Islamorada
Investment Management

Letter to Investors - Tarpon Folio

Part One: Eighty-four Days Without Fish

"Price is a crazy and incalculable thing, while value is an intrinsic and indestructible thing."

- *G.K. Chesterton*

Dear Investors,

This is the first of four sections of my update to you on the Tarpon Folio.

The entire report is lengthy. I wanted to explain this year's performance, the market's volatility and our new focus on a single sector. And some things are impossible to generalize.

I am above all just trying to think independently. If I were to compress this entire update into a single message for Twitter, it would be this:

> *I refuse to let other people do our thinking for us. Also, the decline curve never sleeps.*

The 'No Jargon' Version of What Happened

We are down in Tarpon because, in short, I have been early on oil stocks.

I clearly underestimated just how pessimistic the consensus view on oil prices could become. I also believed the oil market would be much more forward-looking than it has been.

As a result, my brilliant plan to capitalize on the vicious selloff in oil and gas companies earlier this year did not survive first contact with the enemy. More specifically, after some success in the winter and spring, we were caught long and wrong as oil fell from $61 a barrel in late June to $38 in late August – a 38% decline in oil prices in just two months.

And that collapse made the last few months in Tarpon feel like some kind of trial out of the Old Testament.

The Wonky Version of What Happened

Tarpon is down due to a combination of (1) poor timing on my part in terms of oil prices, (2) views I hold that differ dramatically from consensus, and (3) an investment process that, in order to maximize our odds of significant outperformance in the future, has led to significant short-term volatility.

In addition, I was too slow to update my analytical approach to investing in certain exploration and production companies ("E&Ps") in the following two ways, specifically:

1. I had been overweighting the ability of an E&P to manage its margins, and underweighting raw geology. Higher oil prices, as it turns out, can obscure the importance of owning really good rocks.

All operators are limited in their ability to generate cash by things that are entirely out of their daily operational control - including oil prices, royalty rates, and lifting costs. It is not enough for low-cost production to be considered a moat if that advantage is based on efficiencies gained in daily operations. Those will eventually be copied. What cannot be copied, however, is the sustainable advantage that comes specifically from the most material thing a management team can control - where they choose to drill.

Geology is destiny. And the top priority here, really, should be to have both - great managers and great rocks – providing we can buy that combination at an attractive enough discount.

2. This year's oil price collapse is forcing the industry to move from the previous "land-grab and maintenance drilling" phase to a new "rationalization of acreage and more deliberately exploit reserves" stage. In other words, several of the things that made some companies highly attractive to me in January no longer seemed nearly as important by August.

The result of the errors above were losses on several oil companies we have since sold in order to high-grade our own portfolio of energy shares - with more trading in Tarpon than usual in-between.

What I Am Doing About It

In spite of terrible market sentiment and the unforced errors above, I have continued to buy more shares of the best, most undervalued energy companies I can find. I did not take that decision lightly. I realized it would come with increased volatility, not to mention more than a

few raised eyebrows on the subjects of concentration, diversification, and, well, my sanity. In the end, however, every bit of logic I had compelled me to keep grinding it out.

To be clear - I realize that watching big swings in the paper value of your holdings can be unsettling. I also understand at a visceral level that our recent results have provided little validation for your belief in my investment process. But please hang in there, anyway. The price-to-fair-value of Tarpon, our potential to compound returns at a high rate and - most importantly - the odds we have on our side right now are each the most favorable they have been since late 2008.

And despite our lousy results this year to date, we don't need any heroics to recover. We just need to sit still and wait – specifically, for the global decline curve to kick in. More on this later.

In the meantime, I expect the demand for oil to continue to respond to lower prices - as it always does. I expect supply to respond to lower prices, too, as it always does. This time is not different, just unusual. In the end it is just another oil price cycle, and we are in the trough.

Calling Our Shot

I believe you are paying me to run Tarpon in as intellectually honest a way as possible. In good times and bad, I happen to really believe in this philosophy called value investing. And under that framework, returns are not necessarily optimized for comfort. They are optimized for long-term compounding.

To acknowledge the obvious - value investing does not work all the time. It's been a frustrating stretch for performance, but although it is hard to see right now, it is actually an excellent one for establishing higher future returns. My timing of late has, with the benefit of hindsight, been horrible. But I also believe that before too long, that will not matter, either.

My own assessments of the values of the companies in Tarpon to date this year have not mattered. But they will, and likely beginning fairly soon. And as frustrating as the past few months may have been, it may also have been our very best period for establishing a new foundation for long-term compounding.

So, in summary, I am shaking it off and calling our shot. We have slowly loaded up, and now I am done. It has been volatile, it is has been frustrating, and it is unpleasant to report poor results. But the only way out is through, and it will eventually be worth it.

The Short Version of This Update

The popular consensus is that the oil market is grossly oversupplied, due to Saudi Arabia's determination to retain market share at the expense of U.S. tight oil producers – a relatively new breed of oil companies drilling in shale, sandstone, and carbonate rock. In this consensus view, the market will remain oversupplied until significant amounts of current production are reduced - a potentially long, painful process.

My view is different. I believe there are fundamental industry trends being ignored that, unless oil prices rise fairly soon, mean the oil market is at real risk of sleepwalking into a supply shock in 2016. In the meantime, the price of oil is unsustainably low and should self-correct fairly soon.

In the update that follows I detail the reasons why I differ from the consensus. The short version is this:

I believe a significant and sustained rise in oil prices is inevitable much sooner than consensus. Massive cutbacks to drilling programs and natural decline rates across the world's oilfields may make OPEC – already operating at close to max production – and the U.S. shale oil industry – with more than half of its fleet stacked – unable to increase production enough to control the pace of an increase in oil prices as demand begins to exceed supply.

Oh, and also:

Is it just me, or does the Middle East right now look like a Tom Clancy novel that ends in massive sectarian war?

There is currently a very low level of spare production capacity available across the industry, leaving the market particularly vulnerable to any material supply shocks…say, the kind that could be caused by an attack on certain Middle East oil facilities.

And, um, nobody has told the oil market.

I believe today's extreme pessimism over oil prices is unwarranted.

Contrary to popular opinion, the global demand for oil is actually robust and growing. Global oil demand is actually 2 million barrels of oil per day (bopd) and growing so far in 2015 - double the rate predicted at beginning of the year. There also appears to be a reasonable probability

that in 2016, the amount of oil produced around the globe will fall like Hemingway described going bankrupt:

"In two ways. Gradually, then suddenly."

I am basing this opinion primarily on basic math, economics, and a little armchair petroleum engineering. It is not exclusively my opinion – there are a few others who share it, too. But it is nonetheless being crowded out by a particularly ruthless kind of trading on Wall Street, and an echo chamber of breathless and irrational voices around it. Consider this update my small attempt to rectify that.

In the pages that follow I will further discuss a number of wonky issues, including compound annual decline rates, marginal costs, and cuts to capital expenditures. I believe that any investment thesis related to oil companies these days has to be built on those sorts of things, really, or else the potential for confirmation bias can be too high.

As a result of the recent collapse in oil prices, I believe the shares of certain U.S. oil exploration and production companies represent very appealing opportunities to compound our capital at a high rate of return over the next few years. The shares of the companies we now own in Tarpon have been extremely volatile. But that same volatility appears to have driven out the vast majority of institutional investors, who because of clients far less patient than you, are doing their best to avoid the sector entirely. This has temporarily left us with a large, exploitable advantage over some of the biggest investors in the world.

I believe the odds we have on our side right now are the most favorable I have seen in any area of the stock market since late 2008. As a result, Tarpon is now entirely focused on this opportunity. I have deliberately chosen to concentrate our efforts and capital here. We are, effectively, all-in on U.S. energy companies, and this is somewhat of an unexpected and dramatic shift in our holdings.

I'm hoping this letter in its entirety explains why.

Questions From the Mailbag

Here are some answers to questions I've received via email the past few months.

When Will Things Turn Around?

By far the most frequent question I have gotten this year is this one:

"When is Tarpon gonna turn around, moron?"

First of all - take it easy, Mom. Other people are going to read this.

Second – In Part Four of this letter I will discuss the concept of compound annual decline rates in detail. This more than anything else will underscore why I am confident we will see things turn around significantly at some point relatively soon.

When it comes to predicting an immediate turn in Tarpon, though…first, I have three qualifiers.

First - Tarpon's fate is tied to the price of oil, and more specifically, WTI, or West Texas Intermediate crude oil. In the short-term, the price of oil is theoretically determined by what happens in both the physical and financial oil markets. In the long-term, the price of oil is determined by the marginal cost barrel, as per my letter earlier this year.

And this decline is getting really long in the tooth, so that "in the long-term" bit would start to seem more and more relevant on the financial side of the market fairly soon. More on the historic duration of this current collapse a bit later. In the meantime, we're all essentially depending on irrational traders to rationally agree with each other that things have finally really just gotten way too crazy in the oil market. I'm amazed we're not there yet, frankly. But here we are.

Second – I'm of the opinion that this summer's drop in Tarpon is not going to matter in a few years.

Now, I don't mean to downplay this year's volatility. At all. Shoot, I lost fifteen pounds, turned four shades paler and my hair turned shock-white. Imagine an Anderson Cooper wig on a plucked turkey with leukemia. It was a long summer, knowwhatImean?

Nonetheless, what I'm saying is that the shares we own in Tarpon right now are so significantly undervalued that their expected returns are attractive enough to me that I am not too concerned about our current paper losses. Yes, obviously, I'd have rather fast-forwarded

through all that, too, but when it comes to oil prices in the medium-term the world is facing structurally rising demand, increasing rates of oil field decline, and now a very large, price-driven capex deficit. And the longer it takes for prices to rise in the short-term, the faster or higher they will eventually rise in the long-term.

The third reason that question makes me a bit uncomfortable is that predicting the short-term price of oil is a task at which I have recently demonstrated complete and utter incompetence.

Calling the bottom of the current downturn has been difficult for a number of reasons, but foremost among them is that horizontal drilling in U.S. tight oil fields is changing the established market order as I type.

At the moment, Wall Street is also hyper-focused on anything and everything that could affect the price of oil on a day-to-day basis. I try to stay focused on our companies and those external factors that will affect actual oil production and demand in the industry, believing the price response will take care of itself.

Said another way – the market thinks the only thing that matters is whether this morning's news about oil prices was better or worse than yesterday's. And all that news, regardless of true importance, is seen as critical. I'm saying what really matters is the difference between where oil is priced right now versus what it should rationally be worth, regardless of temporary factors.

So with those qualifiers in mind – and to the extent that the short-term price of global oil can be successfully forecast based on rational thought and logic and exclusively U.S. data (bwaahaha!), I would answer like this:

Oil production in the U.S. is on pace to decline by the end of this year by approximately 600,000 barrels of oil per day (bopd), down from approximately 9.6 million barrels bopd at the peak this past April. This pace is significant, though it has recently been obscured by temporary oil storage increases due to seasonal refinery maintenance, which now appear to have peaked.

Last week was the first back-to-back decline in crude oil storage in the U.S. since May. More than 1.4 million bopd is still offline during routine maintenance as refineries tune things up after a very busy summer driving season. Refinery processing runs should rise by up to 900,000 barrels per day during November and December, if past history is any guide.

All of which means the actual decline in U.S. oil production numbers should begin to become that much more obvious to even the most daft of headline writers. And we should soon start to hear more and more about large consecutive draws on crude oil stocks in the U.S. as we head into the end of 2015.

In early October, we actually saw some significant though fleeting gains in Tarpon based on similar large weekly storage decline numbers right before refinery maintenance season began. This may bode well for Tarpon as we head into 2016.

So, in a perfectly rational world, the long-awaited upward turn in oil prices should begin to become obvious starting, well...now.

That said, one of my own frustrations of late is that, in theory, markets and stock prices should both be forward-looking. We are clearly in a market driven less by theory and logic, however, and much more by the sentiments of traders. Should that sentiment finally shift away from the concerns about oversupply that have been so prevalent for so much of the year, then the worst is behind us.

So my inability to time the bottom of the oil market has absolutely caused us all a lot of angst this year. Volatility is different than risk, though. And in the end, capitalizing on beaten up stocks after they've been sold off indiscriminately for a long period of time is going to be very good for us. But I also get that this is hard to see at the moment.

Risk is a topic I will discuss more in the second part of this series. So standby for more thoughts there very soon.

I've also gotten a number of questions lately that, although each was phrased a bit differently, were about similar subjects.

Here are some quick thoughts on those topics.

On the strength of the dollar:

While the dollar and oil prices are clearly and strongly inversely correlated of late, it's just that - a correlation - and not causal, and that the relationship will likely weaken if/when the Fed raises rates.

On future oil production from Iran:

Given the drop-off in global production I expect to see by late 2016 – when Iran purports it will begin to re-market an incremental 400,000 bopd of somewhat questionable quality crude using possibly decrepit facilities – the world will likely need that new crude to meet demand, anyway. Standby for the section on decline rates a bit later in this series.

More broadly, I am skeptical that Iran has the technology and capital to increase its production by more than 400,000 bopd by the end of 2016 - despite its own propaganda and the uncritical parroting of it by the financial media. Also, as it turns out, that "oil" Iran has in storage is not actually oil – it is low quality condensate. Facts, meh.

On U.S. rig counts:

Rig counts just don't matter much right now in the face of high-grading and wellbore design, especially in this phase of the cycle. Or, at least they don't matter much to me, a fundamental long-term investor.

They may matter, however, to traders and their algorithms. Specifically, rig counts may be important when it comes to gaming short-term price movements. To traders, the importance of rig counts of late seems unrelated to actual U.S. oil production. Of greater significance seems to be whether or not, say, changes in the rig count numbers released last Friday will be significant enough to cause the Energy Information Administration to tweak its weekly reporting model – which will push oil prices around next Wednesday.

But this kind of lunacy should not be confused with investing.

On "weakening demand for oil from China":

This has gotta be one of the most tired myths of 2015.

First, in Q3 of 2015, demand for oil in China was up 6.9% year over year.

Here, quickly, is the demand for oil from China:

2012: 9.7 mm bopd
2013: 10.1
2014: 10.5
  1Q15: 10.4
  2Q15: 11.0
  3Q15: 10.9
2015E: 10.8 (OPEC est.)
2016E: 11.2 (OPEC est.)

This is strong demand and good growth. What are we talking about here?

Demand for oil in China has been and should continue to be quite strong, due to (a) growing consumer demand, (b) efforts to fill the country's SPR or Strategic Petroleum Reserve, and (c) the country's transition to a mass automobile culture.

China economic data has both bullish (consumer) and bearish (industrial) data points. It's a cherry-picker's dream. But both data sets should be kept distinct in your mind from the Chinese stock markets, which are not at all markets in the traditional sense due to heavy government involvement. Those stock markets seem to run on a series of liquidity-driven bubbles. They have little relationship to the fundamentals of the real economy, which, incidentally, is still growing twice as fast as our own. So if you are concerned about oil demand in China, please prepare to explain to me why you are not concerned about oil demand in the U.S. first.

The U.S. stock market's recent concerns about China perplex me. The relationship between the two countries economics is small. Specifically, only about 7% of U.S. exports go to China, and exports only account for 13% of our economy, anyway…which means our exports to China represent less than 1% of our GDP. Big U.S. companies earn less than 2% of their total profits there, and U.S. banks have less than 1% of total U.S. banking systems assets there.

China's economy and stock market may have challenges, but its demand for crude oil, gasoline and refined products has never been higher. And I do believe it's entirely plausible to be a bit pessimistic about Chinese economic growth in the near-term without being a pessimist about oil demand from China.

I believe that's all I need to say about this. At least for now. There is more on China in the fourth part of this update.

On Saudi keeping production high for a long time:

First, several weeks ago Saudi Aramco actually announced a 300k bopd reduction in production. So there's that.

Otherwise, all countries in the Middle East, including Saudi, are currently producing near maximum levels. According to IEA and others, this has left very little spare production capacity remaining in the region. This represents a different kind of risk than implied in the original question, though, so I'll save that for a bit later.

Saudi can't pump high forever because, in short, to do so would mean they run the serious risk of permanently damaging their oil fields. The oilfields in Saudi are made of carbonate rocks, and one of the dangers associated with producing at maximum levels from carbonate reservoirs

is that you start producing larger amounts of water – and the science around carbonate reservoirs suggests that once you start producing larger amounts of water, the reservoir will forever produce larger amounts of water - even at reduced production levels.

Which means an already extremely daunting engineering challenge – coaxing oil out of the ground – becomes significantly more difficult, not to mention expensive. Wells decline and deplete faster, efficiencies worsen dramatically, and corrosion can become a very serious problem. Saltwater, as you can probably imagine, can be lethal to oilfield equipment.

On the high level of short-selling in the sector:

Here was the typical short case against U.S. E&P companies I heard this summer:

"The equity of *[insert name of shale oil company here]* is overvalued. They're actually a really bad business because *[steep decline rates, no growth in reserves, have debt, etc.]* and the assets of these companies are, like, constantly depleting themselves! Plus – and we checked on this - it takes a lot of money to drill wells! Their financial statements also show *[take your pick among many obnoxious things in any E&P's financials]* and their managements always talk about *[things that good management teams don't talk that much about]* – and then the Wall Street analysts always do this crazy thing [*that no serious E&P investor would do*]. Plus, oil looks like it could stay at $ *[some completely unsustainable level]* forever, guys. So based on our *[very opaque]* analysis, the company's equity is really only worth [*some ridiculous percentage]* of the current share price. Got all that, plebes?"

