

**BigPictureTrading**  
macro . technical . options

# MACRO MASTERS

Tutorial 4  
Modules 15-21



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## Module 15

### Currency Impact on Commodities




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### Commodity Markets

- Basic materials, foods and energy
- Economies hinge on the supply of commodities
- Shortages of oil, gas, metals, food would very quickly grind an economy to a halt
- Global trade of commodities is overshadowed by governments, tariffs and political/financial maneuvering
- While most commodities are consumed, some commodities like gold are considered by many as an alternative store of value




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### U.S. Dollar and Commodities

- Also referenced as the petrodollar
- U.S. Dollar is the international currency of trade
- International commodities are predominantly quoted in and settled in \$US dollars globally




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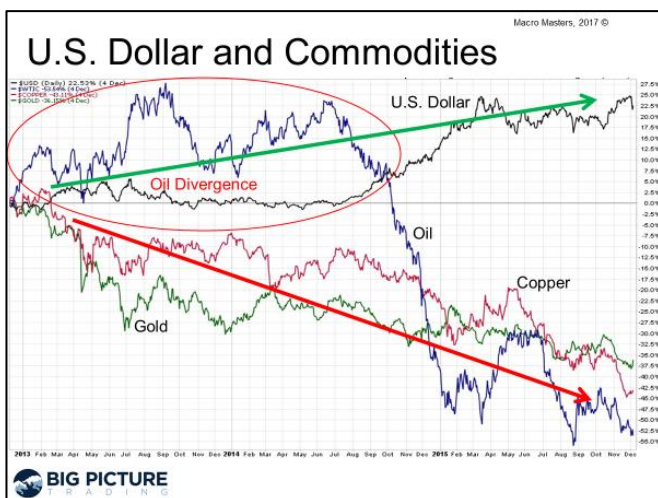
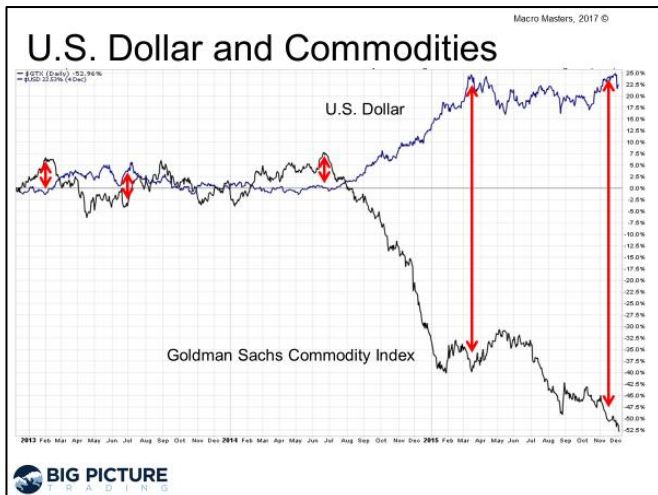
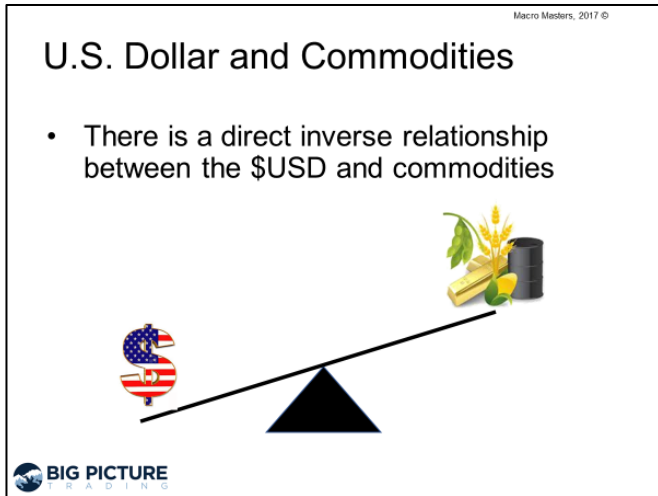
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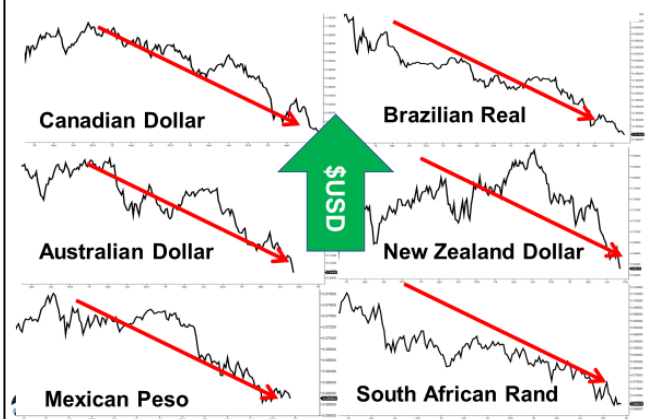


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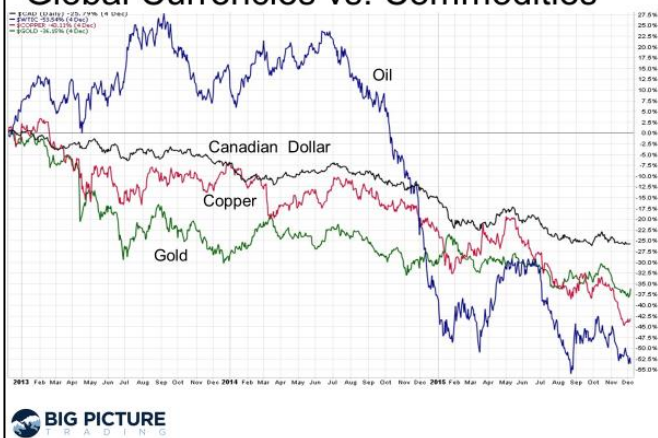
- 
- A balance scale is shown, tilted towards the right. On the left pan, there is a large US dollar sign with the American flag pattern. On the right pan, there is a globe, several gold bars, and some wheat stalks. The scale is set against a white background.

