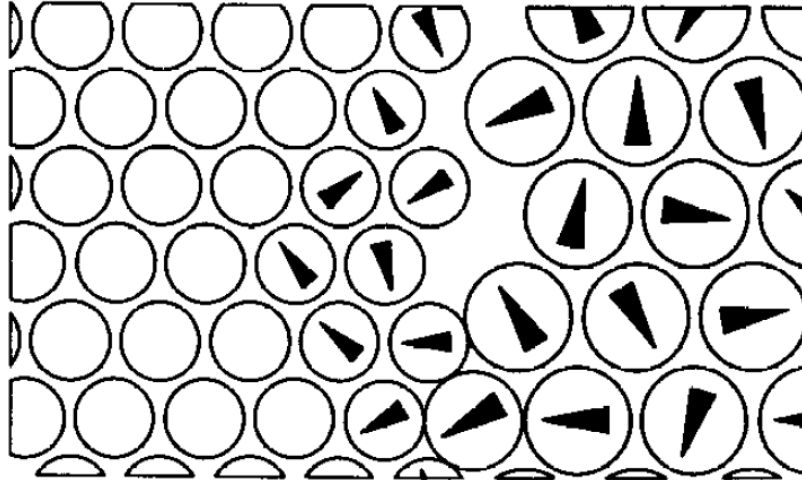




MARKET BRIEF

The Second Law Of Inflation



You look at every bear market and they've always basically occurred because of an uptick in inflation and an uptick in interest rates. ~ Paul Tudor Jones

We know that inflation is an important input to the debt cycle model.

Like PTJ says, every bear market occurs because of an uptick in inflation that forces the central bank to raise rates.

That makes sense. Inflation is one of the Fed's dual mandates, the other being maximum sustainable employment.

But where does inflation come from?

You'd think we'd know this considering it's one of the "dual mandates" central to the Fed's decision making. But we don't... or at least the central planners pulling the policy levers don't.

The *WSJ* had an article this last week titled [Everything the Market Thinks About Inflation Might Be Wrong](#).

The article discusses a group of top economists' findings that show that the main indicators policy makers use to understand inflation don't really work.

The piece goes on to say how the past few years have done irreparable damage to a popular monetary theory that's held sway for decades. That theory is the one given by Milton Friedman, who said that "inflation is always and everywhere a monetary phenomenon." Here's the *WSJ*:





That theory posits that if the economy has only two apples and two dollars, each apple has to be worth \$1. When the central bank issues two more dollars, there is suddenly \$2 for every apple: inflation. And what people think inflation will be in the future is crucial: Workers will bargain harder for pay raises if they believe prices will rise faster in the years to come.

Remember all the “smart” people screaming about the coming inflation after the Fed started printing money post-financial crisis? The central bank expanded its balance sheet by roughly \$4 trillion. According to Friedman’s monetary theory of inflation, all that new money should have sent inflation to the moon. But deflation, not inflation, remained the primary threat.

What gives? How were so many of these smart people wrong? And how can we better understand the drivers of this important economic input?

These are big questions. I can’t answer them in a single *Brief*. So instead I’ll explore them with you over the coming weeks to see if we can get a better understanding of what’s at work here. Once we know the drivers, we can see where future Fed policy is headed. This will keep us a couple of steps ahead of the herd which is a good place to be.

To start, let’s first cover the basics of thermodynamics. There are some strong parallels between the relationship of heat and energy and markets and inflation.

Entropy Rules...

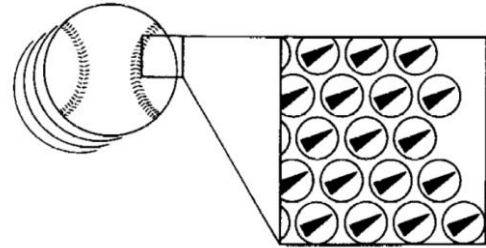
The following is from a book called [The Second Law](#) by P.W. Atkins (a favorite of mine).

Intrinsic to the soul of thermodynamics is the fact that it deals with vast numbers of particles. A typical yardstick to keep in mind is Avogadro’s number. Its value is about 6×10^{23} , and it represents the number of atoms in 12 grams of carbon. (By coincidence, it is not far off the number of stars in all the galaxies in the visible Universe.) The idea to appreciate here is not the precise value of Avogadro’s number, or the precise number of atoms in any give system, but the fact that the numbers of atoms involved in everyday samples of matter are truly enormous.

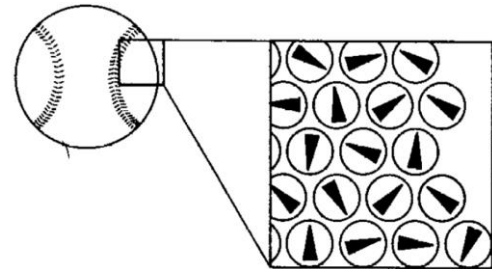
It may seem surprising at first sight that science learned to deal with the properties of such enormous crowds or particles before it discovered how to deal with the individual atoms. The reason lies at the core of thermodynamics: the thermodynamic properties of a system are average values over statistically large assemblies of particles. Just as it is easier to deal with average properties of human populations than with individuals, be they consumers, wearers, or wage-earners, so it is easier to deal with the average properties of assemblies of particles than with the individuals. Idiosyncrasies (which the atomically aware thermodynamicist terms fluctuations) are ironed out and become relatively insignificant when the populations are large, and the population of particles in a typical sample is vastly greater than the population of people of any nation.

The energy of a thermodynamic system, such as the several Avogadro’s numbers of water molecules in a glass of water, is the sum of the kinetic energies of all the particles and of their potential energies too. Hence, it should be plain that this total energy is constant (the essential content of simple versions of the First Law). However, in a many-particle thermodynamic system, a new aspect of the motion, one not open to a single particle on its own becomes available.

