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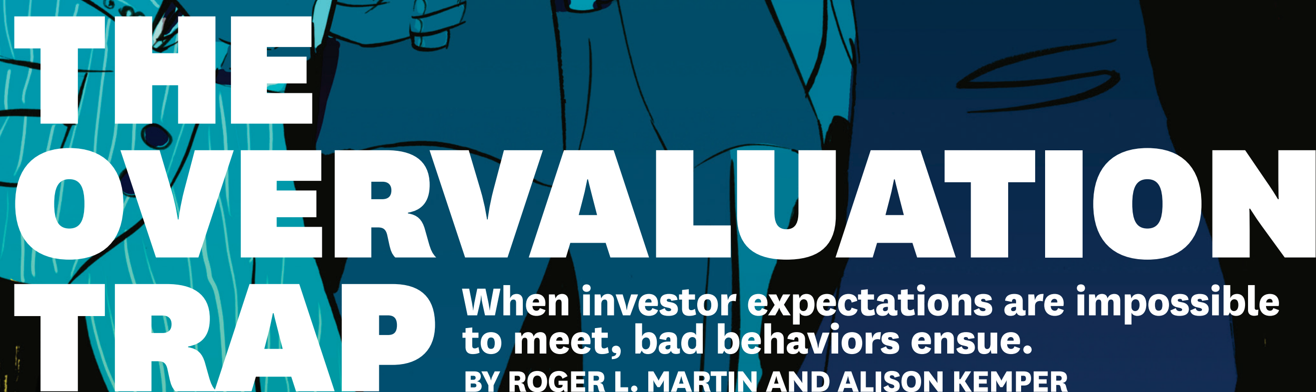


THE OVERVALUATION TRAP

When investor expectations are impossible to meet, bad behaviors ensue.

BY ROGER L. MARTIN AND ALISON KEMPER

RYAN INZANA

On July 9, 2007, Chuck Prince, then the CEO of Citigroup, made a comment that was to become notorious: "When the music stops, in terms of liquidity, things will be complicated. But as long as the music is playing, you've got to get up and dance. We're still dancing." Prince meant well. He wanted to reassure reporters in Japan that signs of weakness in the U.S. subprime mortgage market would not cause Citigroup, a major player in that market, to pull back from further lending there.

A mere two months later, Lehman Brothers filed for bankruptcy as a result of its losses on subprime mortgages, triggering a meltdown in the global financial system. As the mortgage market collapsed, millions of Americans lost their homes. U.S. taxpayers had to bail out Citigroup to the tune of $476 billion in loans and guarantees—almost $4,000 per U.S. household.

In that context, Prince's comment came to be seen as a cavalier justification for the extraordinary risks taken on by banks like Citigroup. He seemed to be admitting that his firm was engaged in a somewhat artificial process, that he knew it would eventually stop, and that when it did, there would be negative consequences. Yet this interpretation overlooks an important possibility: that he had little choice but to dance—that a behavioral trap lies in wait for leaders of all successful firms, one they will struggle to avoid even when, like Prince, they're aware of it.

The trap is an almost inevitable consequence of what many managers might regard as a blessing, because it occurs when the capital markets overvalue a company's equity—and especially when stock overvaluation is common in a particular sector. In the following pages, we'll describe the trap, show how it has played out in various industries, and suggest where it may be playing out once again.

The Agency Costs of Overvalued Equity

The idea that overvalued equity poses a behavioral trap was proposed, two years before Prince's comment, by Harvard Business School professor Michael Jensen. Jensen, of course, is familiar to many as the coauthor of one of the most cited finance articles of all time: "Theory of the Firm: Managerial Behavior, Agency Costs, and Ownership Structure," written with William Meckling and published in the *Journal of Financial Economics* in 1976. Yet Jensen's 2005 *Financial Management* article, "Agency Costs of Overvalued Equity," has been largely—and, we believe, unfairly—ignored.

The latter article focused on companies that benefited from the dot-com bubble and collapsed dramatically after the crash of 2000–2002, such as WorldCom and Nortel. Jensen's central point was quite simple: When a company's stock is overvalued, by definition managers cannot, in the absence of amazingly good luck, reliably and legally deliver performance that will justify its price. The market is setting a bar that firms cannot realistically meet.

