extent of preparation. After some time, the edge seems less and less dangerous to approach and firms find that there are more and more profits operating closer and closer to the edge.

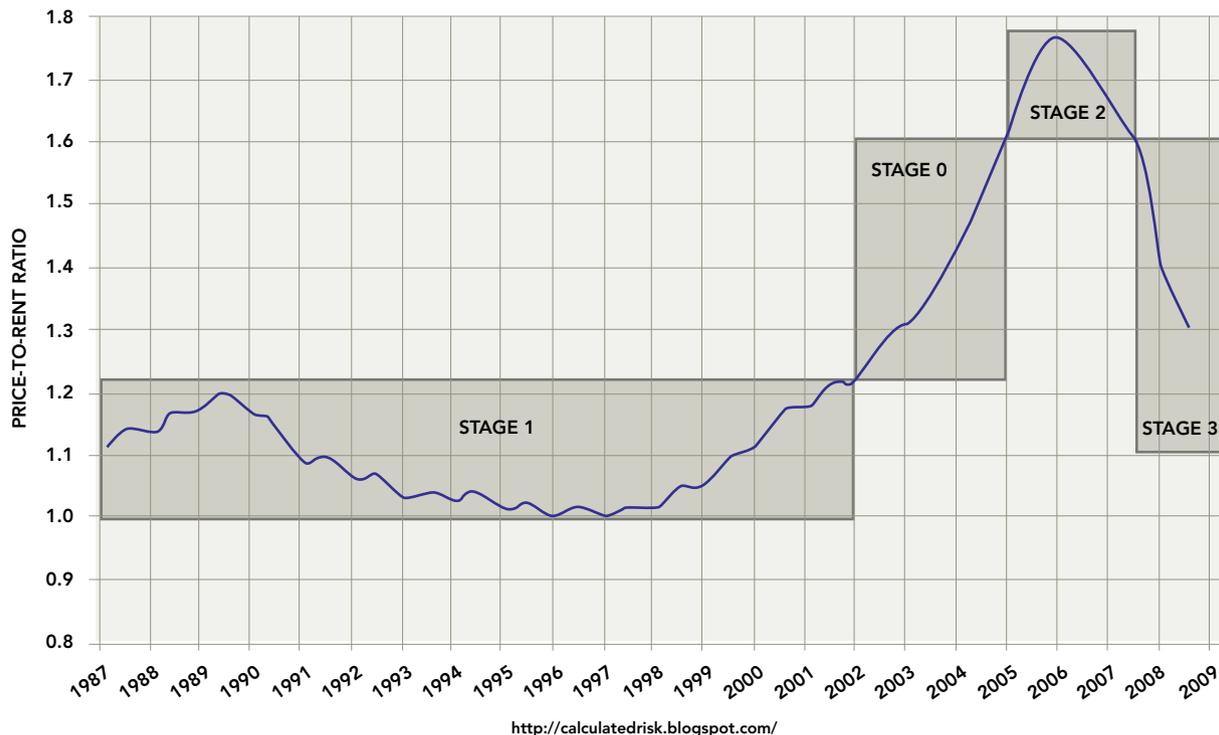
Firms that use this two-stage view of their risks tend not to do anything active in risk management, other than the “be cautious.”

But in fact, many people refer to the financial system as going through cycles. Cycles can be broadly represented by sine waves. And a sine wave has four stages: a bottom, top, upward slope and downslope. Now with financial cycles, the duration and amplitude of each of these stages is unknown, but there are four stages.

In macro terms, the environment for any risk can be seen to have four main stages:

Stages of Risk

PRICE-TO-RENT RATIO, Q1 1997 = 1.0
NATIONAL CASE-SHILLER HOME PRICE INDEX AND OWNER EQUIVALENT RENT



STAGE 0 – Low Risk Environment. It does not seem to matter how much risk is taken on during this stage. Every decision to take an additional risk pays off handsomely. Over and over again the naked, unhedged position beats out the carefully hedged position; the uninsured risk beats the insured risk. During this environment, people slowly drift away from being concerned about risk and risk management because they are looking at others who are not concerned with risk who are making a lot of money. Capacity for risk taking does not seem to be an issue and some will take much more risk than could possibly be prudent in any other environment.

STAGE 1 – Normal Risk Environment. This is when the long-term averages seem to hold up well. Investors and insurers experience mostly gains, but with enough losses to

maintain focus on appropriate risk management. Volatility is in the normal range, so hedging and reinsurance programs have the expected impact. Risk management seems to be designed for this environment—because it is. Capacity for risk taking is carefully matched up to risks, but taking risks up to capacity is usually seen to be the best course in this environment. Capacity is usually defined in terms of something like a one-in-200-year loss, but no one really expects to experience a loss of that size. That just wouldn't be normal.