Consider the kinetic energy of the collection. If all the particles happen to be travelling in the same direction with the same speed, then the entire system is in flight, like a baseball (see image on the right). The entire system behaves like a single, massive particle, and the ordinary laws of dynamics apply.



However, there is another sort of motion. Instead of all the particles moving uniformly, we can think of them as being chaotic: the total energy of the system may be the same as that of the ball in flight, but now there is no net motion, because all the directions and speeds of the atoms are jumbled up in chaos. If we could follow any individual particle, we would see it moving a tiny amount to the right, bouncing off its neighbor, moving to the left, bouncing again, and so on (see image on right). The central feature is the lack of correlation between the motions of different particles: their motion is incoherent.



This random, chaotic, uncorrelated, incoherent motion is called thermal motion. Obviously, since it is meaningless to speak of the uncorrelated motion of a single particle, the concept of thermal motion cannot be applied to single particles. In other words, when we step from considering a single particle to considering systems of many particles, when the question of coherence becomes relevant, we are stepping out of simple dynamics into a new world of physics. This world is thermodynamics. All the richness of the subject, the way that the steam engine can make the journey into life and account for the unfolding of a leaf, results from this enlargement of domain.

We have established that there are two modes of motion for the particles of a composite system: the motion may be coherent, when all the particles are in step, or the motion may be incoherent, when the particles are moving chaotically. We have also seen in our encounter with the First Law that there are two modes of transferring energy to a system, by doing work on it or by heating it. Now we can put the remarks together:

When we do work on a system, we are stimulating its particles with coherent motion; when the system is doing work on the surroundings, it is stimulating coherent motion.

When we heat a system, we are stimulating its particles with incoherent motion; when a system is heating its surroundings, it is stimulating incoherent motion.

I hope you're not concussed with boredom. Let me try to tie this together and make it relevant to our discussion.

Think of humans as particles with stored potential energy (I do, is that weird?). When we work (ie, build, create, produce, innovate) we're converting our potential energy into kinetic energy.

Economic growth is the result of millions of humans (particles) converting their potential energies into kinetic coherent motion.

A strong, booming business cycle is where our “work on a system” is unleashing the creative coherent energy of humans onto the economy. This results in innovation and productivity gains. The economy resembles the image on the bottom left; all the arrows are applying their force in one direction.

But for the same reasons a perpetual motion machine can't exist, eventually the business cycle falls apart. This is because of the second law of thermodynamics, which is the law of entropy.

Entropy is defined as “a thermodynamic quantity representing the unavailability of a system's thermal energy for conversion into mechanical work, often interested as the degree of disorder of randomness in the system.”

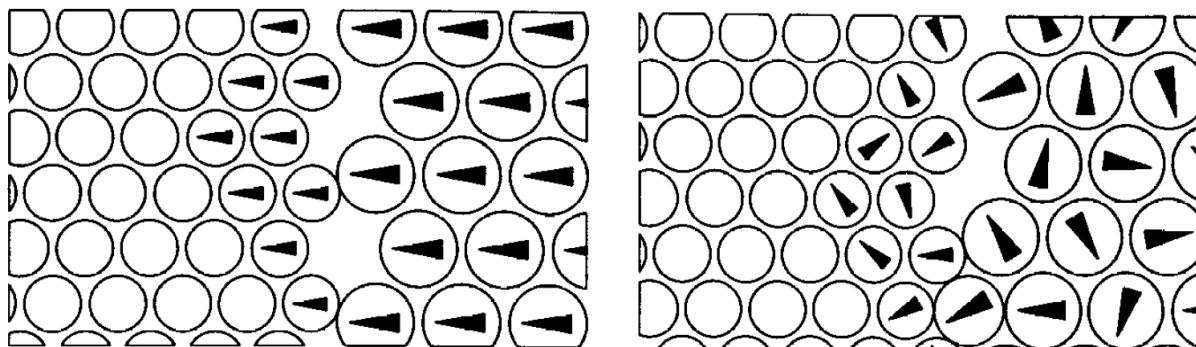
Say what?

Entropy is the natural tendency for the energy in a system to go from coherent to incoherent — from order to disorder (chaos).

In an economic system, inflation is like applying heat to a coherent system; we get thermal motion and eventually disorder. Going back to the baseball analogy, the start of the business cycle and bull market is like when the baseball first leaves the thrower's hand.

Work has been done on the baseball (market), and potential energy has been turned into coherent kinetic energy. The arrows are all working in the direction in which the ball has been thrown (bull market). But at the same time, the ball is experiencing friction (heat) as it flies through the air and is also pulled down by earth's gravity. This heat chips away at the coherent energy of the ball until it's dominantly incoherent and the ball comes to a complete rest (market crash).

Inflation turns the economy from the coherent arrows pictures on the lower left to one of disorder as pictured on the lower right.



The business cycle simply represents the constant swing from coherent kinetic motion to incoherent entropy and back again.

And just as there are many different ways in which heat impacts a system, there are many ways in which inflation sprouts up in an economy.

The two broad categories for the types of inflation are:

1. Demand pull
2. Cost push

Demand pull occurs during the growth phase of the business cycle. During this period demand grows faster than supply. And when you have more money chasing fewer goods, prices rise. This is a natural symptom of the debt cycle. Credit can boost demand more quickly than it can work its way into capex to boost supply.

When you hear people say the Fed is worried about the economy running hot, demand pull inflation is typically what they're talking about. It's the more "healthy" inflation of the two.