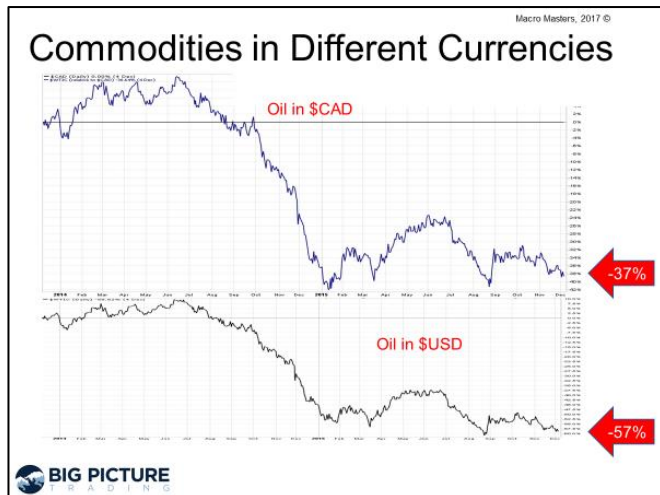
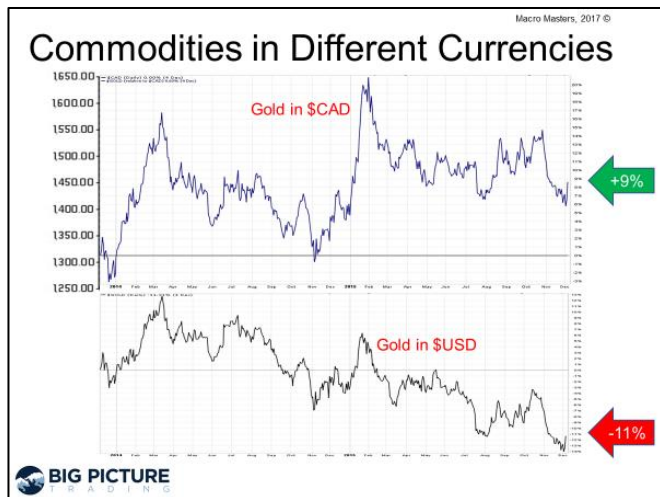

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## Module 16

### Energy Markets




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## Energy

- Different types of Energy
  - Petroleum
  - Natural Gas
  - Coal
  - Nuclear
- Oil is the most influential commodity in the world due to its size




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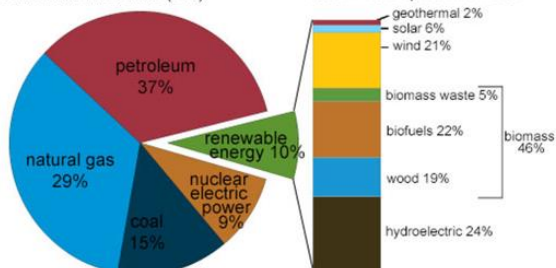
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## U.S. energy consumption by energy source, 2016

Total = 97.4 quadrillion  
British thermal units (Btu)



Note: Sum of components may not equal 100% because of independent rounding.  
Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2017, preliminary data




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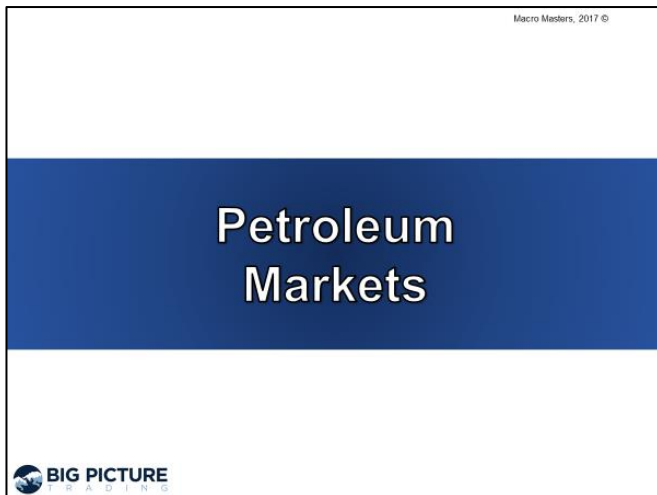
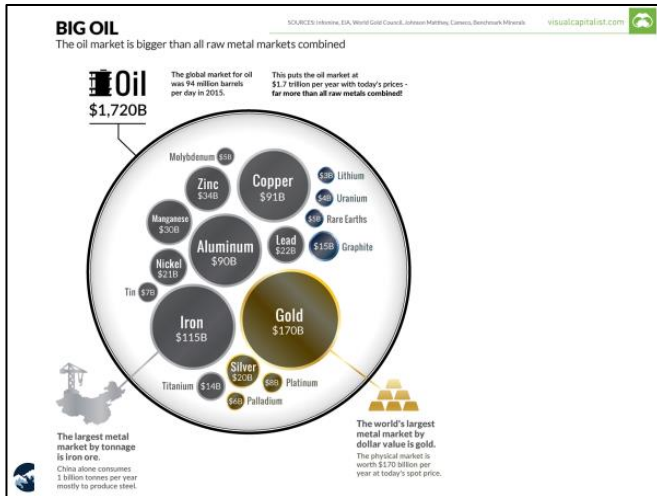
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## West Texas Intermediate

- North American benchmark in oil pricing
- Also considered “light grade” because of its relatively low density

