

Market Case Study – WTI Grade Issues

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What is a Future?

Futures Contracts

Definition

- Wikipedia: A standardized contract between two parties to buy or sell a specified asset of standardized quantity and quality for a price agreed upon today with delivery and payment occurring at a specified future date, the delivery date.

Advantages of Futures Contracts

- Leverage: Futures contracts are highly leveraged instruments, so investors do not have to put up much capital to own a contract.
 - You can spend your gains on a new trade without having to close out your position as long as you have the margin to do it.
 - With stocks or bonds, you must sell your position to free up your capital
- Much easier for speculators to trade because they don't require actual delivery of the product itself (paper transaction).
- Because futures contracts are easier to trade than physical commodities, the markets are generally very liquid.
- Long and short positions are symmetric.
 - You don't need to worry about borrowing to short, and a position can therefore be easily reversed.
 - In the case of oil futures, every \$1 change in price is exactly a \$1000 change per contract.

Futures Contracts

Explanation with an Example

- I am the CEO of Delta Airlines, and I have hundreds of thousands of customers that want to book their flights for this upcoming Christmas.
- A large part of Delta's costs come from buying jet fuel, which has a price that fluctuates like any other commodity.
 - If I sell flight tickets to these customers and then the price of jet fuel goes up, I could end up losing a lot of money.
 - I won't be able to back out of providing flights once I've sold tickets.
 - Businesses generally don't like this uncertainty.
 - Of course, the price of jet fuel could also go down in that time.
- I can eliminate uncertainty by buying a futures contract with a delivery time right before Christmas.
 - This enables me to lock in a price, so I can eliminate uncertainty about the future and still give competitive pricing.
 - I can more accurately gauge what the prices of flight tickets should be.
 - Since it's delivered close to Christmas time, I don't have to worry about storing all that fuel for an extended period of time.

Oil Benchmarks

Major Benchmarks

Western Texas Intermediate (WTI)

- Light sweet crude
- Trades on the New York Mercantile Exchange (NYMEX)
- American standard crude oil

Brent Crude

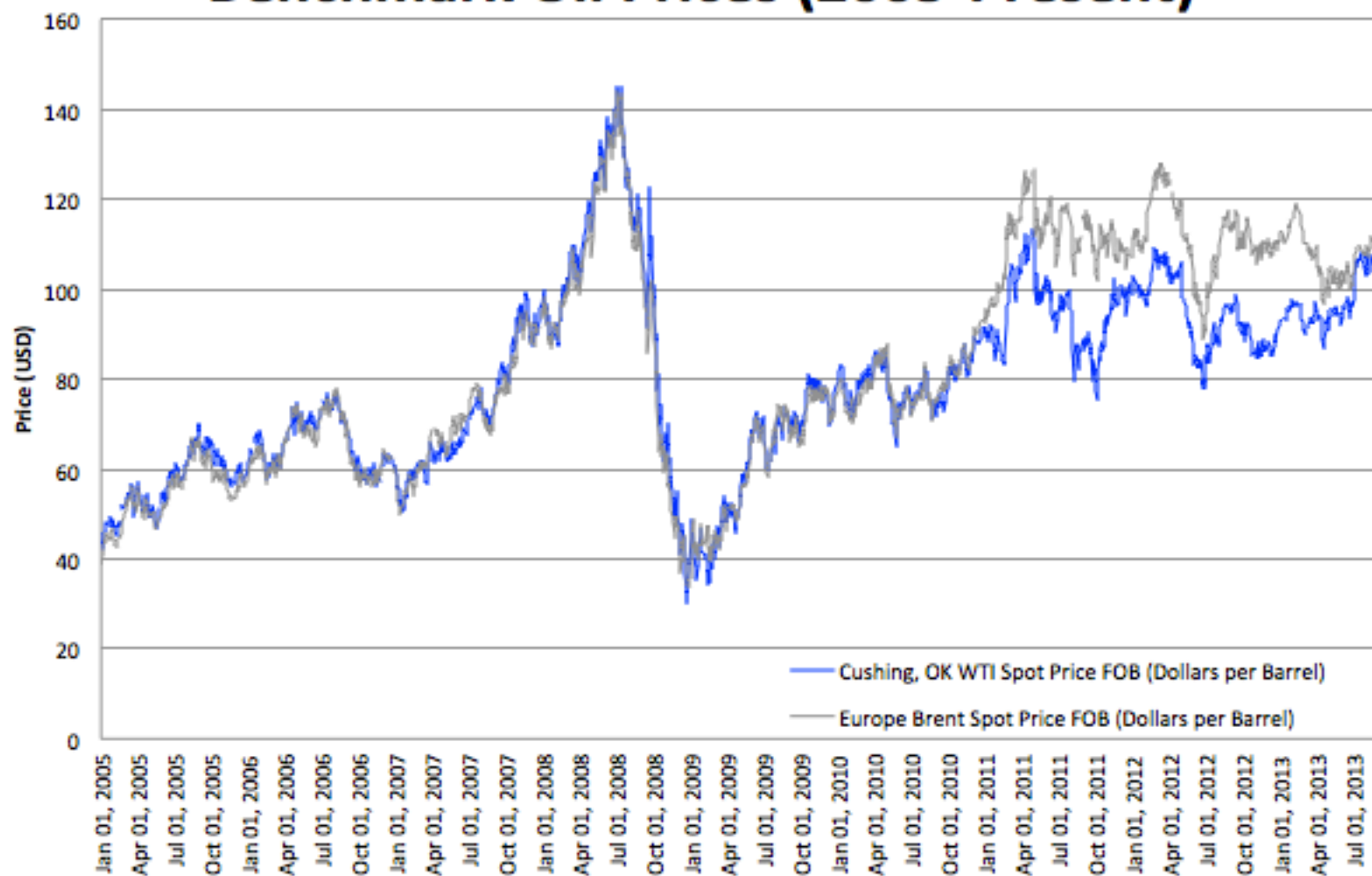
- Light sweet crude
- Trades on the Intercontinental Exchange (ICE)
- British (and the rest of Europe) standard crude oil

