Volatility, Stored Methane, and the Fundamentals of Asset Values

by Scott Vicary & Gene C. Sulzberger

We've said it in our previous quarterly notes, but it bears repeating: the value of any financial asset is ultimately derived from the value of the cash you are going to get back from it. That all sounds good in theory, but in practice, there's a lot of uncertainty about what that future cash is going to be, and this leads to a lot of price volatility. Even that wouldn't be so bad to navigate if there weren't the human element. Let's put it this way. Every asset has a fundamental value – plus or minus the estimation error – and then it has the unpredictable human element that is not always rational; that is, what people are willing to pay for it at any given moment, be it a moment of market anxiety or unbridled optimism.

One should never underestimate people's capacity for spending real money on things that have little fundamental value. A former reality show contestant recently made news because she was selling jars of her own flatulence on the internet for as much as $1,000 a jar – and was making $50,000 a week before she was hospitalized with – you guessed it – intestinal troubles from eating too many beans. Journalists could not let that one go, but we will take a pass on the puerile puns (we are strictly focused on asset movements without all the hot air).

So what do jarred farts and financial assets have in common? Honestly, almost nothing. But believe it or not, there is an underlying point here: the same people who spend their money on jarred farts also make up some of the retail investors who are driving the prices of stocks and bonds. Let's charitably call them the "dumb money". This dumb money is not inconsequential in its effect on volatility, driving certain stocks to bounce around so much. It's obviously more complicated than that, but the important takeaway here is that markets can move erratically in the short term because your crazy Uncle Carl – the one who thinks aliens are secretly breeding poodles with Elvis clones (an Elvicloodle?) – is also trading stocks with his Reddit buddies. There are a lot of Uncle Carls who can make trades with little regard for an asset's fundamentals, driving prices up and down more than can reasonably be justified.

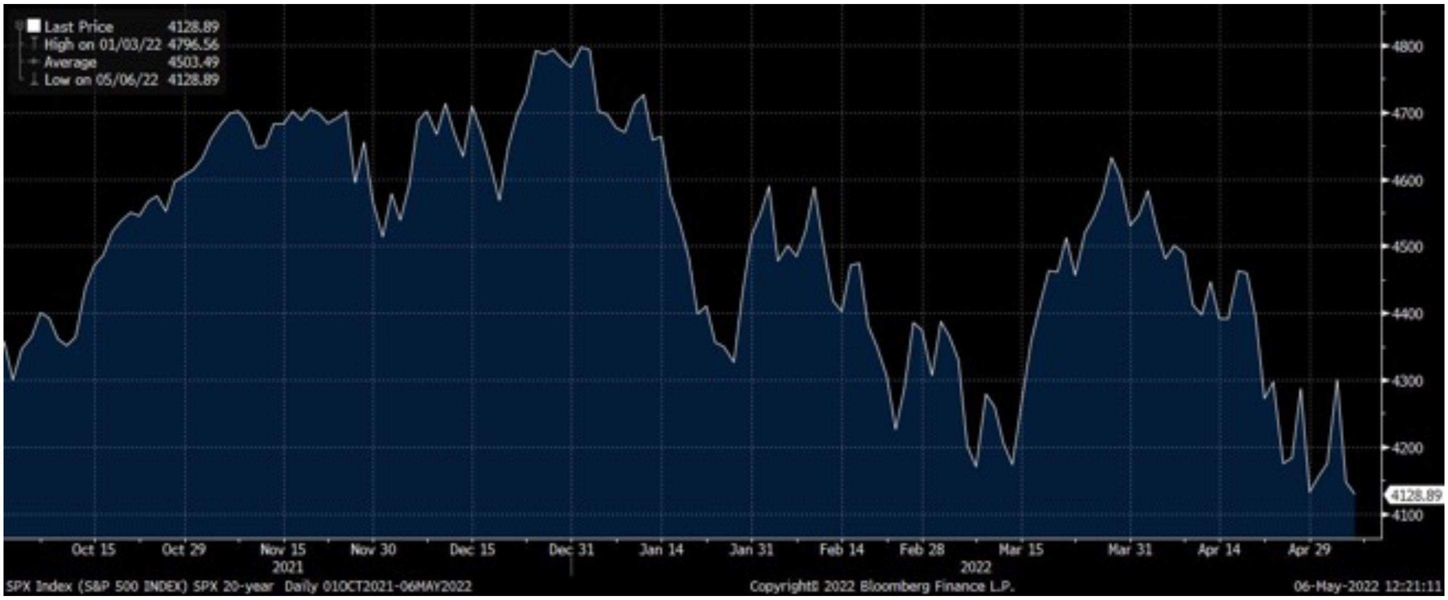
The Probability and Normality of Volatility

