

GMO

QUARTERLY LETTER

February 2014

Year-End Odds and Ends

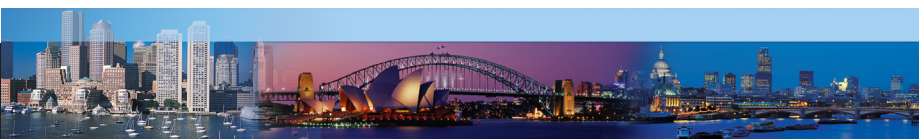
Jeremy Grantham

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Ben Inker

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Year-End Odds and Ends **(Possible Peak Oil Demand, Fracking Frictions,** **and the Great Fertilizer Wars of 2037)**

Jeremy Grantham



Fossil Fuels: Is Tesla a Tease or a Triumph?

In an earlier report, “The Race of Our Lives”¹ I finished on the unusually optimistic point (for me) that a combination of declining fertility and eventual declining population combined with unexpectedly strong progress in renewable energy might just save our modern civilization from a slow and, no doubt, irregular descent into dystopia. More recently, while still believing we are in this critical race, I have become increasingly impressed with the potential for a revolution in energy, which will make it extremely unlikely that a lack of energy will be the issue that brings us to our knees. Even in the expected event that there are no important breakthroughs in the cost of nuclear power, the potential for alternative energy sources, mainly solar and wind power, to completely replace coal and gas for utility generation globally is, I think, certain. The question is only whether it takes 30 years or 70 years. That we will replace oil for land transportation with electricity or fuel cells derived indirectly from electricity is also certain, and there, perhaps, the timing question is whether this will take 20 or 40 years. To my eyes, the progress in these areas is accelerating rapidly and will surprise almost everybody, I hope including me. Because of this optimism concerning the technology of alternative energy, I have felt for some time that new investments today in coal and tar sands are highly likely to become stranded assets, and everything I have seen, in the last year particularly, increases my confidence. China especially is escalating rapidly in its drive to limit future pollution from coal and gasoline and diesel powered vehicles. Increased smog last year in major cities led to an unprecedented level of general complaint. China simply can’t afford to have Chinese and foreign business leaders leaving important industrial areas in order to protect the health of themselves and their families. Nor are they likely to be comfortable with a high level of sustained complaint from the general public. They have responded in what I consider to be Chinese style, with a growing list of new targets for reducing pollution. A typical example recently was an increase of 60% in their target for total installed solar by the end of 2015! Hardly a month goes by without a new step being announced.

Even when considering oil, with enough progress in alternatives and in electric vehicles one begins to wonder whether this year’s \$650 billion spent looking for new oil will ever get a decent return. I recently took a drive in a GMO colleague’s Tesla from New York to Boston. Now, I am about as far from a car freak as you will easily find. I just turned in a 12-year-old Volvo that unfortunately had been sideswiped, for otherwise it was good for years more. But I have to say that my recent Tesla journey was my #1 car experience ever. Three years ago I test drove a Tesla in Boston and it was a tinny, rattly, super-expensive toy. Its battery alone cost \$50,000! Last month, its chief engineers suggested its cost today is \$22,000. In three years they and other experts are confident that the battery will be less than \$15,000 and probably its weight will have fallen also. The Tesla feels like the \$75,000 vehicle it is and not simply adjusting for the fact that it is electric, but on its own merit. Many of you will know that this vehicle has a range of 150

¹ “The Race of Our Lives,” 1Q 2013 GMO Quarterly Letter, available with registration at www.gmo.com.

to 270 miles depending on battery size and that it received two prestigious car of the year awards² along with being given the highest crash ratings of any vehicle ever! *Consumer Reports* gave it the co-equal highest ratings in the magazine's 77 years! Even more importantly for me, there was this series of what I can only describe as my first iPad moment: "Wow, that's cool!" And cool it was as the extreme acceleration pushed me back into the passenger seat for the first time in my life, aided, it must be said, by an exuberant new owner at the wheel. We had enough charge to reach Boston easily, but out of curiosity and in need of a coffee break, we stopped to charge the battery at the one and only charging station halfway home. Twenty-five minutes later, we were back on the road, fully charged up. And for free! (Full disclosure: I regrettably have owned no shares in Tesla.)

Okay, "Enough!" you say. But at \$10,000 to \$15,000 per battery in three years plus some economies of scale, there will probably be a \$40,000 vehicle that even die-hard cheapskates like me will have to buy. (Our stop-gap Jetta diesel, which gets an honest 41 miles to the gallon, was \$24,000.) One can easily see that in 10 years there could be a new world order in cars. (And if that weren't enough, there is a wholly different attack on the traditional gasoline engine from an entirely new technology, the hydrogen fuel cell, to be introduced by Toyota this year.) In short, with slower global economic growth, more fuel-efficient gasoline and diesel vehicles, more hybrids, cheaper electric cars, more natural gas vehicles, and possibly new technologies using fuel cells and, conceivably, methanol, it is certain that oil demand from developed countries will decline, probably faster than expected. Some emerging countries, notably China, are likely to take more dramatic and faster steps to reduce demand than we have ever thought about. Already they have 200 million electric vehicles – mostly motorbikes – almost as many as the rest of the world squared. Total global oil demand at current prices or higher is likely to peak in 10 years or so. At much lower prices we would fairly quickly lose most of our high-cost production: deep offshore, fracking, and tar sands. Times may be changing faster than we think. My guess is that oil prices will be higher than now in 10 years, but after that, who knows? The idea of "peak oil demand" as opposed to peak oil supply has gone, in my opinion, from being a joke to an idea worth beginning to think about in a single year. Some changes seem to be always around the corner and then at long last they move faster than you expected and you are caught flat-footed.