And here was my inner monologue after the fifth time I'd heard that thesis:

"Keep the camera rolling. Let's pick things up using that same logic. Because it sure looks like if all that were true, then whoo-boy, the equity of every one of these other unconventional oil companies is just about worthless too, then, eh? And man, if institutional investors cannot get decent returns on that equity capital, forget it! Those drillers will never be able to raise another dime. What a sweet short! Kiss that 5 million bopd of production goodbye. They're just gonna twist in the wind. And then imagine what will happen once the decline curve starts just wreaking havoc on that remaining production. It'll be bedlam! I mean, eventually, the carnage would get so bad that…um, well, it would get so bad that…that oil prices will have to go back up. Which would really boost the value of all that equity. Wait, what were you saying again?"

Or, less dramatically, the common E&P short-seller logic appears to be…

Capital-intensive cyclical >> Equity worth bupkus >> Same issues affect all peers >> Sector is starved of capital >> No growth >> Decline curve crushes production even more >> Global oil out of balance >> Oil prices rise >> Equity worth a lot!

This short thesis is not a serious argument. It's Wall Street demagoguery.

To be clear, some E&Ps will not make it out of this cycle – at least not with their current equity base. But not nearly as many will fail as the shorts would like you to believe, either.

And the irony is that every one of those guys, if given the chance, would fall all over themselves to make an equity investment in an oil company on terms like this:

No leverage, no bloated corporate structure, no dry holes, and your equity capital goes to work right at the wellhead – giving you excellent economics on something even as piddly as a little 20% internal-rate-of-return well.

Shoot, you'd have pension funds lining up all day long to fund that opportunity - for just half of those returns. Those same short-selling hedge funds would do it in a heartbeat, too.

Only afterwards, they would charge you 2 & 20.

Last three questions.

Will the Fed raise interest rates 25 basis points in December?

Does it matter?

Is the U.S. about to go into recession?

No.

Can I feed these seagulls?

Get out.

I'll publish more Q&A on the blog soon. Fire away with new questions in the meantime.

Next, let's talk about risk. Part Two is coming up.

Part Two: Thoughts On Risk

I have shifted Tarpon's holdings to capitalize on unsustainably low oil prices. My inability to time the bottom of the oil market this year has absolutely caused us all a lot of angst this year in the form of volatility and temporarily lousy results in Tarpon. But I also want to distinguish that from true risk.

Real risks in Tarpon right now would include a global softening of demand for oil – say, due to an emerging market economic crisis – as well as the possibility that Saudi for whatever reason decides to escalate their production even more.

I would argue, however, the former is an awfully broad brush, and there are few viable scenarios that would convince me that every emerging economy in the world was entering a serious crisis simultaneously. To some extent, an economic slowdown in these markets is probably already priced into a barrel of oil, in any case. That latter risk also implies unfamiliarity with the very real problem of water intrusion in Saudi oilfields. See the investor Q&A in Part One for more.

Other explicit risks might include new large oil reservoir discoveries. Currently, however, low oil prices have dramatically reduced the incentive to discover new fields - and any new oil fields large enough to move the needle on global production would almost certainly be highly expensive projects. Both make funding new exploration efforts a tough sell in boardrooms today.

A breakthrough in the battery technology that powers electric automobiles like those of Tesla could also pose a theoretical risk to Tarpon companies. Like batteries, solar power is a technology, too, and we should expect the costs and efficiencies of both to improve over time. However, it is difficult to foresee either improving rapidly enough over the next three years to be a viable threat to Tarpon today.

One of the ironies of this current collapse in oil prices is that there is also less economic incentive to spur innovations in renewables, as well. And by way of context - Tesla hopes to sell 100,000 electric vehicles in 2016, and currently loses about $4,000 on each current car it manufactures. Meanwhile, there will be more than 94 million other automobiles sold around the world next year. So I am comfortable assuming this particular risk.

Then, of course, are the company-specific risks in Tarpon now. I'll address those specifically over time, as we review the companies we own a bit later. For now, know that security

selection and position sizing are the two primary tools I continue to rely on to mitigate those particular risks in Tarpon.

What follows, then, is more of a broader look at how I address risk in Tarpon than a point-by-point counter to specific sources of risk in our portfolio. If you have such concerns, please let me know, but the topics I address below are what I believe you are most concerned about in Tarpon today – specifically volatility, cognitive bias, and forecasting error.

But before we get to those issues, there are two things we need to cover first.

Prudent Risk

Every industry has legitimate experts – those wise veterans whose experience, dedication and competence give them truly adroit insights into their market.

None of those experts work on Wall Street.

At least not in the oil market.

As you will read, my thesis in Tarpon rests largely on a difference between my own views of the oil market – informed to a significant degree by experts in the fields – and the market consensus, as popularly articulated by the Street.

The financial side of the oil market – Wall Street - has effectively grabbed the bullhorn of popular opinion on oil prices, and in very articulate terms has wrested the narrative of what may be rational about current oil prices away from the actual experts in the physical side of the oil market – the men and women working for companies actually operating in oil fields. So which would you rather take more seriously – the opinions of those people, or the ones coming from Manhattan, one of the only places in America where you could travel back and forth to work every day for a year before ever actually seeing a sign for gas prices along the way?

My point is: I am not saying the experts are wrong, and that I, some guy in flip-flops on an island south of Miami, am right.

I agree with some of these experts. And we think Wall Street has it wrong – both because the Street is presuming way too much certainty about an extremely uncertain subject – the setting of global oil prices – and because the Street seems to have gone completely probability-blind when it comes to the share prices of U.S. E&Ps.

That was an awfully presumptive "we share the same opinion" there. I used "we" like C-3PO probably tells his droid buddies about the time he and Luke Skywalker beat the Empire. But you know what I mean; I think the experts are right here. More on them a bit later.

And some of your own angst about Tarpon's focus on oil companies may be because a year's worth of histrionic headlines from Wall Street about prices has got you presuming a rationality to today's oil prices…that really doesn't exist. And it's not just me thinking this. I'll discuss this more in Part Three: Evidence of Mispricing.

For now, I would make the following points related to risk in Tarpon:

- In spite of its focus and recent volatility, Tarpon is much less risky than you might otherwise believe;
- The probability that Tarpon increases significantly over the next twelve months is quite high;
- Assuming no unforced errors on my part, the range of poor outcomes we are looking at in Tarpon over the next few years is small and less severe than you might expect; and
- The same fear you may be feeling when it comes to investing in oil companies right now is actually the same thing that is, ironically, making it safe to invest in; investors and companies across the board are now doing extensive due diligence, making conservative assumptions, and applying considerable skepticism to every aspect of oil companies' operations. And shares are ridiculously cheap.

Investments may also be judged riskier if it is perceived they will fare worse than other options that may be available. The most obvious viable option for you is Tarpon's benchmark, the S&P 500 Index. And if you are looking at your account's performance and wondering how in the world I could possibly make that bottom 'Tarpon' line get back up and cross over that other 'Index' line in your Folio account again, I'll give you a hint: only 8% of that S&P 500 Index is made up of oil companies…and our companies' share price performance should absolutely trounce those indexed companies as oil rises.

The goal in Tarpon is not to eliminate risk. That's not possible. My goal is to make sure we only assume prudent risk – deliberate exposing us to a negative outcome only after objectively judging the potential positive outcome is worth the risk. I am going to just be flat-out wrong at this at times (see "Summer, 2015") but I also don't have to be right all the time, either, for us to do really well. I just need to be *really right* about a few things, *at the right time*. And I believe this is one of those times.

This concept of "prudent risk," by the way, used to be called "sticking your neck out." But then someone – let's not kid each other, a consultant – abandoned it for a term that would fit better on a risk management brochure or something.

Regardless, I want to reiterate that it is absolutely distinct from "risk-seeking." There are no GoPros here. Nor am I "risk-avoidant." I eat gluten all the time. Also, I couldn't in good conscience charge you fees for putting your money in something that didn't even try to beat the market.

I consider Tarpon "risk-neutral." It's not that Tarpon has no risk. It's that we are getting waaaaay more than fairly compensated for assuming it right now.

Our large expected returns are out of proportion to the relatively small risks we are actually assuming.

Let me try to show you what I mean.

On Risk and Probabilities

Ah, probabilities. The mathematical language of uncertainty.

Also the reason I could never get a date in high school. Because I would say things like that out loud in math class.

This next part may get a bit wonky, but I think it will explain quite a bit about Tarpon right now. So, here goes.

Investing is not just about having good odds. What we want are "asymmetric odds" in which our upside potential significantly exceeds our downside risk. Those odds are set by the market and show up in stock prices, which effectively represent the beliefs of many independent voters. But even then, good odds aren't enough. What we really want are high probabilities – which are analytically distinct from the odds…especially in times of market distress.

And understanding my own assessment of the probabilities in Tarpon is critical when it comes to realizing both why I believe the risks we are taking right now are not only prudent – but they also hint at the degree of outperformance we may, under the right set of circumstances, realize in 2016.

Through the lens of probability, here is how Tarpon looked earlier this year – before becoming focused exclusively on energy companies.

Tarpon Before Energy Focus (Independent probabilities)

P = probability a stock price reaches intrinsic value in one year

Probabilities			Initial Position Size	Payoff
P (Stock #1) =	20%	x	$3,000	$600
P (Stock #2) =	70%	x	$1,000	$700
P (Stock #3) =	50%	x	$2,000	$1,000
P (Stock #4) =	70%	x	$1,200	$840
P (Stock #5) =	30%	x	$2,800	$840
			Expected Value =	**$3,980**
			Portfolio Return =	**39.8%**

Assumptions

$10,000 portfolio invested across 5 stocks

Initial position sizes determined by various factors (management, certainty of undervaluation, catalysts, durability of moat, etc.)

5 stocks are in different industries (i.e. probabilities are independent)

Expected Value is a proxy for Portfolio Return

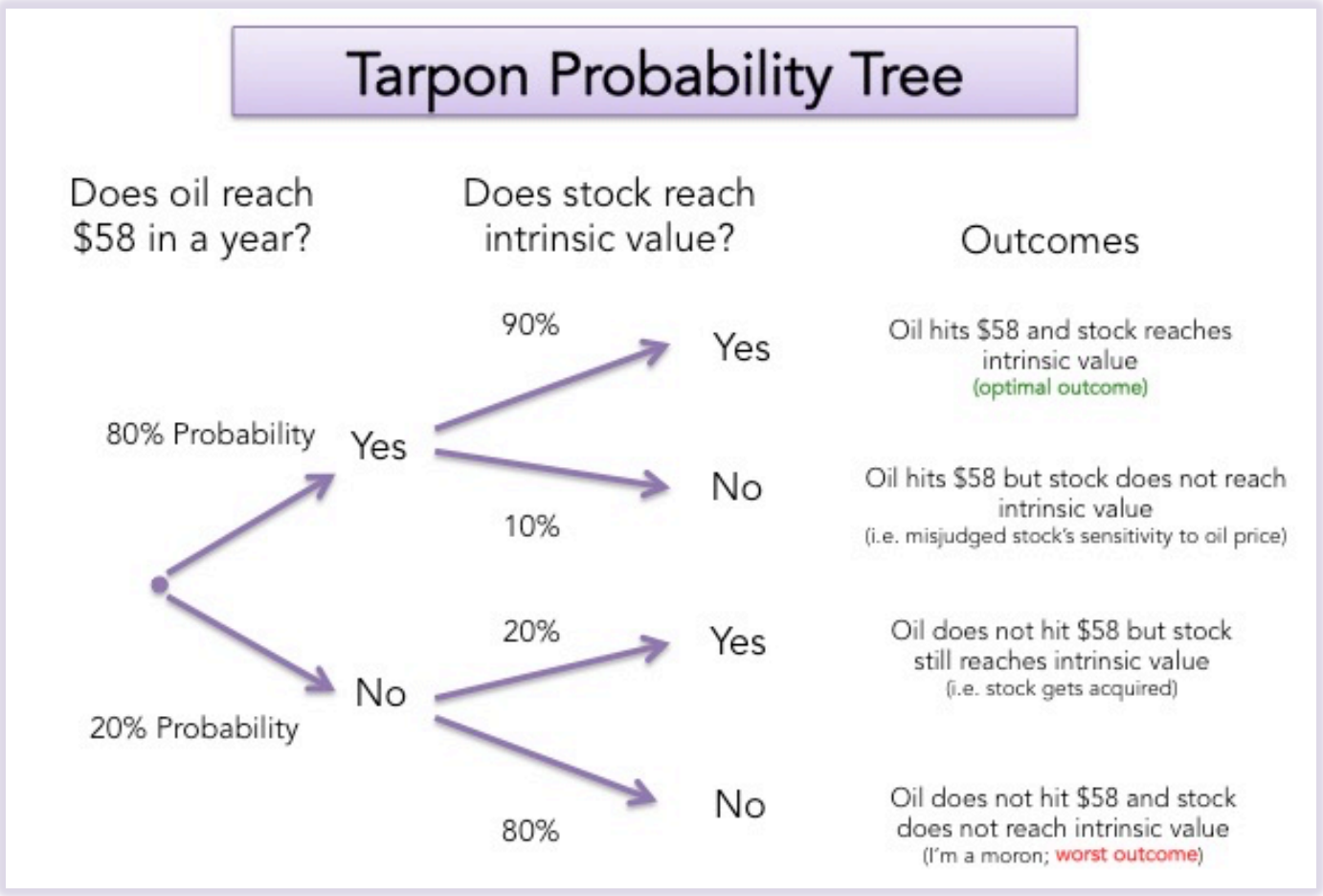
No transaction costs or taxes

Those probabilities in the left column were determined by yours truly, as were the initial position sizes, so don't get hung up on trying to understand where those numbers came from. I assigned them as realistically as I could to make a broader point, which is this:

Even when every stock we owned in Tarpon was 50% undervalued, the multiple different variables that each stock was subject to at any given time meant that the actual probability of Tarpon as a portfolio doubling in a single year was relatively quite low.

And the key number to remember there is that Expected Value of $3,980. Hold that thought.

Here is a probabilistic depiction of Tarpon now – invested entirely in oil companies.



We compute the probabilities of Tarpon doubling in a year differently now, because whether or not those stocks will double is entirely dependent on a single variable – the price of oil. Statistically speaking, what we want to know is what is the probability that Tarpon doubles given that oil prices have reached their consensus forecast of $58 per barrel by the end of 2016.

That $58 is in fact the current consensus forecast for 2016 average Brent crude price as per a recent *Wall Street Journal* survey of 13 investment banks.

And I, again, assigned all the probabilities in the "probability tree." Here is what the best and worst case scenarios look like for us now with Tarpon essentially an all-energy portfolio:

Outcome: Best Case	Probability		Initial Position Size	Payoff		# of Positions with Identical Probabilities
Oil hits $58 and stock reaches intrinsic value	80% x 90% = 72%	x	$2,000	$1,440	x	5
				Expected Value =		$7,200
				Portfolio Return =		72.0%

Outcome: Worst Case	Probability		Initial Position Size	Payoff		# of Positions with Identical Probabilities
Oil does **not** hit $58 and stock does **not** reach intrinsic value	20% x 80% = 16%	x	$2,000	$320	x	5
				Expected Value =		$1,600

Assumptions
$10,000 portfolio invested across 5 stocks
Initial position sizes are equal-weighted
5 stocks are in same industries (i.e. probabilities are dependent)
$58 is consensus forecast for 2016 average Brent crude price as per *WSJ* survey of 13 investment banks
No transaction costs or taxes

See that Expected Value of $7,200 for that Best Case Scenario? That's considerably bigger than the Expected Value of $3,980 from that very first "Independent Probability" table. Which is probability's way of telling us…

"You should absolutely choose the portfolio where Tarpon is fully invested in oil companies!"

And that, statistically speaking, assuming the same variables above and a $10,000 investment…

"By investing exclusively in oil company stocks, Tarpon has a 72% chance to make $7,200 – and even the worst case scenario would give us a small chance of still earning $1,600."

In other words, all things being equal, we've got a very attractive chance to capitalize on some truly asymmetric returns in Tarpon right now.

Now, to be clear, that probability tree and related table above would make Bernoulli roll over. It's too unorthodox and back-of-the-envelope to be anything other than an illustrative example. Obviously a truly bad outcome would likely involve a negative expected value, for instance.

But for now, I trust you see the broader point: by taking a focused position in oil companies, we have dramatically increased the probability of maximizing our expected outcome in Tarpon over the next year. Instead of, say, relying on a string of six different variables of various degrees of independence to successfully play out at each of the five companies we might own in order for shares in Tarpon to reach their full value and double…we now are relying on only one variable, which will impact all our companies - i.e. oil reaching $58 a barrel.

So we don't need for anything to happen at any of the current companies we own in Tarpon in order for them to double. We just need oil to hit $58 a barrel. And I believe the probability of this happening is approaching a near certainty. It's just a question of timing.

And as an aside - Tarpon is absolutely "event-dependent" on the price of oil reaching $58 to reach my estimate of its true fair value. And a systems engineer would note that being dependent on anything – the local electric utility, the pizza delivery guy, oil prices – by definition will increase your vulnerability to risk in the theoretical sense. But even that event-dependency risk represents far less to worry about to me than any number of factors that might impede the ability of a more diversified portfolio to double over time.

Clearly this path will also mean our short-term returns will fluctuate quite a bit, because each Tarpon position is dependent on the same variable – oil prices.

Which brings me to my next point.

Volatility Is Not Risk

The price we will pay to earn outsized returns later is volatility now.