Financial commentators tend to use the term 'volatility' as a sanitized and quasi-professional way of saying "grab the safety bar because this roller coaster is just getting started." Strictly speaking, volatility is defined as "a tendency to change quickly and unpredictably." In financial market-speak, it also means the degree of unpredictable change – i.e., a company whose stock price moves both up or down by 10% a day is more volatile than one that moves 1% a day (even though both are bouncing around). Of course, no one complains much about market volatility when the change is unpredictable toward the positive side. In financial markets analysis, volatility is more than just a word – it is a fundamental statistical part of how analysts measure the risk of an asset and is even a critical variable in the most common formula used to value stock options (Black-Scholes, for those who take a masochistic interest in Finance).

For now, let's just say euphemistically that it was a volatile couple of quarters for the stock market. The S&P 500 index is down nearly 13.6% so far in 2022 and the tech-heavy NASDAQ was down almost 22% (as of May 9, 2022). This actually understates the true degree of downward movements, because fossil fuel producers are up 47% for the year largely as a result of increases in oil prices after the Russian invasion of Ukraine and post-pandemic recovery. The two graphs below give an interesting perspective on this recent volatility:

S&P 500 Index October 2021 through 2022 Year-to-Date

Figure 1



The first graphic shows how the value of the S&P 500 index moved over the course of Q4 2021 and the first four months of 2022. These 500 companies make up a significant and broad part of the US stock market, and the period looks like the kind of volatile roller coaster that no one would enjoy very much. Who would want to invest in that?

Now zoom out to look at the same index over the course of the last 20 years:

S&P 500 Index Since 2002 (20 years)

Figure 2

Source: Bloomberg data with Sulzberger Capital analysis

This graph helps to put the recent volatility in perspective. The yellow box at the top represents the period of the previous chart covering October 1, 2021 through today. While the pull-back of the index over the last six months was certainly not inconsequential, in the general long-term trend of stock market growth, it becomes just another zig before the inevitable zag of that roller coaster. If your horizon is long enough, short-term volatility and even mis-pricings generally work themselves out in the right direction. Even the 2008 housing crisis and the 2020 pandemic tend to look like the inevitable dips in a roller coaster (which is admittedly a bad metaphor, because roller coasters come back to earth, whereas the stock market is biased toward an ever-growing upside). The orange line shows what growth you would have had if there was no volatility and your investment just grew 7% a year, compounded over 20 years. This is roughly what the large-capitalization stock market has yielded on average, excluding the 1-2% of dividends that are paid out annually. From this perspective, there is nothing particularly abnormal about how the market has been increasing.

Compounding Growth is Also a Normal Part of Investing

There is a common misconception amongst 'mom-and-pop' investors best encapsulated in a semi-rhetorical question we get all the time: "the stock market can't go up forever, can it?" The simplified answer is "yes it can, and indeed should." The more complicated answer is that the stock market may experience all sorts of economic disruptions and volatility during specific periods (e.g., war or pandemics), but in aggregate and on average, the trend will always be upwards and compounding. This answer often mystifies people, largely because many think of the stock market as analogous to an investment in real estate, artwork, or Bitcoin – i.e., the only reason that the value could go up is because more people want to buy them at a higher price.

In actual fact, companies themselves are growing their profits – not just their share prices. This growth can be created in a number of ways, starting with the impact of overall economic growth[1]. Other important factors include:

- the growth in population
- increases in household disposable income
- market expansion
- new technologies facilitating lower costs
- investment in equipment or new business lines
- international expansion
- mergers and acquisitions (to name just a few)

In short, companies grow, and their stock prices will tend to grow with them.

