December 15, 2014
R.W.L

Business Notes

Oil Price Collapse 2014 – or

"How the invisible hand was forgotten by the Shale oil drillers"

WTI Oil Price $55.91/b
Dow Industrial 17,180
US 10 Year 2.12%

Summary

The recent collapse in oil prices is a classic supply and demand cycle, unlike the collapse in 2008/9, which was more related to the commencement of a worldwide economic recession.

- World oil prices have collapsed over the past 6 months, (Fig.1) primarily due to increases in US oil production from shale plays, developed using horizontal drilling.
- Thoughts that the oil price collapse was due to a US/Saudi Arabian conspiracy to damage the economies of Russia and Iran are ludicrous. The main losers are the US shale industry, Saudi Arabia and its Gulf state allies!
- Sluggish demand post 2009, has influenced the oil balance. Despite a significant economic recovery, oil prices and gasoline prices remained at high levels, greatly reducing worldwide demand overall, but especially in the United States. (Fig.2)
- A price recovery will require a substantial drop in shale drilling and a drop in actual US oil production, or significant slowdown in US oil production growth.
- The price drop is a major worldwide benefit to energy consumers which should result in increased economic growth and lead to another oil boom at the end of this business cycle, probably in 2016.

Growth in Production

- With the success of horizontal drilling and improved fracking in the Bakken, Eagle Ford and renewed drilling in the Permian basin, (Fig.3) US oil production increased by 3.5 Million barrels over the past 3 years. (Fig.4)