Fracking

Fracking in the U.S. has already been a bonanza for economic activity (and Lord knows the economy can use any help it can get) as drilling and its massive support system has ramped up to 20,000 wells or so a year. The importance to the U.S. of increased domestic oil production has, of course, been in reduced import bills and lower dependence on a potentially dangerous market. But oil is a truly global market, with 64 countries producing oil and every country using it, and our new fracking oil moves our dial but barely touches the global market. Our remarkable 20% increase in output is only 2% of world production. The real oil problem is its cost – that it costs \$75 to \$85 a barrel from search to delivery to find a decent amount of traditional oil when as recently as 15 years ago it cost \$25. And fracking is not cheap. The fact that increased fracking has been great for creating new jobs should give you some idea: it is both labor- and capital-intensive compared to traditional oil. Also, we drill the best sites in the best fields first, so do not expect the costs to fall per barrel (although the costs per well drilled certainly will fall with experience, the output per well will also fall). No, fracking, like extracting tar sands, yields a relatively costly type of oil that you resort to only when the easy, cheap stuff is finished. Fracking wells also run off fast. We still get 10% of global oil from a single traditional field discovered in 1945 that is still chugging along. Fracking wells are basically done for in three years. They are definitely not your grandfather's oil wells!

² Tesla Model S was named 2013 Motor Trend Car of the Year and Automobile Magazine's 2013 Car of the Year. In addition, it was named the 2013 World Green Car of the Year by the World Car Awards.

Natural gas is a local market, so local that Japan can be paying \$12 per MCF while we, with our new fracking supplies, pay only \$4.00 or so, vastly to the competitive advantage of our chemical industry and other energy-intensive industries. However, if we tried very hard we could mess up this splendid advantage: we could ship our gas overseas. The costs of liquefying, shipping, and delivery come to around \$6 per MCF, well over half the total energy value at global rates of the world's premium fossil fuel – premium in terms of its ease and cleanness in handling, its huge reduction in air pollution, and, critically, its reduction in CO₂ produced per unit of energy. So from a global environmental and resource view, fully half of the benefit of our premier fossil fuel (or the least bad to an environmentalist) would be totally wasted in shipping costs. Oil is perfectly designed for cheap shipping; natural gas, in contrast, is perfectly designed for painfully expensive shipping. Exporting our natural gas would also take a big bite out of the relative cost advantage of a large slice of U.S. industry. Building incremental chemical and other industrial plants would produce many multiples of the new jobs that exporting gas would create. Exporting gas would, however, help raise the price of gas in the U.S. and make some more money for gas producers if that is what you value. Rising demand as industry and consumers reorient activities toward this cheaper energy will push the price up steadily anyway. And, very probably, long before the huge investment in shipping and port facilities were amortized, the U.S. gas price will have crossed the \$6 gap, which, added to shipping costs, would close out the international markets. Surely it is far better to have the U.S. sit back and enjoy a few years of energy cost advantage. (Similarly, the XL pipeline is designed primarily to arbitrage the gap between higher global oil prices and the lower oil prices in parts of Canada by making more tar sand oil available for global markets. Higher prices are much to the advantage of Canadian tar sand producers. Lower prices are much more to our advantage in the U.S. Multinational oil companies with profits in both countries do not see this issue so straightforwardly.)

Yet More Technical Stuff on Fracking

“Fracking gas,” like all natural gas, is basically methane. Methane unfortunately is an even more potent greenhouse gas than CO₂: at an interval of 100 years it is now estimated to be 32 times as bad, and at 20 years to be 72 times worse! If it leaks from well head to stove by more than 3%, it gives back its critical advantage and becomes no better than coal in its climate effect. Emissions, for whatever reasons, have not been carefully monitored. It would be nice, though, to know how fast we are roasting our planet. A series of tests in the next three years or so, privately funded, will measure leakages. In old cities with Victorian era gas lines, leakage will be terrible – probably 2% or 3% on their own. At some “cowboy” wells, emissions will be much higher than that. This, however, is just a matter of best practices: all production and transmission could be reduced fairly quickly to 0.5% or less. In comparison, retrofitting antique city gas lines will not be easy. It will take real money, but there are some ingenious new methods of renewing pipes being developed as we read. We could really do this with a little exercise in good judgment and sensible regulations. Carefree deregulation à la Greenspan et al. helped make the financial meltdown interesting. But this issue is much more important: planetary meltdown.