Comparison

- WTI is lighter and sweeter than Brent
 - A “light” crude has a low American Petroleum Institute (API) gravity measurement, which compares the specific gravity (density) of crude oil to that of water.
 - A “sweet” crude has a relatively low sulfur content. Crude with higher sulfur content is referred to as a “sour” crude.
 - We will get more into grade specifics later in this presentation.
- A lighter, sweeter crude is easier to refine, and thus should be more valuable.
- In early 2011, the price of Brent began to break away from the price of WTI.
 - Why?
 - How?

Trading in Tandem

Benchmark Oil Prices (2005-Present)



Source: U.S. Energy Information Administration

A Closer Look

Benchmark Oil Prices (2011 - Present)



Source: U.S. Energy Information Administration

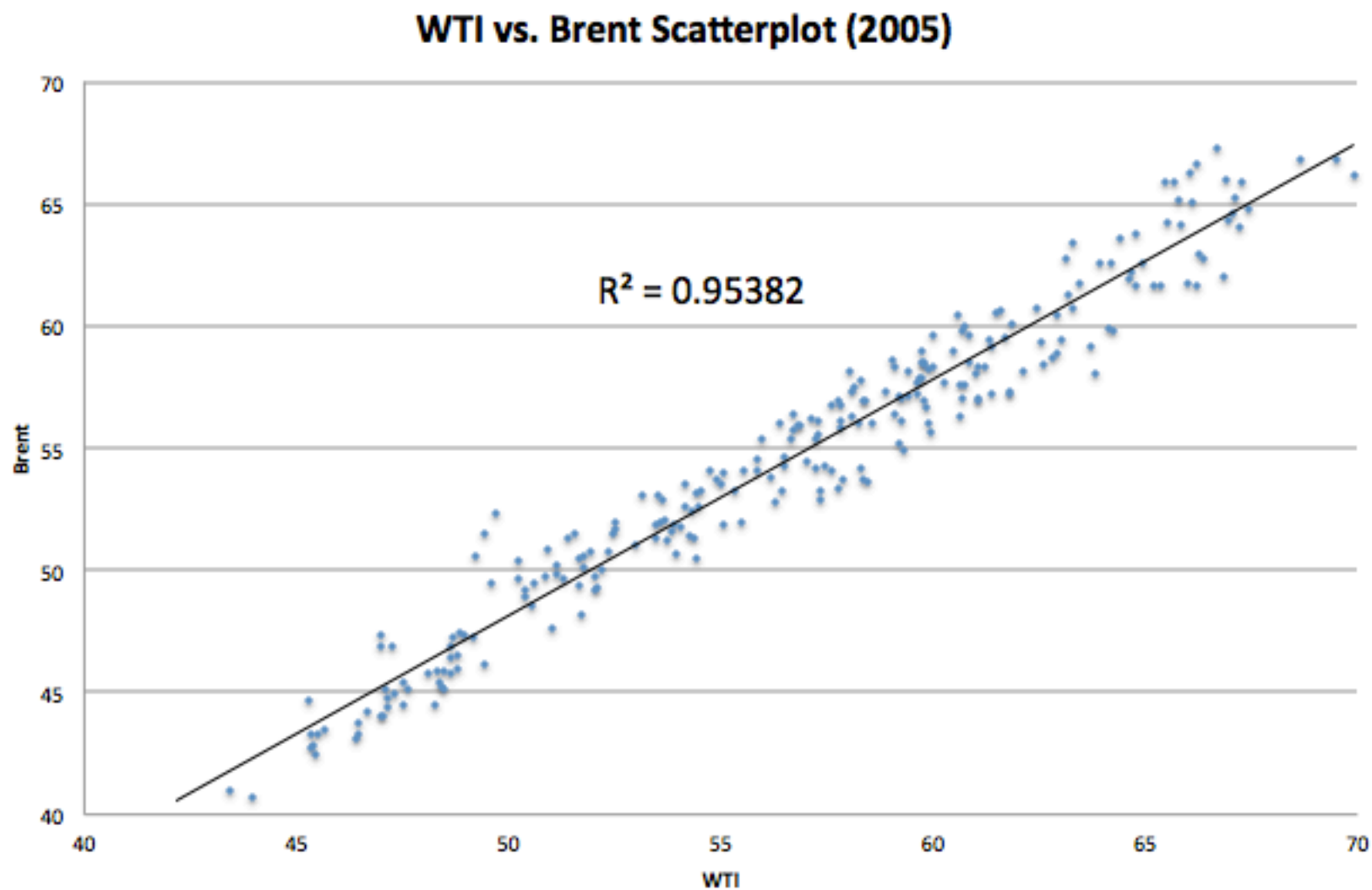
A Closer Look

COCL1 Index (2003 – Present)