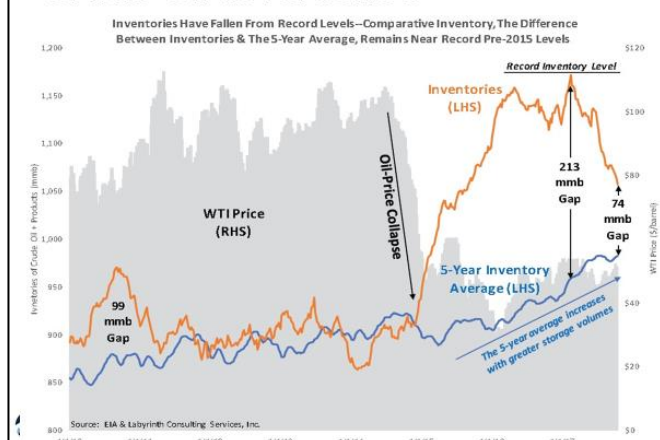


## Crude Oil Inventories

- Weekly EIA Petroleum Status Report
- Petroleum supply data include field production, imports and exports, inputs and production at refineries and blending terminals, production from gas processing plants and fractionators, and inventories at refineries, terminals, pipelines, and fractionators



## Crude Oil Inventories



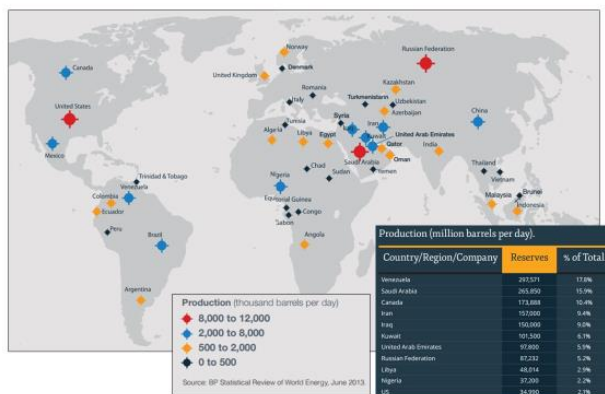
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## Crude Oil Term Structure

- Based on production and supply, each futures contract reflects a fair price
- In a normal market, oil should trade in contango where farther out months should reflect storage costs
- When the term structure goes into backwardation, it reflects short term supply or future supply deficits/excesses



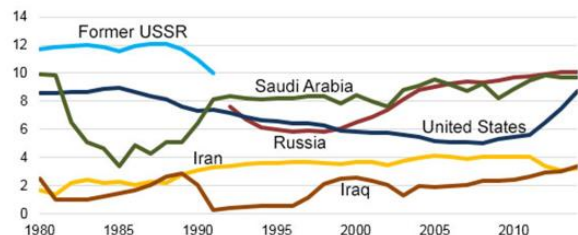
## Global Oil Production



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## Top five crude oil producing countries, 1980–2016

million barrels per day



## Crude Oil Flows



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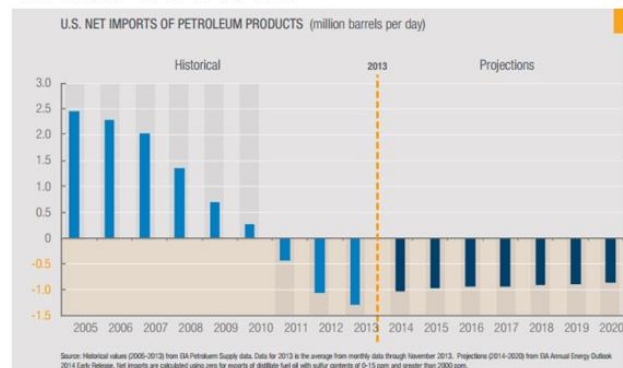
## Crude Oil Flows into U.S.



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## Crude Oil Flows

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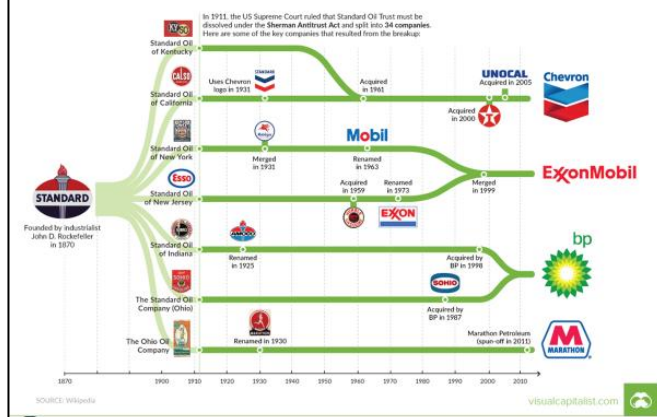
## OPEC

- Was created in retaliation against “Consortium for Iran” cartel
- Nicknamed the Seven Sisters cartel that was brought together by the US State Dept.
- Cartel consisted of the modern day BP, Chevron, Texaco, Royal Dutch, Exxon
- OPEC: Organization of the Petroleum Exporting Countries
- Includes Algeria, Angola, Ecuador, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela



## THE EVOLUTION OF STANDARD OIL

Following the remnants of John D. Rockefeller's oil juggernaut



## Geopolitics Dominate

- Geopolitical landscape dynamically changed since the shale revolution
- Many global oil producers are state owned and/or state sponsored/supported
- Many countries depend on oil revenues, not just to balance government budgets, but to maintain the countries foreign reserves for trade purposes
- This implies that standard supply/demand economic rules do not naturally apply



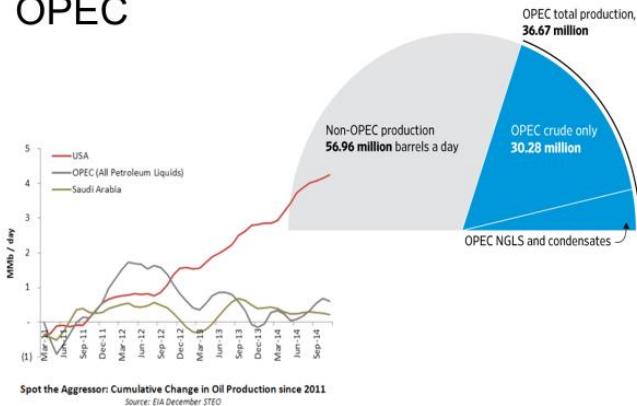
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## Example of Modern Geopolitics

(UK Daily Telegraph Jan, 2016): Kirill Dmitriev, head of Russia's sovereign wealth fund, said it is still too early for a deal with OPEC. "Agreement is possible, but at the right time," he said. Mr. Dmitriev said there are too many conflicting agendas at the moment. "Some players believe that in 15 to 20 years, there won't be much need for oil because of electric cars. 70pc of oil is consumed in transport, and 42pc of that is in cars," he said. He said others want to "punish" US shale, or aim to block the entry of newcomers. "When all this has played out in a year, it will be much easier to sit down and reach an agreement."