Exhibit 1 is my favorite example of circumstantial evidence (presented initially in *Science*³). You can see that in the Midwest earthquakes measuring over 3.0 on the Richter Scale occurred with the almost remarkable regularity of 14 a year on average. Decade after decade this pattern continued – producing a remarkably straight line – until 2003, when the line climbed steadily above trend, coincident with the drilling of fracking wells in the

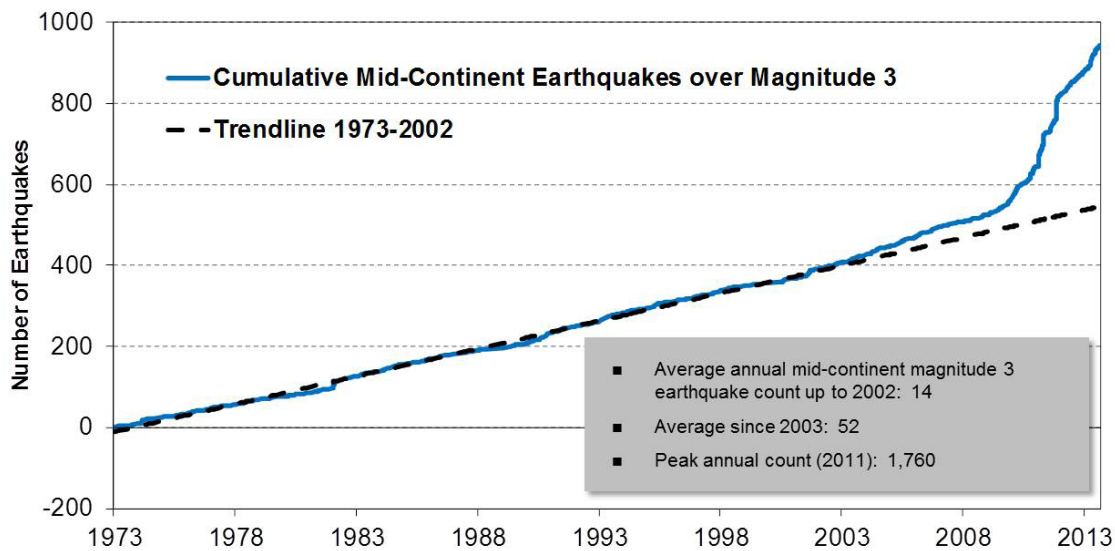
³ William L. Ellsworth, “Injection-Induced Earthquakes,” *Science*, July 12, 2013.

region. From 2003 until now the average has risen by over three times to 52 a year, with a peak of 1,760 in 2011 alone! There is no prize for pointing out that few, if any, individual incidents can be attributed to a particular well with certainty, but to me at least the connection is clear and statistically certain ... far more certain than anything I ever see in the stock market or the economy. But would you know this from the way this data has been presented, or, rather, not presented? Hey, they're only earthquakes! Fortunately these earthquakes are, as always, overwhelmingly minor quakes. Large earthquakes are, happily, very rare. In this data there were only two events over 5.0 on the Richter Scale, but one of these was deemed by the authors to be very likely the product of fracking.

Exhibit 1

Cumulative Count of Earthquakes Over Magnitude 3, U.S. Mid-Continent

Rectangle between 25 and 40 N, -107 and -88 W



Source: USGS as of 9/2/13

Note: Data provided by the USGS is very similar to the data presented in the Science article.

Update on Metals, Fertilizers, and Food

A group of important elements – iron, aluminum, and potassium – are generously supplied in the earth’s crust, 2.5% to 4% each, and at some price that is affordable at least to rich and middle income countries they will be available for a century or two at least. Many other important elements, though, are genuinely scarce so that their availability at even fairly desperate prices is not assured, at least not for their current uses. Copper, for example, may become a semi-precious metal but will certainly not be commonly used for piping in a few decades. All of these metals must be replaced eventually by organic substitutes, just as cellulosic plastics from wood have already been substituted in some uses for petrochemical plastics. Substituting for copper and other elements that have special qualities such as conducting capability or use as a catalyst will take decades – a time period far too long to attract many corporate research dollars.

Phosphorus. As readers know, I consider phosphorus (phosphate) to be an especially important case. Phosphorus is about .07% of the earth's crust compared, say, to potash's 2.5%. This .07% had been washed down rivers for millions of years and, once in a geological while, an ocean dried up. If everything was just right, we were left with 20% or 30% phosphate concentrations, at which concentration extraction is efficient and cheap enough for the farmers of developed and most emerging countries to use in required quantities. As mentioned before, phosphorus (and potassium in potash) is necessary for the growth of all living things and, unlike very nearly everything else, cannot be substituted for or made. Currently both are mined and the mines deplete.

Particularly worrying to me is that phosphorus is not evenly divided: you either sit on a dried up ocean or you don't. Morocco and the neighbor it controls, Western Sahara, contain within their boundaries some 75% ±10% of all of the high-grade, low-cost phosphate known to exist in the world. Outside of these Moroccan deposits there is still a lot of phosphate – about enough for 50 years at 2% a year growth in demand. Even after allowing for further discoveries to add 40% to this total, it would mean that “peak non-Moroccan phosphate” would occur in some 30 years and all hell would break loose. Take out Morocco from the production side and serious people (most Scandinavians and maybe five in Congress, but which five?) would immediately worry. I'm pretty sure, though, that the U.S. military already pays suitable attention to this issue as it clearly does to problems stemming from climate change. (Who would have guessed that on several vital long-term issues the military here and in the U.K. seems to have the most sensible views of any establishment entity?)

Well, Morocco fortunately seems like a reasonable enough kingdom with an unusually reasonable king and sensible-sounding people running its phosphate operations, who seem to me to be not as short-term greedy as, say, your typical investment banker circa 2007. It seems to be settling into the role of market leader and price setter, and things could be a lot worse.