Cost push inflation is when the cost of the inputs for goods goes up, causing price increases in finished goods and/or leading to less supply. Think oil embargo during the 70's, or wage increases pushing up the cost of production.

Like everything else in economics, inflation is a function of supply and demand.

It gets complicated though because it's not a single supply and demand equation.

You not only have the money supply (which is complex in itself when you factor in credit and how it's distributed throughout an economy) but you also have the supply of countless different goods, the natural resources that are inputs to those goods, the labor and regulation costs etc... And it's the same for the demand picture. There's an infinite number of variables, or countless independent supply and demand equations, which directly or indirectly impact inflation.

This is why so many are lost when it comes to modelling economic "thermal motion".

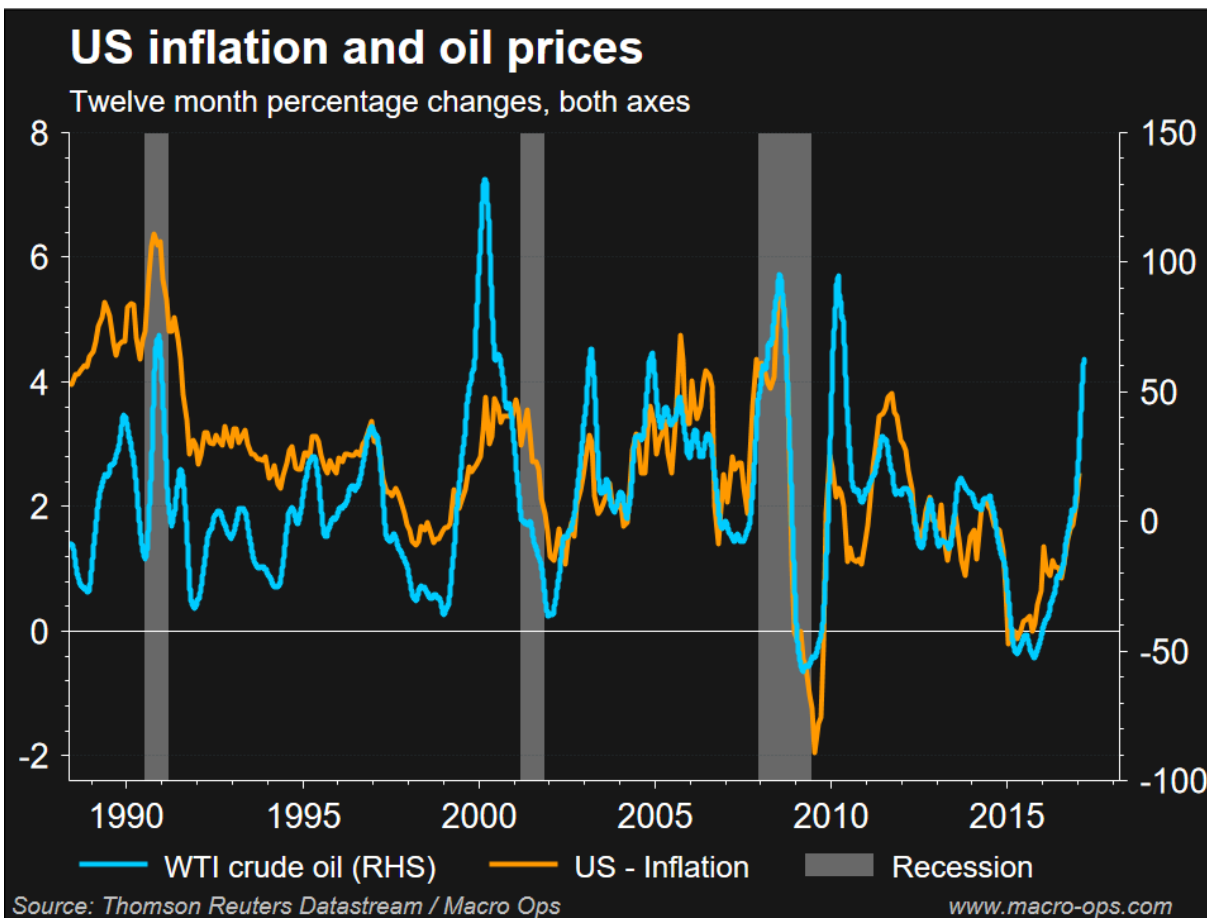
Luckily, similar to how it's easier to model the average of a whole system of particles versus a single one, with inflation it's easier to understand the broader drivers rather than each individual instance of supply and demand.

We can do that by stepping back and logically thinking about the biggest movers of inflation supply and demand.

This is what we'll be exploring more in depth over the coming weeks. But an example of one of the things we'll talk about is the change in the price of oil and how it affects inflation and as a result, interest rates.

Energy is an obvious important input in the price equation of many other goods (think raw material and transportation costs etc). So logically it's one of the bigger drivers of inflation.

