



Art Berman: Crude Oil Special

December 24th 2019

Erik: Well, folks, last week I promised you for Christmas a good, old-fashioned Art Berman oil special. So crude oil is going to be the topic of the day and, of course, petroleum geologist Art Berman, a very good friend of MacroVoices, is our feature interview guest.

As always, Art puts together some of the best slide decks that we have all year long. So, whatever you do, don't miss downloading Art's chart deck. The download link is in your Research Roundup email. If you're not yet registered and don't have a Research Roundup email, just go to our home page at macrovoices.com, look for the red button that says [Looking for the Downloads?](#) next to Art's picture.

Art, I love the new graphics on the cover slide, but I want to dive right into Slide 2 because this speaks to what I've been telling our listeners for a couple weeks now is, in my mind, the core central issue. The IEA has forecast that, even if there is complete compliance with the new deepened OPEC production cuts, even with full compliance, there is still going to be an oil glut in the first half of 2020 that could only mean prices going down dramatically, which is totally opposite of recent market action.

The thing is, Art, that whole forecast is based on IEA's projection that the US will increase its production by a million barrels a day in 2020. And a lot of that, or most of that, has got to come from the Permian Basin.

Now, you're showing on Slide 2 here what I've been – you're graphically showing what I've been saying in words to our listeners for months now, which is ever since November of 2018 we've seen a decline in the rig count. And that decline is steepening.

You've said many times that oil doesn't come from rigs, it comes from oil wells. But the oil wells do come from rigs.

So, with an appropriate lag factor, which you are expertly showing on this chart, there has got to be a correlation here, Art. I don't get it. How is it possibly that IEA with this rig count is expecting another million barrels of incremental production from the United States, moving from approximately 12.8 to 13.8 million barrels of daily production by the end of 2020? I don't get it.

I mean, I know pad drilling is more efficient than the way they used to do it. But does this make sense? Help us understand this big picture.

Art: Well, Erik, first of all, as you know, I am a geologist and not an abnormal psychologist. So my ability to answer that question has got to be limited to the data on oil.

But the simple answer is I'm as mystified as you are. And the only defense or mitigating factor that I can offer is that IEA, hopefully, is looking at something other than tight oil growth, like Gulf of Mexico deepwater. But we're not going to get anywhere close to a million barrels a day from the offshore, so I come away confused.

And the only other possible thing I can offer is that perhaps they believe that the OPEC cuts are going to increase the oil price enough that money is going to flood back in toward the US E&Ps. And that that's going to generate a whole new spate of activity.

But, again, I think that even if that's true – which I don't think it is – then the time lag is such that, I mean, here we are. It's almost the new year.

I just don't see how lagging things for the money changing, perception changing, that translating into capital budgets, that translating into drilling wells, and finally that translating into production, there is just no way that all of that transpires probably in 2020 at all. That's just the way I see it.

So, now that we've discussed what's going on in the heads of those people in Paris, my perspective (which is embodied in this chart) is that we're seeing a couple of things going on.

And the first, as you astutely noted, is that rig counts – and this is tight oil, this is not just Permian. But Permian is the driver, so it's kind of a proxy for Permian. I've got that chart too, but I didn't choose to put it in this deck.

What's happening here is that the companies are starved of capital. They've lost their OPM (other people's money) and so now they're forced to rely on whatever capital they can generate either from cash flow or from asset sales or whatever.

So, understandably and predictably – I've talked on this podcast many times about the oil price collapse of late 2018. And I told you as it was happening that this is a whole lot more significant than most people realize.

This is not just some kind of an adjustment response to broader market declines or Trump reneging on Iran waivers. All of that is part of it, sure. But this is as significant an event as the price collapse of 2014 through '16. It's not as great in magnitude, but it is as significant. And it is as great in terms of the daily rate of change, or was as great in terms of the daily rate of change.

So that's a price signal. The market is telling oil producers, cut it out guys. Stop drilling. We've got too much oil. And, of course, it takes a while for the message to percolate through.

So what I've done here is this is data – as you mentioned, the rig count is lagged. WTI is as it is. And so the last rig count data I have is 509. And then I'm kind of doing a dumb-ass projection of where I think that's going to go. And I believe that's going to continue to decline, almost regardless of what oil prices do here in the coming weeks and months.

So – and let me state one more time, as I have before – what rig count is really about to me, it is the best way of tracking capital flows. We can talk all day and all night about how that translates into future production. And obviously it does.

But the real message to take out of rig count is where is the money going? And what this chart says is the money is still going mostly to the Permian, but there is a lot less of it. And it looks like there is going to be increasingly less for the near term. So, therefore, production declines.

And the final point I'll make, which is as important for understanding what's going on here, is notice rig count tripled from January 2016 to December 2018. And that occurred when WTI, the whole time, was less than \$65 a barrel.

Now, again, the rig count is lagged a little bit here, so if somebody gets in here and actually measures these, they might say, well that doesn't work. But, trust me, I've done the calculations.

So rig count tripled. That says money was gushing into the E&Ps. And all the while the investors knew that nobody was making any money.