But think for a minute where Morocco is. Egypt, Syria, Libya, and Mali are not far from being failed states, and Tunisia, Algeria, Chad, etc., are not themselves models of stability. You will remember, perhaps, my thesis on North Africa and Syria. Their populations all increase rapidly, they are largely desert countries abnormally affected by climate deterioration (Syria's recent troubles were preceded by the driest six years in its long history), and wheat does their heavy calorie lifting. They cannot grow all of their own wheat and must import it on the world market at prices that vary from two to four times what they were only 10 years ago. Libya and Algeria have oil or gas to export but, critically, Egypt, which did until recently, is now an importer. The much-increased prices of wheat and oil and, to some extent, fertilizer, have helped destabilize their societies. They mostly run trade deficits that are hard to imagine being funded for long by international good will. So, what happens if this irregularly deteriorating situation spreads to Morocco, with its most important quasi-monopoly in the history of man, as I like to say? Surely the U.S. military or, say, the Chinese military will not allow Morocco to become a failed state for these reasons? Perhaps if we're lucky and not too reckless the worst will be avoided, but we should definitely try to avoid the Great Fertilizer War of 2037.

Problems in Forecasting Short-term Prices for Resources

I underestimated both the skullduggery of “miners” and the great lumpiness of their new production capabilities. New mines are surprisingly few and usually gigantic in scale. Deliberate delay in completing projects, legal or not, when shortages are intense and profits exceptional is understandable and does occur. I missed the point that when you run a copper mine at 1.2% average copper ore you start with the 1.5% stuff and end with the 0.7% dregs. And when the replacement mine comes on with a painfully lower average of, say, 0.7% it nevertheless

starts mining its 1.1% ore first on its way in 30 years or so to its dregs of 0.4%. So, even as the quality of ore irretrievably declines in the long term, the quality of ore mined can increase in the short term when a new mine comes on line. And this higher quality for a short time improves the cost structure and puts temporary downward pressure on prices.

The skullduggery factor in mining was revealed recently as the potash “cartel” in Belorussia and Russia fell out in a farce that, put to music, would sell tickets. The Belorussian President invited those bosses of the Russian syndicate who had broken ranks to discuss the issue, and the one who unwisely turned up was promptly arrested on arrival and put in jail, where all cartel breakers clearly belong. The price meanwhile fell 10%, not as much as expected, but enough to make the point that some aspects of mining are scarily far from any efficient and free market hypothesis. Many of those “special” factors were considered in some detail in a report by an independent consultant, Frank Veneroso,⁴ as he objected to parts of my original April 2011 thesis on commodity scarcity and qualified others, often with good reason.

As for my stock predictions, like a coward I will continue to hide behind my original (April 2011) warnings that: a) if China slowed, metal prices could be hit badly for a while; and b) if there was finally some more reasonable weather, grain prices would dive under the influence of substantially more land than ever having been planted in response to the sustained high prices. And that is how it has worked out. However, with the probable exceptions of the truly widespread iron ore, bauxite, and potash, for which I am an agnostic, I still believe metals, phosphate, and grains will move much higher over future decades as opposed to falling as they did in the past before 2000, and that these price rises will have profound consequences for the poorest 20% or so of the world. And that their disturbances will produce an increasing number of desperate food and poverty refugees as reflected in last year’s (October 4, 2013) shocking shipwreck off Lampedusa. I also believe that these continued reverberations will disturb our peace and make it difficult to fully enjoy the incredible advantages we in North America have, not just in income, but in real wealth – plentiful fertile land, plentiful water (six times per capita more than the Chinese, hence their different behavior to resource availability), and, relatively speaking at least, plentiful resources in the ground. (The bottom line, rather unexpectedly, is that the price of oil, which is half the value of all traded commodities and a major cost input into the rest, was up slightly for 2013. Natural gas in the U.S. was up a lot and, most unexpectedly, the global prices of iron ore, which is almost half of the top line of the miners and was surrounded by pessimism all year, actually had a very small rise for the year.)