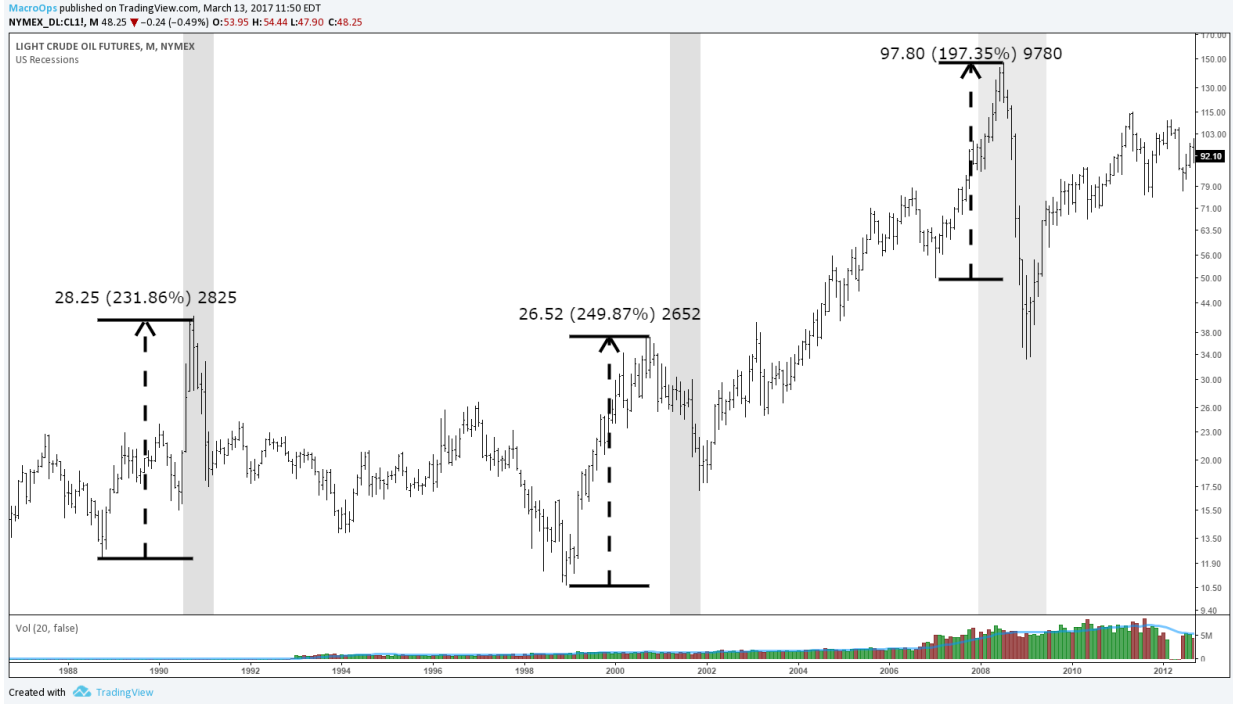
Look at the chart below showing the y/y change in US CPI and the price of oil (smoothed over 3 months).



There's a strong correlation between the two. Rising energy prices lead to a rising inflation rate. The correlation exists even in the core PCE measures which exclude food and energy because of the transmission effects of energy costs on other goods. I don't think I'm blowing any minds here, but this is just the start of our peeling back of the inflation onion.

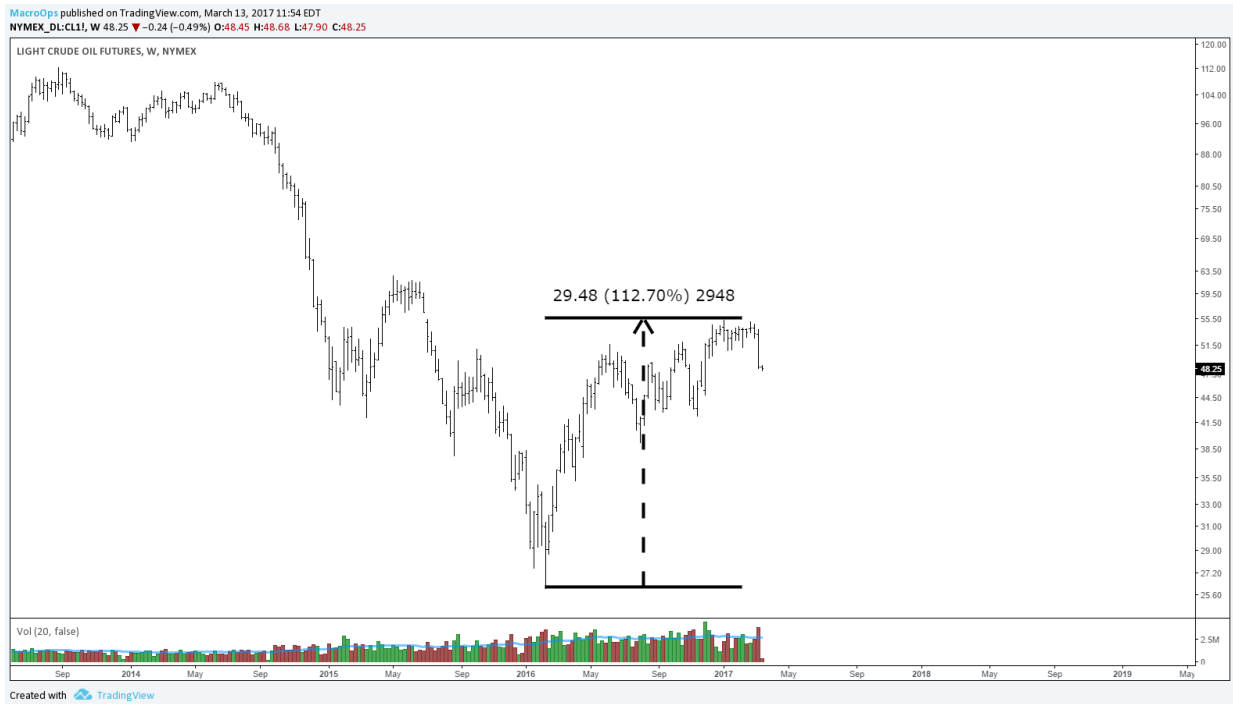
This leads us to an interesting fact. Did you know that a 100+% increase in oil prices has preceded every recession over the last 40 years?

Look at the chart below.



Perhaps we can append PTJ's quote to read something more like, "You look at every bear market and they've always basically occurred because of a 100+% uptick in the price of oil which led to an uptick in inflation and an uptick in interest rates."