When it comes specifically to Tarpon, it's probably no surprise that I do not view volatility as risk. I believe the emphasis that most of this industry places on "minimizing volatility" as if it were a proxy for "safety" is nonsense. Volatility is irrelevant to the long-term investor.

Here – let's try a little thought experiment.

Let's go back ten weeks. Specifically, to Monday, August 24, 2015.

Within minutes after the opening bell, the Dow plummeted 1,089 points. This represented history's single largest point loss during a trading day, ever. Shares of General Electric and Pepsi both crashed more than 20% at one point. Even boring old Costco fell 16%.

By noon, however, the Dow had rallied back. About three hours after that historic drop, the Dow had climbed back furiously and was only down 102 points for the day. Alas, it was not to be, and the Dow soon fell sharply again, in the end closing down for the day by 588 points – identical to the day in August 2011 after the credit rating of the U.S. was downgraded for the first time in the history of the republic.

By the end of the day, that volatility in the Dow had caused stocks and exchange-traded funds to be automatically halted on stock exchanges more than 1,200 times.

Whew.

The experiment is this:

Try to remember what caused that extreme, historic volatility. Any of it.

What were the headlines that led to the single largest point drop in the history of the Dow Jones Industrial Average? It had to be something big, right? Shoot, that first drop was historic – and then the other news that right after lunch *that same day* caused as big a drop as right after the debt ceiling debacle a few years ago.

If not the drops, then maybe you recall the news that sparked that huge mid-day rally.

No? Coming up blank?

Maybe a better question is – do you recall any of that happening at all? Or did you just go start Googling stuff because you wondered if I made that all up?

I didn't. All true. But don't feel too bad if you couldn't remember it. I had to Google every bit of it. And you all have, like, real lives. I sit here all day, every day, passively watching the market, and even then my first three guesses - "Iran nuke deal blowback," "more panic about oil" and "Trump says not joking about this whole President thing" - weren't even close.

As it turns out, nobody can really satisfactorily explain what happened that day. At least, not to me. CNN attributed the day's action to "concerns about a slowdown in the Chinese economy," but seemed to completely punt on what caused that massive mid-day rally. Perhaps all those anxious Chinese just went to bed.

A reporter at the Wall Street Journal live blogged the morning open here, but the Journal itself otherwise failed to seriously examine the cause of the drop at all. Late the same day, however, they did publish this gem of an article about a high frequency trading firm that made a ton that

day, complete with a pic of backslapping traders and the money quote, "It's probably our best day since the 2010 flash crash." Aaaargh.

And CNBC – still a channel on TV! - attributed the historic drop to well, everything other than a plausibly identifiable cause. It was apparently just traders being traders and liquidity woes and soybeans were down hard too and something maybe about China but not the Pope and *HOWINTHEWORLDISITPOSSIBLETHATNOBODYKNOWSWHATHAPPENED*?

Ahem.

For certain kinds of investors, and in portfolios that require broad diversification, volatility can be problematic. And there are no shortage of ways in this industry to quantify risk as a statistic.

But not everything that can be measured is meaningful. When it comes to Tarpon, the most popular of these risk statistics, "beta," is, to me, irrelevant. I question how meaningful it is for most investors, really. Because, in addition to other things, it implies that shares of GE would never fall more than 20% in less than three seconds for no reason, people.

The degree to which an individual stock's price may move around relative to the market is irrelevant if high frequency trading algorithms are gaming the movements of both.

Beta also assumes an investor's risk tolerance is constant. This in particular is top-shelf nonsense. Exhibits A thru G, your honor, are the strings of email conversations I had with a few of you this summer. Investors do not have stable risk preferences. The stress of August 24th makes people way more risk-averse when they wake up on August 25th.

And sustained stress over time increases this risk aversion even more. This phenomenon is, to me, precisely what makes successful investing so hard: most people's stress goes through the roof at the same time their expected returns do. Yet they cannot stay stoic.

Time for another thought experiment.

If at any point this summer you muttered to yourself, "As soon as Tarpon gets back to where it was this spring, I am sooooo selling out…" then you, dear investor, have just proved my point.

It is, after all, the same amount of money, whether in March or (let's hope we recover fully by) December. You had no compunction at all to sell out in March. The only difference was that by December, you'd been continually subjected to the stress of poor performance, which made you more risk-averse – in spite of the fact that your expected returns from Tarpon in December are materially higher than they were back in March.

All of which is a long-winded way to say: I'm not being cavalier when I say we should ignore volatility and questionable measures of it like "beta."

We are just living in different times. And risk is not a statistic.

Particularly not in the stock market of 2015 – when high-speed computers trade 70% of all shares, and the average holding period for a stock is 22 seconds. Everything moves around a lot more, quicker. You can't control any of it. And just like on August 24, things in today's market often move violently for no obvious reason whatsoever.

Market volatility is irrelevant – if you are consciously deciding to tolerate it in order to earn what should be superior returns.

In the end, I view volatility as a true risk only if it causes an investor to capitulate – to abandon an otherwise sound process and make an emotionally-charged investment decision.

Otherwise, history is unequivocal on this point: volatility creates opportunities for patient and rational investors who do their homework.

How I Could Screw This Up

There are a few ways that my decision to concentrate Tarpon in energy companies could, in theory, screw things up for all of us.

Risk One: Bias

The biggest risk you should probably be concerned about when it comes to my managing your money in Tarpon right now is what is called "confirmation bias."

This is the tendency for people to only see things that confirm what they already believe, while ignoring contrary data. The assumptions you start with determine the conclusions you will end up with.

Now, the markets are already rife with confirmation bias. That's kind of what makes a market, really. But oil markets are, to me, particularly notorious in this regard.

Based on how Tarpon traded this summer, there no doubt were some times that some of you thought I'd probably lost my mind…only that was a bit too generic of a description. I would submit that perhaps "you thought I had massive confirmation bias" is a bit more accurate, eh?

Just being aware of this bias certainly doesn't inoculate me from having it. So for what it's worth, I'll present to you a few reasons why I don't believe I am suffering from it, and let you draw your own conclusions.

1. We had a near-death experience in one of our smaller oil company positions this summer that was unexpected, jarring and made me suddenly question what else I could have missed, who I was, what I was doing here, and why the Seahawks didn't just run it in. Again, small position, wasn't fatal, and you probably didn't even notice…but it was absolutely a gut-check moment. And to slowly recover my conviction about things after that little surprise was probably a good test for any pre-existing confirmation bias.

2. The best tool in an arsenal to battle confirmation bias is through a strategy of "falsification," or actively looking for evidence that might disconfirm your point of view. It is much harder to dismiss that contra or negative info about oil easily these days, simply because we have been bombarded by so much of it for so long now.

3. More generally, I am try hard to find and evaluate info as rationally as possible. That may in part explain why this letter is so long.

4. Confirmation bias is usually traced to someone's natural inclination to cling to their beliefs – particularly if they are reinforced by recent experiences. My beliefs about oil prices and our companies have, um, not being getting reinforced at all lately. They've been repeatedly taken to the wood-chipper.

5. I am a value investor running a small "go-anywhere" portfolio who has demonstrated some previous expertise when investing in energy companies. The guest of honor at our first annual investor meeting seven years ago was Ken Peak, the former CEO of Contango Oil & Gas - which, I should point out, we now once again own in Tarpon. So E&Ps have been in our wheelhouse since day one.

   That said, Tarpon has no mandate to invest in energy companies at all, and all opportunities in all sectors are evaluated equally. We have previously realized some significant returns from some of the oil companies we have owned – and I've certainly learned some lessons from a few duds, too. But I'm doing it now strictly as an opportunist.

6. Building this current portfolio also meant selling us out of a number of other non-energy companies that, in some cases, pained me to jettison. I thought long and hard about

each of those decisions. Nonetheless, in the end, you cannot deny the logic of expected future returns, so here we are.

7. Finally, as discussed more below, I try to build my opinions about oil prices - as well as on the prospects of our companies themselves - based as much on numbers, rationality and logic as possible. That's may be because I'm naturally a little too Spock, but it's also because I am well aware that I'm less liable to fool myself that way then by, say, making trades based on watching little squiggly lines on a chart.

So I could be Patient Zero in the Great Mass Oil Market Psychosis of 2015…or perhaps Tarpon is being managed as free of confirmation bias as can be expected. I'll leave that call to you.

Risk Two: Bad Picks

The other way to screw Tarpon up is by picking companies that do not maximize our risk-adjusted return as oil prices begin to inevitably rise. I'll address this more as we get into specific holdings over time. Whether we call this "stock selection" risk or "opportunity cost," it can represent the worst of all outcomes either way. It would mean that, while on the cusp of big returns, I instead picked a stock that bounced around all over the place on us…and then, for whatever reason, failed to rise in value as oil prices increased. We'd have suffered for nothing.

It's also mistake, though, to get too conservative in times of market distress. After all, there are ten-baggers among us. Somewhere out there, at right this very moment, are energy stocks that, once oil rebounds to a sustainably higher level, could increase by ten times their current price. And I don't know about you, but I refuse to let the fear of making a mistake in evaluating company-specific risk deny me the opportunity to create multi-generational wealth for my family – assuming that potential is truly there. And I believe it is.

Specifically, I think it can be found among oil companies with good assets, plenty of liquidity, and excellent management teams, whose only crime was that oil has fallen 60% in a year on them. Because of what now look like challenging debt levels, their shares in some cases trade for a dime on the dollar.

While there is certainly some additional risk in investing in companies with high debt, one of the ironies of low oil prices right now is that they are scaring the stuffing out of the holders of many of those oil company bonds – giving the most liquid of these oil companies the unusual ability to either buy back their own debt at very steep discounts, or swap out their existing, onerous bonds, for newer bonds with stunningly improved terms. And there is absolutely multi-bagger potential among the shares of some of those companies, too.

Regardless, my point is that even among certain oil companies with considerable debt on their balance sheets, investing in the best of them right now is still far less risky than it would otherwise seem – *because we are being more than fairly compensated for assuming that risk.*

Risk Three: Bad Prices

The third way it probably seems I could really screw this up is if I blow it on oil prices. I'll discuss my thoughts on oil prices below more in great detail, but to address "forecast risk" specifically:

I believe this summer has proven, without a doubt, my complete ineptitude when it comes to forecasting oil prices in the short-term.

Fortunately, we're not investing for the next month. I'm thinking about things over the next three years. So I'm not overly concerned about traditional forecast risk, because, well, I don't believe I'm making an explicit forecast. I'm just noting the wide gap between the true economic value of the marginal barrel of oil and the current market price for oil, and then explaining why I believe that gap will close at some point during that three year window.

That all might seem like semantics, but I think it's actually an important distinction. Tarpon is really a general directional call on the price of oil – up! - to an approximate price that would still be far below the cost of the marginal barrel of supply (i.e. would still be historically very low). So, we should be more than well compensated for the "forecast risk" we are assuming here.

In Part Three, I will discuss at great length why I believe concerns regarding oil prices staying "lower for longer" appear overblown.

Finally, in theory, we could also be at risk if the price of oil decreased significantly below today's prices, and then stayed low, for years. For reasons elaborated on later however, I view the probability of $20 oil actually happening as indistinguishable from zero. And that's about as much as I will humor the doomsayers. Go sell that crazy someplace else.

Same Process, Different Companies

In addition to discussing the more overt risks of this shift in Tarpon's holdings, I also want to address a more subtle one – that by concentrating on energy stocks now, it might mean that Tarpon may have somehow changed its focus.

Towards that end I would underscore that in spite of this very opportunistic change in the companies we now own, I have changed very little about the process I actually use to manage Tarpon. I adamantly believe this is entirely consistent for why you originally hired me. In fact, it's kind of the whole point – to be selective, stay disciplined about process, and - when a unique opportunity to get aggressive truly presents itself – load up.

Now at some point in the next few months, I think there is a pretty high chance you're going to begin to read stories about "the few brave souls" out there who have started to buy oil stocks. I'm thinking WSJ, page one, but below the fold, and almost certainly featuring an on-the-nose quote from either a Cleveland tanning bed operator or a goat farmer in Inner Mongolia, not clear yet.

Either way, there is no denying that one way to build an energy portfolio today that should do pretty well the next few years might be to say, "Boy, the gas at Tiny's Mobil seems way too cheap. And I've got too much cash just sitting here in my portfolio. I think I'll watch that Cramer guy and then go pick up some oil stocks."

And if I ever meet that guy, I'm swatting the Keystone Light right out of his hand.

Tarpon became concentrated in energy stocks as a result of repeated iterations of an existing process – a slightly more professional way of saying, "I spent all summer banging my head on the desk trying to figure out what I was missing." But I do think the difference between both approaches is important.

An inviolate rule I have when managing Tarpon is that when shares of one of our companies' shares drop 20% or more in a single week, I go to ground. I run through the original thesis, re-read all my notes, review the valuation, revisit the bearish case, make calls, send emails and in general try hard to make sure I haven't missed anything.

One of the first questions on that list of things to review is, "Why is this company cheap?"

And given the collapse in oil prices this summer, I was asking that question about our companies quite a bit. Almost every time, the answer ended up being, "Because oil prices fell again." Eventually I realized I could probably save a lot of time if I instead I would just try to answer the more macro question, "Well, why do oil prices keep falling?"

It was the process of trying to answer that question that eventually gave me the conviction to keep adding more E&Ps to Tarpon.

Why Concentrate?

If you believe oil prices are unsustainably low, and that prices will inevitably rise, then in theory the companies that will see the earliest, biggest boosts to their cash flows are exploration and production companies. So it has been decidedly convenient that, because of their sensitivity to oil prices, U.S. E&P shares have been hammered over the past year. We'd owned some already and had a ton of potential new candidates to review.

Along the way I also started to develop the nagging suspicion that a value investing strategy like Tarpon was likely going to be the best way to approach those E&Ps after this particular collapse. Yeah, I know – how convenient, right? – but hear me out for sixty seconds.

First, we have a huge advantage in that we can afford to be patient in Tarpon. Time in the oil market is currently being measured in milliseconds. There is a very good chance that right now, behind the scenes, the oil market is in fact some kind of giant operant conditioning chamber, jammed full of wild-eyed lab rats frantically pressing on things, thinking they are about to score some methamphetamine, but firing off trades instead. Not a lot of deep thinking going on.

Second, due to low prices, U.S. tight oil companies were being forced to shift away from production growth and much more towards a focus on their own internal returns. So the ability to identify the best risk-adjusted opportunities would seem likely to require the same kinds of analytical tools that were already right in the wheelhouse of a value investor.

And finally, though this may sound odd – we are constrained in what sorts of things we will own in Tarpon, and this is a good thing. More specifically, the oil markets are dominated by derivatives traders, ostensibly because pricing can be so volatile, and when it comes to selling equity options or dabbling in futures, these traders do not necessarily have to guess short-term market direction in order to profit. That may sound wonderful, but it also comes with a slew of other disadvantages that makes derivatives guys high-strung all the time, anyway. And to be clear, part of our constraints in Tarpon relate to our custodian FOLIO, so they're not entirely voluntary.

Regardless, sometimes constraints can be good, and the math of compounding says that we will do far better in Tarpon over the long-term by sticking to plain vanilla, boring old-fashioned common stocks. The fact that so much of the rest of this market is dominated by short-term vehicles like derivatives would seem to make it that much more likely that stocks which could be held for years are being the most mispriced.

Now, to be clear, oil and gas companies are capital-intensive businesses, and the accounting treatment of certain aspects of their financial statements can be, in a word, obnoxious. They

rely heavily on reserve-based lending, the terms of which may not always be disclosed. Horizontal drilling is disrupting the entire industry hierarchy. Unconventional producers are young companies. These assets are constantly depleting themselves. And these companies quite literally burn cash to make fuel.

Nonetheless, the supply-demand picture for oil is analytically clean and can be far easier to gauge than the future revenues and costs of the vast majority of non-energy companies.

Recent improvements in well design have also dramatically improved the economics of tight oil companies. Compared to traditional oil producers, whose activities include mega-capex projects with very long and uncertain investment and payback horizons, tight oil companies in the U.S. can produce oil under a much more decentralized, micro-project kind of model – with very short investment and payback cycles. The gulf between poor operators and excellent ones is enormous and obvious. And the Permian Basin in West Texas is probably the greatest oil province in North America. So we own our fair share of tight oil companies in Tarpon now, too.

These new Tarpon companies still have moats. Our shares include an appropriate margin of safety. Our E&P management teams are excellent. Our companies can be valued confidently. I include upstream energy companies in my circle of competence.

And if my thesis on them holds true, they are about to see dramatic increases in cash flows relatively soon.

Part Three:

Evidence of Mispricing

Different Takes on the Oil Market

Consensus View	Tarpon View
Lower for longer	Higher sooner or higher later
This is a historic oil glut!	Nope. It's a price war.
Causes of the crash are obvious	Whole lotta ex-post-facto going on
U.S. tight oil is too resilient	It's about to Wile E. Coyote off the cliff
OPEC is targeting U.S. tight oil	Saudi is battling Iran and Russia
Massive wave of E&P bankruptcies	Too much cheap money around
Capex cuts aren't important	Oh, you petulant child
Um, what are declines rates?	Who let you in here?
The turn is taking forever	It will be huge when it arrives
We're running out of oil storage	Just stop it, already
Production growth is most important	Internal returns are most important
Only U.S. & OPEC production matter	Non-OPEC oil matters, too
New Iranian production is bearish	The world will need that Iranian oil
Volatility is risk	Panicking is risk
Pick safe blue-chip oil stocks	Look for best, most undervalued co's
Spare capacity is what, again?	A margin of safety for production
The Middle East? Everything is fine!	You are drunk
Sub-$50 barrel is the right price	Marginal cost barrel is $80
U.S. is the new swing producer	U.S. is temporary balancing things
Demand from China is falling	China demand is growing @ 7% YOY
Rig counts matter	Well productivity matters
Saudi will keep production high	They're already coming down
Next few months could be volatile	Gird your loins, sir.