Source: Bloomberg

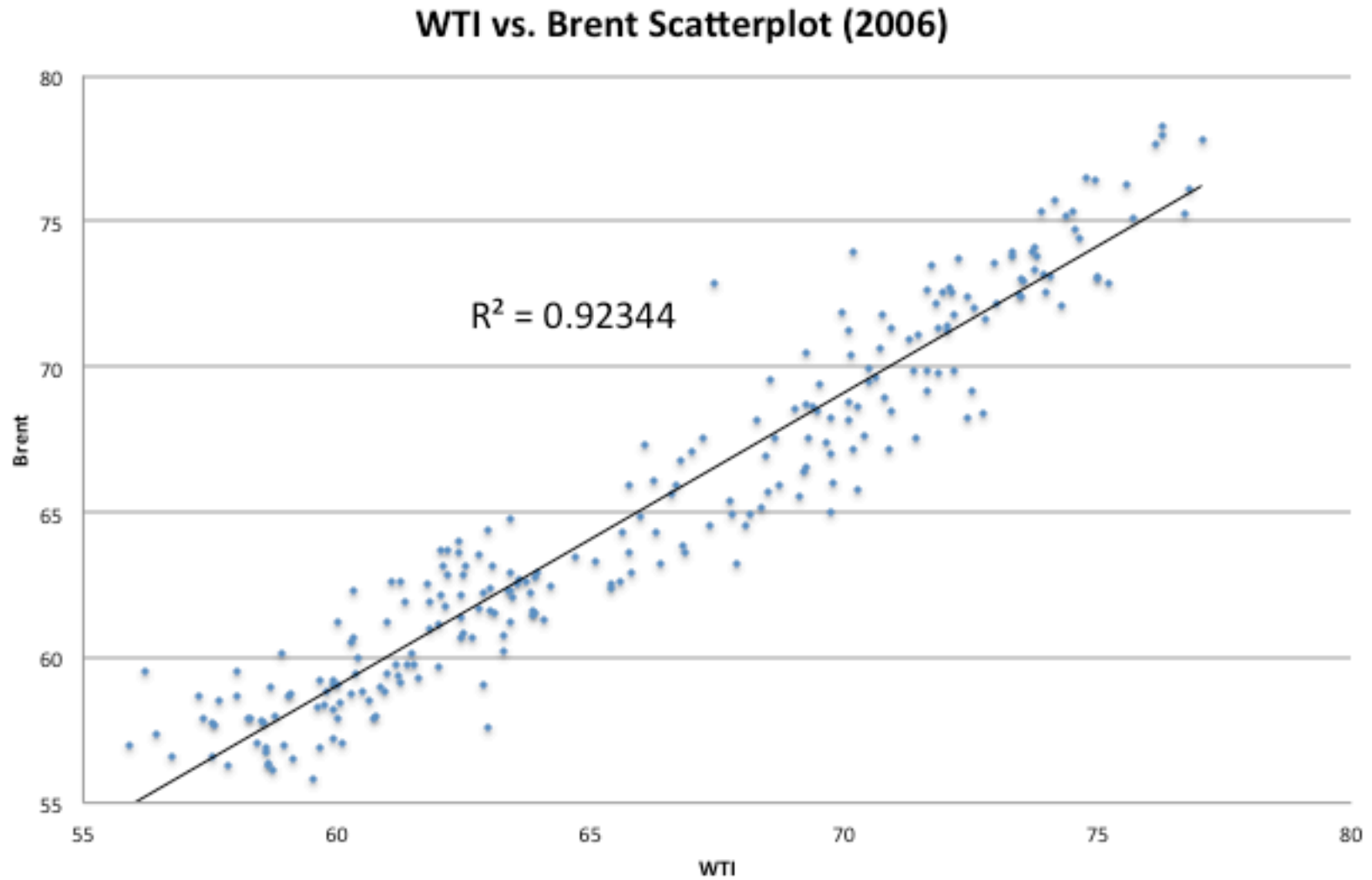
Scatterplots



Source: U.S. Energy Information Administration

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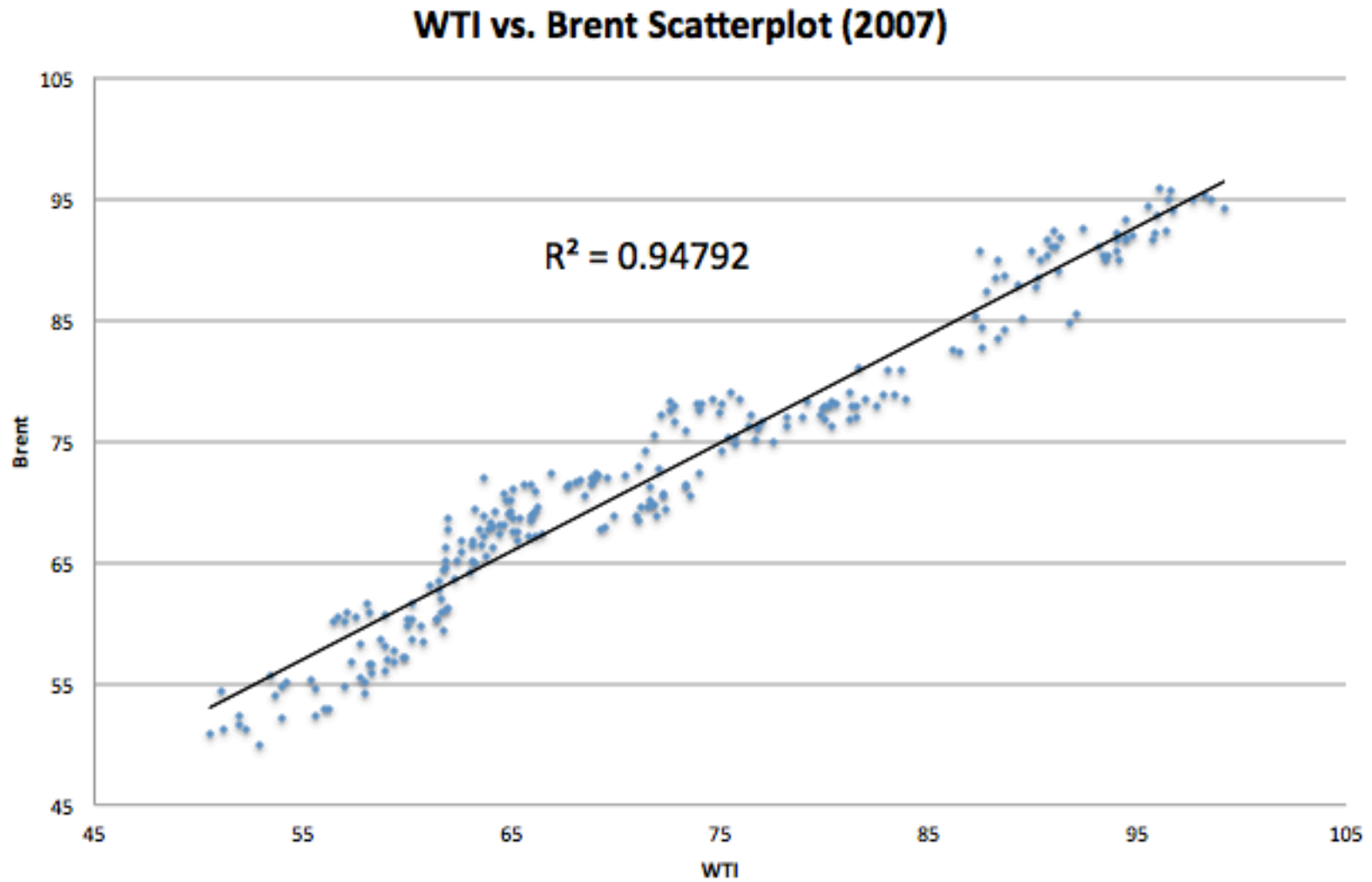