What managers do in that situation, Jensen argued, is to make decisions that "will at least appear to generate the market's expected performance in the short run." In other words they start to make investments that encourage markets to believe the firm still has value-creating potential, even if they know that those investments will ultimately fall short. By doing this, managers can postpone the day of reckoning until they have left the company and can escape the consequences.

Typically, they adopt one or both of two strategies:

Investing in fashionable technologies. Companies with overvalued equity often shell out large sums for hot, hyped technologies. Dot-com-era darling Global Crossing spent billions laying fiber-optic telecommunications cable because doing so convinced shareholders that its business would grow explosively. This was perhaps the ultimate "If

Idea in Brief

THE PROBLEM
CEOs of companies with high price-to-earnings ratios often make decisions that soon turn out to be deeply flawed. These missteps may have not only financial consequences but also environmental and social ones.

WHY IT HAPPENS
Because of unrealistic investor expectations about a sector's potential and what it takes to succeed. CEOs make moves that the market wants to see. Pricking the expectations bubble will only guarantee a sharp correction. But CEOs who play along may be able to move on before reality sets in.

AVOIDING THE TRAP
CEOs should be more sensitive to the evidence about company prospects and develop strategies more consistent with that evidence.

you build it, they will come" strategy: At the time many analysts saw bandwidth as the main limit to growth; companies that owned high-bandwidth infrastructure would be poised to benefit most from a rise in digital traffic. Companies that invested in laying fiber-optic cable, therefore, could present themselves to investors as being on the right side of the future.

As it turned out, Global Crossing used very little of its capacity before the market crashed. Its fiber-optic assets were sold off for a small fraction of their cost, to the chagrin of most shareholders—though not necessarily its top executives, many of whom sold shares before the crash, indicating they probably knew the stock was overvalued.

Making glamorous acquisitions. In the absence of obviously fashionable capital investment projects, companies with overvalued equity tend to turn to M&A, often paying top dollar for talked-about start-ups. Take Nortel, whose share price increased 10-fold from the beginning of 1997 to its peak, in September 2000. It bought dozens of small technology companies; the biggest was Bay Networks, which it purchased for $9.1 billion—all in overpriced Nortel stock, of course.

The prospect of combining a large firm's seemingly deep pockets with the entrepreneurial savvy of small firms further fueled investor interest. Nortel's market cap rose steadily with each new acquisition, cresting at $283 billion. When the music stopped, however, Nortel's market cap plummeted, dropping to less than $5 billion by July 2002. The company limped on for a few years but eventually filed for bankruptcy in 2009. Many commentators pointed to the acquisition of Bay Networks (itself a roll-up of small tech firms that was arguably driven by overvalued equity) as a key event in the reversal of fortunes: It put Nortel in head-to-head competition with emerging router giant Cisco Systems—a battle Nortel would lose decisively.

What happens when obvious capital investments or acquisitions are few and far between? In such cases, managers may illegally manipulate the financial reporting to make it seem as though the company's performance meets shareholders' high expectations. For example, from 1999 to 2002, WorldCom capitalized costs that should have been booked as expenses, to the tune of what was initially thought to be $3.8 billion. The discovery of that misstatement precipitated the company's 2002 bankruptcy. In due time, the misstatement was found to be an even more staggering $11 billion. WorldCom had grossly inflated its earnings, all to prop up its overvalued equity.

Of course, with the benefit of hindsight, the market recognized that during the turn-of-the-millennium boom, executives had been making irresponsible and sometimes criminal decisions. Yet despite the chastening crash and a raft of regulatory changes—most notably, the passage of Sarbanes-Oxley, an attempt to force boards to upgrade their supervision of management—it became apparent within less than 10 years that markets could continue to overvalue companies and sectors, and that this would still tempt and arguably even force managers into value-destroying strategies and behaviors.

The Lesson Not Learned

No other sector illustrates the danger of overvalued equity more than banking, and within it, there is no better example than Citigroup. During 1994, the firm's market capitalization averaged $10.5 billion. This meant that if shareholders expected a 13% annual return (in line with Citigroup's 12.85% cost of equity), the firm needed to generate $1.4 billion

a year in value through dividends and stock price appreciation to keep them happy.