But what they were doing, they were betting on the dumb bet, a safe bet, which is that, at \$30 a barrel, oil has only one direction to go. It's going to go up. And that was the bet. So, all other things notwithstanding, once oil got to the market expectation of where it probably would max out, the money stopped flowing.

So we've got all of these grand theories about investors want to see cash flow and they want to see profit and they're tired of being lied to, and I say that's a bunch of nonsense. It's an excuse. It's a rationale.

The real rationale behind this is they can't make any money on the stocks. Stock price for an oil company is correlated to oil price. And they've taken that ride.

So there's a lot in this chart, for sure. But those are the two main points.

Erik: Art, I'm curious about what you're saying there for a couple of reasons. It sounds to me like you're saying, okay, we're kind of in this range. The top of it's in the low \$60s. We're there.

Now, we recorded today's interview more than a week ago, by the time our listeners hear it over Christmas week. But, as we're speaking on Wednesday the 18th, we just broke above \$60 on WTI, so we're up at the very high end of your range.

You're saying it's over here, or maybe it goes up another dollar between now and when our listeners hear this. But you don't think we're going to \$75 here.

On the other hand, just a few weeks ago we had Mark Gordon on this program, who really thinks there is an inflection point coming. And his thesis, basically, for the oil stocks is, look, we're going to get to the point where the market realizes a major sentiment change. We went from the peak oil age, which you and I remember well, to the age of over-abundance. And we're going back to what you might call a new peak oil age, where we get much more concerned about scarcity of supply and inability of the industry to keep up with demand.

And Mark thinks that within the next few months we could hit an inflection point that takes oil much, much higher. So that's one thing.

The other thing that I've noticed in this market is where we used to see a lot of traders in the oil market that were very, very focused on oil market fundamental, particularly those weekly EIA inventory reports that come out on Wednesday mornings.

Two weeks ago, Art, on December 11, which was an EIA reporting day, we had a massively, massively bearish surprise which caused oil prices to take a nosedive. That lasted less than an hour before they went and retraced fully. And by the next day they moved to new highs.

The other thing that I notice in conjunction with this, Art, is I've been looking at our good friend Ole Hansen Commitment of Traders report analysis. And what he's showing in his net crude oil speculative long – which takes the Commitment of Traders for both Brent and WTI and knits them together – he's showing that there's been a massive resurgence, where we for a while were kind of at a cycle low in terms of speculative longs.

It seems like the hot money crowd – the dumb money in the eyes of some people – the hedge funds and so forth, are piling back into the oil market.

And what I've noticed, if I look at the way the market just shrugs off that very bearish inventory report, it says to me that there are longer-time horizon traders who don't even pay attention to inventory that are coming into this market. And they're buying any dip without really thinking about inventory numbers. That says to me managed money, hedge funds and so forth, maybe we're going through another wave of just macro popularity of the oil complex.

So I see a few reasons that might warrant really being bullish here. You're saying it's over. What do you think about all that?

Art: Well, that's a lot to think about, Erik, but –

Erik: Sorry to hit you up with so much all at once.

Art: That's okay, fair enough. I like it. So let's talk about Mark Gordon's thesis for a second.

Mark Gordon's thesis, as far as I can tell, is a reprint of Goehring and Rozenchwajg's thesis, which is not in any way meant as a criticism of Mark's work. But it's the same general belief structure. And I have a lot of respect for all three of those people and the folks that work for them, so this is not a disparaging comment.

But my criticism, or my doubt about what's basically a peak oil view – and, you know, you and I met at a peak oil meeting many years ago, so I don't have any issue with peak oil – but the problem that I see is that that thesis and most of the rest of the analysis that goes on today is completely lacking in any recognition of the financialization of the oil market.

So if we can jump quickly here to Slide 9 (way out of sequence), I think this is a big piece of the answer to your question. And what that says here, we're looking at this magical mystery tour of unaccounted-for oil in the United States. And, I mean, this is a really significant volume that we're looking at here.

So from July 2017 through last week's inventory report – I haven't integrated this morning's into this chart yet, or at least into the slide deck piece of it – we have increased 300 million barrels of who knows where the hell it comes from oil. I mean, that is a massive, massive volume.

And I'm in no way criticizing the EIA. I think this oil is very real. I don't think it's a fudge factor. I don't think it's a problem with their algorithm.

And I go back to our friend Chris Cook's thesis, which is that there is – through the financialization of oil, there are all kinds of agreements and contracts and derivatives and over-the-counter transactions that are going on in which unknown or unnamed parties are paying ahead for oil production and –

Erik: Let me interrupt for a second there, Art. Let's define for our audience when we say unaccounted for oil, what does that mean? What are we even talking about here?

Art: We're talking about a discrepancy or a disparity between the way that the EIA, in this case, calculates supply and demand and what's actually flowing through the pipes.

So they look at production, they look at net imports, and they look at refinery intakes. And those should provide at least a crude oil balance that is consistent with the inventory change that week.