Where Both Sides Agree

Consensus View	Tarpon View
Geology matters	It's all about the rocks
These companies burn cash	Welcome to the industry
OPEC is overproducing	And Saudi in particular
Strong dollar hurts oil prices	Definitely correlated for now
We have conviction	We have conviction

The Contrarian's Burden

It is always best to begin by assuming the market has it right.

Not because the market is infallible. But because the presumption that shares are being priced correctly is a cornerstone of American capitalism and a foundational principle of equity analysis. That presumption also shifts the burden of proof onto the investor to affirmatively prove that a stock is being mispriced.

Today the Tarpon Folio represents one side of a debate.

My thesis is that the shares of the companies we own in Tarpon are undervalued *to a degree that is historically rare*, specifically because *oil prices are unjustifiably low*.

My argument in the debate is that oil prices are going to rise much sooner than consensus.

Market consensus, as per a recent Wall Street Journal poll of thirteen investment banks, is that West Texas Intermediate or WTI oil, the U.S. benchmark, will average $54 a barrel in 2016, and that Brent crude, the traditional global benchmark, will average $58 per barrel for the year. The latest report from the International Energy Agency (IEA) has oil prices staying below $80 for another five years.

I believe the market has it wrong. In a big way. So big that the market could be sleepwalking into a supply shock next year.

This is a heavy charge to make.

First, because, well, it's just me here - a very small fish, trying to coherently express a contrarian take on one of the biggest, most liquid, most closely watched markets in the world. And some of the conclusions I draw directly contradict views held by the likes of OPEC and Goldman Sachs.

It's also a serious allegation because I have no incontrovertible proof.

You never do when investing. It is always much more about favorable odds than indisputable facts.

But the nature of what I am trying to prove here also has a particularly high degree of difficulty. I am trying to substantiate that the market is overestimating the importance of multiple

superficially bearish factors…that either aren't truly worthy concerns, or soon will be irrelevant…while it completely ignores one incredibly important aspect of the industry that is about to take center stage.

It's not quite clear to me how to attempt to prove that to you. At least, not without coming across as some kind of bearded old crank deep in the Montana woods.

Nonetheless, I feel compelled to litigate this particular case, anyway, because of the seriousness of my assertion that it is essentially the market, and not me, that currently has it wrong on timing. The best I can do, I think, is bring you evidence that serious mispricings may exist, demonstrate that global decline rates really do matter - and then let you decide the validity of my argument.

To be clear, this is not an actual debate. I'm not arguing that my point of view is the correct one, and that many other experts are wrong. I'm saying that one otherwise important aspect of the oil industry – an issue that the experts are already aware of - is being undeservedly overlooked. This oversight is our opportunity.

The good news is that if I am wrong - even, like, "Steve Ballmer: there is no chance that the iPhone is going to get any significant market share" wrong - then factors grounded in much less subjective areas, like simple arithmetic, the physics of oil wells, and basic economics, will kick in and bail us out. They will inevitably force oil prices higher.

Higher sooner or higher later. It really comes down to a question of timing. We will do well in either case - although one of them will take longer, obviously, and given the volatility of late, I, too, am rooting for the quicker one.

So regardless of whether you find my evidence of a mispricing in oil to be conclusive, we should still realize attractive long-term returns.

And it is these fundamentally favorable odds that have driven my conviction.

Long in the Tooth

Currently priced at $40 per barrel (WTI), oil trades significantly below the industry's marginal cost of supply, which – despite confusion about the global role of U.S. shale oil – remains unchanged at approximately $80 per barrel.

Recall from my investor letter back in January:

Price of Barrel of Oil = Marginal Cost of Production + Risk Premium

Today's oil price also fails to reflect what logic would suggest should be a historically significant risk premium on top of that marginal cost barrel, due to the material and growing risks in a Middle East that appears on the brink of widespread military conflict.

This dislocation in oil pricing has been popularly attributed to factors including:

- a shift in strategy by Saudi Arabia;
- high oil production out of OPEC;
- rhetoric from Saudi Arabia;
- unanticipated production spikes out of Libya and Iraq;
- the growth and resilience of U.S. shale oil producers;
- declining capacity for oil storage;
- extreme volatility in the futures and equity markets;
- premature resumption of drilling activities during a rise in oil prices this spring;
- propaganda from Iran;
- a massive hedging program by Mexico;
- a battle for market share among major producers;
- lifting of previously severe economic restrictions on Iran;
- concerns over an economic slowdown in China;
- angst regarding the U.S. Federal Reserve's monetary policy; and
- dire warnings from Wall Street investment banks.

And then the Cubs failed to make the World Series. Again.

The severity and duration of the decline in oil prices to all market participants, myself included, has been stunning.

Goldman Sachs lead commodities analyst in November of 2014 (oil at $83 a barrel):

"In the current environment we believe the risks are skewed to the upside (for prices)."

Headline on Goldman from Bloomberg in September of 2015 (oil at $46 a barrel):

"Goldman Sees 15 Years of Weak Crude as $20 U.S Oil Looms"

Citigroup lead commodities analyst in May of 2014 (oil at more than $100 a barrel):

"Despite its doubters and haters, the shale revolution in oil and gas production is here to stay."

The same Citigroup analyst on October 10, 2015 (oil at $46):

"I think we are not at the bottom."

John Hess, CEO of Hess Corporation, in a November 10, 2014, investor meeting:

"We have an $80 Brent case that is what we call our stress test. We don't think $80 Brent is likely."

CEO John Hess, CEO of Hess Corporation, on a July 29, 2015, quarterly conference call:

"We don't know how low it will go and how long it will go."

In other words – nobody knows what's going on, but everyone is an expert. Welcome to the oil market.

Here is a table cropped from a recent presentation given by Matador Resources (MTDR), a mid-cap independent U.S. exploration and production company based in Texas:

Comparison of Major Oil Corrections Since 1980

Date	Event	% Change in Oil Price	Length of Oil Price Decline (in trading days)	% Increase in Oil Price – 1-Year Post-Low
1986	Saudi Market Share War	-67.2%	82	79.0%
1988	Oil Glut	-43.7%	295	58.4%
1991	Global Recession / End of Gulf War	-57.2%	90	5.4%
1998	Asian Crisis	-59.6%	484	134.5%
2001	Global Recession	-53.1%	290	46.2%
2008	Great Recession	-78.4%	119	134.8%
	Average	**-59.9%**	**227**	**76.4%**
2014-2015	Current Dip(2)	-59.8%	~300	?

(1) Includes Matador Resources Company, Foran Oil and Matador Petroleum Corporation and other predecessor entities.
(2) Length of oil price decline in trading days using high of $107.26 on June 20, 2014 and low of $38.24 on August 24, 2015

We do not own any shares of Matador (little pricey, lukewarm on Eagle Ford) but I do admire their management team and I liked this table. And here is what jumps out at me:

Oil prices have collapsed from a high of $107.26 on June 20, 2014 and low of $38.24 on August 24, 2015 – a decline of 59.8%.

This price collapse is the seventh major oil correction of the last 35 years.

It ranks as the third worst as measured by the percentage drop in oil price from peak to trough and the second longest as defined by the length of the decline in trading days (before the low was reached).

And I also see that three of these seven major oil corrections were due to recessions.

So we have had a few more severe price drops the last four decades - but only two. And only one price decline has lasted longer.

This current dip has also lasted almost four times as long as the 1986 Saudi battle for market share, and about two-and-a-half times as long as the oil price decline after the 2008 Great Recession. You know, the largest financial calamity in the modern era.

Said another way…

Knowing nothing about the causes or circumstances behind the current price collapse, one might observe that while the magnitude of the current decline in oil prices is probably appropriate - based just on previous crashes – the duration of this thing is highly unusual.

It took an exceptionally long time for oil prices to reach their low after the most recent decline initially began. Which would seem to indicate that, unlike every other event of the last four decades on that table, this current price collapse was not triggered by a specific event per se. Something appears to have gotten the snowball rolling, and then it turned into an avalanche.

So what caused this particularly historic price decline, exactly?

Even if you don't follow the markets closely, you probably at least have some vague recollection of every other event listed on that table in the lines above "2014-2015."

But at this time next year, what are we going to call the period on Matador's table that right now is labeled, "Current Dip"?

There are probably a few labels we could try on that might describe the initial snowball. But they'd probably fall short when it comes to explaining the historic *duration* of the decline.

The reality is that your answer to that question is probably going to depend on what day you ask it. Every day, for 300 trading days, it seems there has been some new reason to freak out about oil prices.

Some of these reasons, to a causal observer, seem covered in a veneer of importance.

Wait – Iran has oil, now, TOO?!?!

Other reasons feel more like the substitute science teacher passed out the wrong quiz.

"Uh, ma'am? We've never even gone over spreads between futures contracts that expire on different dates before…"

I hereby make a motion we call this period, "The Great Pessimistic Bias Feedback Loop of 2015." Or something.

The popular narrative would have us believe that in the summer of 2014, an oversupply of just 2% in the global oil market – slightly under 2 million barrels of oil per day – led to an oil price decline that culminated 14 months later, when oil prices bottomed out, lower by 60%.

That the popular factors in the list above formed a procession of negative headlines that exacerbated the fundamentally cyclical nature of the oil industry during that period.

That the initial oversupply was the snowball, and it was those multiple other factors that created the avalanche.

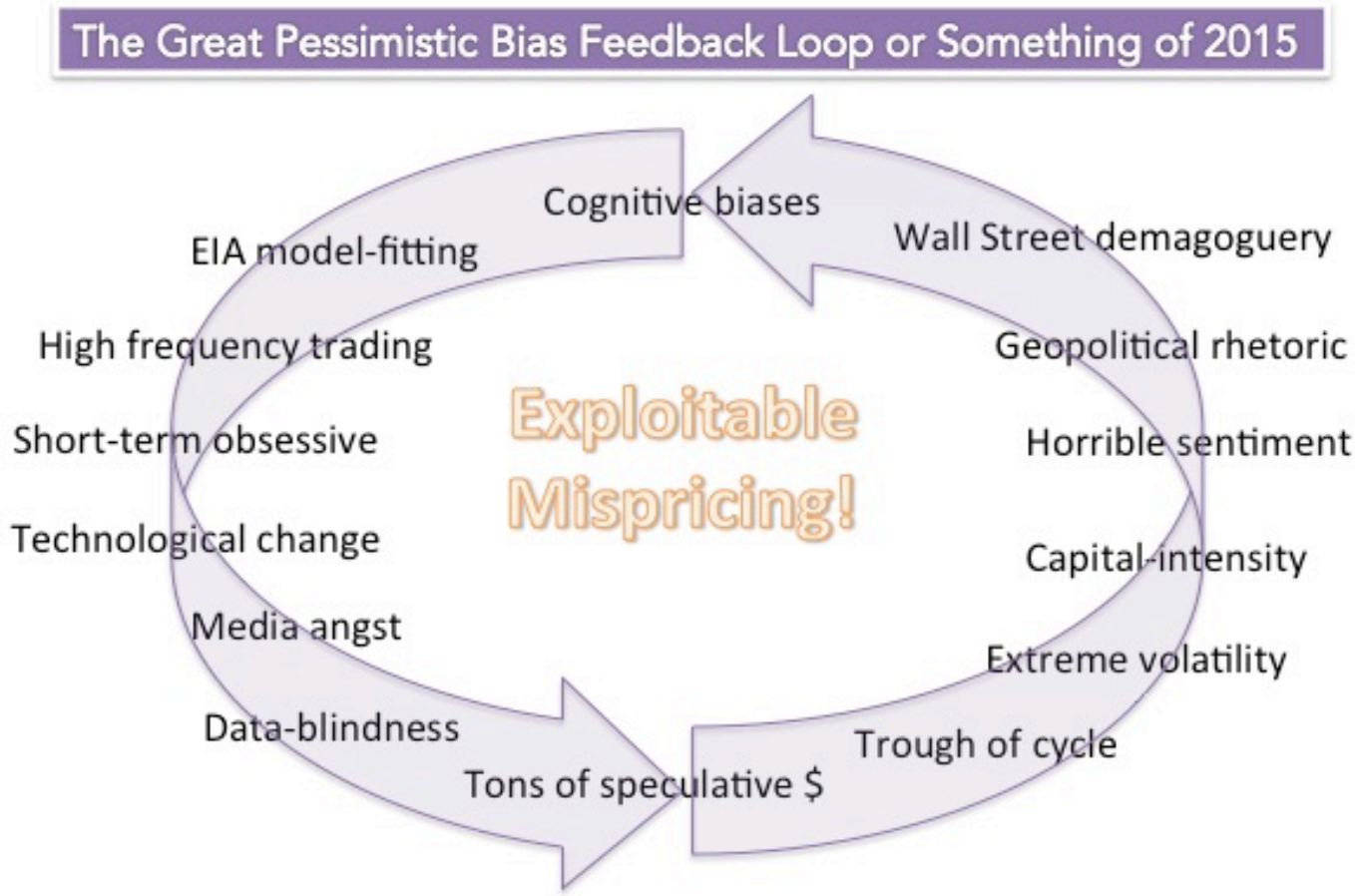
I would submit, however, that if you seriously believe that the past year's drop in oil prices was rational – that it was the result of a previously responsible and sober global oil market which slowly became increasingly desperate and despondent due to a temporary 2% oversupply of oil production…then you absolutely should be seeking professional investment help.

But don't look at me.

Because I, personally, cannot reconcile the underlying premise there – that today's price should be taken as a serious indicator of the true economic value of a barrel of oil – with the reality of Wall Street business as I have come to understand it the last seven years.

I believe the current collapse in oil prices can really only be understood when also taking into account some other important but less obvious factors.

I present the following sections to you as evidence that serious mispricings can and do occur in the oil market. And that the current consensus on oil pricing may warrant some skepticism.



Let's start with a simple definition.

Oil Glut vs. Price War

Properly defined, a "glut" is an excessively abundant supply of something. An excess, a surfeit, a superabundance.

Now, 1986 – that was an oil glut.

Global production in 1986 was 58 million barrels of oil per day (bopd). The compound annual decline rate (more on this later) was approximately 1.5%.

58 million * 1.5% = 870,000 bopd of natural decline in supply every year.

So the industry had to drill and complete enough new wells to add 870,000 barrels of oil per day in incremental production just to offset natural declines.

However, in 1986, the industry also had 10 million bopd of spare capacity; wells already drilled, completed, and tapped – just waiting for someone to turn the spigot. Except nobody actually needed to drill any new wells. Not for a long time.

In fact, about 10,000,000 / 870,000 = *11.5 years worth of new oil production* was already on tap in 1986 to offset those future natural declines.

In 1986, the world had more than a decade of spare oil capacity on hand.

There was absolutely zero reason to drill and complete any new wells. Everyone just had to wait, for years, for demand to rise in order to reduce the surplus.

Now that's an oil glut, Hoss.

Today, using the exact same approach as above except plugging in current numbers, we have only *seven months* worth of extra supply on tap around the globe.

Not only is this soooooo not an actual oil glut, but, you know, we're cutting it a little close on the game clock there, Eli.

And my point is this:

We are not in an oil glut. We're in a price war. Or, more specifically, a price-driven market share war. And an oil glut and a price war are fundamentally different – most notably because we could wake up tomorrow to an unexpected policy announcement out of OPEC and the current "glut" would effectively vanish. There is no chance of that sort of thing happening in an actual glut, like in 1986.

As per that earlier table from Matador, during that 1986 oil glut, also know as the Great Saudi Market Share War, the price of a barrel of oil dropped 67.2% from peak to trough. It took 82 trading days for the price to reach its trough. And one year to the day after oil had hit its low, the price of oil had increased 79.0%.

Again, this was while there was *over a decade* of oil inventory on hand.

During the current (trying it out here) Great Pessimistic Bias Feedback Loop of 2015, the price of oil has fallen 60% from peak to trough, and oil prices declined for more than 300 trading days before finally bottoming.

Only instead of having 11.5 years of extra inventory on hand, like in 1986, in 2015, we've actually got only seven…

Wait, what month is it?!?!

Deterred by neither math nor logic, however, both the media and the Street seem to be confused by this distinction between an oil glut and a price war. Somewhat amazingly, both are still using the levels of storage available for crude oil in Cushing, Oklahoma as some sort of proxy for the current "glut." Which makes all this even sillier.

Now, physical traders in the U.S. – industry folks who actually move real oil around the country – like to park that oil close to the market, and geographically, Cushing, is great for that simply because it sits near the center of the country. Cushing is actually the designated storage location for all NYMEX-related physical oil positions. And, sure, that's important, but Cushing also only represents about 20% of the total oil storage capacity in the country.

Fill 'er up. What are we talking about here?

Cushing facilities are also connected to plenty of other storage facilities by these long, giant straw-looking things called "pipelines." Builds in one facility are offset all the time by draws at another. That's, um, kinda why we have pipelines.

Nonetheless, this spring the fear that the U.S. would run out of storage room for oil actually grew so high that the Department of Energy had to remind everyone that the U.S. has at least another 220 million barrels of storage capacity ready to go in the Gulf refining region known as PADD2. Which is sort of the equivalent of a football coach having to call a time out just to tell his team, "Uh, guys? You do know there is plenty more Gatorade, right?"