STAGE 2 – High Risk Environment. Suddenly, things get really RISKY. Almost any course of action presents potentially fatal threats. Some unexpected event usually triggers a shift from a Stage 1 to a Stage 2 Environment. Natural or man-made catastro-

phes or sudden major shifts in markets might be triggers. Capacity that during Stage 1 was seen as a perpetual resource now suddenly seems like it may or may not be sufficient. Suddenly people are extremely concerned with how risks are (and were) managed.

STAGE 3 – High Loss Environment. Many of those risks have turned into LOSSES. Survival of the institution (and potentially the entire financial system) is uncertain. The market senses that many previously respected firms will not make it through this period and that suspicion drastically slows business activity. Risk management focus needs to be on helping to

opportunistically find the course of action that will save the firm. For the firms that fail, risk management efforts shift to workout.

The graph above gives a good picture of how the stages work. Stage 1 was in effect for 15 years. There were moderate swings up and down during Stage 1, but nothing severe. Then, the market came to think that there was almost no risk and entered into Stage 0 during 2002. This ramping up of risk taking led to a Stage 2 Environment during 2005. Then in 2007, that transitioned into Stage 3 when everything came crashing down.

And where was risk management? Those who were doing their risk management “by the book” were busy analyzing their risks with their single-stage risk models. That is because the book version of risk

management is written for the Stage 1 Environment and uses Stage 1 thinking. Risks are expected to fit into neat formulas that represent the historical experience for each risk. Regulatory systems such as Basel 2 and Solvency 2 are firmly rooted in Stage 1 thinking and experience. Prior episodes of Stage 2 and Stage 3 environments may be incorporated into these views, not as something unexpected and uncontrollable, but as things that in retrospect are completely explainable.

So for future risk management to be effective there are two choices. The first choice is to hope that the regulators and central banks and the new systemic risk regulator do their jobs better and that henceforth we always stay in a Stage 1 Environment. And that is the choice that many seem to be working towards. The second choice is for risk management to recognize that we will have all four stages in the future and make plans for how to manage risk in all four environments.

The first choice, which seems to be the direction that the governments are taking, is just another version of the “it’s different this time” thinking that is common during Stage 0 Environments. Or maybe it represents a Stage 1 type of thinking that because, in retrospect, we can explain the past difficulties—we have tamed risk.

The other choice is going to be more costly and will require much more far-sighted thinking. It requires recognizing that the possibility of future shifts from one stage to another for new reasons exists at all times. It means thinking through possible approaches to risk and risk management during all stages instead of working with a Stage 1 ERM system that is abandoned or ignored during Stage 0 and inadequate during Stages 2 and 3.

It will probably mean ignoring the calls for a fixed set of rules about risk (that can be immediately arbitrated) and creating something that flexes with the environment.

WITH THIS NEW EMPHASIS FOR RISK MANAGEMENT, THE MOST IMPORTANT SKILL BECOMES OUTWARD AND FORWARD LOOKING ...

During Stage 0, the system needs to flex to allow more, but not unlimited, risk taking. During Stage 2, risk taking needs to shrink, but not disappear. But Stage 2 risk management needs to focus on the possibility that Stage 3 may happen at any time. So the risk taking needs to be carefully reviewed during Stage 2 for liquidity, and illiquid risks need to be avoided and unwound as quickly as possible. Stage 3 risk management then focuses completely on triage. Which losing situations can benefit from workout attention? And which liquid positions can be sold with the least damage?

With this new emphasis for risk management, the most important skill becomes outward and forward looking to understand where the environment is and where it is moving. Previously, much of risk management attention has been directed inwardly towards evaluation of the risks on the books and looking backwards to historical experience to do that.

If the role of identifying potential shifts in stages is accepted as a major role for risk managers, then in addition to preparing reports looking inward about the risks of the firm, risk managers and firms will need to prepare four sets of risk management plans and keep them up to date. Seem onerous? Think of what a football coach and team go through. They do not just have

two sets of plays—offense and defense—they have a dozen or more sets of plays for both offense and defense for the very different stages of the game. Somehow, we

have settled for asking much less from our business and risk managers than we do from our football coaches.

For the risk modeler, that will mean a four-stage model. It might not mean linking them together as is usually done with the two-stage regime-switching models. It may mean creating models of each stage that then are all used to evaluate different products and programs. Management may still want to favor Stage 1 in their decision making, but keep the information about how things might perform in the Stage 2 and Stage 3 models in mind and be ready to change course when there are signs of entering those situations.

In 1928, Frank Knight divided the future into Risk and Uncertainty. The risk can be easily modeled. The uncertainty cannot. But guess which one pays off? The single-stage model tried to pretend that Knightian Uncertainty no longer existed—that those with the best models could be paid well for risk taking. Then uncertainty appeared and took back all of their earnings. This four-stage approach admits that uncertainty will always be with us and provides a realistic and tractable way to face it. ▣

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