Except that it isn't. So a certain volume has to be added or subtracted to make it work. And where is all that coming from?

Well, simply put, that's unaccounted-for oil. So, in other words, they know that there is oil in

pipelines that is over and above (or under) the amount that the supply balance gives them.

Erik: Okay, Art, so just to clarify.

What we're talking about here is we take the total US production, add to that the total imports that come into the United States – both of these things are tracked by government statistics – you add them together, you're supposed to get the total amount of oil.

But it doesn't balance out. It doesn't add up. And there is more oil in the system than we can account for because, if we add imports to domestic production, we end up with less oil than we actually have in the tanks.

Is that the gist of it?

Art: Yes. And just add in that we add the net imports, the production, and subtract the refinery intakes. You know, what's going out of the system producing product. So that equation, which is pretty simple, ought to give you a pretty close approximation of how inventory, crude oil inventory, changes on a weekly basis.

And when it doesn't, the reason it doesn't is because there is some sort of unaccounted-for oil, oil that isn't included in current production or net imports.

So the idea that Chris has suggested, and that I agree with, is that there is a volume of oil that was produced and accounted for in the past but has been paid forward by unknown parties, substantial parties, and has been kept in storage, probably on leasehold, until such time as the owner of that oil, which is not the producer, says, okay, stick it out there on the market.

And suddenly there is this flow of oil that – it was accounted for. It was accounted for in the past. This is like an impairment charge. It doesn't count on the current quarter, but it sure was money spent at some time. So that's unaccounted-for oil.

And I think it's real. I think it's totally real.

So what we're saying here, Chris and I, is that there are large financial forces that are superimposing a footprint on what otherwise is simple supply and demand. And that's what this is. This is the financialization.

Erik: And how does that relate to Mark Gordon's thesis that we were discussing before?

Art: It's outside of Mark Gordon's thesis. And that's the problem with Mark Gordon's thesis. His thesis and Goehring and Rozenchwajg's thesis is that everything is a nice closed system and that the peak oil idea and the Hubbert Linearization that Goehring and Rozenchwajg are masterful users of, that ought to tell you everything.

And I agree with them except that, certainly since the financial collapse in the world in 2007 through '09, the world is different. The oil world has become financialized and, to a large extent though lesser, so has natural gas.

And, if you ignore that fact, then you're missing a really important component that – I'm not going to say – is it as great as supply and demand? Of course not. But it's substantial. I mean, if you took a quarter of this volume that I'm showing on this chart away, then the US would be in serious comparative inventory deficit. And the price would be a whole lot higher, I promise you that.

So this is a huge dampening factor on oil price. We've got a valve that somebody can turn and say, okay, dump it on the market. And that's the reason that oil prices are suppressed right now, at least for WTI. It's one of them.

Erik: Okay, so you think that Mark Gordon and other analysts are not considering the function of this unaccounted-for oil and essentially throwing the rest of their well-reasoned logic off kilter a little bit.

Now, the second half of my long-winded question from a moment ago was Ole Hansen's charts that are showing us a really significant pickup in open interest.

A lot of signals that I see, particularly the way the market's been shrugging off very bearish inventory data, suggest to me that longer-time horizon position traders are coming into the long side of this market. And I don't think they understand any of this comparative inventory stuff.

What do you make of that?

Art: I almost guarantee they don't understand any of this comparative inventory stuff because, I mean, the kind of criticism that I deal with daily on Twitter is astonishing, but whatever.

Let me take you to Slide 7. So Slide 7 relates directly to Ole's observation. Here we're showing Brent open interest, WTI open interest. And then the red curve is normalized WTI plus Brent open interest.

And the point that Ole made, correctly, was that we saw a 25% (about) increase in net long positions in combined WTI and Brent in last week's CFTC Commitment of Traders report. So, lagged back a week.

But what I want you to look at in this chart, focus on any of the three items in the lower part, but let's just look at the red. I mean, compared to what?

Open interest reflects how much, you know, what the volume of trades is, not the change in

net longs. And what we see is last week's gigantic shift was a pimple on the scheme of everything, beginning in May 2018 when this whole downward trend occurred.

So what I say back is, you know, good observation and I appreciate it, but it doesn't change my perspective at all.

My perspective is that, I mean, even the Saudi refinery attack in September, which was the other jump of sorts, showing there with 2,672. Of course, that's a normalized number. But that was bigger than this.

But, I mean, you can go back several weeks in between now and then and there were jumps in open interest, up or down, about the same as we saw last week.

So I'm not questioning Ole's observation, because it's correct. I'm just saying put it in context and perspective. And the context and perspective is nothing has changed.

Erik: Now, as we're speaking, more than a week ago as our listeners hear this (Wednesday, the 18th of December), we're looking at almost \$61 (just about a nickel shy of it) as we're speaking.

Let's suppose that we do get a dollar or two higher. I think that maybe there's kind of Christmas rally effects on the stock market that might help take this market up to \$62 or \$63.

It sounds like you think that's probably the top or pretty close to it. Is that right? And if not why is it not right? And give us what your price outlook is from here.