So please feel free to ignore those breathless reports about the U.S. "running out of oil storage." Now you also know that there is no "glut" – just a relatively small oversupply, a year ago, that may have already corrected, even if it's not obvious yet.

And a really good question related to all this would be, "How could an overhyped shortage of oil storage in an obscure part of Oklahoma cause global oil prices to tank, anyway?"

Which brings us to another truly unusual aspect of this current collapse in oil prices:

It is way, way too U.S.-focused.

Data Availability Bias

An availability bias occurs when we overweigh the information that is the most obvious, vivid, or easiest to recall.

One classic example is a shark attack, which people believe happens much more often than it actually does - because of heavy media coverage when an attack actually occurs, and the vivid, emotional reaction that causes. Actual statistics, though, are pretty clear on the fact that you are much more likely to get killed by a falling coconut than a shark – and even that probability is miniscule.

Keep that in mind: if you are about to get eaten by a shark, swim under a coconut tree.

You're welcome.

The oil market is currently suffering from a data availability bias of its own, and it results in an overemphasis on developments in the U.S oil market. I know, because, I too, once suffered from it. Back in the spring. And it led to a distressing case of premature accumulation. Ask your doctor if ah neh nevermind.

Why So Serious?

Oil data from the U.S. Energy Information Administration or EIA is, hands down, the best in the world. U.S. data is more accurate, more detailed and more timely than the numbers coming out of any other country – by far. Other advanced economies like Australia, the U.K. and Germany provide data that is mostly guesswork - and then only, like, after soccer season or something. China, Russia and Saudi Arabia essentially treat their oil data as state secrets. And oil forecasts in some emerging markets are done using a process that, technically speaking, resembles someone dropping chicken bones in the sand.

But because the best and most easily accessible data is from the U.S., the entire market overemphasizes that data.

And this is odd, because U.S. tight oil barely meets 5% of global demand. Our companies here don't set the marginal cost of supply for the global industry. It's not even close. Wall Street and the popular financial media seem utterly confused by this.

Sitting beside OPEC and U.S. tight oil in the global oil production market is more than 54 million bopd of crude being produced by other companies and petro-states. And a significant portion of that is being produced at a much higher cost that the most efficient tight oil

producers here in the U.S. And that higher cost production is way more uneconomic than U.S. tight oil at current prices.

Now, it is true that U.S. tight oil producers have temporarily assumed a key role in balancing the market today – because they can efficiently modulate their production in fairly short order. But that is entirely different from the suddenly popular notion that global oil prices will somehow be capped by the average cost of producing U.S. tight oil.

That is not only silly, but would invalidate 85 years of economic theory.

The Unexpected Virtue of Ignorance

The temporary oversupply of oil in the market is approximately 1.7M bopd.

The recent collapse in oil prices has led the IEA to anticipate a decline in U.S. production in 2016 of 6%, or 600,000 bopd.

Thanks to high quality U.S. data, we can have a high degree of confidence in that estimated decline. But there are almost certainly deeper production declines occurring in higher-cost areas than the U.S. - of which the industry is unaware, due to that lack of good data.

Areas with higher marginal barrel costs than the U.S. include the following:

- Brazil produces 2.7M bopd from deepwater projects costing $80 a barrel;
- Canada produces 2.2M bopd from oil sands at a cost of $90 per barrel;
- Angola and Nigeria together produce 3.7M bopd offshore at costs between $80 and $90 a barrel; and
- Mexico produces 1.8M bopd of crude from deepwater at a similar $80 cost.

Never mind the potential millions of other bopd in production that might be curtailed or "shut-in" from other high-cost places not on that quick list. We really don't even know how much production the market will lose in 2016 from just these four areas. But if they are higher cost than U.S. tight oil, and U.S. tight oil producers have determined prices are too low for them to drill…then logic would suggest that the additional decline from these costlier sources could easily not just erase the remaining current oversupply, but create an incremental shortage.

There are other factors outside the U.S. aside from marginal costs that might also materially impact the entire oil industry soon. For instance, Russia's biggest oil producing company Rosneft produces 4.16M barrels of crude a day on its own, but it also shoulders a huge debt load – which could be problematic in light of 2014 sanctions against Russia related to the

Ukraine that limited Rosneft's access to capital markets. And several weeks ago the management of Rosneft also estimated that Russia would, in the face of new proposed taxes, lose more than 500,000 bopd in production in 2016.

The industry, by obsessing about U.S. tight oil and ignoring the rest of the market, is flying with one eye closed…and the other eye really droopy.

The Yard Is Fenced

Another more obvious problem with this overemphasis on U.S. oil data, however, is that, um, our oil can't go anywhere. There is that whole ban-on-exporting-oil-from-the-U.S. law. And that alone means there are going to be some pretty unique things about the U.S. oil market that may not apply to the rest of the world.

To be clear, it's easy to understand why the oil market is very U.S.-focused at the moment. The U.S. is where capital can most quickly be removed and deployed in response to price moves these days. And horizontal drilling of U.S. tight oil over the past five years put us in a different league when it came to growth. U.S. oil drillers were, at least until recently, producing just under 4 million barrels a day of tight oil, nudging overall domestic oil production to more than 9.6 million barrels per day.

And this made U.S. unconventional oil companies in aggregate the 7th biggest oil producer in the world – bigger than Iran and the UAE, and just less than Iraq – in relatively short order. All of which makes for a very compelling story to watch.

But just because U.S. tight oil production played a key role in the original oversupply, does mean it will also hold true that the U.S. will be the key to the turn in global oil prices. I suppose I understand how people might *want* the U.S. to be a proxy for production in rest of the world…but, well, that's just the analytically lazy, er, data availability bias.

The bottom line is that it is a mistake to overweigh what goes on in just the production half (never mind that demand stuff!) of the U.S. oil market in an attempt to extrapolate what may or may not be going on in the rest of world. That there is no good oil data from most of those other places should not be taken as an indication that nothing important is going on right now in them. It's just the opposite.

Nonetheless, the financial media and Wall Street are currently transfixed with U.S. tight oil production. Not because it's the most important; it's because the data is better and more easily accessible. So in a price collapse, just like that shark attack, what goes on in the U.S. market gets repeated much more frequently.

It's also interesting to me that even within the U.S., there is a clear data bias towards tight oil producers. You'd never know based on media coverage that the U.S. actually produces more oil from conventional oil wells than tight oil wells. The market is obsessed with U.S. tight oil companies – *yet they aren't even the dominant segment of oil production in the U.S.*

Extrapolating any kind of data or conclusions about conventional wells and fields to tight oil wells and fields – or vice versa - is fraught with obvious problems. Yet here we sit, in a market obsessed with rig counts.

The world is a much bigger place than some people think, and production is very likely coming off right now in the places we can't see – at a scale we do not currently know, and at a pace we cannot judge. When analysts, traders, journalists and Wall Street obsess only about the most available data, they become blind to much more important trends in the rest of the world.

And this, too, seems to be creating a real opportunity for us.

On "Lower for Longer"

The next major area where my own views differ the most dramatically from consensus is with regards to the oil price scenario dubbed "lower for longer." Here, oil prices might fluctuate a little, but would otherwise stay bounded between a small price range near today's oil price.

I'm going to defer discussing my primary objection to the "lower for longer" thesis - the global decline curve – until Part Four of this update. I'd also quickly point out that strong enough demand for oil would instantly squelch the "lower for longer" thesis. And that "lower for longer" implies a heavy U.S.-centric data bias that may now sound familiar to you.

Luckily, there are other good arguments against it, too.

The most vocal advocate of this "lower for longer" scenario is Goldman Sachs. And I will now demolish this line of thought.

Haha just kidding not really though.

Actually, it's not so much that I personally disagree with Goldman's analysts as much as it is that I agree with the experts in the field on this issue - and they disagree with Goldman. And by experts in the field, I mean the management teams of U.S. E&Ps as well as the firms that service them – in particular companies like Core Labs, which we do not own in Tarpon, but whose management has a ton of real-time insight into the industry given their expansive customer base. And who share it for free on the Interwebs!

Goldman Sachs - and others, to be fair - seem to view rising oil prices as a bell that will bring the salivating dogs running. Increased oil prices will unleash a wave of pent-up production from oil wells that have been drilled, but then were corked during the price collapse, before any oil could be tapped. If that wave of pent-up drilling happens, Goldman's thinking goes, then "lower for longer" could result because those corked wells would represent a flood of new oil that would hit the market as soon as prices rise high enough. And that would put a ceiling on prices.

As an aside, wells aren't actually "corked." Technically, they are referred to as "drilled but uncompleted wells," or "DUCs." And there are a ton of them across the U.S. right now. That's because about 70% of the cost of drilling a successful tight oil well is incurred in the completion stage. For companies wanting to save money while waiting for oil prices to recover, the easiest way to do that is to press the pause button on operations right after the well has been drilled but before it is completed. The cork goes back in the bottle.

So Goldman sees a lot of DUCs out there and believes it means oil prices will be lower for longer.

The consensus "on the ground," however, and the one I believe is more likely when it comes to oil staying lower-for-longer is this:

Because of the recent volatility in oil prices and damage done to balance sheets across the industry, management teams will react slowly to a price increase in oil. They are skeptical about price stability. As prices begin to rise, operators will take their time before resuming widescale drilling in order to confirm that prices will stay high. In the meantime, initial cash flows from resumed production will be allocated towards bolstering balance sheets first before being recycled back into drilling programs. Further, even after rigs are ordered back out to the fields, there will be a significant delay before production across the industry reaches a notable volume again. And there is a good case to be made that production growth coming out of this collapse will slow significantly.

This view is also consistent with the observation that most E&Ps have less of their 2016 production hedged, so they will have lower EBITDA and therefore less of an ability to quickly ramp up capital expenditures in any case.

In other words, once oil prices continue to rise, there would be no "lower for longer" ceiling on prices because these management teams are in no rush; they have all just seen their lives flash before their eyes. I believe their desire to protect their balance sheets will mean that while those DUCs may start to be selectively tapped to maintain existing production rates and bare-bones 2016 budgets, it will take a considerably long time before they start seriously considering using them to rapidly grow production again.

Being Short Speculation

I would also add that, a bit more broadly, "lower for longer" also presumes a rationality to pricing in the oil markets that does not exist.

Or, at least, that seems to have been in hiding since the day after Thanksgiving in 2014.

Relying on oil prices to stay lower for longer is essentially being short speculation in the oil markets. And, you know, good luck with that.

It is unclear to me why Goldman and company believe the same hyper-speculative forces running so rampant in the oil market of 2015 will suddenly disappear once sentiment in the oil market turns bullish.

In Goldman's defense, an April EIA model-fitting debacle I elaborate on a bit later absolutely made it look like U.S. tight oil companies started ramping up their production again way too quickly when prices rose this spring. And there was, inevitably, one CEO tight oil cowboy early this year, who for whatever reason, let the Wall Street analysts on his company's conference call know very clearly that he was going start ramping up the drilling again as soon as oil hit $60.

But, at this point, I think we can probably assume everyone involved in both incidents has learned a few lessons.

There is also no denying that Goldman's own oil price forecast rests on a number of other points in addition to DUCs, like a stabilizing in certain Chinese economic indicators and deflation across multiple commodities. Nonetheless, their take on DUCs is central to their case, and it in particular has become market consensus.

Finally, just in case, here is Saudi Arabia's deputy oil minister in *The Wall Street Journal*, rejecting the idea that the current period of low prices represents a fundamental lasting shift:

> "A prolonged period of low oil prices is…unsustainable, as it will induce large investment cuts and reduce the resilience of the oil industry, undermining the future security of supply and setting the scene for another sharp price rise.
>
> "Just as the assertions, heard a few years ago - that the oil price would reach $200 a barrel - were proved wrong, so the recent assertion that the oil price has shifted to a new low structural equilibrium will also turn out to have been wrong."

So if you're tracking sides, we disagree with Goldman, but are aligned with the corrupt monarchists.

Did I mention I've developed a tick?

And that brings me to the algos.

The Reflexivity of High Frequency Trading

In the popular imagination, my job as a portfolio manager is to rationally analyze a slew of economic and company fundamentals. On your behalf, I scrutinize companies, weigh various factors like cash flow and competitive differentiators, and in the case of energy companies, stay on top of a lot of other things that may impact global supply and demand for their product.

But most trading these days has nothing to do with any of these things. Instead, it's almost exclusively focused on what market prices are going to do in the next few fractions of a second.

A key truth about today's stock market prices is that on a daily level, they are determined as much by computer algorithms as by human judgment. A market dominated by short-term-obsessed computerized trading programs has many potential problems. When it comes to the oil market right now, however, one of the most glaring of these problems is on full display; it is exceptionally vulnerable to what are called feedback loops.

High-speed trading firms mimic each other's trading strategies, which in times of distress can amplify price swings and push shares prices to diverge radically from the future cash-generating abilities of the companies those shares represent.

In the stock market this has happened most famously in two separate "flash crash" incidents. On May 6, 2010, both the Dow and the S&P fell more than six percent in a matter of minutes, losing a trillion dollars in value. Then again, only a few months ago and as mentioned in Part Two of this update, we saw another "flash crash." Within minutes of the market opening on Monday, August 24, 2015, the Dow plummeted 1,089 points. This, again, represented history's single largest point loss during a trading day, ever.

In both cases, nothing happened in the real world that would in any way rationally explain the severity of those drops. "It's just the algos" has become surprisingly accepted.

High frequency trading is very much a big part of today's market - and by extension your investments in that market, too. I'm less interested in railing against it, though, than in capitalizing on the inefficiencies it can create.

In an authoritative March 2013 paper, researchers at the Swiss Federal Institute of Technology determined that in commodities markets, "reflexive trading" - when prices respond to past price changes rather than new information about fundamentals - accounted for 60 to 70 percent of price moves in futures contracts.

Said another way, fundamental changes in supply and demand in the actual oil market accounted for less than a third of short-term movements in oil futures prices.

Commodities markets are effectively moving themselves most of the time these days – and taking longer and longer to properly price new information. From the same 2013 study:

> "It takes more and more time for the system to adjust to new [information] due to the larger and larger number of triggered [price changes] and the longer and longer sequences of [waves of trades]. This means that the convergence process to any true price becomes longer and longer, in other words less and less efficient."
>
> "Rather than agreeing rapidly on the 'correct' price after the arrival of some unanticipated news, the traders take longer, not knowing on what price to settle."

Sounds a little familiar, no?

Several weeks ago, the head of the CFTC, the Commodities Futures Trading Commission, also gave a speech in which he let it be know that automated trading programs are on *at least one side of half of all the trades in the energy futures market*.

In that same speech, the CFTC Chairman also stated that in 2015 alone, *WTI crude oil futures have experienced 35 "flash crash" events*.

Thirty-five.

Treinta cinco, Papi.

Or one flash crash about every eight or nine days.

Don't tell me this market is pricing oil correctly.

And I would submit that it is at least possible that oil prices set by an HFT-dominated market might be at least a little untethered from what is actually going on in the world's oilfields due to the dominance of algorithmic trading and its resultant feedback loops across the oil and equity markets.

"Beware of Geeks Bearing Models"

From crazed trading robots to glitches in spreadsheets...

Fair warning - this next section gets particularly wonky.

The short version is this:

Technical discrepancies in a much-watched weekly model from the premier source for U.S. oil production data appeared to seriously exacerbate fluctuations in WTI oil prices this spring.

The long version follows. It has jokes, though.

In the oil market, those frantic trading machines I just described appear to rely overwhelmingly on a single, very complicated financial model when it comes to setting short-term oil prices.

Now, there are actually three reports that oil jockeys watch each week for the gouge on oil storage and by extension prices, but they vary in importance. Every Monday, an outfit called Genscape issues a report, but it's private. After the market close every Tuesday, the American Petroleum Institute releases its own estimates of U.S. oil storage for the week. The numbers in the API report, though, are self-reported by oil companies, and as such are deemed less reliable than government data. Which brings us to the reports from Uncle Sugar.

Specifically, the U.S. EIA, or Energy Information Administration, publishes its Weekly Petroleum Status Report every Wednesday. This report contains the numbers that traders believe are the most critical to setting short-term oil prices in the U.S. And because oil traders watch it so closely, so does Wall Street and, by extension, most of the financial media.

The EIA gets more than 1.5 million visitors to its website every month. That puts it, roughly, in the top 1,500 websites in America. And yet I'm guessing you, nor anyone you'll meet this month, have ever been there. I'd also surmise that the vast majority of those visitors aren't even humans, but bots, scraping EIA numbers for computerized trading models.

In the oil market, that weekly EIA report is sort of like if the Fed published its meeting minutes once a week – and it rolled off the fax into a room full of first graders eating handfuls of Gummy Bears. And on the cover page was written, "Secret Place Where Santa Hides The Toys."

Let's leave aside that U.S. oil production data is not nearly as significant to setting actual global oil prices as U.S. traders and Wall Street would like to believe. And that there is, by definition, a whole 'nuther half of the same oil market called 'demand' that is, you know, kind of critical, too,

when it comes to setting prices. Let's also ignore the obvious point that trading frantically every day based on imperfect conclusions spit out of very complicated spreadsheets is a dumb idea.

For now, let's just focus on the fact that the information that comes out of the EIA every week is not actually data.

It is an opinion. About the very near future.

A data-driven and reasonably sound opinion, mind you, but, nonetheless, it is the product of a financial model – and one whose most material shortcomings only started becoming more evident this spring, when trends in the real world begin to quickly change.