Another Look at U.S. GDP Growth

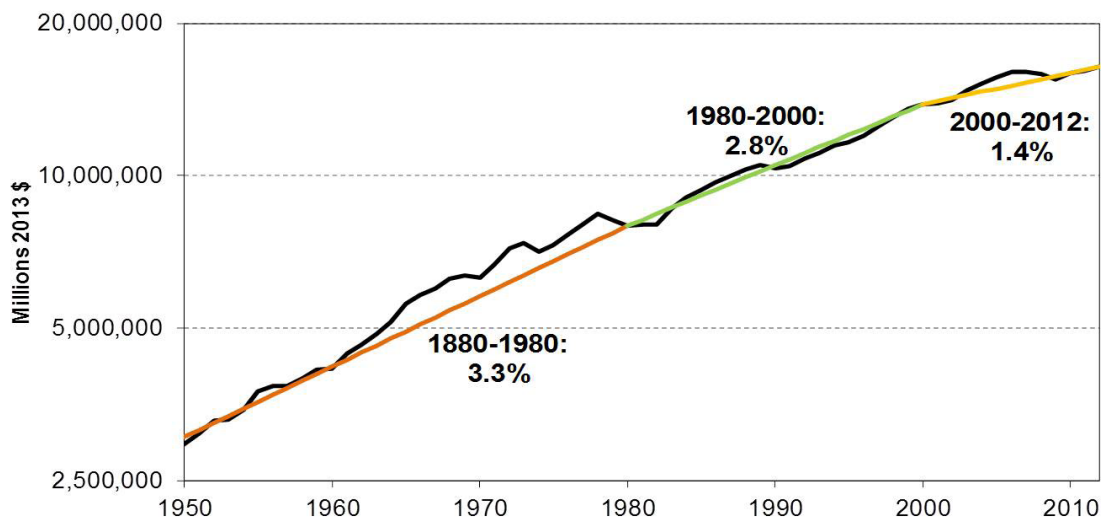
U.S. GDP growth had a wonderfully long run on a remarkably steady 3.3% trend line, from about 1880 to 1980 (see Exhibit 2). Although admittedly nowhere near recent Chinese growth, the duration and consistency was remarkable. Annual growth of 3.3% for a hundred years will multiply your income by 26 times! But 1880 to 1980 appears, with hindsight, to have been the Golden Century. In the 20 years from 1980 to 2000 that followed the Golden Century, the growth of GDP slowed materially (and was skewed to the top 10% and 1% in a way that had not been seen for 70 years), but still the country was compounding at a solid enough 2.8% a year, a rate that in a century would still compound to 16 times. For the last 13 years, in contrast, the growth has really slowed – to only 1.4% a year, and this despite a considerable bounce-back in capacity utilization since the bottom of the financial crash in 2009. To put it into perspective, 1.4% a year turns a dollar of income in 100 years not into \$26 or \$16, but into \$4!

⁴ Frank Veneroso, “Commodities, A Dangerous Hedge Against the Much Anticipated Debt Confiscating Inflation,” September 13, 2011.

Exhibit 2

GDP Growth Is Slowing Down

U.S. Real GDP and Trendlines



Source: Global Financial Data, GMO as of 12/31/12

An important question here is how integrated is this substantial and unprecedented economic slowdown into everyone's thinking, from average businessmen to the economic experts of the IMF and the Fed? The answer seems clear: not very. But this data, the accuracy of which is not challenged as far as I know, is the background for my recent forecast that the next 30 years of U.S. GDP growth is likely to "look like 1.5%," on current GDP accounting; a growth rate, incidentally, that is slightly higher than that actually experienced in the last 13 years. Despite this comparison, my forecast of late last year was generally treated as unreasonably bearish, although no one really challenged the two basic propositions on which it was based: first, a growth in future person-hours offered to the workforce of 0.2% a year based on estimates of the U.S. Bureau of Census; and second, that the productivity of the last 30 years of 1.3% a year would be sustained, which, given the steady decline in the share of the subset of manufacturing, a subset of the total with much higher productivity gains (over 3% a year) than the average, is actually a friendly assumption.

At this point I can't resist reviewing once again my forecast in 2009 of "seven lean years," in which I suggested 2% a year would be a hard level to reach or exceed. And it will turn out that way. But the biblical idea of seven lean years, which felt so brave back then in 2009 seems likely to be a red herring: the time period would be better left open-ended. "Permanent lean years" is not as memorable but probably more accurate. Let me add here that "lean" is only a useful concept to compare with the previous Golden Century. Growth of 1.5% a year is simply not that bad. (Indeed, to the earner of the average hourly wage, which, remarkably, has been dead flat since 1970, 1.5% a year would have delivered an increase of almost 70% and would have gone a long way to removing some of the middle class malaise.) It is, however, important that we readjust our mental targets unless we want to enter an era of perpetual disappointments, which would seem to be a very bad idea. False optimism leads to very poor investment decisions. It will also encourage yet more dangerous policies at the Fed. We can imagine, for example, in 30 years some "son of Yellen" as it were, introducing QE 27 in a vain attempt to squeeze blood out of stones. But long before then, I fear an overstimulated system will have bitten us a few more times on the leg.

Investment Lessons Learned: Mistakes Made Over 47 Years

Chapter 1 (the first of several future chapters)

When I was a teenager, my parents had their friends over on most Sundays for a drink. (Actually, it was a 1950's version of "a few drinks.") During these sessions I was impressed by the confident expressions of current and future success laid out by my stepfather's closest friend. His firm was a manufacturer of scaffolding, a patented easily-assembled variety, for which he was the main international salesman. After two or three years I could stand it no longer and at 16, because my parents did not invest in the market and for lack of a better idea, I arrived at a bank branch in a south London suburb with the bank book from my "home safe account," which was designed for children's savings and which I had had for as long as I could remember. Asking to see the branch manager, I surprised and amused him by asking for his help in investing everything in my account – £16. I remember the investment well: Acrow A shares. It was his first experience with investing for a home safe account but he could see no problem and without parental confirmation or any fuss at all did the trade. And so my first commission was paid out. And, by the way, £16 was a lot. I had been extremely frugal. (The exchange rate was 4:1 and \$64 of buying power in 1954 translates to about \$560 today.)

So far, so good. Years came and went as they do and presently I was 26 and unexpectedly heading to business school in America. Equally unexpectedly and very generously I had been kept on the payroll of my employer, Royal Dutch Shell, but at £1,200 a year this was only going to cover one-quarter of my two-year expenses. As a result, everything I owned – as in every last thing – was cashed in. By this time my shares had blossomed to about £100 of value and my mother was by now also an investor. Encouraged by the unabated enthusiasm from our neighbor (who, after all, we had argued must surely know the innermost secrets of his firm, particularly because we knew for a fact that he had most of his wealth tied up in the company's shares), and no doubt reinforced by past stock performance, my mother made me a proposition: to avoid paying the notorious commissions, we would transfer my shares to her account and she would pay me that Wednesday's closing price. So, off I went to the U.S. with enough to buy my ticket on a VC10, a faster crossing than you can get today by the way, but brutally expensive for a one-way trip. (My parents had bravely allowed me to take out a mortgage on their house to draw down as I needed to balance the books.)

