Have you tried to buy a hard drive in the past couple of weeks? I don't know how things are in your neck of the woods, but out here the drive shortage is so bad you can't find any internal drives on the store shelves. My friendly local computer shoppe won't sell me an internal drive unless I buy a whole PC.

Moreover, the cost of hard drives is spiking, as if you were investing in the gold market. For example, 1TB drives are up to three times more expensive than they were just a month ago. Take a look at Figure 1, which tracks the price of a plain-vanilla 1TB Seagate Barracuda drive at Newegg over the past three months.

![Figure 1. In recent weeks, the price of a 1TB Seagate Barracuda 3.5-inch, internal hard drive from Newegg has nearly tripled. Source: camelegg.com.](http://camelegg.com)

Just one month ago, that Seagate drive sold for U.S. $54.99. As of Nov. 10, it had jumped to $149.99. To add insult to injury, Newegg limits purchases to one of these drives (purchase page). Don't believe it? Try updating your shopping cart with a quantity of two or more.

Although price spikes are not unusual when demand exceeds supply, this case is particularly remarkable. To understand why, let me explain what did and didn't happen in Thailand last month.

**Why building in a floodplain is a bad idea**

In Thailand, companies get special tax breaks if they build manufacturing plants inside specific industrial estates scattered throughout the country. The Bang Pa-in Industrial Estate in Ayutthaya province (about 50 miles north of Bangkok) spans almost 2,000 acres. Like most of central Thailand, it sits on an ancient alluvial floodplain. The companies that built plants inside Bang Pa-in Industrial Estate are well aware of the potential for flooding dikes surround almost all of the manufacturing areas.

This past August, rain started falling in northern Thailand. The rains were heavy and didn't stop for weeks. By Oct. 12, the town of Ayutthaya was under water, but with the help of 1,000 Thai troops, the dikes around the industrial estate were holding. Then, on Oct. 14, after days of relentless runoff, the dikes ruptured and water poured into the industrial estate.

A few companies with relatively light production equipment had the presence of mind to move out of the estate or onto the upper floors of their buildings. Unfortunately, Western Digital was not one of them; its extremely heavy hard-drive manufacturing equipment was firmly anchored to the ground floor. By Oct. 15, that floor was swimming in four feet of water, sludge, chemicals, and sewage.

That was catastrophic. Western Digital makes about 30 percent of all hard drives in the world, and 60 percent of its drive-manufacturing capacity was now under water. (According to news reports, the main Western Digital plant in Bang Pa-in made mostly 2.5-inch hard drives primarily for laptops.)

Western Digital was not alone. Toshiba makes more than 10 percent of the world's hard drives, and
the flood shut down half of its total manufacturing capacity. The flood had now taken down roughly 25 percent of the world's hard-drive production.

That's an astounding number, but there's more to the story.

None of the major hard-drive manufacturers produces all the components that make up a hard drive. Various companies make parts such as motors and mounting assemblies and sell them to the primary manufacturers. Several of the biggest hard drive component manufacturers were shut down as well. (Some came back online quickly by shifting manufacturing to other locations.)

That means that even manufacturers with plants on higher ground were affected. For example, the world's second-largest hard-drive manufacturer Seagate wasn't touched by the floods. However, the company relies on parts suppliers in the Bang Pa-in Industrial Estate. Fortunately, some of those suppliers were able to ship parts by using alternate manufacturing facilities or by drawing down from inventory. (I don't have any numbers on the flood's impact on Seagate drive production.)

The parts-supply problem swings both ways. Western Digital also makes drive-head sliders a key component in the Bang Pa-in plant, not just for itself but for other hard-drive manufacturers as well. By some accounts, the flood took out 75 percent of WD's slider-assembly capabilities. Whether WD will be able to get slider production back up to speed quickly is a multimillion-dollar question.

What the manufacturers do and don't say

Seagate came out with both formal and informal statements about disruptions to its manufacturing operations before the floods hit the Bang Pa-in facilities. In short, Seagate expected disruptions to its component-parts supply, but the company is moving full-tilt boogie (that's a financial term) to get as many hard drives out as possible. Given the numbers shown in Figure 1, Seagate's profit margins are considerably better than they were a month ago, according to a Wall Street Journal story.

At the Needham HDD Conference two weeks ago, Seagate CEO Steve Luczo gave a presentation (summary is on the Yahoo Finance site) in which he stated that the demand for hard drives is huge and that Seagate expects the drive shortage to continue into late 2012. It appears that Seagate expects to lock in drive-critical customers such as data centers at the expense of retail and PC-sales outlets.