Which brings us to our last chart for this *Brief's* look into inflation. It shows the price of oil up more than 100% over the last 12-months...



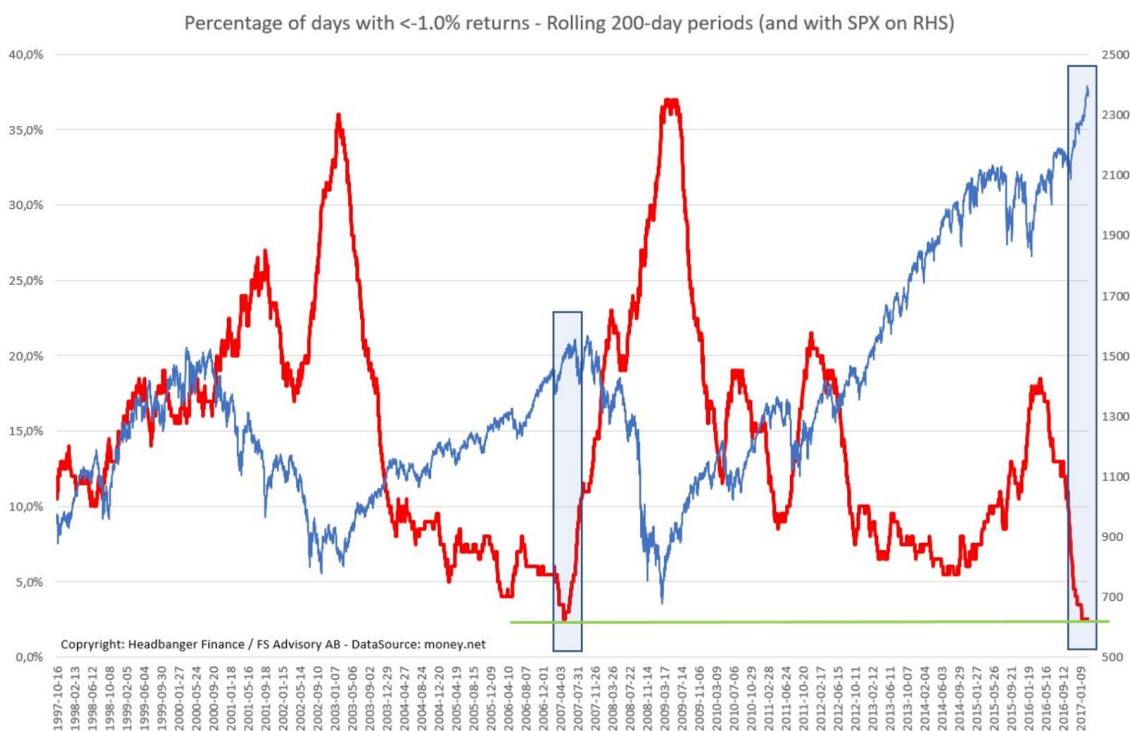


Hawkier Fed, Drowning Oil, and Insiders Jumping Ship

The Fed is going to hike this Wednesday. They've made that clear. But why the complete reversal in tone since their last meeting?

The answer is obviously because of the Fed's unspoken third mandate — putting caps on bubbles. This is something it's historically been poor at. But Yellen and team have commented in recent weeks on the market's seemingly lack of concern over economic and political "uncertainty".

Charts like the one below are evidence of this:



So the Fed's gonna hike. But the real question is, do they talk dovish following this week's hike as has been their modus operandi? Or do they increase their hawkish rhetoric out of fear that the market and expectations are running away from them?

I don't know, but we'll find out shortly.

We nailed the breakdown in oil. Our option play in Vol Ops should pay out nicely.

Now we just need to see if oil experiences another v-bottom reversal at its 200-day like it did the last two times, or if the third time's the charm and she trips off the cliff here.



What happens to oil will have big implications because it's wagging the tail of credit (see nearly identical chart below). If oil turns lower, then credit will continue lower and we'll see spreads begin to widen and defaults increase.

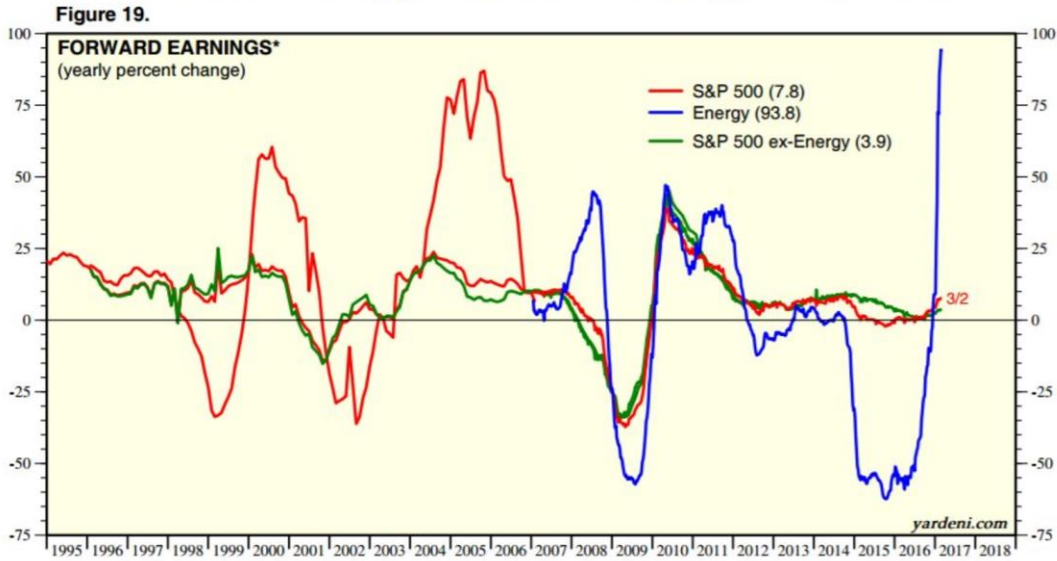


Not to mention what a lower oil price will do to S&P earnings over the coming year. The rebound in oil prices have been a big boon to earnings and revenue growth over the last year. The chart below shows expected forward earnings for the SPX, Energy and SPX ex-energy.