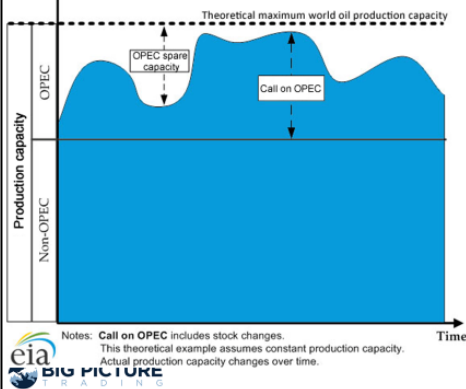


## OPEC



## World oil market Spare capacity and call on OPEC

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## Western Canadian Select

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- Heavier blended crude oil composed of bitumen blended with sweet synthetic
- Sells at a discount to WTI
- Profits have to further account for government royalties and costs



## THE CHANGING ANATOMY OF U.S. OIL IMPORTS

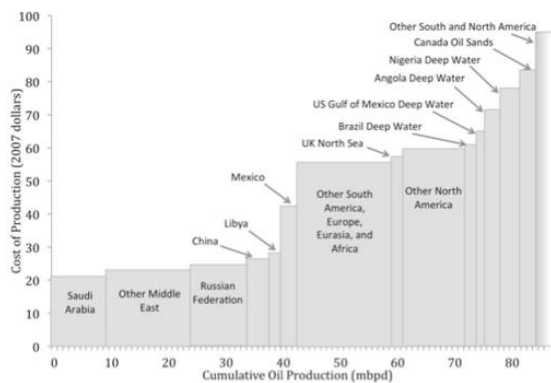
In just 10 short years, Canada has surpassed the once mighty OPEC

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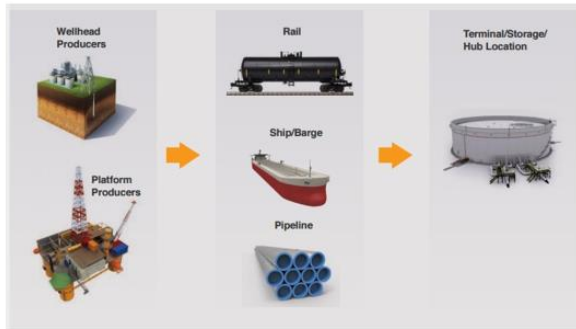
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## Production Cost



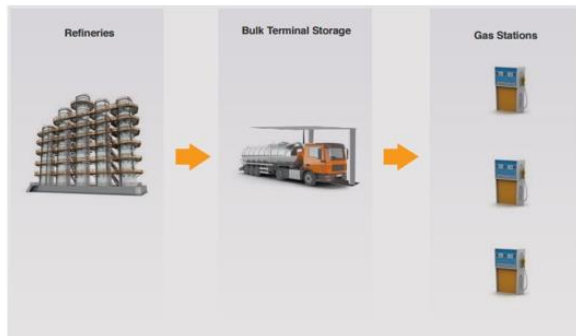
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## Stages of Oil Production



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## Stages of Oil Production



**BIG PICTURE**  
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The diagram illustrates the natural gas supply chain, divided into three main stages: production, transmission, and distribution.

- Production:**
  - Oil and gas wells and gas wells feed into a separation process.
  - Separation yields oil, water, and gas.
  - The gas is sent to a gas processing plant.
  - From the gas processing plant, products removed, nonhydrocarbon gases removed, and vented and flared gas are managed.
- Transmission:**
  - The gas is transported via a compressor station.
  - It can be stored in an underground storage reservoir.
- Distribution:**
  - The gas is sent to main line sales, where odorant is added.
  - It is then distributed by a natural gas company.
  - Alternatively, it can be stored in LNG storage.
  - The final destination is consumers, represented by factories and houses.

**Major trade movements 2013**  
Trade flows in billion cubic metres (bcm)

Legend:

- US
- Canada
- Mexico
- S. & Cent. America
- Europe & Eurasia
- Middle East
- Africa
- Asia Pacific

Trade movements:

- Pipeline gas
- LNG
- Exporter

Source: Includes data from Cofegas, CIGS, FIE MENAPAS services, IHS CERA, PRGA Energy Group



## Liquid Natural Gas

- Liquefied natural gas (LNG) is natural gas that has been cooled to a liquid state, at about - 260°Fahrenheit, for shipping and storage. The volume of natural gas in its liquid state is about 600 times smaller than its volume in its gaseous state. This process, which was developed in the 19th century, makes it possible to transport natural gas to places pipelines do not reach.