After 1994, Citigroup's stock price rose like a rocket, going from about $50 in late 1994 to $588.75 on August 28, 2000. At $588.75, the company's market cap was $330 billion. At that level, Citigroup needed to generate 31 times more new value per year than it did in 1994. In other words, in just six years, expectations for its annual increase in value had risen from $1.4 billion to $43 billion, a goal that probably no mature company has ever accomplished.

Of course, investors did not see any such increase. Quite the reverse: The bursting of the stock market bubble in 2000 chopped Citigroup's market value in half, with the share price bottoming out on October 7, 2002, at $267.30. Sandy Weill, then the CEO, was able to lead something of a recovery, however, helped by the postbust economic rebound. He handed Citigroup over to Chuck Prince on October 1, 2003, with the stock at $470.00.

If overvalued equity were a periodic problem associated only with bubbles, we would be concerned but not alarmed.

This was a mixed blessing for Prince. The share price was back to a level that was challenging to defend. To deliver on the market's expectations, he aggressively invested in the subprime mortgage and credit derivative markets. Thanks to this strategy, the stock price shot back up to $564.10 on December 27, 2006, a mere 4% off the historic high. But this soaring equity value came with a price. It was the result of ever more risky activities, which were required to earn the returns expected.

Tellingly, the stock price on the day of Prince's dancing quote was still at a lofty $516.00. He was allowed to dance for only another four months. On November 4, 2007, with the stock down to $377.30, Prince was forced out of the company. His removal made no difference: Citigroup stock was in free fall by then, bottoming out at $10.20 on March 5, 2009.

Even with the gigantic government bailout, an infusion of new capital from investors, and an economic and industry recovery, the stock has climbed only as high as $60 a share for a single day since the bottom of the trough. This suggests that even in the post-dot-com dip, Citigroup suffered from a massive and indefensible overvaluation of equity. And it is fair to argue that Prince became CEO in a context in which it was impossible for the company to earn enough to defend that valuation. So he did what Jensen's theory predicts: He kept dancing even though he knew the music would stop—with serious consequences. (However, he probably had no idea just how cataclysmic they would be.)

Prince stood apart from his colleagues in only one respect: He publicly admitted that he had an overvalued equity problem. He even talked to regulators about it. When dining with Hank Paulson, then the U.S. treasury secretary, in June 2007, Prince is reported to have asked, "Isn't there something you can do to order us not to take all these risks?" His appeal apparently fell on deaf ears. Nor did investors pay attention. Perhaps a few sold Citigroup shares after hearing his comment about dancing, but not many, given that the stock price drifted higher, not lower, in the week after the quote came out in the *Financial Times.*

A Widespread Problem

If overvalued equity were a periodic problem associated with bubbles, we would be concerned but not alarmed. But we're coming to believe that this phenomenon is more commonplace and more serious than we initially suspected, and that it affects many important, capital-consuming sectors in the so-called real economy.

The pharmaceutical industry is a case in point. Many drug companies enjoy high valuations: From 1988 to 2000, the combined capitalization of the six pharma firms in the S&P 50 rose spectacularly, from $83 billion to $917 billion ($983 billion if you include the seventh, Amgen, which emerged after 1988). Their valuations have stayed largely flat ever since, with the seven sitting at $945 billion in the fall of 2015.

In 2009 a seminal article in the scientific journal *Nature,* "Lessons from 60 Years of Pharmaceutical Innovation," demonstrated that even though commercial R&D spending rose from under $1 billion in 1950 (in 2008 dollars) to $50 billion in 2008, the number of new drugs approved each year did not rise; though it vacillated slightly from year to year, it remained remarkably stable. The favored big pharma tactic of merging to produce scale-driven synergies provided no systematic increase in drug

output, either. There is no indication that R&D productivity has improved at all even as commercial pharmaceutical R&D spending continues to rise.