Art: So, let's go to Slide 4. We've been talking about comparative inventory. And this is WTI. Again, I could show Brent. Brent is even more pessimistic than WTI in many ways. But I used WTI because we've got the most detailed weekly reports that are now condensed in this chart into monthly.

All of the red ovals on this chart represent what I'm calling excursions – excursions from the mean, if you will. The mean represented by the yield curves.

The red is the pre-2015 yield curve – in other words, the pre-price collapse through the bottom of the price collapse. And the blue is the yield curve ever since then.

Now, these excursions are not a failure of comparative inventory. These are as important, maybe more important in some ways than the points that fall on the main line.

And that is because these represent price discovery. Price discovery, as you know, is an integral part of price. My goodness, that's how we figure it out. So traders, if you will, are pursuing trends in sentiment, psychology, politics, geopolitics, whatever, to see where it goes.

And so the point of this is that, even with all of these excursions, the most recent being the second half of 2018, the yield curve is giving a consistent message for the last four years. And that is that, at the five-year average, WTI ought to be \$60. And, whenever it gets above there, it falls below the curve and then works its way back.

So, to your question, Erik, is what we're seeing right now an excursion? A price discovery excursion? Absolutely.

How high could it go? I don't know. I mean, in the case of this particular chart, sometimes it goes up 20% even 30%. But it always comes back down.

My sense is that I don't think that this price rally is going to last 10 weeks or whatever the average of these excursions has been in the past. I think it's going to be shorter. But, if it is longer, good for everybody. That's fine.

But what the data has told me and us is that these excursions will revert and they'll revert lower than the mean first and then they'll work their way back.

So look at where we are. Look into the left 20% of the chart where, just right near the Y-axis, so the \$50 number, that was the undershoot that we got to in December of 2018. From \$71 in October it went too low.

And, basically, the trajectory up until October of 2019, which is the yellow – and the month before was the blue, so that was September – we're still tracking below the yield curve for 2015-2019.

What that says is that WTI is undervalued and has been undervalued all year.

How high should it go? Well, right now we're at 25 million barrels above the five-year average. So we're somewhere in between the October yellow and the December red. And so we ought to be a little bit below \$60. That's the so-called correct valuation.

So could we go to \$70? It's happened before at similar low inventories. But it can't last. It never lasts. That's the point I'm making, Erik.

Erik: Okay, and just for the benefit for any of our listeners who are not familiar with this, because this is not a standard financial chart that you would find from other sources, Art is very, very well known for this comparative inventory system.

If you are not already familiar with this and don't know how to read this chart, please just go to macrovoices.com, type in Art Berman's name, and go back to some of our previous interviews where we focus on the comparative inventory system as the subject of the entire interview.

What you can find out just from watching Art's weekly tweets on this subject is – if you know

now that we're looking at plus-\$25 on the bottom Y-scale is about where we are with respect to crude + products comparative inventory.

You go from there up, find the blue line, and it shows right around \$55-\$57 dollars or so is where we ought to be, according to the comparative inventory system.

And, as we can see, we've now moved above that so mean reversion should take us back down to somewhere between \$55 and \$60.

Now I want to make sure, Art, did I get that summary correct?

Art: Perfect, Erik. No problem at all.

And I obviously could not include today's weekly comparative inventory chart, but I'm looking at it right now and I'll send it along so that you can include it in this deck by the time the broadcast is publically available.

So today, December 13th, we had a weekly average WTI of 2,945, which is overvalued by somewhere between \$1.50 and \$3.50 based on the yield curve information.

So, again, that supports my belief that what we're looking at right now is a price discovery excursion and appropriately so. That's important. That's how we figure stuff out. It's not wrong. It's not anything other than what it is.

But that tells me that it's going to come back down. And whether that takes a week or two or whether that takes a month or two, I can't say. It depends on how long the traders can get away – how long will it be until they can't find somebody on the other side of a \$62 or a \$63 trade? That's really what we're talking about.

Erik: And of course, moving on to Slide 5, you're showing that very nicely, visually here, where the one standard deviation is away from the current forecast which is being projected by the yield curve.

So it looks from this chart, Art, like, if oil has moved up to \$63 by the end of the year, probably time to take some profits there.

Art: And that wouldn't surprise me, Erik, either. I don't have a – I'm not looking for an answer. I'm indifferent. If the market wants to take oil to \$70, that works out just great for me. I make money off of oil wells. I'm a happy guy.

People say, oh, you're a permabear. No, I'm not a permabear. I'm just telling you what the data is informing me.

But the point of this chart is – I mean, that standard deviation goes back 13 months. And the

only thing that got us slightly above \$63 was the big rally that led, towards the end of 2018, to the collapse that occurred after April.

So, again, the reversion always occurs and the realm of fluctuation, at least statistically, is limited. I mean, my God, the Saudi refinery attack didn't quite get us to one standard deviation above the mean. That's 5 million barrels a day. So that's the mentality that this market has right now.

So explain exactly why a trade deal and another OPEC cut is going to get prices higher than they've been anywhere on this chart since maybe September 2018. I just don't get it. But it's possible.