As we already stressed, when you invest in a company's stock, you are actually investing in an expectation of future cash flows paid to you – either in the form of dividends or in so-called stock buybacks (they amount to the same thing: paying cash to shareholders). Yet a lot of the time companies don't pay out all of their profits immediately to shareholders, preferring to reinvest some or all of their profits in the expectation that they can grow the future payouts by even more.

Companies usually hit a 'mature' stage in their development when they have essentially tapped out their potential to grow their natural market – let's say everyone has already gotten an iPhone. If they manage to stave off competitors, their business will typically generate lots of cash on a pretty reliable basis without growing that annual pot. Yet even companies in this stage can do a lot of things to enhance the growth rate of their profits or just their share price. For instance, they can borrow more money in the form of bonds to increase the share of profits paid to stockholders. Generally, the more reliable their cash flows, the more money they can borrow at cheaper interest rates, which can ultimately benefit stockholders. Companies can also use that debt to buy smaller, high-growth companies to goose their growth. Of course, some companies, such as utilities, will just pay out most of their earnings in dividends and carve out their niche as low-risk, reliable sources of cash flow to investors.

The S&P 500 index itself also tends to grow at a pretty high average rate because it cheats a little – that is, the learned scribes at the S&P periodically drop companies from the index that have matured and add replacement companies that are earlier in their growth cycles.

[1] remember, GDP is an inflation-adjusted rate of growth, so the nominal rate of growth of the average company is going to be appreciably higher than 2-3% typical of GDP growth

That’s a whole other can of worms that we won’t pry open for this quarter’s note, but suffice it to say that it helps to make it all the more difficult to ‘beat’ the index on a consistent basis when they are switching up which companies to count in their 500.

Is Volatility Risk?

We are going to commit Finance heresy for a minute by saying “volatility is not risk…it is only a proxy for risk.” While we’re at it, we’ll blaspheme by saying markets are not actually particularly efficient in the short term (the craven followers of Adam Smith might smite us down for trying to shatter that icon of laissez faire capitalism). These inefficiencies can have real consequences in the short term with mis-pricings. However, for most average investors, the biggest fear in making an investment is not that its price will bounce around a lot but that they will lose some – or all – of their investment.

We will concede that there are a few ways that volatility in and of itself can create actual risk:

- Initial mispricing. The asset happens to be on a big upswing when you buy it, and this makes it hard to recover your capital anytime soon;

- Exit timing. You bought the stock at a good price, but you have to sell unexpectedly when the price happens to be on a sharp downswing;

- Psychology. An investor can’t stomach the price swings in an asset and decides to sell at the worst possible moment (come on, we’ve all done it).

At its core, these are all risks of timing. If the only risk that an asset had was that it bounced around a fundamentally knowable and rising value, then there would theoretically not be that much risk at all when holding for the long term. Take the example of a company’s bonds (i.e., debt issued to investors). A company’s bonds can rise or fall with prevailing interest rates, but the volatility is typically much less than the stock price because you pretty much know what you are going to get (ignoring default risk for now). If you hold a bond to maturity, you will get the return that you expected at the time of making the investment (once again, it is more complicated than that, but let’s run with it for now). However, if you sell that bond early as interest rates are rising, you are probably going to lose a bit of money. Bond prices drop as interest rates go up. The value of the bond changes with regard to what someone would be willing to pay for the bond if you were to sell it today. However, that doesn’t change the fact that you will get 100 cents on the dollar when the principal of the bond is repaid at maturity[2].

Stocks are even more problematic in this regard, because you don’t have any underlying commitments about what money the company is supposed to fork over. Yet in both cases, as long as an asset is generally trending upward, a long-term holding period can significantly reduce the effects of short-term volatility.

Of course, volatility is not really the only – or indeed the greatest – risk in investing. Let’s posit that there are at least four other types of risk apart from volatility:

1. Fundamental Value Risk. After the fad wears off, no one is willing to pay $1,000 for that jarred fart that you purchased. The underlying asset has little or no fundamental value other than the demand for it by other people.