Drug companies can't simply return earnings to shareholders, however, because that would signal that they no longer believe that R&D is an attractive investment—and that their R&D model is broken and can't support current valuations. Despite the evidence, investors expect big pharma firms to continue delivering value with their existing model, which means that managers have no choice but to continue as they are. They may fear that cutting R&D might cause investors to realize that the music has stopped and thus trigger a collapse in the share prices they're mandated to grow.

The money that big pharma spends on R&D is small change beside the $571 billion big oil is projected to pour into prospecting for new reserves in 2015. (Admittedly, that amount is 17% less than its 2014 spending.) That large an investment seems perverse when you consider that with proven reserves containing almost 2 trillion barrels' worth of oil, the world now has a 53-year supply ready to tap. And oil companies are not only overexploring but overproducing: They're extracting increasing quantities of crude oil, amassing stores of nearly 500 million barrels in the U.S. alone.

More perplexing still, the massive investment is being made in the face of a strong consensus among environmental scientists about the impact of fossil fuels. It's an ecological catch-22: If oil companies are to sell what they already have, the world will have to burn carbon at a rate that will damage the planet's ecosystem so much that economic growth itself (and, therefore, the future need for oil) will be compromised.

Oil executives may well believe that they're sensibly pursuing a sound asset-acquisition strategy. After all, oil companies have historically profited from finding new reserves, as economic growth has always provided ample oil demand. And it's possible that the scientists are wrong—that the

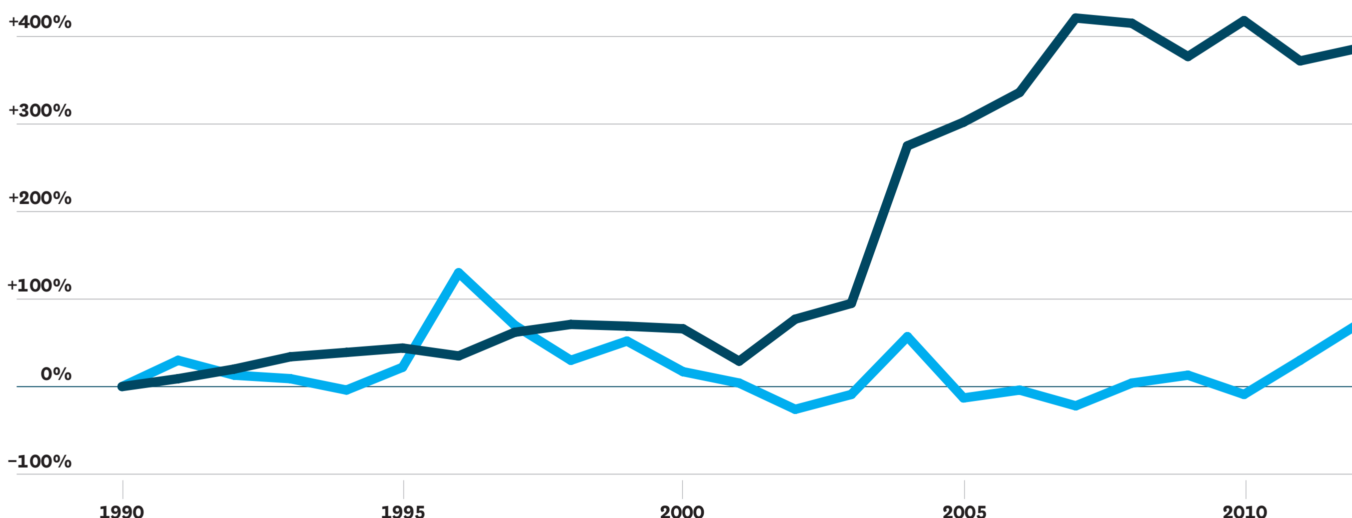
PHARMA: MIND THE GAP

In the pharmaceutical industry, new drug pipelines are a major driver of valuations. Though R&D expenditures have more than doubled since 2000, the number of drugs approved per year remains the same. You'd expect this trend to depress market caps, but the overall market cap of pharma companies has in fact more than doubled in the past five years alone.