Erik: Well, this particular chart that we see on Slide 5 is showing us the standard deviation from the mean. But what it doesn't visually show us is how that relates to transitions in your comparative inventory system.

And that's the reason I really want to move on to Slide 6. You've got the same price chart here, but what you're showing with these green and gold regions above and below that zero line, if you will, is when we've had over-supply versus under-supply on the five-year average in your comparative inventory system.

Talk us through this chart and what it's teaching us.

Art: So the market is ruthless and stingy. The market sends a signal, a price signal, to producers based on its sense – and, of course, who is the market? I mean, it's us. It's everybody listening to this podcast and more.

The market wants to maintain the minimum supply necessary to meet everybody's needs so as to not cause some kind of a crisis. That's what the market is doing. So the market is going to bet a certain amount of money either to increase the oil supply to get to wherever it thinks the market needs to be or the supply level needs to be, or decrease the price to get it down to where it thinks it needs to be.

And, by the way, for the gazillions of people that think demand drives the system, tell the market that. The market works completely on the basis of supply, in my view.

And somebody will probably disagree with me, but the market doesn't know how to bet on demand. I mean, ask a petroleum geologist to explain how is demand different from consumption exactly, and see if you can get an answer that you understand. I'm betting that you can't.

So demand is a squishy deal, is what I'm trying to say.

But the point of this, Erik, is that the market, whether it knows it or not, whether it knows

anything about comparative inventory *per se*, when the price gets too high for the market's perception of supply or future supply, the market says, okay, time to lower the price.

So we look at where it says oil under-supply negative CI (comparative inventory) back there in the second half of 2018. The market was under-supplied and the signal that was sent to producers was drill more. And the signal was higher oil price.

So that all happened and we drilled. And producers always overshoot. They overshoot. We ended up with a glut of oil, an over-supply into the green. And the market said, hold your horses, guys, we're going to pull the rug out from under you.

And the market dropped prices \$30 from October 2018 to December 2018 to try to scale all of this back. And it worked. It worked.

So the second and smaller gold area of the chart that appears back in March 2019, we got a little bit below. And the market said, okay, here's a little bit more price incentive. And the price went up.

And, lo and behold, so did the – the producers overshoot again. The market said, whoa, and dropped the price by \$13 or \$14 between April and June. So now we're kind of at an equilibrium of over-supply.

So the question I would ask the bulls – First of all, they're going to say, well, I don't believe your comparative inventory chart. And I say, fine, but a market that doesn't want to pay too much, why would a market pay more than the current price when the market is over-supplied a little bit? It just doesn't make any sense to me why it would, outside of price discovery.

So that's what this chart is telling me. And I can show you charts that go all the way back to 1995.

Erik: Well, Art, I want to ask you specifically about this chart and the version that goes back to 1995, because something is jumping off the page for me here.

If I look at these gold regions here where it says oil under-supply negative CI, where we've gone into a period where there was a series of inventory reports that were drawing down on cumulative inventory, right at the zero crossing point – in other words, where the gold ends and we transition back to green –

If I just invented a rule that says that's the magical Art Berman sell signal that tells you oil is about to change direction, holy cow, look at the accuracy of that. And look also at how proportional it is to the size of the gold region.

At the end of a big gold region switching to green, if you had shorted there, you would have caught a \$30 move down in oil.

There is a shorter gold period in the spring of 2019. If, when you switched over, on the day you went to green you would have been selling right at the beginning of maybe a \$12 or \$13 move in price. Still a really big swing trade.

Is that just an anomaly that happens to be true on this limited-scope chart? Or is that a signal that we should be looking for that you might have back-tested going back beyond what we see here?

Art: It goes all the way back to the beginning of inventory reporting, Erik. EIA started inventory reporting in 1990. So we don't have a five-year average to work with until 1995.

So the skeptic will say, well, aren't there some exceptions? And the answer is, yes, there are a few. And they're quite minor. I'd love to show people the full spectrum of comparative inventory and price, both on Brent and on WTI.

But, if you recall, what was the title of the talk that I gave at the MacroVoices symposium in Vancouver in January? It was something like "How to Short the Market." I laid it out there for people. I told them exactly what you're describing from this chart.

And how many subscribers did I get as a result? Well, not enough probably. But, yes, it seems pretty straightforward to me. It seems pretty straightforward to me.

Erik: Well, and you make a joke there, but I want to make a serious point for anyone listening. If ever there was a compelling argument for why you should subscribe for free to Art's blog at artberman.com, it's because you get updates on this chart.

And when you see a period of yellow, start waiting for it to flip green and sell oil when it does, because look at what a reliable sell signal that's been. And I know that that does go back quite a ways beyond what we see on the chart here.

Moving on to Slide 7, I asked you some questions earlier that caused you to already explain this particular slide out of sequence, so we've covered that one already.

Let's move on to Slide 8. What's going on here?