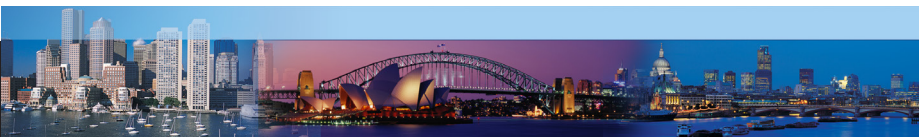
The following year, with little preamble "our" company imploded to zero. My mother took a few hundred pounds' hit in her only (and last) stock holding, and our friend, right on the cusp of retirement, lost the great majority of his formerly comfortable nest egg. Almost until the last day he had known nothing about his impending doom, about big bets made and reckless debts assumed to make the corporate great leap forward. His own sales efforts in South America had continued promisingly into the last few months.

LESSONS LEARNED:

- 1) Inside advice, legal in those days, from friends in the company is a particularly dangerous basis for decisions; you know little how limited their knowledge really is and you are overexposed to sustained enthusiasm;
- 2) Always diversify, particularly for your pension fund;
- 3) Fraud, near-fraud, or colossal incompetence can always strike;
- 4) Don't buy stocks yourself if you're an amateur: invest with a relatively rare expert or in a low-cost index;
- 5) Investing when young will start your brain turning on things financial;
- 6) Painful errors teach you more than success does;
- 7) Luck helps; and finally,
- 8) Have a convenient mother to be the fall guy.

Disclaimer: The views expressed are the views of Jeremy Grantham through the period ending February 6, 2014, and are subject to change at any time based on market and other conditions. This is not an offer or solicitation for the purchase or sale of any security and should not be construed as such. References to specific securities and issuers are for illustrative purposes only and are not intended to be, and should not be interpreted as, recommendations to purchase or sell such securities.

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Divesting When Discomforted

Ben Inker



Value investing can seem like a pretty easy way to make a living. It almost sounds self-evidently true that our style is the correct one in the long run – after all, how could purchasing undervalued assets not eventually provide superior results? Other investors may make guesses about the future: What will happen to unemployment next year? Will holiday spending grow by 2.3% or 3.2%? Will the new iPad sell 28 million units this quarter? But we can sit back and say none of it really matters because “value will out.” It sounds like such a relaxing way to invest, other than the occasional near-death experience of an investment bubble that won’t stop or an apparent buying opportunity that turns into a value trap.

But the reality is that value investing is trickier to pull off than it seems, and can require those who really want to win to make some difficult trade-offs. These trade-offs can be particularly vexing for those of us who are making their living as asset allocators rather than bottom-up security selectors.

One extremely important issue for value investors is timing. We all know we want to buy assets when they become cheap and sell them as they return to fair value, but how exactly should we do this? If you are building a portfolio out of a relative handful of securities, the simple answer is to move slowly. You simply cannot acquire or dispose of a large position in most securities particularly quickly, so you are forced to move in and out over time. As an asset allocator, this isn’t necessarily true. If we wanted to move \$5 billion into the S&P 500 tomorrow, this would not be a problem. Daily volume in S&P 500 futures over the past quarter has been about \$140 billion, so we could get \$5 billion done over the course of a day without leaving much of a trace. If, however, we wanted to buy \$5 billion of Berkshire Hathaway – to pick a large cap stock well-loved by value managers – that would be something like 12 days’ volume, and we’d be well served to build up the position over a period of months, as well as selling over a similar period when investors came to realize that this Buffett guy may know something about investing after all. But just because we can trade something quickly doesn’t mean we should. As a slight spoiler to the rest of the piece, for our asset allocation portfolios we generally try to trade slowly even when we aren’t forced to by liquidity considerations. The practical upshot of this is that after not selling much equity last year despite the strong rally, we look to be steady sellers of equities this year, and we will very likely continue to sell even if the equity markets fall moderately during the year.

The Slow Trade Movement

There are some nice features to trading slowly. One important one is that it reduces your overall turnover. If your estimate of pricing relative to fair value is bouncing around, you can wind up selling stuff you just bought and vice versa. This is not necessarily a bad thing if that trading activity is driven entirely by changes in prices – after all, you

should be making money each round trip – but if there is some volatility to your estimate of fair value, you can wind up whipsawing your portfolio and doing nothing but incurring transaction costs. Our general tendency is to manage our portfolios using not just the current – or “spot” – asset class forecasts, but also to take into account the forecasts over the last year or so, a technique we refer to as slicing. This slicing slows our trading, reduces the impact of data issues that might affect one month’s forecast only to disappear in future months, and allows us to do the bulk of our investing through physical stocks and bonds rather than restricting ourselves to the most liquid futures and ETFs. Investing through physicals not only gives us the ability to target our positions more specifically than the use of futures allows for – think U.S. Quality stocks, Japanese domestically-oriented companies, or depressed asset-backed securities – but also allows us to take advantage of bottom-up security selection opportunities within the groups we are buying.