# Uranium



# Uranium

- The fuel most widely used by nuclear plants for nuclear fission
- Uranium is considered a non-renewable energy source, even though it is a common metal found in rocks worldwide
- Nuclear power plants use a certain kind of uranium, referred to as U-235, for fuel because its atoms are easily split apart
- Although uranium is about 100 times more common than silver, U-235 is relatively rare



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## Module 17

### Grains, Basic Materials and Precious Metals




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### Agricultural Products

- Key Agricultural products include Corn, Soybean, Wheat and Cotton
- Has a material influence on inflationary / deflationary forces through food prices and clothing
- Often volatile because the commodity can spoil and be vulnerable to things like seasonality and weather




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### Agricultural Products

- Tracking the Grains Index: SPGSGR

SBP GSCI GRAINS INDEX, D, SP- O 308.81 H 311.15 L 308.81 C 310.65  
09A (US, close) - 314.524




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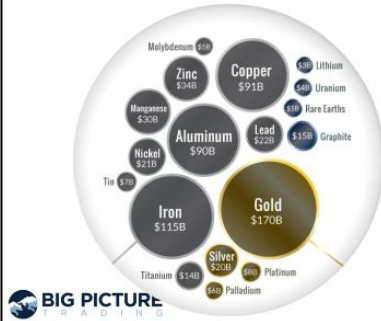
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## Basic Materials

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- Iron Ore, Aluminum, Zinc and Copper are widely used metals that are traded on the markets



## Copper

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- Because iron ore is controlled by a few powerful global companies, it is relatively illiquid to track for short term price changes
- Copper markets are arguably the largest liquid market in the industrial metal / basic material space
- Many analysts coin it as Dr. Copper as its price movement often is a leading indicator or global growth

**BIG PICTURE TRADING**

## Iron Ore

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### Largest Producers



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# Iron Ore Companies


The top 10 iron ore mining centers, ranked by ore mined in 2014 calendar year

	Major Owner	Country	Province / State	Iron ore production in 2014, Mt
Hamersley	Rio Tinto	Australia	Western Australia	163
Caraas	Vale	Brazil	Para	120
Chichester Hub	Fortescue Metals	Australia	Western Australia	90*
Yandi	BHP Billiton	Australia	Western Australia	79
Mount Whaleback	BHP Billiton	Australia	Western Australia	77
Solomon Hub	Fortescue Metals	Australia	Western Australia	58*
Area C	BHP Billiton	Australia	Western Australia	57
Hope Downs	Rio Tinto / Hancock	Australia	Western Australia	43
Mariana Hub	Vale	Brazil	Minas Gerais	39
Sishen	Anglo American	South Africa	Northern Cape	36

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# Precious Metals

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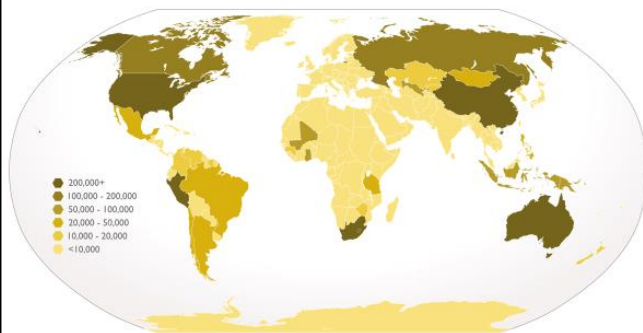
## Precious Metals

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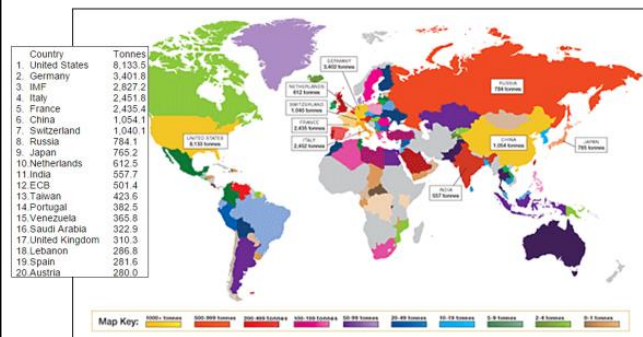
- Rare metals that have a high economic value
- Used through history as a store of value and medium of exchange
- Gold, Silver, Platinum and Palladium
- Increasingly used in specialty manufacturing and production
- Primary function is still a store of value



## Global Gold Production



## Global Gold Holdings



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## Gold Leasing

- Unlike basic materials that are consumed, gold is held as a monetary asset
- There is a high cost to safety and storage
- Central banks and Bullion banks started issuing paper gold contracts as a lease on the gold
- They subsequently can invest the proceeds and earn interest
- Gold lease rate = LIBOR – Gold Forward Rate




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## Gold Swaps

- Gold swaps involve the exchange of the floating commodity spot price, for a set price over an agreed-upon period
- "In gold swaps, gold is exchanged for cash and a firm commitment is made by the monetary authorities to repurchase the quantity of gold exchanged at a future date." Such gold swaps generally are undertaken between monetary authorities and with financial institutions. Gold swaps are typically undertaken when the cash-taking monetary authority has the need for foreign currency but does not wish to sell outright its gold holdings.

Paragraph 100 of the International Reserves and Foreign Currency Liquidity Guidelines for a Data Template (Guidelines)




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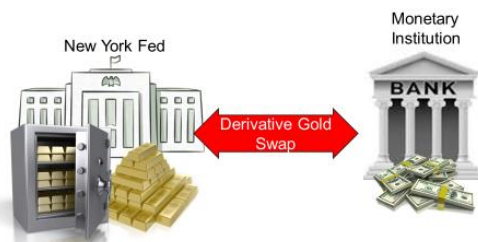
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## Gold Swaps



- Gold remains in the vault of the central bank, the rights are transferred to the monetary institution with a commitment with a future date to unwind the deal




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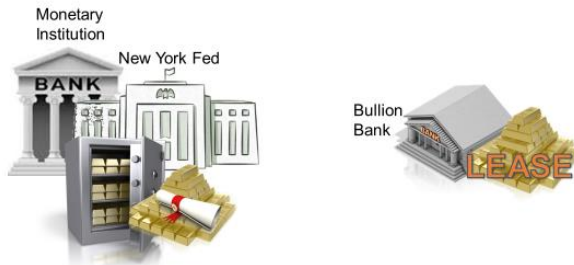
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## Gold Leasing