2. Forecasting Risk. The underlying asset has fundamental value (it can generate cash flow), but you just didn’t estimate the future cash flows that the asset would generate. It may still be worth something, but not as much as you forecast.

[2] *We are simplifying here, as bonds can have various repayment schedules and bake in some or all of the interest paid into the initial price. What matters is that you know in advance how much principal will be repaid and when.*

3. Event Risk. Even if the fundamentals are largely sound, an event that is well outside the control of the company suddenly destroys significant value: by way of example, Russia invades its neighbors and bombs your factories into rubble. For practical purposes, this could be considered a subset of forecasting risk except that it is for events that are largely impossible to foresee and which would not typically be included in forecasts (natural disasters, political instability, war, famine, pestilence…we seem to have experienced all of these since March 2020).

4. Opportunity Risk. Maybe your investment is solid and doesn't lose money, but you earn a lot lower return than you could have earned elsewhere. You are kicking yourself for the lost opportunity and the fear that you missed out.

Professional investors try to mitigate these risks in a number of ways that we have discussed before, chief among them, diversification. Holding a lot of different stocks, bonds, and other financial assets in a number of different countries and in various sectors can mitigate the so-called 'specific risk' of getting the prognosis or fundamental value wrong (risks 1 & 2). Diversification spreads this risk over a lot of different assets that are supposed to be less correlated. Diversification is not always capable of mitigating Event Risk and Opportunity Risk. By way of example, the beginning of the COVID pandemic caused about a 33% collapse in share prices pretty broadly across most stocks in most countries because there was nowhere to hide from the virus effects. Diversification has less ability to mitigate risk for major downside events, because in those cases, markets tend to become more correlated.

This is where we circle back to where we started, which is volatility. Statistical measures of volatility are widely used in finance to gauge the relative risk of various assets and to help construct a portfolio that balances that overall risk. Again, volatility is being used in this fashion as a proxy for risk, because the more difficult it is to estimate the future cash flows of an asset, the more an asset's price is likely to bounce around (and with larger swings). By statistically measuring these average movements, the investor can construct a portfolio that mixes different levels of risk and can also measure the extent to which they move in tandem or independently.

Complicating all of this, speculative fever can distort prices even for financial assets with fundamental value, at least in the short term. Remember your Uncle Carl? He and his friends may be making short-term bets on early-stage, loss-making companies as if they were having a fun night out in Vegas. An article in Bloomberg captured this thrill of volatility and playing the markets as if they were another gambling table:

> *Scientists have long suspected what Wall Street has always known: Our brains lust after money. The high from cocaine, the thrill of buying Dogecoin: the same reward circuits govern both. Researchers have even linked an elongated version of one neural receptor, dopamine receptor No. 4, to a tendency toward financial risk-taking.*

The speculative Uncle Carls of this world are not usually making trades in and out of an investment-grade corporate bond precisely because the cash flows are more certain and so there are fewer swings. Yet we also have to bear in mind that emotional panic can also drive prices much lower than can be justified considering this fundamental value. Retail investors often sell at the moment when their assets look bleakest, which is a natural psychological response. On the other side of the equation, hedge funds and investment banks are poised to pounce on assets at precisely this moment when they see financial assets plunge below a normal range of their fundamental value plus a margin to take into account the lower bounds of a range. Somewhat disturbingly and patronizingly, these vulture investors refer to this emotional selling by retail investors as 'capitulation'. They essentially use statistics-based computer models to exploit these downward mis-pricings and even to sell into upward mis-pricings.