If oil prices roll over from here then expect that blue line to come crashing back down. And the green line showing S&P companies ex-energy doesn't look a whole lot exciting either.



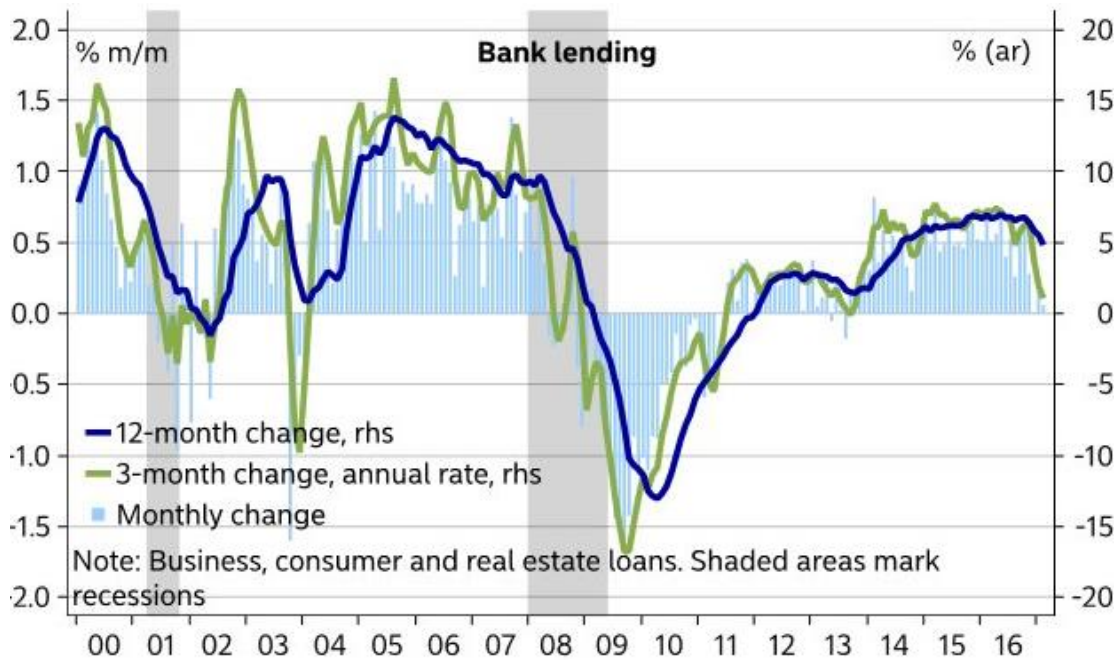
S&P 500 ex-Energy Forward Earnings & Revenues



* Time-weighted average of the consensus estimates for current and next year. Monthly through December 2005, weekly thereafter.
Source: Thomson Reuters I/B/E/S.

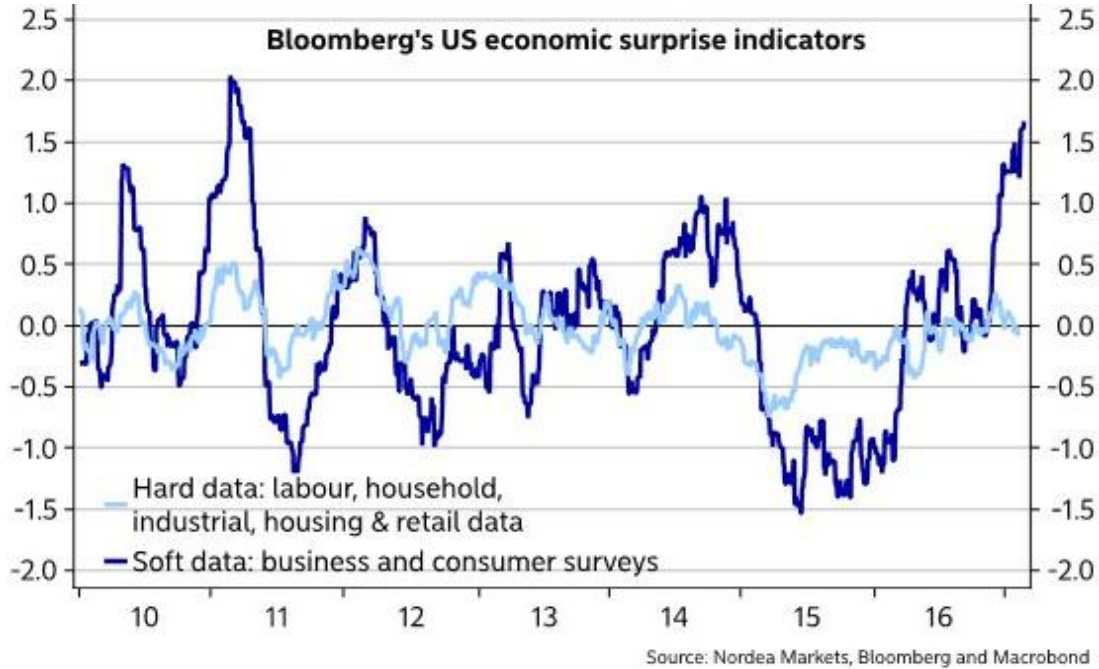
Indicators are pointing South for the credit cycle. The chart below is a prime example of an end of cycle liquidity suck. Falling liquidity = falling demand = falling growth = asset prices adjusting lower.