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Source: U.S. Energy Information Administration

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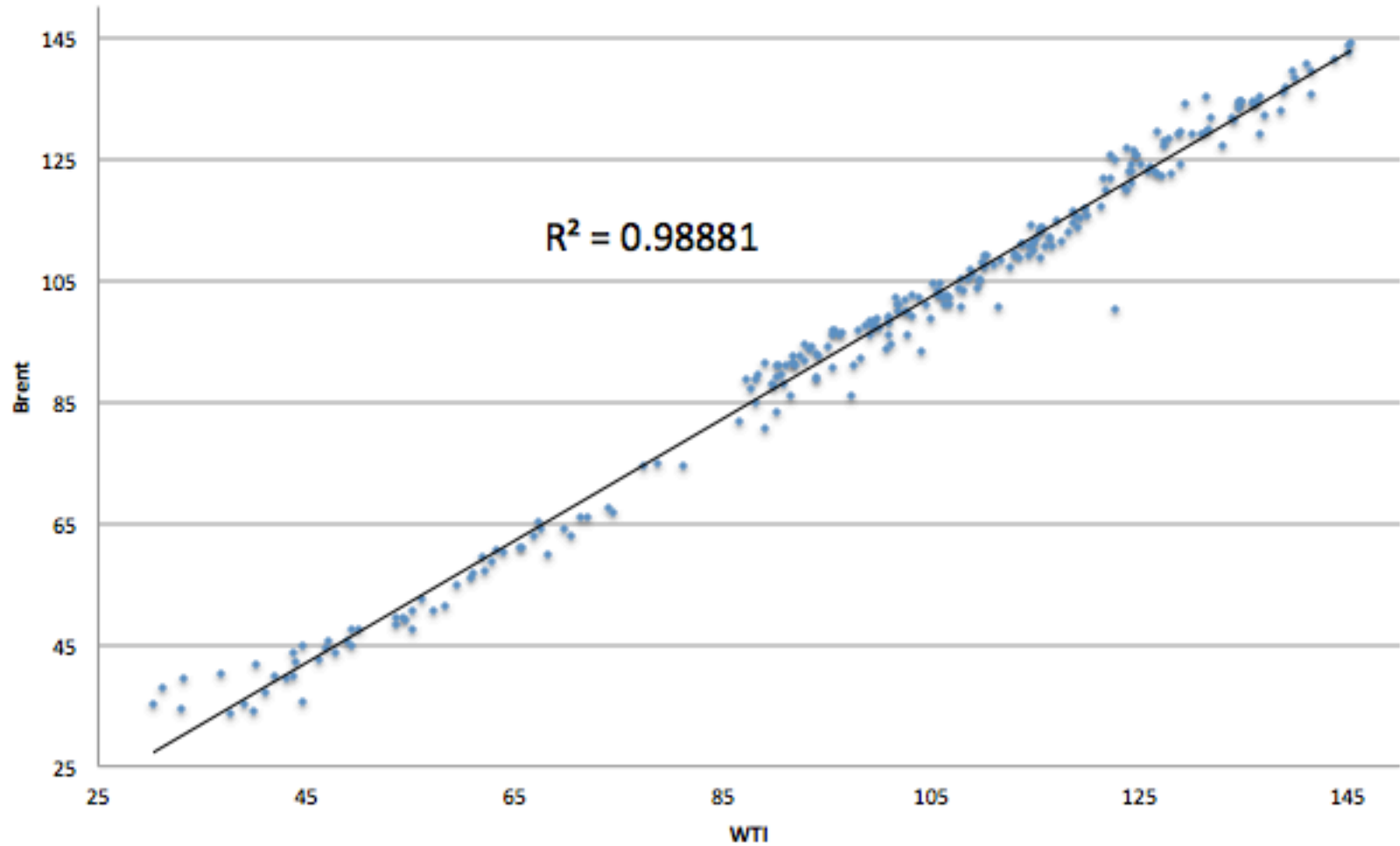
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Source: U.S. Energy Information Association