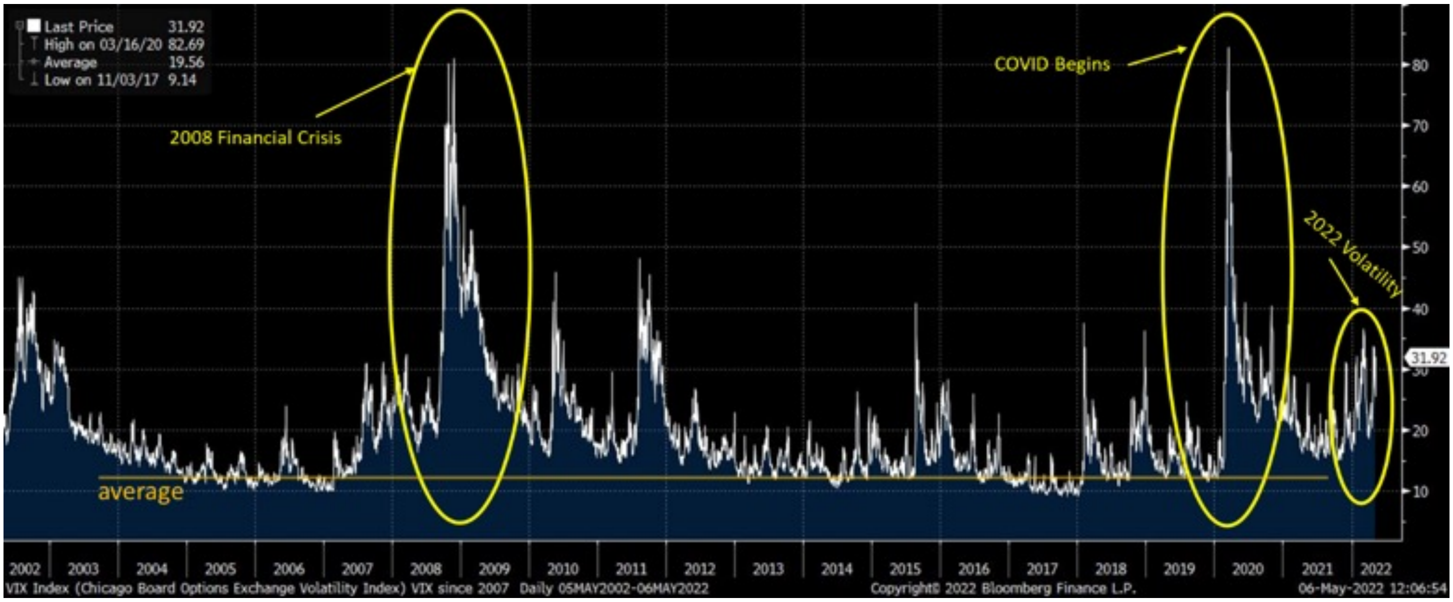
So What are We Supposed to do When Faced With This Kind of Volatility?

It's often hard to discern what is a 'normal' part of the investment roller coaster and what is an event that has changed fundamental value when you are going 100 miles per hour down the tracks. It's easy for us to say that this is just something that you just have to buckle up and ride it out, but it is a lot more challenging when you see your net worth dipping by 10 or 20%.

Let's look at a couple more graphs to put the total market in context:

VIX Volatility Index (20 years)

Figure 3



Source: Bloomberg

Volatility is elevated, but not by all that much compared to the pandemic. The chart above shows the VIX Index, which is a measure of volatility for the S&P 500 total market. The index is back-calculated from the implied volatility in the put and call options, which is a bit of algebraic magic that even we barely understand. The important takeaway is that volatility (or the 'fear index') spiked very significantly during the 2008 financial crisis and during March 2020 when COVID hit. Those were periods of time when markets were tanking amidst a selling frenzy. By contrast, the 2022 pull back in the market certainly demonstrates some level of above-average volatility, but it is not anywhere near crisis levels. At this stage at least, the VIX suggests that investors don't view the Russia-Ukraine war as an event that threatens the fundamental value of US investments even if the human toll in Ukraine is deeply troubling and tragic.