The 12-month, 3-month and 1-month change in bank lending (an aggregate of business, consumer, and real estate loans) growth is rolling over and looks like might actually start contracting later in the year.

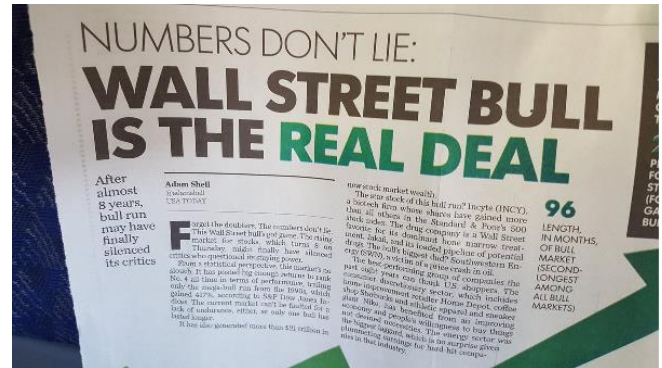
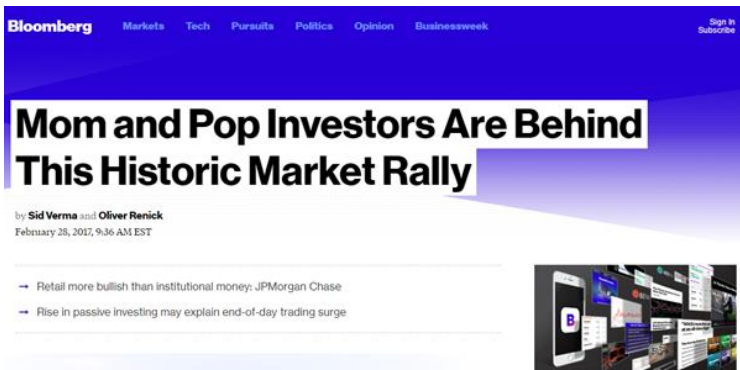


Source: Nordea Markets and Macrobond

This liquidity tightening is happening all while sentiment and retail participation is markedly picking up. The chart below shows soft data (dark blue) which is various business and consumer sentiment survey data compared to the hard numbers (light blue) which report actual data on the economic state of our country.



Large divergences between exuberantly optimistic soft data and the actual hard numbers as shown in the chart above don't have a history of working out well for those giddy individuals.





Corporate Insiders Haven't Been This Uninterested in Buying Stocks Since Ronald Reagan Was President

There were 279 insider buyers in January, the lowest in records going back to 1988

By CHRIS DIETERICH and BEN EISEN
Updated March 9, 2017 4:45 p.m. ET

Corporate executives are buying their own firms' shares at the slowest pace in at least 29 years, the latest sign of uncertainty as the bull market in U.S. stocks enters its ninth year.

Share purchases and sales by executives are parsed by investors searching for signals about what insiders expect from the market. Also see chart on page 12 about valuations.



My call last week for a coming market retrace still stands. The divergence between breadth and credit is still there (has actually widened more). I suspect the market levitates for the next few days and starts selling off into the end of the week.

I'm not calling a top here, just a retrace. The highs haven't been made on this market yet. It has some more room to run. But expect things to start getting a lot more bumpy.

Hugging my cash and waiting to waddle in...

The Strat account is mostly in cash. Unlike many investors, I don't mind being in cash, I actually like it. It means I can't lose a lot of capital on mediocre trades... which is what most trades are.

I'm still tracking GAIA, NEWM, VDTN and LMB (I'll be sending out a piece this week on LMB). But I'm waiting for the right time to enter and now isn't it.

The short euro bund trade is still something I'm keeping my eye on. It recently completed a large H&S topping pattern. And with the ECB looking to ease up on the QE gas later in the year, the fundamental drivers are there for the trade.



We continue to hold our position in GV which is up 184% since our initial entry. It's our largest holding but the position is embarrassingly small now after taking most of our profits.



I'm going to write a long piece detailing my abject failure in managing the GV position. I'll get it out to you guys in the next week or two.

I think it was Michael Marcus or somebody who said (and I paraphrase) "There are traders who are good at taking losses and bad at riding winners and there are traders good at riding winners and bad at taking losses but there is nobody good at both."

I'm definitely in the former camp.

Taking losses doesn't phase me at all, as long as I stick to my plan, which I always do. My biggest weakness as a trader is squeezing my winners for all they're worth. I have a habit of jumping off of perfectly good trends for some reason. And that's an unhealthy habit to have.

So I'm going to explore this weakness with you guys and come up with a plan (I have a checklist in mind) to prevent me from acting like a jackass in the future.

With that, I will bid you all adou. Let's hope we see that selloff so our puts pay out in two weeks.

Your macro operator,

Alex

P.S. If any of you have particular inflation indicators that you like to track or thoughts on our discussion please, jump in the [Comm Center](#) and share your thoughts.



Operator Q&A

Each week we get a ton of great questions in the Comm Center and over email from our Hub members. Going forward, we're going to include these questions and answers in the Brief so the entire Operator community benefits.

Q: I'd love to learn more about long volatility trading strategies. So far, the only ones I'm really familiar with is buying VIX futures SPY puts/calls. Both of those have some nasty negative carry costs. The [paper mentions](#) long volatility strategies that could have neutral carry or even a small positive return. It also mentions buying long volatility for both the upside and downside—but it doesn't go into any specifics. Anyone know where I can learn more?