That all sounds like ample reason to trade slowly, and it is. But there is another benefit to slow trading, which is less intuitive but has historically been quite powerful. The slightly odd fact is that moving slowly on value-driven decisions has simply made more money historically than moving immediately would have. Buying the assets that are cheapest at any given point in time has been a profitable strategy historically, but buying the assets that were cheapest on average during the past year, or odder still, the assets that were cheapest a year ago irrespective of their valuation today, has done even better.

Looking at Lagged Value

One of my earlier jobs as a researcher at GMO was to rebuild our country model for our international equity portfolios. I was young, eager, and had a naïve belief in the power of backtests. I had been at GMO long enough to have the idea bashed into me that we should be using value, but as I looked at the data, it seemed to be the case that the way we used value was important. Just picking the cheapest countries every month worked fine, but it wasn’t the best “value” strategy. It turned out that buying the countries that were cheap a year ago did significantly better than the countries that were cheap today. A portfolio built from the cheapest two countries outperformed by 2.8% per year relative to the average country, but a portfolio built from the countries that had been cheapest a year earlier outperformed by 7.4%.¹ This is sufficiently non-intuitive that I want to make sure I’m being clear. What this test is doing is ranking all countries in the developed world by valuation and holding an equal-weighted portfolio of the cheapest two for the next year. If you did this diligently, on the most recent data available, every month from December 1978 to June 1999 (the time this particular model was settled on), the portfolio outperformed the average country by 2.8% over the following 12 months. If, on the other hand, you decided that you didn’t actually care about what happened in the past year and built your portfolio from the cheapest two countries on the data available a year prior, the portfolio outperformed by 7.4% over the next 12 months. Over 2.5 times the power, from simply ignoring everything that happened in the prior year! So what was the difference between the two portfolios? An easy answer is momentum. That argument goes as follows: the trouble with a portfolio of countries that are cheap today is that they have gotten cheap by virtue of underperforming. If markets exhibit momentum, then we should expect those countries to continue underperforming for a while. Countries that were cheap a year ago have had time for that bad momentum to get out of their system, as it were. And sure enough, from December 1978 to June 1999, the two countries with the best momentum in the prior year outperformed the average by 7.4%, just as powerful as lagged value.

But here’s where it gets a bit weird. Since June 1999, when that model was put to bed, neither momentum nor that value model has worked anywhere near as well for country selection as in the 1979-99 period. That in and of

¹ This result is actually from a somewhat later version of the model developed in 1999. The earlier version was built on a Digital Computer VAX, which was consigned to the trash heap almost 20 years ago, and while I could have asked our IT department to try to dig out the tapes from storage and then dig out a machine capable of reading such tapes, I couldn’t bring myself to do so.

itself isn't that odd. A couple of things could easily have gone on. First, the importance of country effects in the developed world is almost certainly far less than it was 30 years ago, so anything predicated on "countryness" should be expected to have deteriorated in power. Second, the particular model we built could easily have been overfit to do very well in the test period, which would be a further reason for deterioration. (For what it is worth, today at GMO we use both less highly "tuned" value models than we did back then and rely far less on "countryness" in putting together our portfolios in the developed world.) But even so, since June 1999 the two highest momentum countries have underperformed the average country by 0.4% per year, and the cheapest two countries have underperformed by 0.7% per year, not just far less than we saw in the earlier period, but actually the wrong sign! So much for both value and momentum. But interestingly, the cheap countries lagged one year still managed to outperform by 1.8%. Not exactly 7.4%, but still a viable strategy, despite the fact that standard value didn't work, nor did momentum. You can't just chalk up the performance of lagged value to a momentum effect, and while you could shrug it off as a statistical artifact, this is a pattern we see over and over again.

If we just look at traditional value for stock selection – good old price/book as enshrined by Fama and French – the cheapest 10% of the market has outperformed the broad market by 2.5% per year since 1965. Sounds fine, but since the original Fama/French paper was published in 1992, the group has actually underperformed by 1.6% per year. The same group lagged one year outperformed by 3.5% per year since 1965, and since 1992 has outperformed by 2% per year. You can see similar patterns in sectors as well. In most cases lagged value either works better than portfolios based on current data or works almost as well.

So what can we do about this as value managers? One thing would be to explicitly use lagged value instead of spot value in our portfolios. The trouble is that we don't know precisely why lagged value has worked as well as it has, so it is hard to know what to do if it stops working. As a strategy, this puts us value managers in the potentially awkward position of having to explain to clients why we bought an asset that wasn't cheap, saw it fall in price, and then sold it. It's hard to have a lot of confidence in a manager who tells you that story, particularly if he claims to be a value manager.

There are a number of important factors associated with being a good value manager. First and foremost is certainly being able to come up with decent estimates of the fair value of the assets you are considering. Second is having a strategy for trading into and out of the assets that look cheap that captures the returns available from your insights; trading based on lagged value has historically been pretty good on this front. An important third is understanding why what you are doing should work so that you can be in the position to know what to do when your strategy is not doing well. This third factor is a crucial requirement in that it also gives you the ability to explain to your clients what you are doing and why. Because it is almost impossible to successfully implement a value strategy unless your clients are willing to hold on through the inevitable tough periods, having a strategy that not only is reasonable but sounds reasonable is extremely important.