Scatterplots

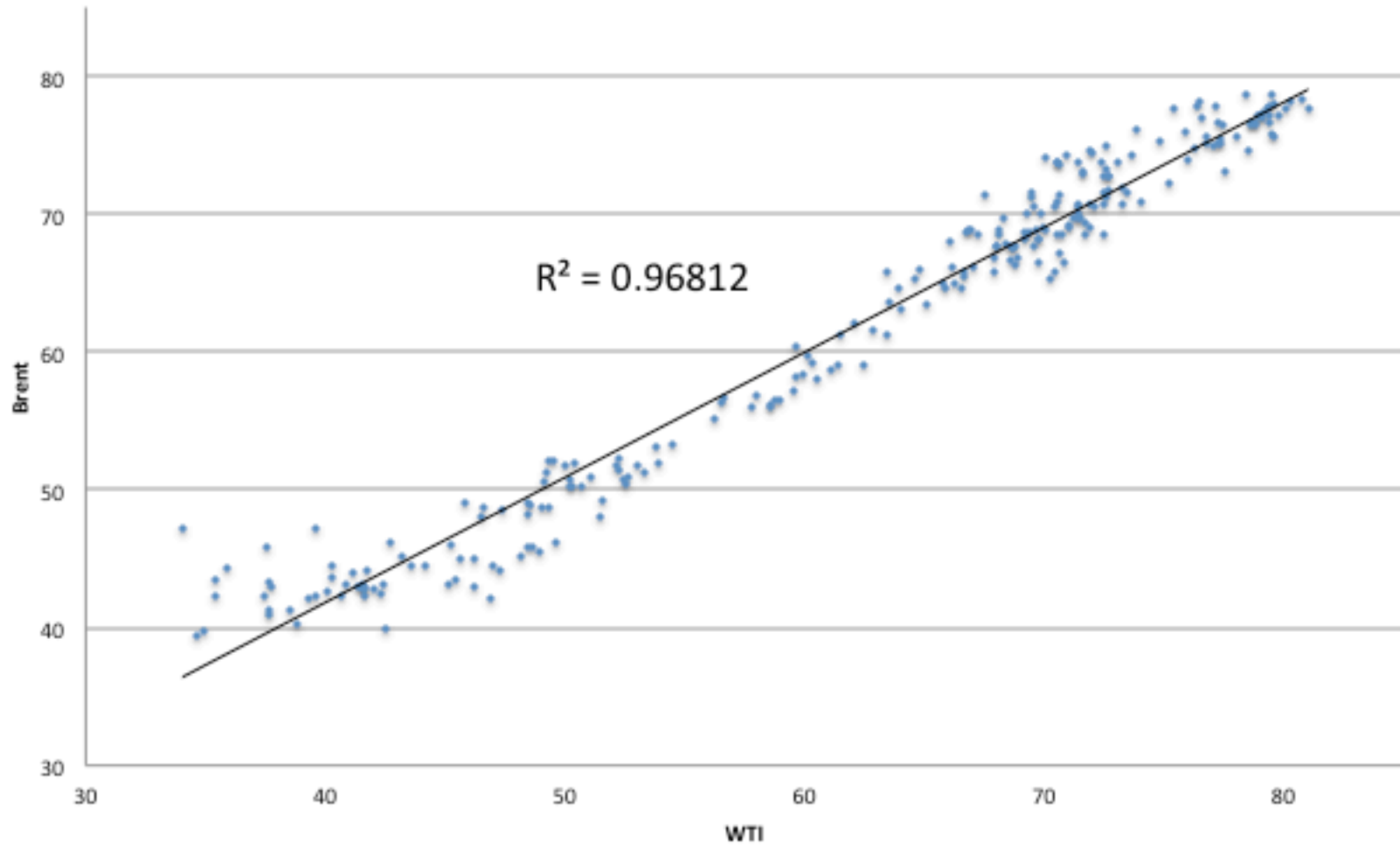
WTI vs. Brent Scatterplot (2008)