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- Gold remains in the vault of the central bank, the rights are transferred to the bullion bank



## Fractional Gold Lending



Earning fees on the storage cost it is charging the client for gold that is often not in the possession of the bank

## Leveraged Profit



Earning interest on the storage cost it is charging the client and investment return on the proceeds

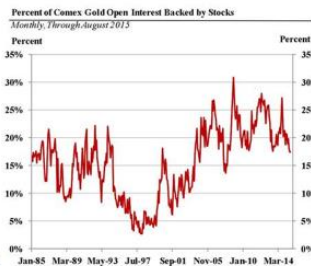
## IMF On Treatment of Gold Swaps/Deposits

- Similar double counting of gold can occur when a bullion bank sells outright gold acquired through gold deposits/loans from other monetary authorities
- These particular accounting principles could pose a problem when international statistical standards allow swapped/deposited gold to remain in the reserve assets of the gold provider

IMF COMMITTEE ON BALANCE OF PAYMENTS STATISTICS RESERVE ASSETS  
TECHNICAL EXPERT GROUP (RESTEG) ISSUES PAPER (RESTEG) # 11 pg.4

## Gold Futures

- Derivatives have opened the window for many products to be given the performance of gold without owning the gold



## Gold Leasing and Fractional Lending

- There are some that speculate that there could be as much as 100 paper gold claims for every 1 one ounce of gold
- Like all fractional lending, based on the assumption that investors won't all ask for the gold at once
- In places like COMEX gold futures, they have a provision that in the case the gold is physically demanded, they can settle in cash





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## Module 18

### Economic Data: Growth




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### Study of Macro Economic Data

- Retail investors can access most economic data for free from
- [www.tradingeconomics.com](http://www.tradingeconomics.com)




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### GDP – Gross Domestic Product

- An estimate of the total dollar value of all goods and services produced over the specified period of time (usually a year)
- No metric is perfect or without criticism, but GDP is an internationally accepted method that allows international comparisons

United States	\$18,569 B
Euro Area	\$11,886 B
China	\$11,199 B
Japan	\$ 4,939 B




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## GDP – Growth Rates YoY

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- The measure of the rate of growth of the economy
- The numbers are reported as the “Nominal” GDP Growth
- Real GDP Growth is nominal minus inflation

	GDP	Nominal GDP YoY	Inflation	Real GDP YoY	Debt to GDP
United States	\$18,569 B	2.30%	2.00%	0.30%	106.10%
Euro Area	\$11,886 B	2.60%	1.50%	1.10%	89.20%
China	\$11,199 B	6.80%	1.70%	5.10%	46.20%
Japan	\$ 4,939 B	2.10%	0.20%	1.90%	250.40%



## Debt Paradox and Financial Engineering

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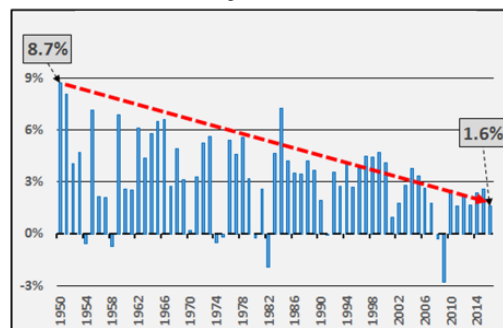
- How much growth is organic and real?
- How much is simply the dilution of money (changing the denominator) to create perceived nominal growth?
- With debt exponentially growing faster and incremental growth slowing, how long until central banks run out of options?



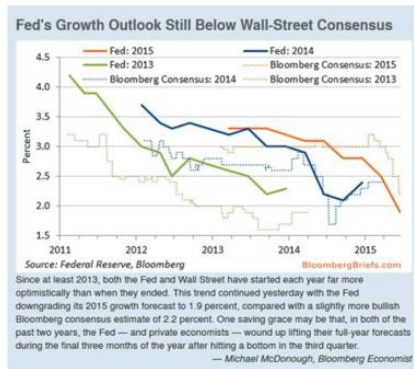
## Debt Paradox and Long-Term GDP Trends

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US Real GDP Annual % change 1950-2016



## Federal Reserves Growth Forecast



## Economic Growth

- Velocity of money is essential to growth
- Through fractional-reserve lending, excess bank reserves need to be lent out to keep the velocity going
- Slowdown in borrowing leads to economic contraction
- Stimulation comes from incentivizing new borrowing



## Economic Contraction

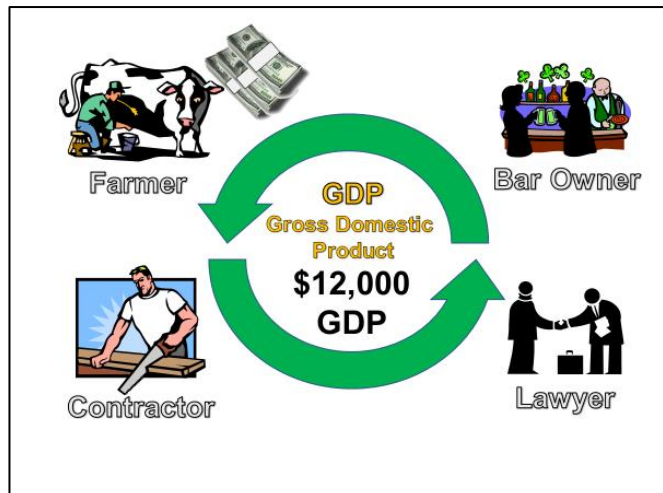
- This is why austerity measures substantially hamper any chance of economic recovery
- The only way the system works is to spend your way into a recovery
- The moment the credit system stalls, the money supply stalls and economies plunge into deep recessions or depressions



## Velocity of Money

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- The average frequency with which a unit of money is spent on new goods and services produced
- Economic activity vs. a given money supply