As a result, while the average performance of a lagged value strategy may be better than that of a spot value strategy, it's not clear that you will either stick to it when it really counts or convince your clients to stick with you when you try to follow it. Sliced value holds up better on this front because you are almost always moving in the direction of what is cheap today and clients are used to the fact that their value managers are slower to turn over their portfolios than most. That isn't to say that sliced value is a breeze to stick to, and part of the point of writing this quarterly letter is to force us to stick to our battle plan this time around.

Giving in to Temptation

We began the 2008-09 period by following the sliced strategy, buying into equities slowly as they fell through fair value in the autumn and became cheap. We bought equities steadily from November to March as prices fell to quite attractive levels, moving from the lowest equity weight we had ever held to something only a few points less than average. But then the market rallied strongly in March and April. We found ourselves paralyzed, unwilling to buy more equities when they had so recently been 20% cheaper. We convinced ourselves that the market was likely to come back down again and we'd have another chance to buy stocks at better levels. As it happened, stock markets continued rising and never turned back. Table 1 shows the performance of a few simple strategies around the Global Financial Crisis – a static 65/35 S&P 500/Barclays U.S. Aggregate portfolio, and four variants of a value strategy starting from a 65/35 neutral portfolio.

Table 1: Strategies around Global Financial Crisis (Gross)²

	12/2007-2/2009 Return	2/2009-12/2010 Return	12/2007-12/2010 Return
65/35 Portfolio	-34%	48%	-2%
Spot Value Portfolio	-31%	53%	5%
Lagged Value Portfolio	-19%	41%	14%
Sliced Value Portfolio	-25%	47%	11%
Sliced then Frozen Portfolio	-25%	44%	8%

Over the three years from 2008-10, the 65/35 portfolio lost about 2%, which was achieved by falling 34% through February of 2009 and rising 48% from then through 2010. All of the value strategies did better. Interestingly, spot value – building the portfolio based on the up-to-date valuation of stocks – was the least beneficial in the fall, saving only 3% versus the static portfolio on the way down, while lagged value, which used one-year stale valuations of stocks, helped the most on the way down, almost halving the loss to only 19% in the crisis. Positions were reversed on the way up, with spot value rising the most, at 53%, and lagged value coming late to the rally and rising only 41%. But the combination of falling the least and rising the least made for the biggest gain, 14% over the whole period, versus only 5% for the spot value portfolio. Sliced value – basically a blend between spot and lagged value – came somewhere in the middle in both directions, winding up with a gain of 11%.

Our plan may have been to follow sliced value, but we didn't quite pull it off. When the market rallied hard off of the March low in 2009, we couldn't get ourselves to buy more and wound up in the case of several of our asset allocation strategies with something similar to the "sliced then frozen portfolio" shown above. The "sliced then frozen portfolio" performed exactly like the sliced portfolio on the way down because it followed the exact same strategy, but lagged on the way up, leading to an 8% gain in total – 3% below what a pure sliced value

² The returns presented in Table 1 reflect hypothetical performance an investor would have obtained had it invested in the manner described and does not represent returns that any investor actually obtained. Table 1 does not reflect the performance of any GMO strategy or fund.

strategy would have achieved.³ There were a number of justifications for “sliced then frozen,” but most of them came down to a discomfort with buying more equities when they had been cheaper only a few weeks or months before. We don’t like giving up returns for our clients and regret not making the extra return a sliced portfolio may have delivered. But I do have to admit it isn’t near the very top of my list of investment regrets as we made those clients money in a time when a static portfolio would have lost, and gave them both a smaller drawdown and higher total return than a spot value strategy as well. If all of our mistakes work out that well, we should do just fine by our clients in the long run.

The world could have gone down a path where freezing the portfolio in March 2009 was the right thing to do, but history told us that the odds were in favor of the sliced portfolio, and history turned out to be correct.

The Situation Today

Over 2013, as stock markets rose in the developed world, equities gradually became less attractive relative to bonds and cash. A year ago, the equity risk premium looked close to normal. In our multi-asset class portfolios we were moderately conservative because that decent equity risk premium was driven by extremely low cash rates, which made us feel that equities were riskier than normal.⁴ Throughout 2013, the yields on bonds rose and the attractiveness of stocks diminished, such that, on today’s forecasts, we believe a significantly more conservative stance is warranted. Trying to heed the lessons of history, avoid excessive trading, and take advantage of securities selection opportunities, we are in the process of selling our equity weight down slowly over the next 9 to 12 months. While circumstances could warrant a change to the plan, as long as equities are not falling faster than they rose last year, our view of their attractiveness will likely be dimming as the year goes on. Our selling may be a little faster if the market continues to rise, and a little slower if the market falls. But after ending 2013 with a little over half of our assets in equities in our Benchmark-Free Allocation Strategy, we expect to be holding significantly less by the end of 2014, unless equity prices manage to fall faster this year than they rose in 2013.

³ This is an oversimplification of what we really did at GMO because it ignores the moves we made inside the equity and fixed income portfolios, but the basic point holds true if you look at our actual portfolios and strip away the other things that were going on. We left a few percentage points of return on the table for our clients by virtue of not continuing to buy equities after early March 2009. Past performance is no guarantee of future results.

⁴ See “What the *&%! Just Happened?” in GMO’s 2013 2Q Letter, available with registration at www.gmo.com.

End Notes

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