Source: U.S. Energy Information Association

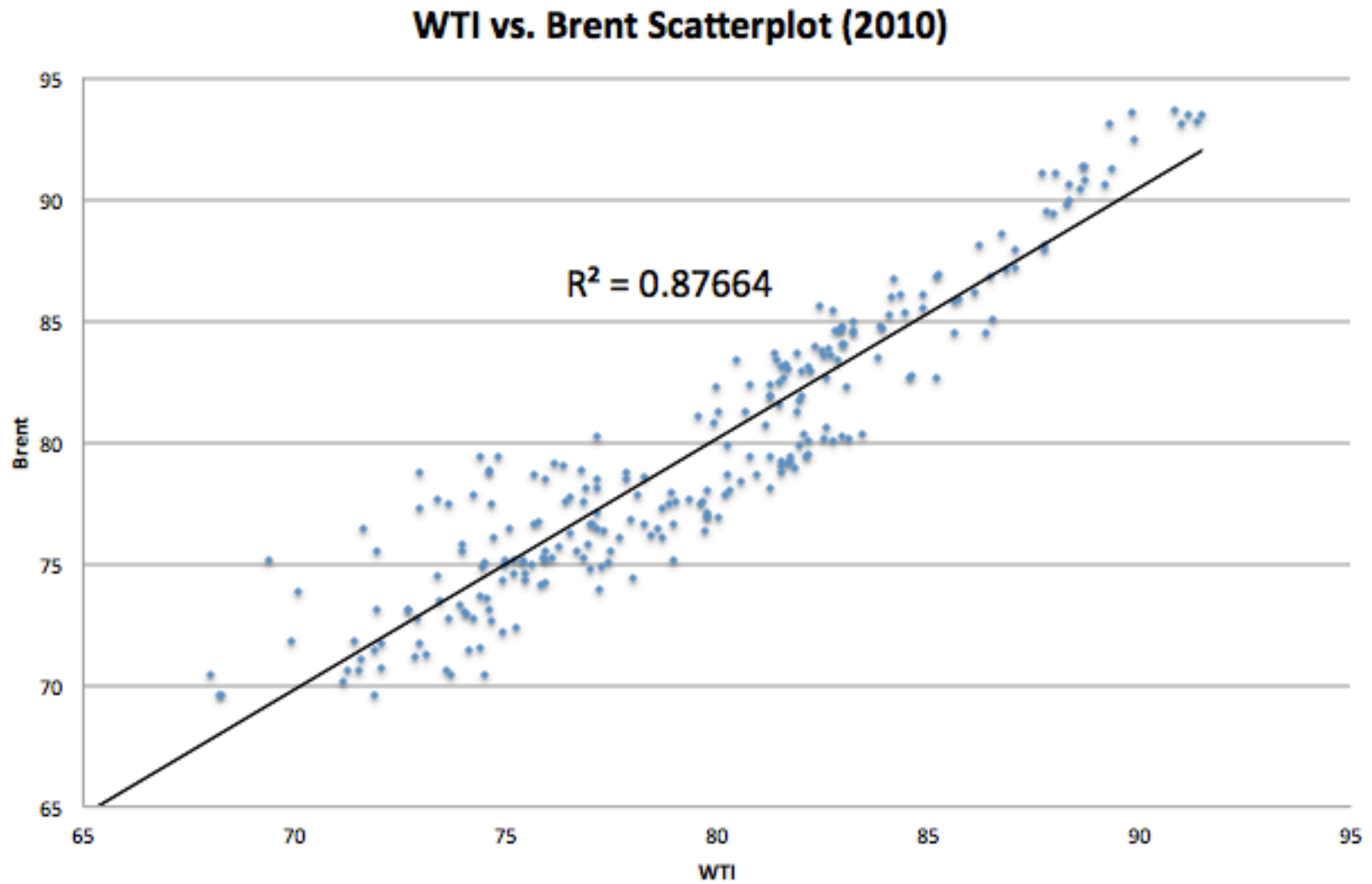
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WTI vs. Brent Scatterplot (2009)