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## Module 19

### Economic Data: Employment




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### Employment

- Full employment helps drive credit growth and economic growth
- Creates more credit worthy consumers
- Keeps default rates and non-performing loans low




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### Jobs Numbers

- Non-Farm Employment Change
- Average Hourly Earnings
- Unemployment Rate
- Weekly Unemployment Claims
- ADP Non-Farm Employment Change




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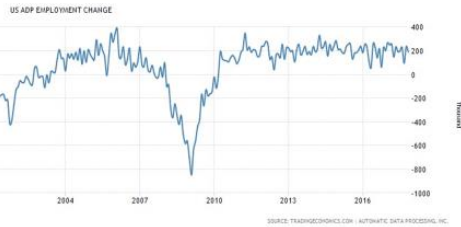
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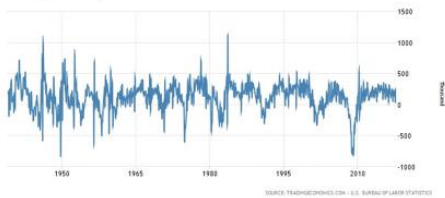
## ADP Non-Farm Employment Change

- Measure of monthly change in private employment based on payroll data
- Released days before non-farm, often used as a indication of where the number is coming in



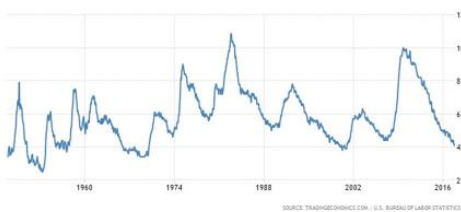
## Non-Farm Employment Change

- Released first Friday of the month
- Compiled for goods, construction and manufacturing companies and measures the change in the number of employed people during the previous month



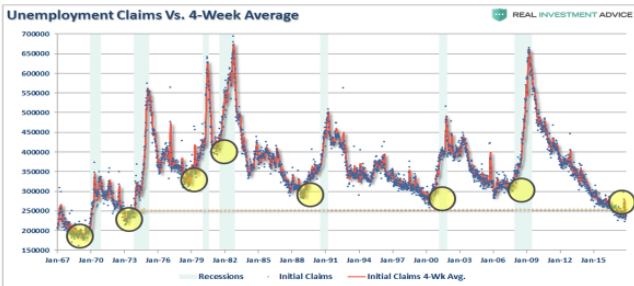
## Unemployment Rate

- Released first Friday of the month with the Non-farm
- Percentage of the total work force that is unemployed and actively seeking employment during the previous month



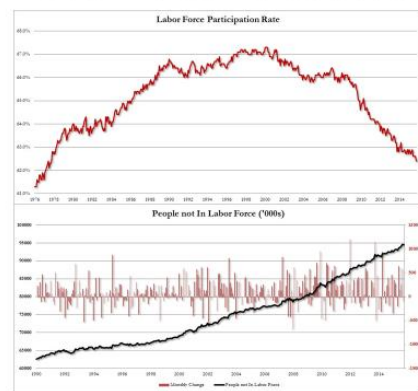
## Unemployment and Recessions

Low unemployment levels and low jobless claims have historically noted the peak of economic growth and warned of a pending recession.



BIG PICTURE  
TRADING

## Labor Force Participation Rate



While unemployment is low, we are seeing a demographic change which results in a smaller work force

BIG PICTURE  
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## Quality of Jobs

With the competitive global labor markets and rapid adoption of technology and robotics, there is a growing trend in the reduction in the quality of jobs



BIG PICTURE  
TRADING



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## Jobs Number Criticism

- There is far too much variance in the:
  - Quality of jobs
  - Part time vs. Full time
  - Participation rates, can you assume that just because someone is too discouraged to look for a job, that they don't want one?



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## Module 20

### Economic Data: Business Growth




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### Manufacturing Numbers

ISM = Institute of Supply Management

- ISM Non-Manufacturing PMI
- ISM Manufacturing PMI
- Numbers above 50 = expansion
- Numbers below 50 = contraction




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### ISM Non-Manufacturing PMI

- PMI = Purchasing Managers' Index
- Indicator of the overall economic condition in the non manufacturing sectors
- Often used as a way to gauge where we are in the business cycle
- Can be used as a leading indicator that the economy has begun an expansion or contraction




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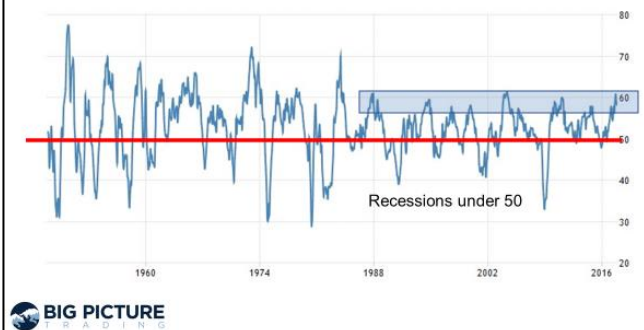
## ISM Non-Manufacturing PMI

- Historically ISM peaks near 60
- This is important because the velocity and trend of growth is important



## ISM Purchasing Managers Index PMI

- Indicator of the overall economic condition in the manufacturing sectors

[illegible]

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## Module 21

### Economic Data: Inflation




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### Inflation

- Inflation is arguably the biggest fear of central banks
- It forces them to contract money supply rapidly, often damaging business and confidence




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### Commonly Tracked Inflation Numbers

- Inflation Rate
- CPI – Consumer Price Index
- PPI – Producer Price Index
- PCE– Personal Consumption Expenditures