Figure 4

Source: Bloomberg with Sulzberger Capital Analysis

Another metric that we've premiered in previous notes is a measure of the S&P 500's valuation over time. This calculates the ratio of the total market value of a company's capital divided by its earnings before interest and depreciation as aggregated from analysts' projections two years forward. The key takeaway here is that valuations have certainly become stretched over the last decade above their historical average of around 10 times their earnings, reaching a high of almost 14 during the crazed trading in 2020-2021. However, those valuations have actually been easing back since the end of 2021 and are now at about the level they were just before the pandemic started (circa 11x). This decline in valuations is not just a reflection of stock prices coming down but is also an effect from earnings going up. An important caveat is that the combination of inflation, Fed rate tightening, the war in Ukraine, and supply chain issues may well begin to bring down earnings forecasts (which are typically a lagging indicator). Yet the fundamental value of the market is certainly not as stretched as before, even if it is still far from bargain prices.

What these two charts taken together suggest is that we are not in a crisis of fundamental value or extreme irrational movements. Rather, we are probably seeing the effects of lots of professional investors trying to position themselves in more mature stocks with steady cash flows (e.g., Value Stocks) to hedge against a possible recession from faster Fed tightening. Effectively, they are trying to time the business cycle to beat the market, which is generally not recommended for the average retail investor. In this case, it is not really your Uncle Carl who is pushing up volatility, but rather these professional fund managers. However, a recession is not going to destroy companies' fundamental value; it will just delay the cash flows a year or two further out.

If you are investing for the long term, there is nothing unique about the events happening today that would undermine the normal investment return profile that we showed in the second chart. For the sake of argument, let's say you had bought the index during a volatility spike in 2002 and therefore paid a 10% premium. Over the course of the ensuing 20 years, you would have seen your investment grow by a compounded rate of 6.5% rather than 7% (let's say about 8% versus 8.5% when you include dividends). You certainly would have rather made the extra 0.5% per year, but for retirement planning or similar things, that's a manageable miss. Moreover, this kind of overstates the difference, because once you take into account reinvested dividends and other new investments you make over time, the impact on returns would be even more muted.

Where Does That Leave Us?

- Don't sweat the short-term stuff. If your investment horizon is long – say, greater than 10 years – the risk of short-term volatility is likely to get smoothed out. If you paid a little too much, it will tend to come out in the wash.

- Make sure your asset mix fits your investment horizon. If your investment horizon is shorter, or you are more likely to need to take cash at irregular intervals, then you should probably be weighting your portfolio toward investments with more certain cash flows (i.e., with more sure fundamental value). The degree of this weighting will depend on your particular cash and income needs.

- Approach your portfolio as an integrated whole. A common mistake is to treat money in various accounts as independent of one another. This can create overlaps that may undermine your efforts to diversify. Real estate investments likewise should be included in your planning. Talk to your financial advisor about all your assets and make sure you update them when there are big additions or changes to your non-managed assets.

- Check your portfolio weightings. Sometimes, a re-weighting of a portfolio is in order as you approach retirement or have other cash needs. Even if the weighting was originally appropriate, the differential in growth rates of different types of asset classes or companies may ultimately weight your portfolio in a direction that no longer fits your needs. By way of example, if you had structured your portfolio so that it was 50% in value stocks and 50% in growth stocks, after 10 years, that ratio would be closer to 34% and 66% respectively, depending on the growth differential. That may be the exact opposite risk weighting you are seeking as you get closer to retirement.

- Check that most of your investments have fundamental value. A portfolio that is made up solely of cryptocurrency, early-stage tech stocks, and pickled flatulence is deeply dependent on the demand by other people to own them, rather than their fundamental ability to give you back cash. Sure, early-stage tech stocks can have long-term, fundamental value too, but bear in mind that venture capital investors who hold these kinds of companies expect only about 1 in 10 to do well. You have to have steel nerves to watch the other nine crash and burn.

- Check your stomach at the door. If you personally can't stomach the roller coaster of price volatility, then maybe you should be positioning your portfolio in a way that better fits your risk profile. Talk to your advisor about the addition of some different asset classes or a greater weight toward fundamental value that could reduce the amount that your stomach drops when the volatility ride really gets going. There is never a free lunch (because you may lose yours on the ride). You can hedge against these market lurches, but it will likely reduce your returns somewhat. If your portfolio is pulling a few Gs with big swings up and down, then maybe the risk profile is not right for you. You don't need to do a full-scale statistical analysis to have this inherent sense of your own risk tolerance.

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