This past May, the EIA restated U.S. oil production volumes from earlier in the year – to a level considerably higher than previously believed. This upward revision was a bit unexpected to say the least, given what anyone with a lick of common sense might think they thought they knew about some pretty basic aspects of supply and demand. Confusion grew as the summer waned on, primarily because of startling differences between (lower) production numbers reported by individual oil-producing states like Texas and North Dakota and (higher) EIA state-level production numbers.

Traders were getting two inexplicably different numbers about U.S. production that should have been the same.

That discrepancy raised hard to answer questions about U.S. oil production. For instance: why in the world, in spite of (1) a 50% drop in the price of oil, (2) the extremely cautious tones of management teams throughout the U.S., and (3) the agency's own longer-term projections, would the EIA expect production growth in the U.S. to increase by 700,000 barrels per day during 2015?

And why exactly would the EIA go back and revise earlier production numbers for March upward, anyway - in direct contradiction to state-level data which was decidedly flat over the same time?

At best, the new EIA numbers seemed to fly in the face of common sense and macroeconomics. At worst, they launched a thousand short-sellers.

The attitude traders collectively took at the time seemed to be, "Man, I can't tell what's wrong, Tommy…but it's EIA data. Dump everything. Michael Lewis can write a book later. "

As it turned out, what we saw in those "higher revised production numbers" coming out of the EIA earlier this year were really a clumsy public demonstration of an exercise that spreadsheet jockeys call "model-fitting." Only it wasn't until September that what had been happening

finally became apparent.

Weekly EIA reports are based not on actual data but a model – a massive spreadsheet, if you will – that tries to connect the monthly dots containing true data. Only the agency's monthly reports incorporate actual field-level data taken specifically from direct surveys of oil companies. The industry, however, demands more frequent data dumps, so EIA tries to fill in the gaps between actual data points at the end of every month with modeled weekly numbers.

In other words, the EIA has to make the weekly data jibe with the more accurate monthly reports – and those previously confusing springtime revisions were the least worst way the agency could attempt to offset the impacts of large inventory draws of crude oil at the time.

And in what was no doubt a crushing blow to conspiracy theorists everywhere, in September of this year, the EIA – having finally gotten its weekly models in sync with actual monthly production declines – readjusted its prior, uh, readjustments. The numbers previously revised up in the spring were, in the fall, adjusted way down. Projections for 2016 were finally walked down as well.

The net effect was that in a theater crowded with already stressed out traders desperately seeking clarity on oil prices, when they looked up to the EIA and quietly asked, "How bad is it?" the agency basically shrugged and said, "Tell you in a few months. First I gotta finish this &#@! spreadsheet."

To its credit, the EIA is clear that its weekly numbers come from a model, and that only the monthly reports it publishes rely on actual survey data from real oil companies.

But here's the thing: traders and their algos don't care about "model-fitting." Nor, in times of stress, do they care how accurately the EIA reports track the real world. Who cares, really, as long as all the other big players at the craps table have to trade off it, too?

Predicting the model – and other traders' reactions to it – becomes way more important than what might be happening in the fields of West Texas. The real world is just an outdated concept, man.

And those weekly model-derived opinions are traded no differently than the more accurate monthly survey data. Which means that trades based on opinions, and not actual real-world data, are dominating the market. And during the time that a particular model is being "walked" by the EIA to better reflect reality, prices can get pushed further from value.

In other words, the complete indifference of traders and their algos when it comes to distinguishing between the output of a model and what is going on in actual oil fields could result in material pricing errors that, at least in theory, might be temporarily exploitable by long-term investors.

To be clear – there is nothing conspiratorial at all about these discrepancies. The EIA has great monthly data, and tweaks to all kinds of models happen all the time as a result of what is called measurement error. It's why the Fed consistently revises prior estimates of the country's economic growth.

The EIA's modeling is in general held in very high regard. The two other major organizations that forecast long-term oil demand and supply – the International Energy Agency (IEA), and the Organization of the Petroleum Exporting Countries (OPEC), have come under specific criticism for perceived flaws in their models, too.

So these issues are not unknown within the industry, and, hey, no models are perfect. The difference here is that the EIA U.S. model is so closely watched on such a short-term basis by such a capital-intensive industry. The industry, by and large, sets its own budgets based on the projections of all three institution's models, flaws and all. The vast majority of Wall Street firms follow them in lock-step, too, in their own projections. And while I can't prove it, it would seem reasonable to postulate that the "data" in those weekly EIA reports is an absolutely critical part of every oil-price trading algo around.

From my perspective - the shortcomings of these models and the temporary dislocations in prices that may result from them have helped create some truly compelling options for us here. And actually, those problems with industry models may unintentionally create opportunities for other, new energy companies to fill the gaps in production that may arise on the global stage, eventually, too.

In the end, David Li, the Nobel-prize winning inventor of the Gaussian copula - the model that predicted the performance of those collateralized debt obligations that later crashed the world's economy –summarized the problem of relying too much on a complex financial model:

"The most dangerous part is when people believe everything coming out of it."

The Craziest Part of All

The following is from *Sleeping With The Devil* by ex-CIA operative Robert Baer:

> "Almost to a person, the disaster planners concluded that the Abqaiq extralight crude complex was both the most vulnerable point of the Saudi oil system and its most spectacular target. With a capacity of seven million barrels, Abqaiq is the Godzilla of oil-processing facilities.
>
> "A moderately successful attack on the Abqaiq facility's stabilizing towers would let loose seventeen hundred ppm of hydrogen sulfide into the atmosphere. That strength would dissipate, but not quickly enough to prevent the death of workers in the immediate vicinity and serious injury to others in the general area – or to stop sulfur dioxide from eating into the metallic heart of the Saudi oil infrastructure. The toxicity also would deter the onset of repairs for months.
>
> "At the least, a moderate-to-severe attack on Abqaiq would slow average production there from 6.8 million barrels a day to roughly a million barrels for the first two months post-attack, a loss equivalent to approximately one-third of America's current daily consumption of crude oil. Even as long as seven months after an attack, Abqaiq output would still be about 40 percent of pre-attack output, as much as 4 million barrels below normal – roughly equivalent to what all of the OPEC partners collectively took out of production during the devastating 1973 embargo.
>
> "Indeed, such an attack would be more economically damaging than a dirty nuclear bomb set off in midtown Manhattan or across from the White House in Lafayette Square."

Baer's book was published in 2003.

On September 4, 2015, this headline showed up in the International Business Times:

"*Saudi Arabia Thwarts Terrorist Attack In Abqaiq, World's Largest Oil Processing Facility*"

And yet the oil market did not so much as blink.

Which brings up another good question:

Why is there no risk premium on a barrel of oil?

It is head-scratching enough to see oil consistently being priced at a cost so much below the cost of the marginal barrel. But in times of such risk in the Middle East, too?

Now, I confess in advance that I am too naïve to truly grasp the complexities and history of the Middle East. And I'm a sucker for anything written by ex-CIA operatives. Nonetheless, from this particular armchair, the Middle East seems closer to massive sectarian war right now than at any other point I can remember in my lifetime.

So standby for some heavy speculating...

First, it seems plausible that Iran is currently engaged in attempting some sort of soft takeover of the Middle East. Its idiosyncratic and quite possibly insane Shiite mullahs seem to have perfected the art of proxy wars, traditionally through Hamas or Hezbollah, but more recently in the south of Iraq and now in Yemen. And call me skeptical, but it sure seems possible that agreeing to a nuclear deal was almost certainly a means to some other, bigger end for them. And while I'd really be spit-balling if I told you I knew what it was, I'm guessing that having a firm grip on the oil spigot of the world would probably help them reach it.

Meanwhile, the House of Saud is in real trouble here, no?

First, their own people hate them. There appear to be grumblings in the Royal family itself about the new king and crown prince. Don't forget that the same fatwa that Osama Bin Laden issued against American in 1996 also included the Saudi royal family. And for years, Al Qaeda strove to topple the Saudi monarchy.

Saudi is currently fighting a proxy war with Iran in neighboring Yemen. They are facing sectarian unrest from the minority Shiites in the oil producing east of their country - stirred up by ISIS, no less, about whom the Sunni Saudi royal family is likely also supremely concerned. Because even though ISIS is also Sunni, ISIS also happens to consider the Saudi royal family to be "Kafirs" - "unbelievers" or "infidel." And though I've never read the Koran, my hunch is that sorta thing means these guys aren't getting together on weekends to play softball.

Until the terrorist attacks last Friday in Paris, it seemed like the only player in the Middle East with the primary goal of battling ISIS was, well, the U.S., only we aren't meaningfully in theater

and have a serious case of war fatigue. France, no doubt, would now like to change that.

Everyone else seems to not only hate their neighbors more than ISIS - but in some cruel ironic twist, they seem to covertly benefit from ISIS being around.

Since ISIS has showed up, the Kurds have gained more Arab land. Turkey has gotten some help in deposing Assad in Syria. The Saudis get help from other Sunnis (i.e. ISIS) in checking Iranian Shiite influence in the region - as well as the influence of the U.S. and Russia, too, I suppose.

The Yemen rebels, backed by Iran, get to fight a Saudi that is distracted watching their own Shiite populations deal with ISIS. Iraq, which as far as I can tell is effectively a franchise of Iran now, anyway, gets an excuse to strengthen Shiite control there even more.

Russia gets a legitimate excuse to come in and protect its only port in the Middle East - a naval port in Syria - while pushing the U.S. out as a power broker in the region - and selling more arms. A three-fer!

It also appears Moscow is now in a loose alliance with Tehran, Baghdad and Damascus to, one might point out, fight an almost exclusively Sunni opposition. And while hard to gauge how intentional or successful Russia may be in tilting the table towards the Shia Muslim countries in the Middle Easy, it's probably also safe to say that few countries would benefit more from unrest in the gulf states than Russia. And that the balance of power in the region seems to be quickly moving towards a Shia upper hand.

Back to The Point

All of which is a long-winded way to say:

Perhaps there is no risk premium on the price of a barrel of oil right now because, for some reason that truly escapes me, the temporary-and-soon-to-be-gone 1.7M bopd oversupply of oil is helping the market shrug off all this geopolitical tension.

Or shoot, maybe it's me who's out to lunch. Maybe the market actually has carefully examined all the factors at play here, thought deeply about geopolitics, and in the end, concluded there is absolutely nothing to worry about in the Middle East.

Or perhaps there is no risk premium on the price of a barrel of oil right now because it is being suppressed. Literally. By the Saudis, who are maintaining production at a very high rate to keep oil prices down. Only they're not doing it to crush U.S. tight oil, as the popular narrative would suggest. They're doing it to hammer ISIS' oil revenues, pre-empt Iranian oil in a battle for

market share and further pressure Russian oil – all primarily in an attempt to lock up markets in Asia and Europe, but also to further protect themselves from Shiite hostilities.

The Saudis, though corrupt and barbaric, are not stupid when it comes to the oil markets. I cannot believe that the Saudis believe they should lower oil prices just to impact U.S. tight oil companies.

First, there are those millions of bopd of higher cost, non-U.S., non-OPEC marginal barrels of production that will come under pressure before U.S. tight oil. Second, there is that whole export ban on U.S. oil thing again. *Our barrels are not competing with Saudi barrels for their best customers.* This is not news to them.

Now, Russian barrels and Iranian barrels certainly are direct competition - throughout Asia and Europe, specifically.

Nor can I casually accept the idea that Saudi would be willing to inflict such a brutal cost on themselves in terms of budget deficits – 20% of GDP in a single year, forgoing $100 billion in oil export revenue in 2015 alone - just to layoff some roughnecks in West Texas.

Nor do I seriously think that they seriously think they could end tight oil drilling in the U.S. An artificially depressed price in the short-term would simply not be effective in blunting the U.S. tight oil challenge in the longer term, and they would have known this in the beginning.

Plus, not too long before this meme about Saudi suddenly targeting U.S. oil companies popped up, you could read articles like this:

"OPEC Sees No Major Threat From Unconventional Oil"

So I'm having a bit of difficulty buying into the "sheiks versus shale" narrative.

Consistently Wrong, But Never In Doubt

One of the most intriguing parts of all this to me is that at some point after that initial decision in November of 2014 to punt on defending the price of oil, the Saudis explicitly decided to basically up the ante - by boosting production. A quick look at a bar chart of Saudi production by month left even my seven-year-old with the inescapable conclusion that Saudi, essentially, willfully forced an even deeper collapse in the price of oil on the world. And – here's the thing – *they forced it to down a level that they know full well is not sustainable long-term.*

In other words, the Saudis appeared to clearly choose to deliberately manipulate – or, to be more accurate, to temporarily cease all previously expected manipulation – for some non-obvious reason this spring. And they did this in spite of knowing that it could not last long, would send traders into a tizzy, and could undermine their own long-term interests.

And I think that the market's inability to resolve this core paradox has played a huge role in stoking the entire market's fear and uncertainty this year.

"Why, oh, why, would the Saudis *really* do this?"

Jonny - bring up that timeline of Iran nuclear deal negotiations for our viewers, now, please.

The only rational motive, it seems to me, that the Saudis could really have to bring down the price of oil is political.

I'm guessing the Saudis have got to be particularly upset about the prospect of a resurgent Iran in the global oil market. If you take expected production from Iran (4.0 million bopd by the end of 2016) and assume Iraq can keep its current production (4.3 million bopd) flat next year – and if you presume that south Iraq is now a franchise of Iran, anyway - then Iran at the end of 2016 would effectively be in control of an amount of oil that would probably begin to make Saudi awfully nervous about its own 10 million bopd – and its position as the de facto leader of OPEC.

Saudi would seem to have several important geopolitical goals it could meet via lower oil prices when it comes to Iran, specifically. The first was putting additional pressure on Iran to abandon its nuclear program in this spring's negotiations. The second is to economically damage a newly unsanctioned Iran by impeding the ability of increased cash flows in Tehran to covertly fund Shiite military goals in the region – like in Yemen and Syria, specifically. The third goal may have been to just buy time to lock up more customers in Asia and Europe before Iran could. And because Saudi can't openly avow any of this within OPEC, perhaps they instead spout rhetorical nonsense about "market share" and the need to root out high-cost competition as cover instead.

Wait, there's more.

Kinda like Rocky IV

When it comes to Russia, Saudi would also seem to be incentivized to keep production high and prices low, in order to be able to pre-empt Russia on contracts in Asia and Europe, and to indirectly pressure Putin in abandoning support for Assad…which would in theory clear the way

for Saudi-Qatari gas pipelines through Syria to Europe.

Assuming, of course that Russia is not thinking the exact same thing already…but with pipes full of Iranian crude instead.

Okay, I'll stop there. But just in case you think I've gone too far down the rabbit hole on all of this, a couple of links:

The first is an article from The New York Times titled, "Saudi Oil Is Seen as Lever to Pry Russian Support From Syria's Assad."

And one from Bloomberg titled, "Saudi Arabia's Oil War With Russia."

If my wild speculations are true, it means, among other things, the true price war here is Saudi versus Iran and Russia, not us. It also underscores that one of the primary reasons for the decline in oil prices was Saudi rhetoric. And let's not confuse that with a serious problem in the oil markets. Which, you know, we don't have. Remember that math about the oil "glut." This current price collapse could, in a single policy announcement, go away tomorrow.

If true it would also put that whole Russia-and-Iran-teaming-up-in-Syria thing in a bit of a different light, no?

In the mother of all ironies, it could also mean that Iran might have rescued U.S. tight oil companies. The re-entry of Iran into the global oil market means that unless OPEC wants to tank the price of oil even further, someone is going to have to cut some production. And that someone will almost certainly be Saudi, who because of Iran, would seemingly have to resume their role as global swing producer in 2016, too.

And, wa-la. Price war, over. But threat of real war? Eh, not so easy.

And finally, and probably most importantly, this theory of mine if true would mean the world's biggest oil producer is so privately concerned about regional economic and military conflicts from a resurgent Iran that it was willing to talk down oil so much that it blew a massive hole in its own budget.

Meanwhile, one truck bomb in Abqaiq, or one little 21-mile blockade across the Straits of Hormuz, and that old $100 a barrel price suddenly looks quaint, don't you think?

Which was kind of the point of all this: I don't believe it's hyperbolic in the least to state that, right now, the entire Middle East hierarchy of order in oil market is under threat.

In fact, given the above, it frankly seems hard for me to imaging that a sectarian war of some

sort is NOT going to happen. What, pray tell, is going to stop it, exactly?

And why in the world is the price of a barrel of oil not reflecting that at all?!?!

Shoot, in January of 2012 - based largely on *just threats* from Iran towards International Atomic Energy Agency inspectors, Wall Street analysts were falling all over themselves to proclaim a $15 to $20 risk premium in oil prices.

Today, however, despite Iran *actually funding* a proxy war against its religious arch-enemy Saudi Arabia, it's…bupkus.

Hello? Is this thing on?!?!

Deep Breath

Again, whether I am right on or way off on all the geopolitical speculating above has absolutely no material bearing on anything in Tarpon. In the end, that there is currently no risk premium on a barrel of oil at all right now - in spite of all the above – once again underscores the massively profitable opportunity in E&P companies the market has yet to realize is at hand.

If I am wrong on the above, once the Saudis make whatever strictly-business point they are trying to make this year, they will turn a few valves, cut off 500,000 bopd, and oil prices will jump.

If I'm right, then the economics of decline rates and global capex and production cuts will kick in soon, and the price of oil will move higher, anyway.