Art: This gets back to where we started this conversation, which was, oh, the reason that investors are fleeing from oil companies, gas companies, energy in general is this drumbeat – we want to see you guys get your cash flow under control. We need to see positive cash flow and then we'll come back.

Well, this is third quarter 2019 and 60% of the tight oil companies that I follow had positive cash flow. So, all right, we gave you what you wanted. Where's your money. It's not there.

And the reason it's not there is because that's not the reason they went away. The reason they went away is because they can't play the free-money casino gambling of betting on oil stocks. It's just real straightforward.

Erik, I hate to give our listeners vertigo, but let's go back for a moment to Slide 3, which I haven't talked about yet.

In Slide 3, I'm showing normalized WTI price in [the] gold. I'm showing an index that I created of tight oil companies' share price in red. WTI straight, not normalized, is above in blue.

But what I really want to focus on right now in this chart is the table at the bottom. The table at the bottom shows some of the companies that make up this index.

And what it shows is that if you had bought EOG in 2016, when oil prices were in the toilet, and just held it (you didn't do any kind of day trading at all) between January 2016 and October 2018, you would have made 124% on your investment. And if you had a basket of all of these companies, you would have made 181% on your money over that two-year period.

So, I mean, this was an absolute no-brainer. I mean, oil is at \$30 a barrel. It's got to go up.

What are the best proxies for doing actual crude oil trading, which a lot of people view as being riskier than going in and out of the stock market? You buy the shares of the companies that reflect the change in WTI and you made a bloody fortune.

Let's keep in perspective that Treasury yields at this time were averaging, what, 2%. And I'm showing you some stocks that you could have made at least 100% if not 200% on. Well, that's a really good reason to write checks and to give these companies money.

Now contrast that with the lower row of data in the same table since December 2018, back to that oil price collapse. Every single one of those companies has lost big-time money. So if you owned a share of any of those companies (EOG, Conoco Philips, Diamondback, Concho, etc.), and you didn't dump it when I suggested you should back in Vancouver (in fact, it was a little bit late), you lost your ass.

To me, this is so obvious as to why the money was big time in E&P, focused on US shale, and why it's out right now. You can't make any money. The oil price is too high.

Erik: I'm going to have to apologize to our listeners, Art, because it's my fault that we're out of order here. But we went from Slide 8. We came back to Slide 3, which you've just finished talking to.

Now if we go back in the sequence, next would be Slide 9. That's the one about unaccounted-for oil that you already spoke to in detail in response to our discussion about Mark Gordon's thesis.

Moving on, on Slide 10 you've got what looks like the same graph from Slide 2. How come it's back here on Slide 10?

Art: The reason it's back a second time is when I showed it in Slide 2 the main point I was trying to make was look at how much money went into the tight oil business when WTI was less than \$60 or \$65. So it was speaking to why is the money there and why is it gone?

So I want to come back to it briefly just to kind of get everybody recalibrated to the fact that, look, tight oil rig count is declining. Big-picture WTI price is declining. And your introductory question to me was: What's going on with IEA that they think the US being the main non-OPEC producer is going to increase production a million barrels a day and that's why there's going to be a giant glut of oil and depressed prices in 2020?

So this is a recalibration slide.

Let's skip over Slide 11 for right now.

I want to go to Slide 12 and emphasize the point about what I anticipate will happen to US, therefore non-OPEC, supply in 2020. Slide 12 is totally US oil production: onshore, offshore, tight oil, conventional oil, everything you want to imagine. And I'm also showing total US rig count.

What this shows is the same basic picture that we saw for just tight oil, and that is that the rig count in this case has been declining quite substantially since about November 2018 when we were over 1,000 rigs, down to 787 in November.

And it's not quite as clean. We're seeing some bumping around on the four-month lagged oil production curve.

But I think what it's clearly showing is that the potential for US production to continue going up, at least the way I'm interpreting this, is really, really low. The rig count is going down. We're seeing that reflected in production.

We're right below 13 million barrels right now. And my guess is that we're probably just going to stay flat for the first quarter of 2020, averaging right about where we are today. And after that I don't know. But, unless something fundamental happens to financial markets and oil price goes up a lot, my guess is that US oil production stays pretty flat.

And, in fact, if you look at EIA's 2020 production forecast, it's absolutely flat for the rest of 2020, which doesn't mean it's going to be that way. But that's what other people, EIA are thinking. So I would be surprised if US production got anywhere close to what's needed to create a glut.

So back to Mark Gordon and the rest, Goehring and Rozenchwajg. Are we moving in a direction of tighter supply? In the bigger picture, yes, I believe we are. Does that mean that oil prices are going to go a lot higher? That's where I disagree with those guys.

The comparative inventory analysis tells me that you can drop inventory to levels as low as they've ever been, at least in the last 10 years, and the price of WTI is not going to get to and be able to sustain much more than \$70 or \$75 (add \$5 for Brent). That's because the yield curve is so flat.

So can that change? Of course it can.

But the market has to say, we are now concerned about supply and we're going to send a price signal which is higher. We're going to increase the valuation of oil. And if that occurs, then their thesis is correct.