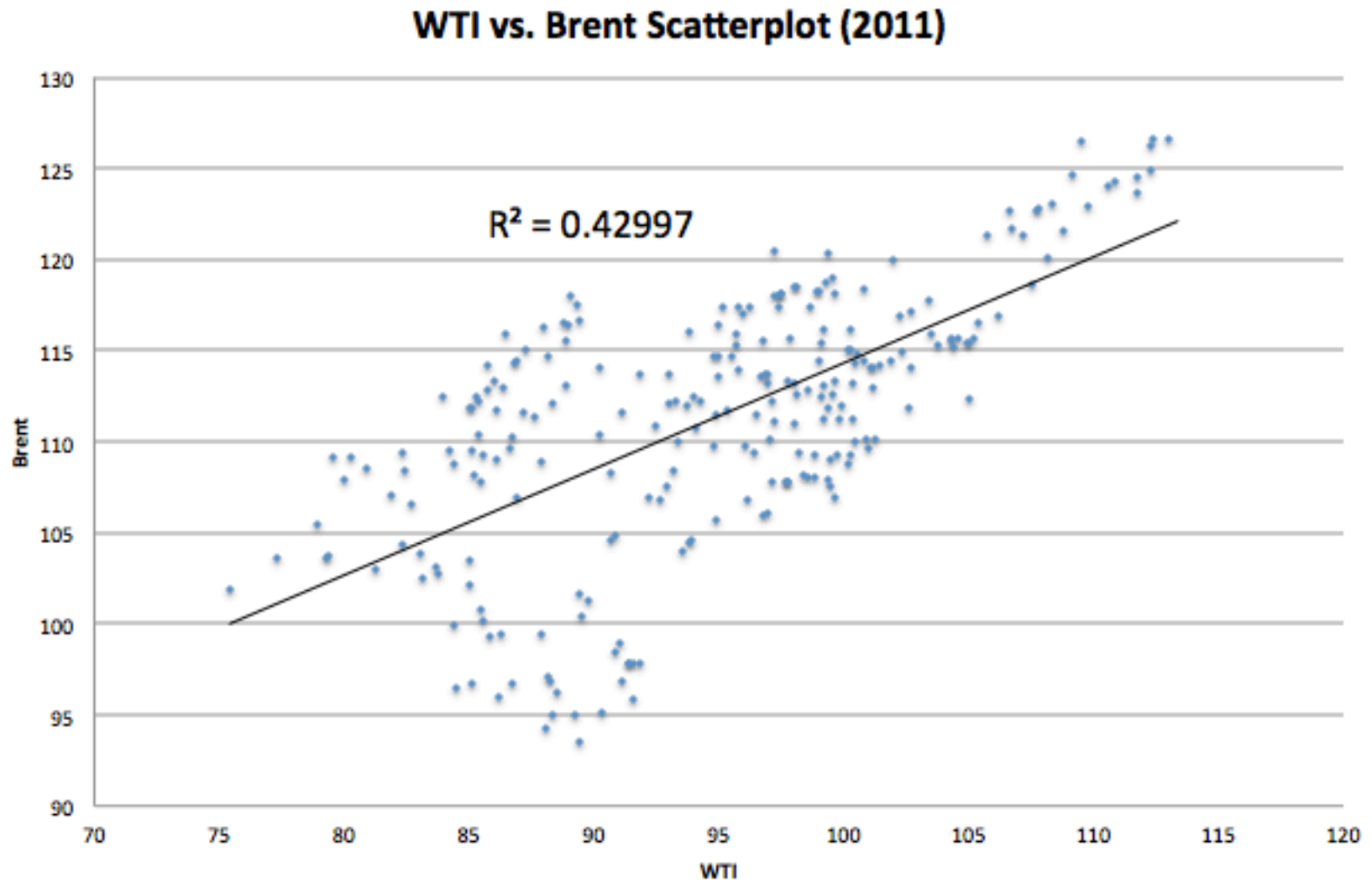
Source: U.S. Energy Information Association

Scatterplots



Source: U.S. Energy Information Association

Scatterplots



Source: U.S. Energy Information Administration

WTI Grade Issues

I. What's Required for Oil to be Called WTI?

Current WTI Grade Specifications

Sulfur Content

- 0.42% or less by weight

Viscosity

- Maximum 60 Saybolt Universal Seconds at 100 degrees Fahrenheit.

Basic Sediment, water and other impurities

- Less than 1%

Gravity

- Not less than 37 degrees American Petroleum Institute (“API”), nor more than 42 degrees API.

Reid Vapor Pressure

- Less than 9.5 pounds per square inch at 100 degrees Fahrenheit.

Pour Point

- Not to exceed 50 degrees Fahrenheit.

- **Important Note:** What comes out of the ground does not necessarily fit these specifications. If that is the case, producers generally blend different crudes to get the desired specs.

II. The North American Oil Boom

We have a lot of oil

- There has been a recent surge in the use of unconventional drilling methods to recover crude oil.
 - “Fracking”
 - Horizontal Drilling
- The Energy Information Administration estimates that the United States has 58 billion barrels’ worth of oil that is technically recoverable with these unconventional drilling methods.
- The Canadian Association of Petroleum Producers estimates that Canadian oil sands bitumen production will double by 2020.
 - Current bitumen production is more than double that of 2005.
- The consulting firm IHS estimated that the newly found sources of oil and natural gas added more than \$1200 last year to the discretionary income of the average U.S. family.
 - This contribution is projected to hit \$2000 by 2015.
- Total United States oil production has increased 29.7% since 2008.
- The International Energy Agency predicted that the United States will overtake Saudi Arabia as the world’s largest oil producer before 2020.

Here's the Problem

- The crude oil that is recovered from unconventional drilling methods, particularly the “Tar Sands” crude from Canada, is very heavy.
- Before the shale boom we were importing various grades of Middle-Eastern crudes that were high quality, and blending them still yielded high quality crudes.
- Now producers are blending the heavier “Tar Sands” crudes with very light crudes.
 - The light crudes are more like condensates than anything else.
- These blends fit the specifications for the WTI contract
 - But they ain't WTI.
- They burn horribly and yield a lot less desirable products for refiners.
 - They don't yield a lot of middle distillates like jet fuel, which are more valuable.
 - Instead, they yield only high and low end distillates, which prompted players in the oil industry to begin calling them “dumbbell crudes”.



III. The Refiners Strike Back

The Crude Oil Quality Association

- The Crude Oil Quality Association (COQA) is a group that lobbies on behalf of refiners and pipeline operators. Their stated mission is:
 - To ensure the quality and consistency of crude oil are maintained from production to refinery.
 - To Expand the definition of quality beyond API gravity and sulfur.
 - To oppose indiscriminate alteration in quality, e.g. blending.
 - To promote better communications between all sectors of the oil & gas industry
- In 2010, the COQA sent a letter recommending the “immediate adoption of seven additional specifications to better define Domestic Sweet crude oil delivered at Cushing, Oklahoma”.
 - Sought crude oil specs that were “meaningful to refiners in more comprehensively defining Domestic Sweet while not limiting the liquidity of the stream”.
- The CME Group, which owns the New York Mercantile Exchange, is now in the process of changing the crude oil specifications for Domestic Crude (WTI).
 - The new specs are expected to be released by the beginning of 2014.