NEW MOLECULAR ENTITIES (DRUG DISCOVERIES)

COMMERCIAL PHARMACEUTICAL R&D EXPENDITURES, UNITED STATES

PERCENTAGE CHANGE SINCE 1990



NOTE R&D EXPENDITURES WERE CALCULATED USING CONSTANT 2010 DOLLARS AND INDEXED TO THE YEAR 1990. **SOURCES** OECD; FDA.

world needs the additional energy and will be able to afford it regardless of its ecological impact, which may be overstated. But assuming that the scientists are wrong is very risky—there's no way to determine in advance whether they are, and the world will have a really big problem if they turn out to be right.

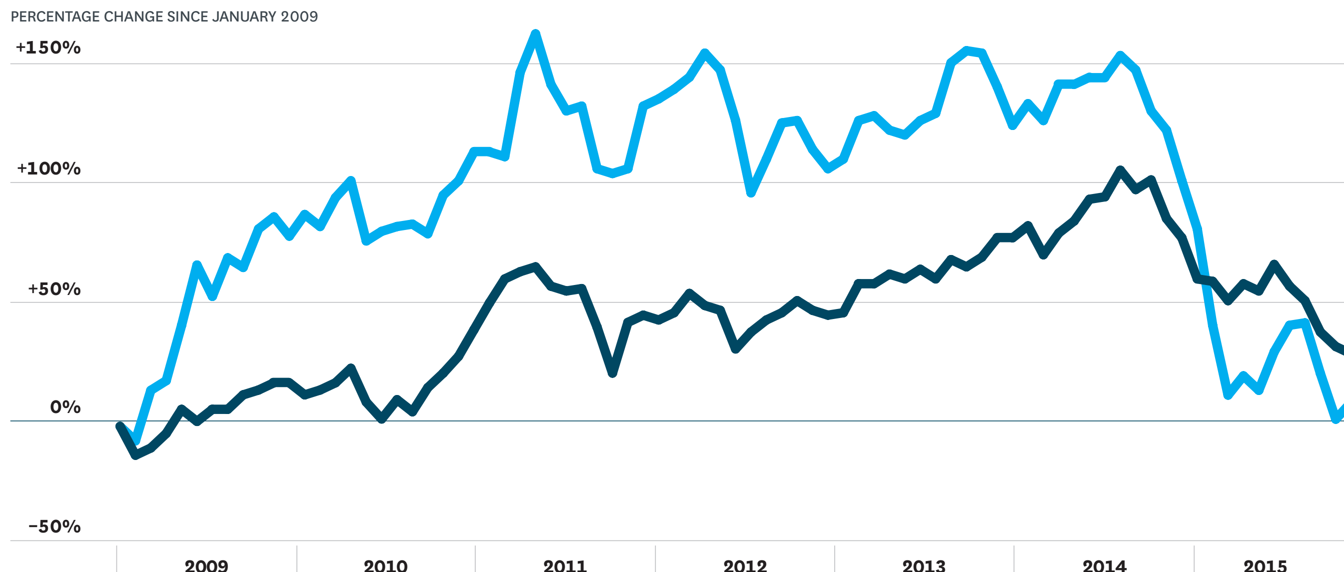
We suspect that the oil executives investing in exploration are actually well aware of the risks. What's happening, we'd suggest, is that the oil industry is suffering from overvalued equity. At last count seven of the 100 most valuable publicly traded firms in the world were oil and gas companies; in aggregate the industry had a market capitalization of more than $1.3 trillion. Since many of the largest petroleum companies in the world, including Saudi Arabia's Aramco, are state owned, the actual sector valuation is probably closer to $4 trillion.

The reserves on the balance sheets of oil companies account for the greatest proportion of this valuation. To keep it propped up, executives running big oil invest aggressively in finding more reserves; should they stop spending on new exploration and development, it would signal to investors that their current reserves aren't worth as much. It's not clear just how far their value would fall if the petroleum companies ever hinted that the end of their dance was near, but the drop would probably be monumental.