My sense, though, is that we've got some very powerful financial forces that are outside the market – call it Saudi Arabia if you will. They are certainly part of it (ask Chris Cook to fill in the details). But all of the signals have been they are putting more oil on the market. Saudi Arabia desperately needs Trump to get reelected. He wants low prices.

I didn't mention it, but go back to Slide 9, the unaccounted-for oil. Look at the inflection points of when strategic petroleum reserve was released into the market. Very good correlation there too.

So there is more going on here than just the simple Hubbert curve linearization, supply and demand.

Erik: Art, I'm really excited to talk to you about Slide 13.

But, for the benefit of our listeners who may not be familiar with all the terminology and still think that ducks are animals that swim in a pond, let's define this first.

What we're looking at on this chart is drilled but not completed wells. That's when an oil company goes and drills a well which can only be productive if they use hydraulic fracturing in order to complete that tight-oil well. They drill the hole but they don't bother to finish it.

What you're showing here is the huge growth in inventory of drilled but uncompleted wells which have been added to inventory since December of 2015. And I think that timing is really important because we're not talking about the 2013-2014 age of easy money.

We're talking about a period of time where capital was tight in the oil industry. People didn't throw money around without thinking about it. Yet, somehow, you've got oil companies drilling an oil well.

And they finish drilling the hole, they don't take the rest of the steps that are needed to put it into production, and they move on and they go drill another hole someplace else. And they keep doing this and they keep accumulating this inventory of oil wells that they've invested in starting but not finishing.

Before you even get into the significance of the change in trend here, please help our listeners understand why an oil company would do that, would drill a hole in the ground but not finish it and turn it into an oil well.

Art: There are many reasons for that. Excellent question, Erik.

The simplest one is because they can. Because they have so much money available to them from outside sources – whether that's selling shares, bonds, private equity placements etc. – that they just say, you know, wow, this is fun, let's keep drilling. We've got money coming out of our ears. It may not last forever or for long, so let's drill as many wells as we can while people are willing to pay for them.

We'll worry about monetizing the investment later on. Which is a terrible thing to do for a balance sheet. And it's a horrible thing to do for your shareholders to spend \$5 million to drill a well and then to postpone monetizing your investment until who knows when.

That's the simple answer. There are more complicated answers. There are holding leases, concerns about that. There are partnership agreements. There are lots of things.

But the simple answer is when you got more money than you know what to do with, you're going to spend it. And that's what they did.

But I want to reemphasize your point that this only represents the drilled uncompleted wells that were drilled and left uncompleted since oil was \$30 a barrel and producers were initially being very careful about where they put their wells. They wanted to drill the best locations first.

That changed when they started getting a gush of money in mid-2016 onward. But the thinking is most of these wells should be keepers, whereas a lot of the wells drilled back in pre-price collapse in 2014 probably didn't make a lot of sense commercially at the time. And a lot of those wells are never going to be completed in my opinion.

Erik: So this trend started right after the oil price bottomed in the spring of 2016. And at that point, with very low oil prices, you've got producers, the capital is tight, they're very careful about their investments. They're not drilling holes unless they're pretty sure that it's going to result in a well that will eventually produce oil and be profitable.

But, still, over the period from November of 2016 up to it looks like right around summer of 2019, this past summer, we just saw this fairly linear accumulation of these drilled but uncompleted wells, wells that could be fractured and put into production but weren't. And

then it peaked this past summer and it started to go down.

So what got us up there in the first place? Why did it peak? And what is the significance of this change in direction? It appears like it's peaked out and it's starting to decline now.

Art: Well, that's right. And, just so we don't get people confused, that's the Permian.

Everything else in this particular chart, being Eagle Ford, Niobrara, and Bakken, was going in a different direction. So certainly new wells were being drilled. And some of those, a lot of those wells were left uncompleted in those plays. But, overall, the inventory of uncompleted wells was generally declining in those plays. So they are actually going back and spending the money to complete them.

But not in the Permian. Not in the Permian. And that's because all the money was going to the Permian.

So what does that mean? Well, it means a couple of things.

It means, first of all, it costs less to complete a well than to drill and complete a well, by about half. That doesn't mean that completing a well is cheap. If we're talking Permian – let's just use round numbers – \$10 million drilled and completed. Probably \$5 or \$6 million of that is in the completion alone. So it's still a lot of money.

But, as companies started running out of other people's money, sometime in the summer of this year, they decided let's make our money go farther. And, for every single well we drill and complete, we can complete two already drilled and uncompleted wells.

So the fact that we're now finally starting to see a decline – a small decline, 4%, but still a decline – in Permian inventory of uncompleted wells is significant.

Now, how significant? And this is the kicker. This is the part that isn't obvious from this chart. And that has to do with something called the frac spread.

The frac spread is confusing to those of us that pay attention to future spreads because it's not the same thing. Frac spread refers to a spread – in this case it's fracking equipment, frac crew. So a frac spread is a frack crew.

What's happening is that the number of frac crews, the frac spread if you will, has been declining really, really fast all through the summer. So a lot of these pressure-pumping fracking companies are closing up shop. Or they're closing offices in key areas.