New Specs

On top of the specifications currently in the WTI contract, the COQA has requested the following additions:

Micro Method Carbon Residue

- 2.40% or less

Metals

- Nickel: 8 ppm or less
- Vanadium: 15 ppm or less

50% point

- 470°F – 570°F

Total Acid Number

- 0.28mg KOH/g or less

Light Ends <220°F

- Not more than 19% by mass

Vacuum Residuum >1020°F

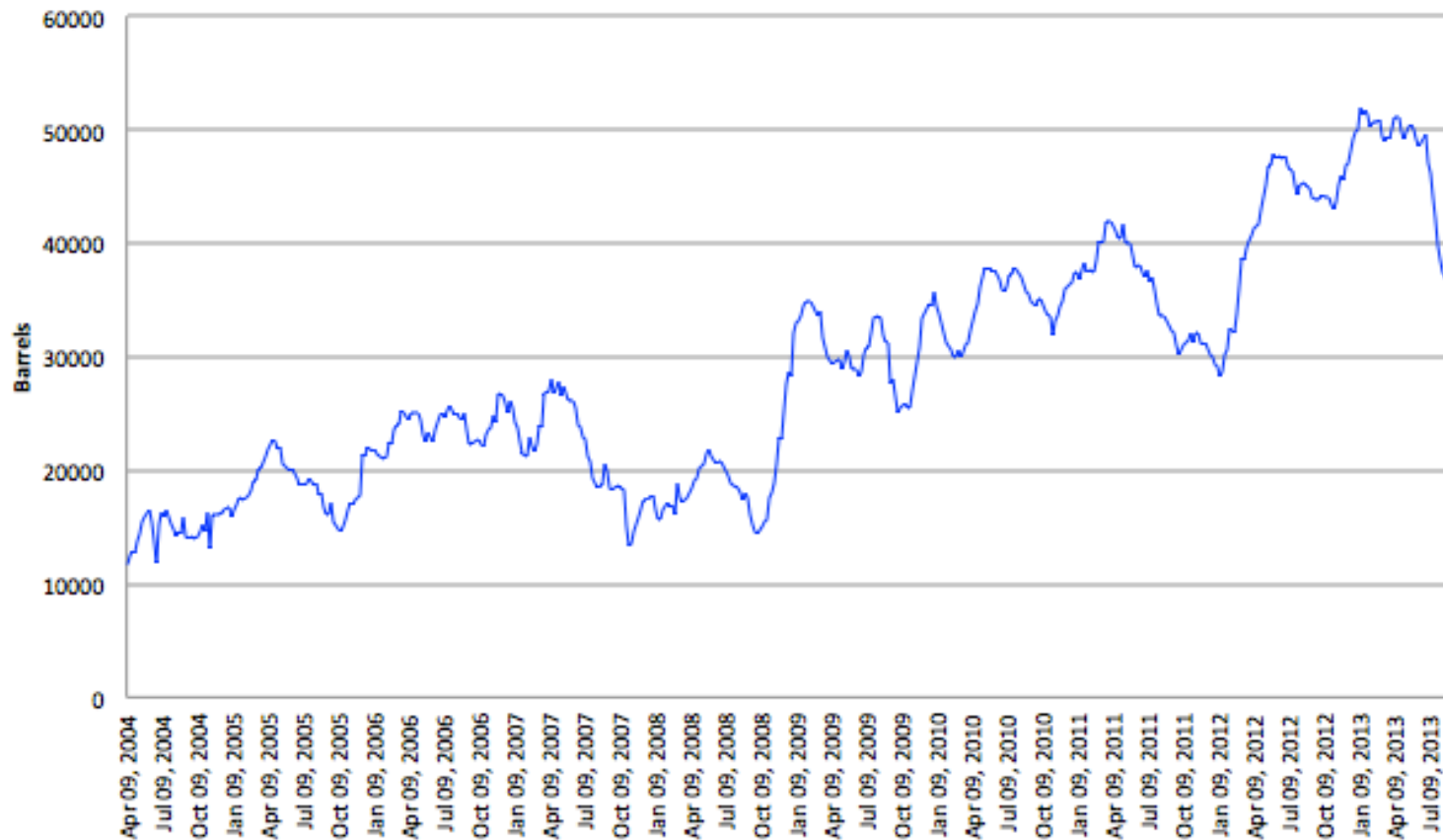
- Not more than 16% by mass

What this Means for the Market

The Supply Glut in Cushing, OK

Cushing, Oklahoma is the price settlement point for WTI on the NYMEX

Weekly Cushing, OK Ending Stocks excluding SPR of Crude Oil (Thousand Barrels)



Source: U.S. Energy Information Administration

How can you Make Money from this Situation?

- In short, nobody knows how much WTI is in Cushing, OK!
 - That's a pretty big deal.
- Some traders see the recent rally in the price of WTI as confirmation of these grade issues.
 - If there's so much WTI in Cushing, the price shouldn't be this high.
- If the new specifications are passed, that would mean WTI would be required to yield certain distillates, which would be very bullish.
- It is speculated that a lot of the crude oil in Cushing, if it were to be tested with the new grade requirements, would not fit the WTI grade specifications.
 - It is likely that a lot of this oil is Canadian Heavy or other crappy light crudes.
 - This creates a huge uncertainty in the actual supply of WTI.
- Ultimately, the price will adjust to reflect actual supplies.
 - Whether that adjustment has occurred in full or will continue is room for debate.
- If you have a thesis on the grade of crude that is in Cushing, you can make a LOT of money.