The overvalued equity trap is not just an economic problem. There can be serious social costs to misdirecting investment on such a large scale, though the two industries we've looked at vary in this respect. Arguably, pharma research overspending does not have particularly egregious social consequences. This money mainly goes to fund well-paid, highly skilled jobs that have a relatively modest carbon footprint and no other negative environmental impact. If the investment leads to the discovery of an incremental drug—even at an uneconomic cost—it alleviates some amount of human suffering. There may be potentially serious long-term effects, though; some critics worry that in their effort to justify their R&D spending, pharma companies are overaggressive in pushing drugs like painkillers and

OIL AND GAS: POISED FOR A FALL?

Because reserves account for a major portion of valuations in the oil sector, its market cap tends to track crude prices. But when crude prices recently plunged, the sector's market cap did not—a sign that valuations in the industry may be artificially high.



SOURCES U.S. ENERGY INFORMATION ADMINISTRATION; GOOGLE FINANCE

antibiotics, exacerbating problems with addiction and antibiotic-resistant strains of bacteria.

With big oil spending, which is 10 times greater, the social damage is much more obvious. Oil and gas exploration and development has an exceedingly high carbon footprint. It's also environmentally dangerous, often causing destruction in ecologically sensitive areas. And the more successful it is, the more it lowers the price of petroleum, encouraging more oil to be burned faster and increasing the environmental penalty.

Is there anything managers can do to break this cycle?

A Possible Way Out

The recent experience of the Canadian company Valeant Pharmaceuticals International suggests one avenue, though it is most certainly a cautionary tale. After seeing its stock price seesaw between $14 and $27 in the four years leading up to February 2008, Valeant appointed ex-consultant J. Michael Pearson as CEO. He immediately began buying up small pharma companies that had fallen out of favor with the capital markets and then chopped their R&D dramatically. The resulting increase in the profitability of the acquired businesses drove Valeant's share price to a high of $262.53 on August 5, 2015, with a market capitalization of $102 billion and a stratospheric price/earnings ratio of 123.

What Pearson did was fairly simple. He created a new narrative for value creation in pharma, based on data about R&D efficiency. In short, he bought pharma companies and largely—if not entirely—shut down their spending on drug discovery. In his view, most pharma R&D does not represent efficient use of capital.

However, the great irony is that as Pearson used this technique and narrative to propel Valeant's market capitalization skyward, he exposed himself and his own company to the agency costs of overvalued equity. As it became difficult to find more acquisitions whose R&D he could cut and whose profit he could grow enough to justify the expectations implicit in a high P/E ratio, the firm began to take actions that raised questions. Allegations of the use of aggressive accounting and tax policies to pump up earnings continue to swirl around the company. Huge increases to the prices of its drugs lifted short-term earnings but have now attracted government scrutiny, which may lead to a dramatic reversal. The overvalued equity trap lurks even for a company that cleverly exploits the problem of overvalued equity.

Whether Pearson's strategy has reached the end of its run or not, it could well be applied in the oil industry. A corporate investor could purchase underperforming oil and gas companies and then eliminate most if not all of their exploration and development expenses to create a producer that simply but very efficiently liquidates its existing portfolio of proven reserves. Like Valeant in pharma, it could roll up to bigger and bigger companies and create ever more value for its shareholders, enabling it to buy more devalued companies. That would help other investors discipline oil and gas company CEOs who are overspending to cover up their overvalued equity.

If such a movement gained momentum, the state-owned companies might even question whether their continued spending is a net benefit to their country's citizens. Regulators and elected officials might be open to scaling back on exploration, since their decades of oil-funded prosperity have expired, leaving them with less patience for the industry's promises. Further, their appetite for taxing carbon is increasing as voters become more deeply concerned about adverse climate impact.

As it became more difficult to meet investors' expectations, Valeant began to take actions that raised questions.

MANY MANAGERS grumble about the capital markets—usually, about how little investors appreciate their strategies. Very few CEOs have ever openly complained that markets are overvaluing a company's shares, even though the problem is as endemic and widespread as undervaluation. That silence is not altogether surprising, given that the overvaluation both increases the worth of their stock options and seems to validate their decisions. But it is precisely when executives feel on top of the world that they need to consider the possibility that their strategies have run out of steam. To avoid the inevitable crash, they need to look for good reasons why their seemingly triumphant approach might fail and figure out fresher and more-realistic narratives for value creation. ⛉

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