So, we are okay either way – and all that ranting above was basically the oil market's equivalent of fantasy football.

www.DailyFantasyGeopoliticalHydrocarbonSpeculation.biz

Thank you for humoring me.

Section Summary

It's critical to understand that due to a number of unusual factors these days – most notably the extreme short-term nature of Wall Street and the rise of high frequency algorithmic trading, it is in almost nobody's interest to distinguish between the concepts of "price" and "value."

Now to me, that distinction is everything.

But to traders and their algos, everything that matters about a company shows up in its share price. Full stop. There is simply no need to understand anything more about the businesses of the shares they trade. Every headline – whether about the Fed's next meeting, reports on the Chinese economy or speeches given in Athens – will either impact stock prices directly, or represent another reason to try and predict how other investors will react to the same event.

And one result of having so many traders and algos in the market, focused exclusively on prices instead of values, is that they can cause shares prices to, every so often, diverge radically from the future cash-generating abilities of the companies those shares represent. And because of other reasons, created and caused by that first set of factors, those disconnects between price and value can blow out to ridiculous levels for longer periods of time than you would expect.

We are at that point right now when it comes to U.S. exploration and production ("E&P") companies.

I believe the oil market itself has, for the moment, lost its bearings a little bit here.

And here is some current sentiment not dissimilar from my own, from the oil minister of Oman:

> *"We are hurting, we are feeling the pain and we're taking it like a God-driven crisis. Sorry, I don't buy this. I think we've created it ourselves."*

And I strongly believe that the current negativity on oil cannot possibly reflect the long-term future valuations of our companies' shares, their assets, or their reserves.

Not. Even. Close.

Now, let's get back to the right side of the looking glass.

Part Four: The Opportunity

"Facts do not cease to exist because they're ignored."

- Aldous Huxley

We've gone through the reasons why, at least in theory, the oil market could be off its game right now, leaving us some very attractive opportunities in the common stocks of certain companies - if we can stomach the volatility. On the financial side of the oil market, there appear to be a number of different factors combining in unusual ways that could explain why oil has been trading so far below its marginal cost of production for such an extended period.

The argument that oil is priced incorrectly is heretical to those who see daily closing prices as truth. There are a lot of these people. They may see the market as infallible in its pricing of any asset, or they may have trading strategies that preclude ever needing to look too closely at anything other than daily prices. Regardless, the pressure that those who myopically focus on price can exert on the rest of us to conform to that view can be intense. But we will not.

Not because I'm obstinate. Because math.

Because the math of compounding at high rates of return with low relative risk over an extended period of time off a low cost basis is such a fundamentally attractive proposition that the only rational response is, when probabilities are in our favor, to plant our feet and ignore the noise.

The price-obsessed are correct, however, about at least one material issue:

It may not matter why something is underpriced.

In the end, it really only matters if that mispricing is temporary.

The evidence of mispricing described in Part Three is important only as much as it may explain why the companies in Tarpon – whose share prices are currently so tightly linked to oil prices - might be so undervalued. And, I suppose, to explain a lot of recent volatility.
So if we can establish that oil prices appear lower than warranted, based on some combination of industry cyclicality and those other extra-curricular factors in Part Three, then the much more relevant issue becomes…is this temporary?

Part Four of this update is my attempt to show you that the answer to that question is unequivocally, "Yes, this is temporary."

And then, assuming so, how can we take advantage of that?

I am so glad you asked. We've got some diem to carpe.

On The E&Ps

This year's collapse in oil prices has created egregious temporary mispricings in securities across the capital structures of numerous energy companies. The common stock prices of U.S. exploration and production companies ("E&Ps") in particular appear the most untethered from conservative appraisals of true value. A number of these firms represent exploitable, once-in-a-decade opportunities for patient investors to compound capital at high rates of return with significantly less risk than extreme levels of volatility might otherwise imply. And the long-awaited catalyst for these companies' share prices - a legitimate inflection point in oil prices - finally appears near.

To be clear, the energy companies we now own in Tarpon do not require oil to return to anywhere near the $100-a-barrel price of a year ago in order for us to do really well. By the time oil reaches $60 a barrel WTI, our E&Ps will be cash flow positive – ignoring hedges – with the capacity to rapidly convert their inventory to production. In the meantime, they have more than enough liquidity to endure, and should things get even tighter, they also have ample assets that could be monetized if needed.

Also, while I do not personally believe in the "lower for longer" scenario for oil prices that I addressed in Part Three, I do believe that it is best to build Tarpon to withstand it - just in case. So that is what I have done.

A Stunningly Boring Insight

Let's adjust some expectations before we go any further.

If you, right now, were waiting in an all-night line to see the opening of *Phantom Menace*…I am your Jar Jar Binks.
Need that answer quick? I am your network connection. And I have been lost.

All set? Alrighty, then.

The opportunity before us comes down to this:

"The market is completely ignoring the global decline rate."

I know…400 pages for that!?! But hear me out.

Decline vs. Depletion

Let's first define what we're talking about.

I have the unfortunate habit of referring to the "decline rate" as "CADR," which is short for "compound annual decline rate." Both mean the same thing.

The reason I typically use "CADR" is probably because I'm a geek – but also because at some level it's a mental shortcut that helps keeps the concept of "decline rate" a bit more distinct from another important aspect of oilfield physics, the "depletion rate."

"Depletion rate" is the rate that reserves in an oil field are reducing. They are an important aspect of petroleum engineering, there are a lot of impressive-looking papers written about them, and they are related to decline rates…but depletion rates are completely irrelevant to me. At least in the below.

"Decline rate" is the rate that production is declining. That's what matters to me - not the size of the oilfield, but how fast the oil is coming out.

Kiddie pool in the backyard. You fill it with 1,000 gallons of water on Monday. On Friday, only 700 gallons. Subtract, check calendar, adjust for evaporation, humunuhhumunh: "depletion rate."

Same pool, same 1000 gallons. Kid shoots an arrow into the side of the pool. Dog is okay. Water shoots out fast at first, need lots of buckets. Water barely dribbles out later, need just one bucket. "Decline rate."

Said a different way, it's the size of the hole that matters, not the pool.

I'll try to keep things as jargon-free as possible here by using "decline rate" and not "CADR" as much as I can in the below - as long as you don't confuse either with "depletion rate."

On with it, then.

The Ghost in the Machine

It might surprise you to learn that the oil industry's greatest challenge at the moment may not be abysmal prices, overactive OPEC or even the stubborn cowboys of U.S. tight oil.

I would make the case that the industry's biggest challenge is decline rates. And because of them, Wall Street's obsession with other far less important things of late has given us a tremendous gift.

Every oil field has a natural decline curve. Due to the physics of oil wells, a field's capacity to produce oil decreases over time. Specifically, removing oil from a field both steadily reduces the natural pressure that drives oil up and out of a well and decreases the permeability of the rock the oil is trapped in, too. So when a good well is first tapped, you may see that stereotypical "gusher" at first….but that doesn't last very long.

Oil comes out of different wells at different rates, and out of the same wells at different rates over time. In U.S. tight oil wells, for instance, oil tapped by drilling horizontally comes out quickly at first, but then fades fast. Those wells have very steep decline curves. In contrast, more than 90% of the world's oil still comes from traditional or "conventional" oil wells - the stick-a-big-straw-straight-down-in-the-ground, "I drink your milkshake" kind of wells. They have much lower decline rates than tight oil wells, but because there are so many of them, conventional well declines nonetheless have an enormous impact on global supply every year.

When aggregated, the individual decline curves from all conventional and tight oil wells across the globe become the industry-wide compound annual decline rate – a production-weighted "CADR" of the world's entire existing oil production base.

Now, the exact impact of decline rates across all oilfields in the world is very hard to calculate. There are too many oilfields in too many different stages of development declining at too many different rates for too many different reasons. Calculating the CADR is an analytically exhaustive effort. Plus, there has been a ton of industry time and money devoted to developing new technologies over the years to slow these decline rates down – making true global decline rates that much fuzzier to determine. The best we can do is estimate, based on the few comprehensive decline rate studies that have been done.

There are three authoritative studies on global decline rates. They have come from the International Energy Agency as part of their World Energy Outlook in November 2013 (*Chapter 14: Prospects for oil supply*). Recent detailed analysis was also done by Uppsala University in Sweden in December 2013 (*Decline and depletion rates of oil production: a comprehensive investigation*). And Cambridge Energy Research Associates also published a highly respected

study in 2007 (*Finding the Critical Numbers: What are the real decline rates for Global Oil Production?*).

A straight average of these three comprehensive annual decline rate estimates puts that global decline rate at 5.8%. We can have high confidence in those numbers due to the small spread between them, and because they were each based on independent data sets over a reasonably similar period of time.

Plus, that 5.8% decline rate figure is also in line with global decline rates previously estimated by ExxonMobil to be between 4% and 6%; a "not unreasonable assumption" of an 8% CADR made by the CEO of Schlumberger several years ago; a 6% blended average decline rate estimated by the CEO of Weatherford in 2009; and T. Boone Pickens' own estimated global CADR of approximately 8%, too, as per testimony he gave to the U.S. Senate Committee on Energy and Natural Resources,.

So with global decline rates running at (let's stick with that averaged) 5.8% level, and IEA estimating a bit earlier this year the world would produce 95 million bopd in 2015, the global oil industry needs to bring on approximately 5.5 million bopd of new production just to stem the industry's lost production that occurs naturally as a result of decline rates.

Hold that thought.

Why Decline Rates May Not Even Matter

I view the global decline curve as a sort of "macro" margin of safety on the "micro" margins of safety already in each of our current Tarpon names. Here is some back-of-the-envelope math that helps explain why:

The current global oversupply of oil is – estimated on a high (conservative) basis - approximately 1.75M barrels of oil per day (bopd).

The IEA recently projected that global non-OPEC production will decline in 2016 by 600k bopd each.

(As an aside - I think this IEA estimates will prove way too low next year, but for the sake of conservatism and objectivity, we'll use it here.)

Looking forward a bit into next year, then, that previous oversupply is effectively down to just 1.15M bopd (from 1.75M – 0.6M).

But the IEA also expects the demand for oil across the globe next year to increase by 1.2M bopd.

And 1.2M – 1.15 means that, right now, today, from even way down here in the Florida Keys, we can see the current oversupply that the market has been so obsessed about in 2015 will essentially disappear, based on just third grade math.

Before we ever get to decline rates and capex cuts.

And which probably doesn't reflect a much bigger drop-off in production than anticipated by the IEA.

Now, you're probably thinking – balancing the oil market couldn't possibly be that simple in reality. And it is not.

The above is not a serious analysis, as that "back-of-the-envelope" disclaimer I hope made clear. Specifically, it completely ignores any changes in production out of OPEC, which the industry has long-assumed will conveniently fluctuate enough every year to balance global supply with demand - enough to support OPEC-desired oil prices, at least.

I am ignoring OPEC here (more later, though) because blindly presuming that OPEC can play the role of global balancer in 2016 requires some assumptions I'm not quite comfortable making. Specifically…(1) peace throughout the Middle East (see Part Three for my thoughts there), (2) that Saudi is willing to risk permanently damaging their oilfields by overproducing (see investor questions in Part One), (3) that Iran can pump 700k bopd by the end of 2016 (Part One again), (4) that the severe financial crisis that the Iraqi government is currently facing somehow resolves itself enough to increase that country's oil production, (5) and that, most importantly, there is enough spare capacity within OPEC to actually be able to produce enough to balance the market. More on capacity in a bit.

The other obvious criticism of that simple back-of-the-envelope approach is also that it focuses on just "flows" of oil and not "stocks." This same point could be made about that "Oil Glut vs. Price War" section in Part Three, so it's worth addressing here, too.

In both rough estimates I do not attempt at all to try and account for the oil that, because of the recent oversupply, has been slowly accumulating around the globe over time.

You might think that this oil in storage should count, too, when it comes to determining when an oversupply might become a shortage because, well, all that oil is sitting there, just waiting for an increase in demand to be used, right?

Nah. Not in the economic sense. At any given point of time there is a huge amount of oil sitting around the globe in storage – because that's just how the industry's supply chain works. And it's a huge supply chain - from refineries to tanker ships to pipelines to rail cars to tank farms – which is also, incidentally, currently seeing very strong demand for oil on the other side. So the "stocks" of oil sitting around in storage are much less analytically relevant than the "flows" involved.

For the record on "flows," though - the amount of crude oil and refined products in commercial storage today, as per IEA's own numbers and compared to stocks a year ago, is up about 9%, or about 240 million barrels. If you expand that glimpse to also include oil stored by the OECD governments (not just commercial stocks), then total stocks are 340 million barrels today – which is 13% higher than the same level in mid-2008…when the market was obsessed with worrying about an *oil shortage*, not a surplus, and *Brent crude prices were at $140 per barrel*.

And those particular rates of increase aren't concerning. At least, not to me. Global refineries typically keep around 7 days' worth of unrefined crude on hand any time and process more than 80 million barrels of crude every day. So refiners need around 560 million barrels at any given time in storage for their own immediate operational needs. But because refiners make a killing when oil prices are low, you might presume that they are loading up on cheap crude right now – which would further reduce the importance you should put on even a modest increase in those "flows" to storage these days.

So whether oil is being stored in big white tanks, or "stored" in the ground…like it, um, has been for tens of millions of years…doesn't matter in terms of the supply-demand picture next year. Not to me, anyway. In the end, using conservative assumptions and the increase in stocks as per IEA above, the world will chew through the current excess stock of oil storage in about 100 days.

Which may be a big deal if you're an algorithm making trades every few milliseconds. But "back-of-the-envelope" is good enough for us long-term investors – at least when it comes to establishing that even if I'm off my rocker in discussing decline rates below, the fact that I am ignoring OPEC and the stock of current global oversupply probably means a turn in the market would likely only be delayed by three months, anyway.

So, to summarize this section - for now, to keep the key IEA assumptions in the global supply-demand picture above as clear as possible, I am assuming that the current historically high OPEC production just stays flat the coming year. I am also ignoring the current levels of global oil stocks.

Adjust that math above yourself however you see fit, though. Just keep in mind that if you adjust it for OPEC and global overstocks, you should realize there are other factors, like a massive reduction in global capital expenditures, that you should also adjust for, too…and which I will get to more in a few pages.

I think you'll find the broader point is still the same; the current oversupply in the global oil market – on any kind of reasonably forward-looking basis – is effectively already gone.

And what happens next will depend on decline rates.

Why Decline Rates Will Matter. A Lot.

In normal times, the global decline curve does not get much attention outside the offices of petroleum engineers. At higher oil prices, decline curves are simply not nearly as consequential to the cash flows of the production side of the industry as other factors like well productivity and EUR (Estimated Ultimate Recovery). When a company can earn IRRs, or internal rates of return, in the range of 40% to 50% on each well it drills, the decline curve loses some relevance - because that well is throwing off plenty of cash near-term even as it declines long-term. The relentlessness of the decline curve gets dulled by attractive well economics.

Now, however, in the context of an extended oil price crash, decline rates do matter. Big time.

And the reason is that because as oil prices come down, natural decline rates effectively increase. They become more dramatic because high-cost producers fail to invest in the capital expenditures that would otherwise stabilize the decline rates of their fields.

Depending on their cost structures and how low oil prices might be, high-cost oil producers are the first to "shut-in" their wells – cease all production – or otherwise reduce maintenance and capital expenditures on existing fields to conserve cash.

If it costs you $90 a barrel to get oil out of the ground, but you can only sell it for $40, why even bother? The rational response is to either shut-in your wells, or at least do whatever you can to minimize your losses – like dialing way back on maintenance wherever feasible to decrease your losses.

It's not strictly oil prices that determine whether or not to shut-in or reduce production, either. The age of an oil field is a particularly important variable in that decision. Older wells can produce so much saltwater, for instance, that disposal costs mean a producer's actual

breakeven point per barrel is significantly more susceptible to lower prices – putting current production that much more at risk during a sustained price decline.

And after enough of this sort of thing, the global decline curve is not a subtle, gradual slope down anymore. It's a jagged cliff. And U.S. tight oil production in particular becomes Wile E. Coyote, running right off that cliff.

Ah, just YouTube it, millennials.

The point is that global decline curve is now critically important because it exposes a vulnerability in the industry: the risk that oil prices fall through levels that not only remove new oil supply, but that deter maintenance on existing supplies among high-cost producers.

And both mean the true global decline rate is, in reality, bigger than the consensus expects.

Wonderful. And The Point Is...?

So the actual global decline rate is likely significantly higher than currently being modeled by the IEA, EIA and OPEC right now…and specifically because the decline rate is not constant, as they each appear to assume.

At a certain point, logic would suggest that the global decline curve becomes inversely correlated with oil prices for high-cost producers.

Implicit in the CADRs used by those Big Three oil data institutions, however, is the assumption that oil companies are high enough to induce continued capital expenditures and maintenance in existing fields – in order to keep the decline rates of those fields stable. Otherwise, if producers do not attempt to impede the impact of those relentless natural decline rates, then it would follow that the declines begin to compound at a faster rate.

Increased decline rates are not necessarily driven solely by high-cost producers, either. As oil prices fall, all producers begin to reduce their spending to some degree. First, they will typically cut non-core areas like exploration and seismic research. Next, they'll begin shelving longer-dated projects. Then, companies will typically cut back on the money spent to do maintenance work – including the type of work that would otherwise slow the natural declines of their oilfields.

Now, the extent to which maintenance gets deferred is largely a function of the cost structure of that producer; low-cost operators may not reduce any, while high cost producers may cut way back.