Will this trend continue? And the answer is, yes, probably. But will it be linear? Will we continue to see more and more uncompleted wells completed? Probably not at the same rate. Because if the frac crews aren't there, then you can't do much of anything.

And that is the piece that is, I think, completely absent from IEA's evaluation and maybe a lot of other people's evaluations going forward. That even if you have money to drill the well, if you can't frac and complete them, you ain't going to be bringing them online.

And this is precisely what happened in 2015, 2016. All the frac equipment got stacked for a long time. It was just being cannibalized for parts. The crews were scattered to the winds. They were laid off.

And it took quite a while, once the money came back into the tight oil business, to reassemble the frac spreads, to put back together the crews and to get this machines running again.

So. in some ways. I suppose this does lend some support to Mark Gordon's and some of the other people in his camp that say we are going to see an increasing tightness of oil. But I've said that too (not that I'm in competition with them).

But what we've been talking about mostly today has been the relatively near term. And in the near term I think this price rally has got a limited life cycle to it.

But sometime in the coming year, the markets are going to have a realization that the forecasts and the propaganda (or the narrative, if you will) that they have now accepted of abundance going forward probably needs to change. And, as we've seen, that's not going to happen overnight.

But I do believe that we are – into the 2020s, we will see a gradual return to scarcity. All things being equal, business as usual.

Erik: Well I think you and I are in violent agreement, Art, which is I think Mark Gordon has exactly the right idea. I think he's early with it. And I think the question, as you say, is we do have this over-supply that's still frustrating the market?

Again, you and I, I think, see this the same way. We're really scratching our heads saying, okay, we're at 12.8-12.9 million barrels of US production. Even though EIA may not see it, IEA says another million in 2020 up to almost 14 million barrels of US production by the end of 2020.

I just don't get it. There must be some other side of this argument that I'm missing for why they think that's going to happen in the face of the declining rig counts.

Is there a whole bunch of, as you said earlier, Gulf of Mexico exploration that I'm not aware of or something that might supplement that? Do they think that it's coming from the Permian, this extra million? And why in the world would they think that, based on what we can see the rig count doing?

Art: Let's invite Neil Atkinson on, Erik. He's a good guy; he's a smart guy. Let's ask him that

question because he's the one that can try to explain it. I'm not doing a very good job, I'm afraid.

Erik: Well, Neil. If you're listening, we'd love to have you join us on the program to explain. Is there some argument that you're aware of that I'm not seeing that would explain how that extra million barrels of production comes online in 2020?

Art: There are all kinds of scenarios that I can imagine where a million barrels comes online from somewhere. You know, from Iran, if we kiss and make up with them. Or Saudi is kissing and making up. If something happens, slowly for sure, in Venezuela. There are scenarios. Libya gets its civil war resolved.

There are all kinds of places. But I just don't see the United States. I don't understand that. I'm with you, Erik.

Erik: Well, I can't thank you enough for another terrific interview. There's a couple more slides with some background information for our listeners who are interested in the slide deck. But we're going to need to leave it there in the interest of time.

Before I let you go, though, I know there's been some big developments. You've got a whole new website; you've redesigned your website. And I think one of the most valuable but least well-known resources on the internet is your entirely free blog. You can subscribe at artberman.com.

Please tell our people if you sign up for a free subscription at artberman.com, it's a free subscription to what? What do you get? What's the value? And how do you sign up for it?

Art: Well, thanks for letting people know that, Erik. Yes, I've got a completely redesigned modern new website and I'd sure like people who haven't gotten there to go take a look at it.

And, for right now, nothing has changed. If you want to get on to it, you've got to give me your email address, that's the price of subscription. And then you have access to everything that's there. That's not going to be the case forever and ever.

Starting sometime in the first quarter, I'm going to start asking people to sponsor, to pay a little bit of money to get access to all. Some of it's still going to be free. But I've got to eat here too.

So what I'm going to do after the new year is offer free trial subscriptions at a pretty low rate, which would entitle you to not only access to everything on the website but also a monthly newsletter.

At somewhat higher prices, you'll get actually some real detailed analyses and phone conversations with me to talk about your investment portfolio.

But, for now, it is completely free. Go take a look, give me your email address, and you've got full access to everything out there. And look for more insight I hope. That's what I try to provide.

Obviously, I am a geologist. I'm interested in the science. But I'm also real interested in the financial side of things too. So I think there's value for those who are betting on crude oil, commodities, and stocks.

Erik: Well, Art, it's great to have you back on the show with us for this Christmas holiday.

Patrick Ceresna and I will be back next week when we'll have another early show for you published, again, Tuesday morning – that's New Year's Eve – when we're going to have Dr. Pippa Malmgren as our feature interview guest.

Note: I don't think I'm supposed to include this part (below) -SLB

This week's episode of MacroVoices was made possible by the generosity of our listeners. Please consider donating to MacroVoices this holiday season. See you all next week, folks. For the MacroVoices Podcast Network, I'm Erik Townsend.