A (Tyler): I haven't found much online on this outside of Chris Cole but I've have done extensive research in this area. I've gone through all the theory and materials of Chris's fund and Taleb's fund back in my days at the family office.

Basically the way to develop a neutral carry position is to sell overpriced options and volatility that is near the money and use the proceeds to purchase out of the money options that have a lot of convexity.

In Chris Cole's case he's likely selling VIX futures and harvesting the same carry we are in Vol Ops to fund a ton of out of the money VIX calls. The result is a position that doesn't lose much money if markets stay calm, loses a tiny bit of money if the markets have a mild/normal correction. And then makes a ton of money if the market shits out and VIX spikes to 50 and higher.

Taleb's fund, Universa, ran a similar program but on all asset classes, energy, rates, currencies, grains, etc. What he did was sell ATM straddles to fund a large amount of OTM puts and calls. He wins if there is no move. He loses if there is a medium move. And he wins huge if there is an extreme move in either direction.

Other examples of long volatility strategies would be trend following CTA programs, global macro strategies, and venture capital. They all have the "long vol" return profile of a bunch of small losses alongside huge wins.

In my experience it is best to blend these long vol strategies alongside positive carry/short vol strategies because short vol/positive carry stuff typically makes much more money over time than long vol stuff.

For example Chris Cole's fund Artemis is really a low cost insurance product for institutional investors. He doesn't make much money. From 2012 until now he is up about 12% total. That's not much. But his purpose in the money management world is to hedge institutional beta. NOT make good returns.

So you have to be careful with these things. They work well within a portfolio structure, but over the long haul playing to only make money on extreme events is not a great strategy. Since it can take 8-10 years for a payout you lose out on the effects of compounding.

Q: Does inflation correlate with the interest rate for a country? Because I looked at Australia and they both seem to move together?

A (Alex): Yep. Interest rates move in response to changes in inflation and inflation expectations. For example, if you hold sovereign bonds you're receiving a fixed interest rate on those bonds. The risk then to your position is that inflation increases and wipes out some or all of the interest rate you're collecting on your position (there's also credit risk if the issuer isn't a good credit). This risk goes up the longer dated the bonds are that you hold. This is called duration risk. So when inflation and inflation expectations rise, bonds will sell off causing yields to rise (when bond prices go down yields go up). Central banks also will adjust interest rates in response to changes in inflation as they like to try and keep it around their 2% mandate.

Q: Just read Luke Wiley's book "52 week low formula" and wondered if anybody wants to comment on this method, and formula – back tested – methods in general, such as Greenblatt's "Magic Formula" and Paul Allen's "Adjusted Floor Price Scorecard" (based on balance sheet analysis).

If these methods have proven to be extremely profitable, why re-invent the wheel?

A (Tyler): I'm a fan of systems and methods. I think they can be a great way to produce returns. But they are not a panacea. The downside of purely mechanical systems is that they usually erode overtime. Basically more and more people have your exact same thought. "Why reinvent the wheel?"

As time passes more investors implement the system. That in turn lowers returns and then the method starts to produce only average or below average results.

Also personality and goals come into play. Does the method or system align with your personality? Does it accomplish what you want to accomplish? These answers are different for everyone. What's perfect for you is probably not perfect for me.

That [strategies you posted](#) aren't bad. They look like a basic momo strat that outperforms buy and hold by a few percentage points. It has it's uses but definitely won't make you 100% in a year.

The best combination is to have a little bit of systematic alongside a discretionary approach. The systems method generates a consistent moderate return and you then you can swing for the fences with big bets in the discretionary method.

That's why we run a multi-strat approach in the Hub portfolio. Strat Ops goes after big bets and Vol Ops is more systematic in nature. We'll soon be adding another systematic asset allocation portfolio to the Hub as well.

Q: I know the answer is somewhere in your previous communications but explain how 65 bps equates to a position size please. (Referencing the SPY Put trade from last week in Strat Ops)

A (Alex): When we are going long an option there is no need for a stop loss since the max we can lose is the amount paid for the option.

So in this case we are buying 65 bps worth of option premium.



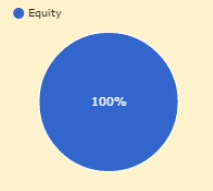
For example on a \$100k account we would buy \$650 worth of option premium. If the market rips and the trade loses we would lose the full cost of the option, or in other words 65 bps of our total portfolio.

Here's the equation we use to calculate the amount of option contracts to purchase for this trade.

$$\text{Account Size} * .0065 / \text{Price of the option} / 100$$

Portfolio Snapshot

Strategic Ops								
NAV		\$1,124,420						
Asset Class	Position	Size	Cost Basis	Risk Point	Open Risk	Target	Notional	
Equity	Goldfield GV	1,000	\$3.89	\$2.52	\$1,370.00	\$4.50	\$7,000	
Equity	Century Aluminum CENX	400	\$11.11	\$7.55	\$1,424.00	\$16.55	\$26,860	
Option	SPY Mar 24th 237 Put	40	\$1.85	\$0.00	\$7,400.00	\$4.00	~	

Metrics				
Exposure Breakdown			Total Open Risk	
Equity	\$10,194.00		\$10,194.00	
Commodity	\$0.00		0.91%	
Fixed Income	\$0.00			
Forex	\$0.00			
			**Updated 3/13	

Volatility Ops				
NAV		\$1,191,353		
Asset Class	Position	Size	Cost Basis	Notional
Volatility	April VIX Future	-17	\$15.70	-\$259,248
Commodity	Crude Oil May 2017 48.5 P	11	\$1.06	~

Scenario Analysis/Stress Tests	
1-Day VAR	-\$34,531
**Updated on 3/13	