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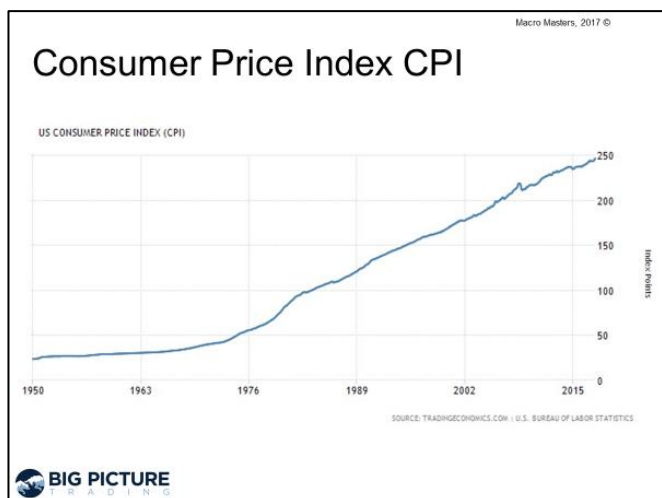
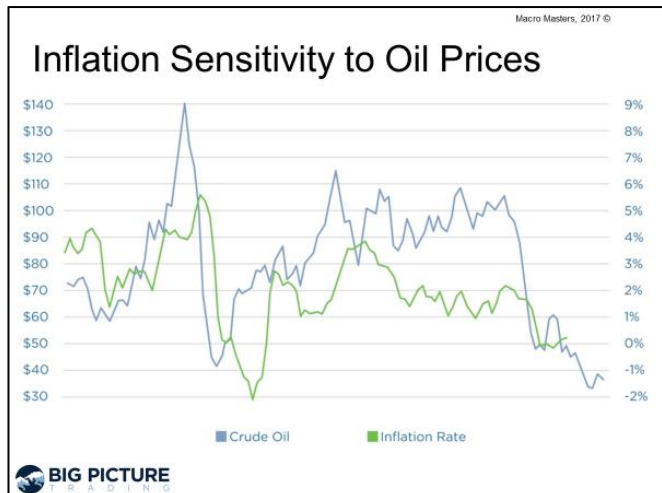
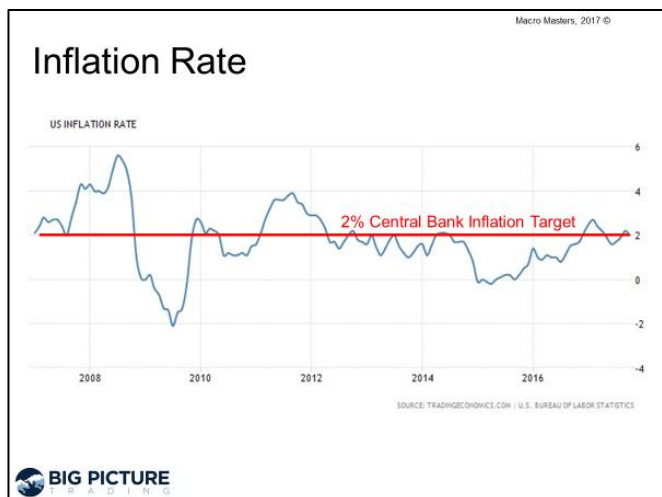
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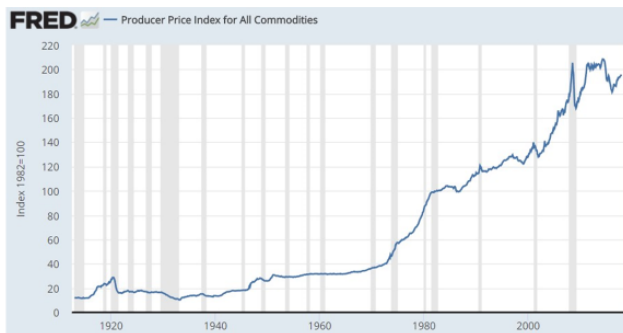
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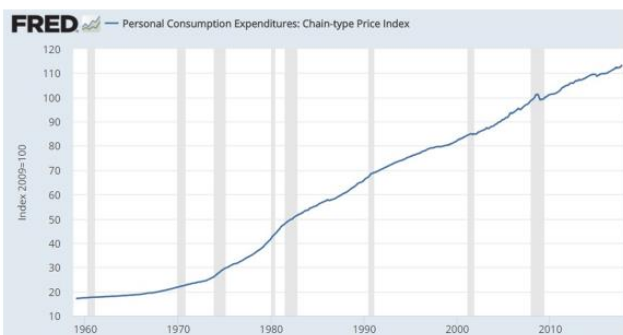
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## Producer Price Index PPI


**BIG PICTURE**  
 T R A D I N G

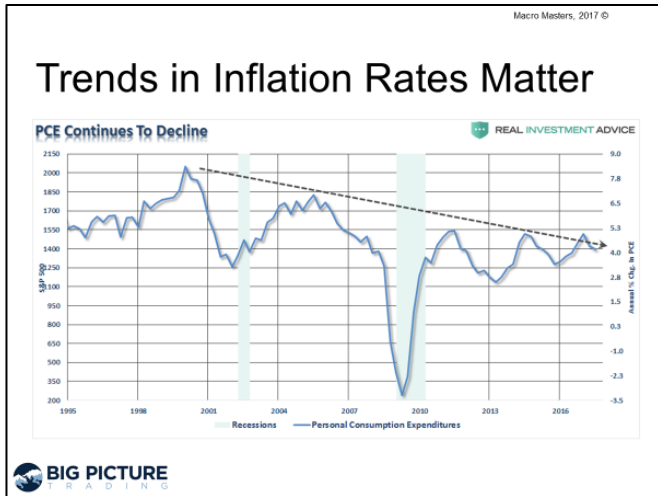
## PCE Price Index PCE


**BIG PICTURE**  
 TRADING

## Inflation Number Criticism

- Consumer prices have benefited from massive global wage deflation
- Food has price fixing and subsidies to keep it from rising
- Chained CPI and substitution rules skew the numbers
- The calculation method has been materially modified once in the 80's and once in the 90's


**BIG PICTURE**  
 T R A D I N G




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