Western Digital has been eerily silent. There was a lengthy Earnings Call discussion (transcribed on the diigo.com site) Oct. 19, but nothing since. It's making many people (including me) wonder how badly Western Digital has been hit and whether it can compensate by shifting production to other locations in Malaysia and China.

How the offal hit the fan big time

Early flood reports focused on the human devastation caused by the high waters, and rightly so. Then, slowly, computer and financial media outlets took notice. More recently, the Chicken Littles chimed in and that's when hard-drive prices started heading for the stratosphere.

Hard drives are what's commonly referred to as a mature technology. (Which means for technology investors, they've got one foot in the grave well, maybe a little toe.) Although the demand for hard drives is strong (and will be for some years to come), sufficient manufacturing capacity and a stable market portend shrinking margins for producers and more bang for the buck for consumers. (Solid-state drives are gaining market share, however, though not quickly.)

With falling prices and stable demand, hard-drive supply channels were run as efficiently as possible. Manufacturers' plants churned out drives at near-full capacity; distributors didn't buy more drives than they needed over the short term (because prices were headed down); and computer manufacturers and retailers didn't lock in big orders, both because of falling drive prices and a softening demand for PCs.

So hard-drive production was entering its dotage that is, until the flood.
That highly efficient (or thin) hard-drive supply channel was upended by the flood in Bang Pa-in. Slowly at first then in an avalanche computer manufacturers, retailers, and big hard-drive customers awoke to the likelihood of a significant drive shortage. What followed can be described only as panic buying. That's why prices have tripled in the past month and drive availability has gone down the tubes. If you're in the market for a hard drive for Christmas, prepare to shell out a whole lot of simoleons.

Ironically, while customers are taking a hit, the manufacturers are looking to weather (so to speak) the disaster quite nicely. Seagate, for example, predicts its operating margins will go up substantially, according to the WSJ story noted above. Everybody is scrambling to lock in hard-drive supplies, not just for November but well into next year. Moreover, the drive manufacturers are insured and they'll probably get substantial subsidies from the Thai government to make needed repairs.

In fact, if you're thinking it might be a good time to buy stocks in drive-manufacturing companies, you're probably already too late. Starting Oct. 4, Seagate's share price jumped from $9.05 to more than $18. Western Digital, the company devastated by the floods, saw its value rise $2.00, to $26.60 per share.

Put all this information together, and the price change shown in Figure 1 is especially surprising. It's a Seagate drive (Seagate's manufacturing wasn't hit), and it's a 3.5-inch drive typically used in desktops (not the 2.5-inch drive found in laptops, which was the flooded WD plant's primary product). Add to that the softening shipments of desktop computers, and it just doesn't make any sense that this particular drive's gone up so high.

**Techniques to weather the hard-drive shortage**

First, in the immortal words of Douglas Adams, "DON'T PANIC!"

If you can put off buying a new hard drive for now, do so. Buy a drive now, and you're probably going to get gouged. It's not clear who's doing the gouging, but a triple price increase in one month is just ridiculous. I can't predict when prices will come down, but I hope cooler heads will prevail and prices will drop in the not-too-distant future. Over the years, we've seen panic buying when other computer components were suddenly in short supply. Somehow, remarkably, the price always goes back down.

If you need to outfit a hundred new PCs with hard drives next week, you've got a problem. But if you're thinking about picking up another drive for backups or to hold your expanding music collection, now would be an excellent time to reacquaint yourself with that wonderful invention the Delete key. You might also consider the magic of file/folder compression. Finally, reread Lincoln Spector's Nov. 4, 2010, article, "A triplicate of duplicate-file finders."

If you're thinking about picking up a new computer especially a notebook consider switching to a solid-state drive (SSD). While they have all sorts of advantages over mechanical HDDs, SSDs have also always had one big disadvantage they're expensive. But with HDD prices soaring and the cost of SSDs relatively stable (at least, this week), SSDs are more attractive especially if you don't need an enormous amount of storage space in that new PC.

The water in Bang Pa-in is starting to subside now: a month after it hit, the flood's moved down to Bangkok, leaving a wide swath of destruction. The death toll's over 500, and millions of people are struggling to cope. You may be concerned about spending $150 for a hard drive, but think for a second about the people who are out of work, out of a home, and relying on the kindness of strangers for food or a bottle of clean water.