But either way, the point is that with low oil prices, those sorts of projects can make little fiscal sense to pursue for anyone, and the rational response for a significant portion of the industry is to skip or cut back on maintenance - and then base production will decline.

In other words, oil prices need to be high enough to at least cover the costs of maintaining existing wells for higher-cost producers…or else the maintenance won't get done, and CADR grows.

If You Only Remember One Thing…

This, finally, is where I start to really geek out.

Because in times of true industry distress, like 2015, oil companies around the globe are currently cancelling capital expenditures left and right due to abysmal oil prices. (See "$200B in capex, gone" below.) And the current pause in capital projects throughout the industry is enabling the natural decline rate of oil fields to materially erode supply to a greater degree than indicated by normalized decline rates, *which assume decline rate increases will be held in check by maintenance capex*. Only a lot of that is not currently happening.

And this is where the compounding kicks in.

By 2020, the IEA estimates the global demand for oil will be approximately 99 million barrels of oil per day (bopd), up from the roughly 95 million bopd currently being used at the beginning of this year.

Now that 4 million bopd difference between now and then might not seem like much. But don't forget that the decline curve never sleeps.

Which I think raises this very important question:

"If as the IEA says global oil production declines naturally at a rate of 5.8% a year, and assuming a current production base of 95m bopd, then if the world is going to need 99m bopd in five years, how much of that must come from new wells developed between now and then?"

And the answer to that question is, **"About 29 million barrels of oil per day."**

Math don't lie, people. The CADR effect is huge.

In order to increase the global supply of oil from 95 million barrels of oil per day to the required 99 million bopd the world will need in five years, due to natural decline rates, the industry doesn't need to just create an incremental new 4 million bopd in new supply.

That's not even close. The industry actually needs to create 29 million bopd of brand new supply over those next five years to meet expected demand then.

In other words, to meet the world's growing demand for oil in five years, the industry needs to discover almost three new Saudi Arabias between now and then.

Or else there won't be enough oil to meet world demand. And prices will rise significantly.

Hunh.

Scenarios:		Start of 2015	End of '15	End of '16	End of '17	End of '18	End of '19	Start of '20	Cumulative mm BoPD Needed	mm BoPD Needed Each Year
Production @ CADR of 3.8%	Low	95.0	91.4	87.9	84.6	81.4	78.3	99.1	20.8	4.2
Production @ CADR of 5.8%	Consensus	95.0	89.5	84.3	79.4	74.8	70.5	99.1	28.6	5.7
Production @ CADR of 7.8%	High	95.0	87.6	80.8	74.5	68.7	63.3	99.1	35.8	7.2

Notes

"CADR" = compound annual decline rate

Using IEA estimates for start of 2015 and 2020; rest are plug figures

In Million BoPD (barrels of oil per day)

Assumes maintenance capex and constant CADR, but no new exploration capex

Now, to be clear – this is not a projection. It is a table to illustrate the power of compounding in the context of oil well physics. The scenarios above do not account for new supply brought online from very recent drilling activities in 2015, which might reduce that 29M bopd by as much as a fifth. So it's not the numbers-to-the-decimal that matter as much as the broader concept.

And a range of assumptions in the "Low" and "Consensus" scenarios above, decline rates could also theoretically cut between 3.6 million and 5.2 million bpd from the output of existing fields in 2016 and again in 2017.

But, again, that presumes a constant decline rate. Oil prices have gone way down, which means maintenance isn't being done, and decline rates aren't going to stay constant. Actual CADRs could be significantly bigger than the 5.8% consensus in 2015 and 2016.

How much bigger?

Hard to say. Some of that lost production will be replaced by new fields discovered and green-lighted for development a few years ago when prices were higher, and those fields will come into production the next two years. So this table is absolutely not a forecasting tool.

Nonetheless, we can get an approximate gauge of the impact of a big jump under the "High" scenario in the table above. If CADR ends up being 7.8% over the next five years, then never mind those three Saudi Arabias. We're going to have to find a whole new OPEC's worth of oil by then. And if all drilling and existing field maintenance capex around the world stopped today, we'd be short of oil to the tune of 6.8M bopd (87.6 – 80.8) at the end of 2016.

And how realistic is that "High" scenario?

That's also hard to gauge, but it may be relevant that Saudi Arabia's Vice Minister of Petroleum recently noted that due to low oil prices, about $200 billion of investments in energy had been cancelled this year around the globe. (And that same estimate can be corroborated in at least two other places.)

That $200 billion reduction in capex represents *nearly 5 million bopd of production either deferred or cancelled over the next few years*.

So between capex cuts and decline rates, in 2016 there is a very real risk that the industry may be unable to increase production enough to control the pace of an increase in oil prices as demand begins to exceed supply.

And the longer those projects are suspended, and the deeper those capex cuts, the more havoc those decline rates will wreak, the quicker production will fall off – and the higher oil prices will rise.

All of which means a few things:

- First, decline rates are about to take over. Market consensus forecasts are relying on unrealistically optimistic (i.e. underestimated) decline rates, and this could lead the industry to

dramatically underestimate the amount of production the world will need to meet demand next year, let alone in 2020.

- Second, even the current supply "glut" of 1.75 million barrels per day oversupply is small in the face of today's decline curve. That decline rate is relentless. It is important. And physics trumps opinions.

- The effects of compounding can also be stunning over time. That goes for things on the way up, or on the way down. Decline rates are likely to have more of an influence on oil production in the long-term than any geopolitical factors. They will also create more demand for new oil than any emerging markets.

- In addition, there is a very sharp natural decline curve rate for a lot of U.S. tight oil that has been added to the global production base over the last five years. The more that U.S. tight oil contributes to global production, the more global CADR will increase, too.

- The maximum rate of additional production increases from U.S. tight oil are behind us.

- The compound annual decline rate (CADR) increases incrementally every year, too, independent of oil prices and capex. Specifically, it rises slowly over time due to the age and geophysics of the big oil fields that produce most of the world's oil.

In spite of the above, any serious discussion of decline rates – biggest challenge in the industry, folks! - is completely absent from almost all media and Wall Street coverage of the oil price collapse to date. It is clearly, analytically speaking, a huge error to ignore or underestimate the global compound annual decline rate, when thinking about future oil production.

The Big Question

Now we can finally get to the core of why my own view on the timing of a turn in oil prices differs so much from consensus.

Given what we know about decline rates, we can now attempt to independently answer the question:

Can the industry meet the demand for oil in 2016?

Most of the world relies on the predictions of The Big Three – the IEA, EIA and OPEC – to do their thinking for them on these sorts of questions. The reason I would prefer not to is because

of that wonky "decline rates are not constant" point, which differs from the assumptions of The Big Three. Again, during an oil price collapse, high-cost producers will eventually reduce maintenance work on (or shut-in) their wells, accelerating the decline curve. When a lot of medium- and high-cost producers make that same decision, global production can relatively quickly fall short of meeting global demand.

So I'd prefer to draw my own conclusions. But to keep this simple and objective, let's still use IEA data to make them, via some back-of-the-envelope arithmetic. And we don't need an elaborate proof here – we just want a quick reality check.

In order to grow production this year to meet demand next year, we need to first offset the natural declines in production, and then, on top of that, add incremental new production.

So the question is really, "What is the change in production needed to meet the expected change in demand in 2016?"

Or, written a bit math-ier…

Production Needed to Replace Declines + Incremental New Global Production = Incremental New Demand

…which is the same thing as, still using IEA numbers and classifications…

"CADR Offset" + New Production from Non-OPEC + Change in 'Call on OPEC' = Change in New Demand

…and then plugging in IEA data for those variables…

[95.0M bopd x 5.8% CADR] + [0.6M bopd decline in Non-OPEC] + Change in Call on OPEC = 1.25M

(-5.51M) + (-0.6M) + Change in Call on OPEC = 1.25M

Change in Call on OPEC = 7.4M

So in order to meet IEA's expected demand growth next year of 1.25M bopd, OPEC, in our little back-of-the-envelope exercise here, has to produce 7.4M bopd of new oil in order to compensate for the global decline curve plus the expected decline in production in the rest of the world.

Can they do that? Well, to answer that we've got to look at OPEC's spare capacity…and, long story short, total OPEC spare capacity at the moment is about 3.3M bopd.

In other words…

In order to meet the 1.25M increase in demand for oil IEA expects in 2016, even if OPEC used all its spare capacity, the world would still be short by 4.1M barrels of oil per day (from 7.4M – 3.3M).

So…

The decline curve really matters, because at best, it indicates oil prices will rise significantly in 2016, as demand outstrips supply. At worst, it is telling us the industry is at risk of sleepwalking into a significant shortage of oil in 2016...also known as a supply shock.

The global decline rate is a simple but powerful concept.

It helps explain why I was buying oil stocks in Tarpon all summer.

It also helps explain why I am not overly concerned about Tarpon right now – in spite of our results so far this year, and the extreme volatility along the way.

The decline curve will also explain why consolidation among U.S. tight oil companies will probably soon be on the way.

It also tells us that a significant rise in oil prices is inevitable. And that oil prices can rise markedly even if OPEC doesn't make a single policy change.

Incidentally, when it comes to the E&Ps companies we own in Tarpon, that inability of OPEC to meet the expected "call on OPEC" in the future - and higher prices resulting from related shortages - will create excellent opportunities for other energy companies to fill the gap that OPEC members were expected to fill, but did not. But that's for another way-too-long letter.

What Are We Missing?

I know. Seems too simple, right? Let me save you some time: here is a quick answer to the first question I am guessing you probably have about all this…

"If this CADR thing is such an important issue, how come nobody else is talking about it?"

Broadly speaking, I would say the vast majority of people just miss the extraordinary importance of compounding – both when investing in general, and then in specific instances like declines in oil fields, too. Compounding is easily the most underappreciated mathematical concept of all time. Period.

A more specific reply would be, "See that Great Pessimistic Feedback Loop thing from Part Three."

It's not that most industry analysts aren't aware of the decline curve, nor that they believe it is unimportant. The global rate of decline by definition strongly defines the required rate of future discovery and production if global oil and gas demand is to be met. Decline rates also effectively represent guaranteed, material demand for the industry every year. Yet as critical as both of those commonly recognized statements are in the industry, decline rates have nonetheless just been getting crowded out of the discussion lately by a lot of other nonsense.

There is some pretty extreme groupthink out there when it comes to IEA projections, too – even though it appears the global decline rate may be systematically underestimated by the IEA.

And that is kind of a big deal, because the IEA is effectively the premier provider of non-OPEC global oil data and projections to governments, companies and financial institutions around the world. In other words, IEA represents the market consensus. And it's possible there could be something off about things at IEA – and OPEC, for that matter - when it comes to CADR.

More specifically, while both groups have considerable expertise in analyzing 'above ground' trends, some researchers have noted that the IEA appears to consistently miscalculate things 'below ground,' including reservoir depletion and production decline rates - which underestimates losses from natural oilfield declines.

And this may be why the IEA in particular keeps overestimating initial non-OPEC production growth; their forecasts have been notably incorrect in seven of the last ten years. And that could be because they're not properly accounting for decline rates.

Here is how an armchair statistician would describe this particular error:

The IEA models future oilfield production by extrapolating historical production data with an exponential decline curve. This results in a curve that is too smooth compared to reality, which is bumpy, and which assumes the future will unfold at pace that is also far too similar to the

past...and the real world is never so predictable. And what it means is that the results for projected production every year can be too optimistic.

So, again, it is not the case that various experts disagree about the importance of the global decline rate…it is much more that they blindly rely on IEA data, which doesn't take the fact that the decline rate is not constant into consideration. At all. And while this argument is pretty wonky, it matters because it is material and overlooked. Decline rates will take over in 2016 - and they will absolutely matter more than rig counts, Iranian production and weekly Genscape reports.

Now, the above approach makes plenty of assumptions that could easily be incorrect. But given the size of the shortfall, I believe they're immaterial. One mistake, for instance, could be putting that whole new 7.4M bopd of needed production squarely on OPEC's shoulders. Non-OPEC countries could, in theory, help bridge that production gap, of course. Still, that doesn't change the broader conclusion.

I also willfully ignored the current market oversupply in the above – for the same reasons as described in the "stocks" versus "flows" bit earlier. But I would argue that decline in non-OPEC production is also going to be way, way bigger than the current 0.6M IEA figure, anyway.

And yes, that 7.4M is overwhelmingly influenced by the CADR offset or decline rate…but that's kind of the whole point. These are IEA's own numbers. I just did a quick end-around of sorts because their current production forecast didn't seem to be accounting for CADR properly.

Even if you nixed that 5.8% decline rate and instead plugged in, say, a 2.0% decline rate, the world will still be short oil in 2016.

But don't forget that the real CADR out there right now is probably significantly bigger than that 5.8% rate, and not smaller.

And that if OPEC does use all its spare capacity, then there is no margin of safety whatsoever in the global oil production market – a sobering realization given the potentially incendiary conflicts brewing in the Middle East right now. With no spare capacity, OPEC could be unable to control a sudden price increase.

Other Things That Make You Go 'Hunh'

Now also consider this:

- More than half the world's oil is produced from fields already in decline, where underlying decline rates appear to be at a rate of between 10% and 15% ex-reinvestment.

- Over time, the cost to bring on the marginal barrel of supply in the industry will keep rising, both to higher levels and at a faster rate.

- Global oil demand is now growing at the fastest pace in five years, and double the rate predicted at the beginning of 2015. Gasoline sales in the U.S. in Q3 also surged at the fastest pace in over a decade.

- Despite all the hysteria over an economic slowdown in China, demand for oil there is still actually quite strong and increasing – consistent with the government's goal to add more than 500m barrels of oil to their strategic petroleum reserves over the next five years. Chinese demand is growing at 7% year-over-year, led by gasoline and jet fuel.

- Cuts in industry capex will likely prove excessive. The industry has cut capex by 25% in FY15. Further cuts are expected in 2016, which would be only the second time in 30 years that industry capex has been cut in consecutive years. Yet as discussed in Part Three, this is not 1986.

- There also will likely be much more of a delay between an increase in oil prices and a subsequent increase in drilling activity than Wall Street seems to believe. I discussed this earlier in that Part Three bit about Goldman Sachs. If it proves true, then this, too, would further support the idea that once the production response arrives, it will be fighting a more rapid decline rate.

- The sheer scale of oil and gas projects demands significant capital investment from sophisticated financial institutions. At some point, and I'm guessing within the next five years, those institutions may start to begin to recognize U.S. tight oil as a legitimate threat to replace conventional oil sources. If so, the funding available to develop additional conventional oil fields could become further restricted. Which is a nice way of saying "involuntary capex cuts."

- The supply side of the oil market is much more vulnerable to material disruption than it was a year ago. With prices so low, the motivation for OPEC members (and Russia) to turn hostile on one another increases more every day.

- Oil use in the developed world currently averages about 14 barrels per person per year. In the developing world, oil is used at a rate of 3 barrels per person per year. What do you suppose will happen when billions of people go from consuming 3 barrels a year to – never mind 14 – just 6 barrels per year? The world's appetite for energy in the coming years will be staggering,

and most forecasts show that 75% to 80% of that need will be met by oil, gas and coal – albeit more efficiently than today.

- Twenty million people a year in China are moving from rural areas to cities. In 1978, the country was 18% urbanized. Today, it is 50% urbanized, and there are over 170 cities with populations of greater than a million people. China is transitioning to a "mass auto culture" at an unprecedented rate and at a massive scale. As late as 1983, China only produced 10,000 cars a year. In 1990, they sold 42,000 cars. In 2009, more cars were sold in China than the U.S. And by 2020, auto sales in China could reach 30 million a year.

- If China consumes oil at the same rate as the U.S., by 2030 China alone will be using more oil per year than all of the world's current annual production.

- Asia in general is also expected to add around 280 million barrels of crude oil storage capacity between now and 2017. About 185 million barrels (about 65% of that) will be for SPR ("Strategic Petroleum Reserve") facilities in China and India. The rapid growth in Asian crude storage capacity also has the potential to influence short-term oil market dynamics - by creating a surge in purchases for crude oil over and above that is required to meet its normal refined product demand. The energy consulting firm Wood Mackenzie expects crude oil purchased for storage in Asia to average 240,000 kb/d from 2015 to 2017. So this "oil stockpiling" is also significant for the global oil balance.

I think you see the point. Noodle on these sorts of things long enough, and you may start to get the sense that we may soon have an oil price problem of a completely different kind.

In Conclusion

What we are left with after considering all the above is this:

For a variety of reasons, the current price of oil is unsustainably low, and I believe will eventually be heading significantly higher sooner than consensus. As a result, I have high expectations for Tarpon's returns over the next three years.

And despite how naïve, unpopular or misguided it may sound to make this point today, it is nonetheless true:

For a number of reasons, there is clearly a reasonable probability that oil prices could reach a level significantly above $100 per barrel within the next three years.

And it's not just me who thinks that. Here's the head of OPEC:

"If you don't invest in oil and gas, you will see more than $200."

To be clear, forecasting short-term oil prices is a fool's game. We do not attempt to do that here at IIM. And again, we do not need oil to return to anywhere near $100 per barrel in order to do very well in Tarpon. In the above I'm just acknowledging the potential for an oil price supply-side shortage in the not-too-distant future - a risk which in no way, shape or form is being reflected in the current price of a barrel of oil. Yet should be.

So, to put a fine point on it all:

WTI oil prices are currently $40 a barrel. I am buying shares in U.S. E&Ps hand over fist. And I'm the crazy one?

Please let me know if you have any questions.

Thank you for your patience, and Happy Thanksgiving.

- Cale

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