FIG 1

WEST TEXAS INTERMEDIATE

In U.S. dollars per barrel, 2014

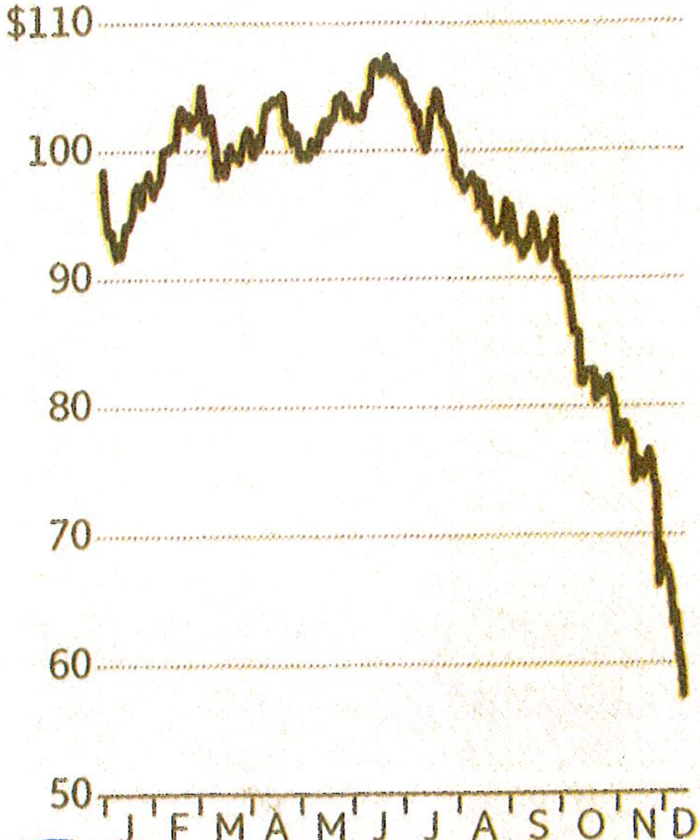


FIG 3

U.S. OIL PRODUCTION, KEY REGION

In millions of barrels per day

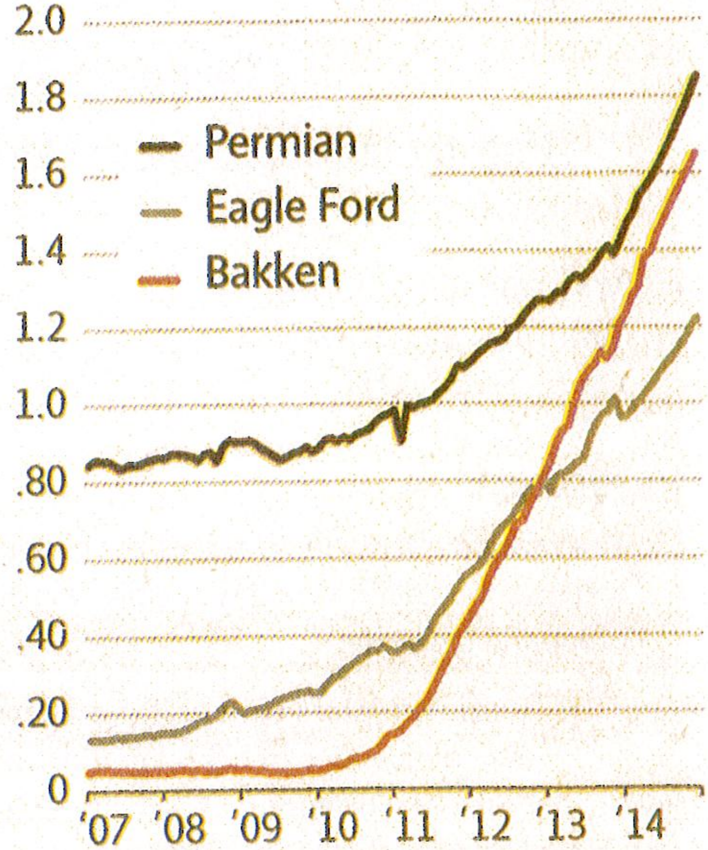
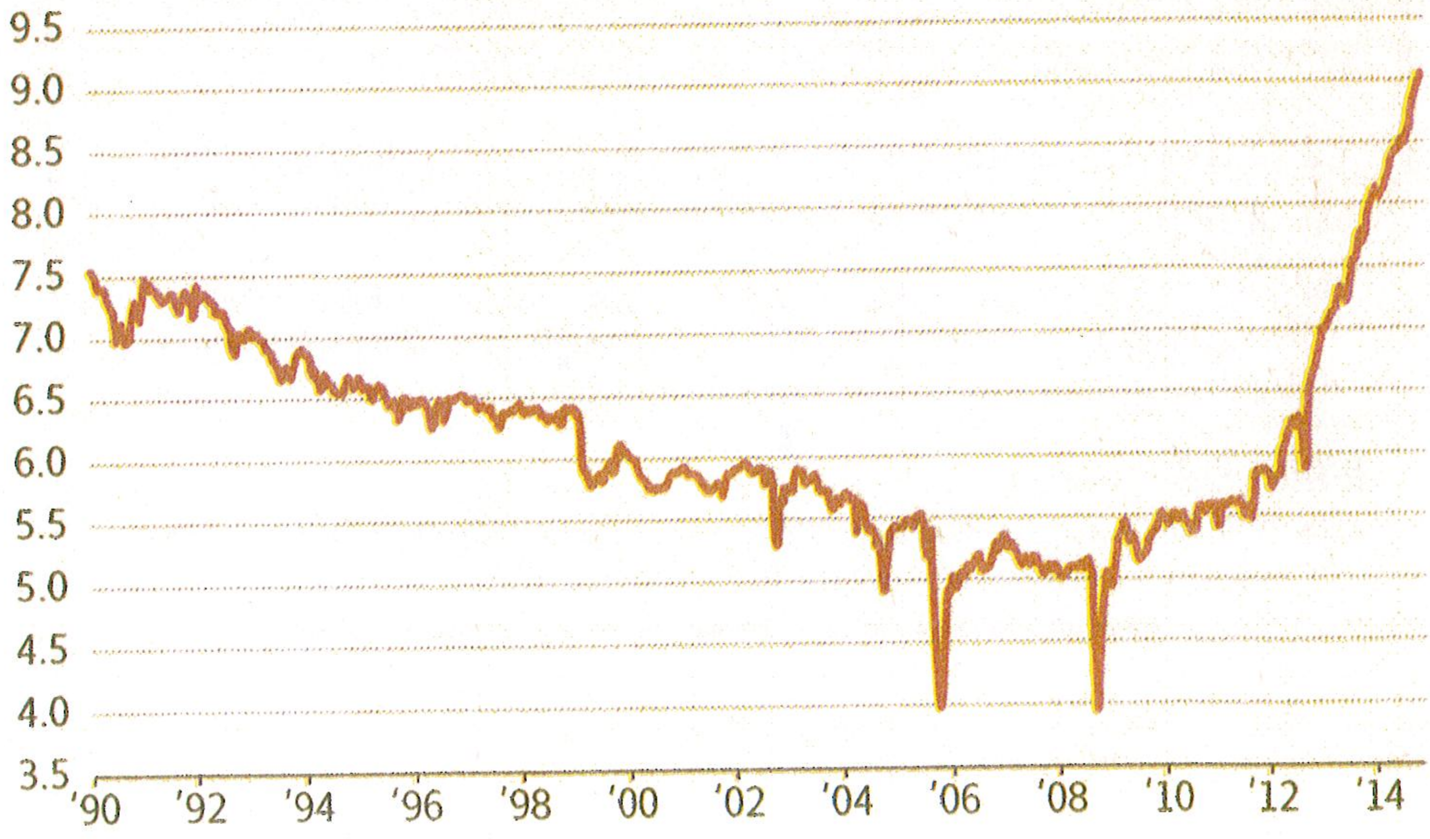


FIG 4

U.S. CRUDE OIL PRODUCTION

In millions of barrels per day (four-week moving average)



Indeed due to unconstrained supplies, the US showed the largest worldwide incremental growth in oil production in the past five years. (Fig.5)

- Growth has been sustained due to high oil prices, greatly improved drilling and fracking technologies and finally abundant availability of inexpensive capital and junk bond financing for independent energy companies.
- Shale drilling has excellent economics at $100/barrel, and the sustained higher prices have led to a huge increase in drilling rigs targeting oil. (Fig.6)
- Natural gas incidentally has been severely impacted by the success of the Marcellus play in the Appalachian region and has resulted in a lengthy period of low gas prices and greatly reduced drilling. A similar scenario awaits the oil business.

Drop in Price - OPEC

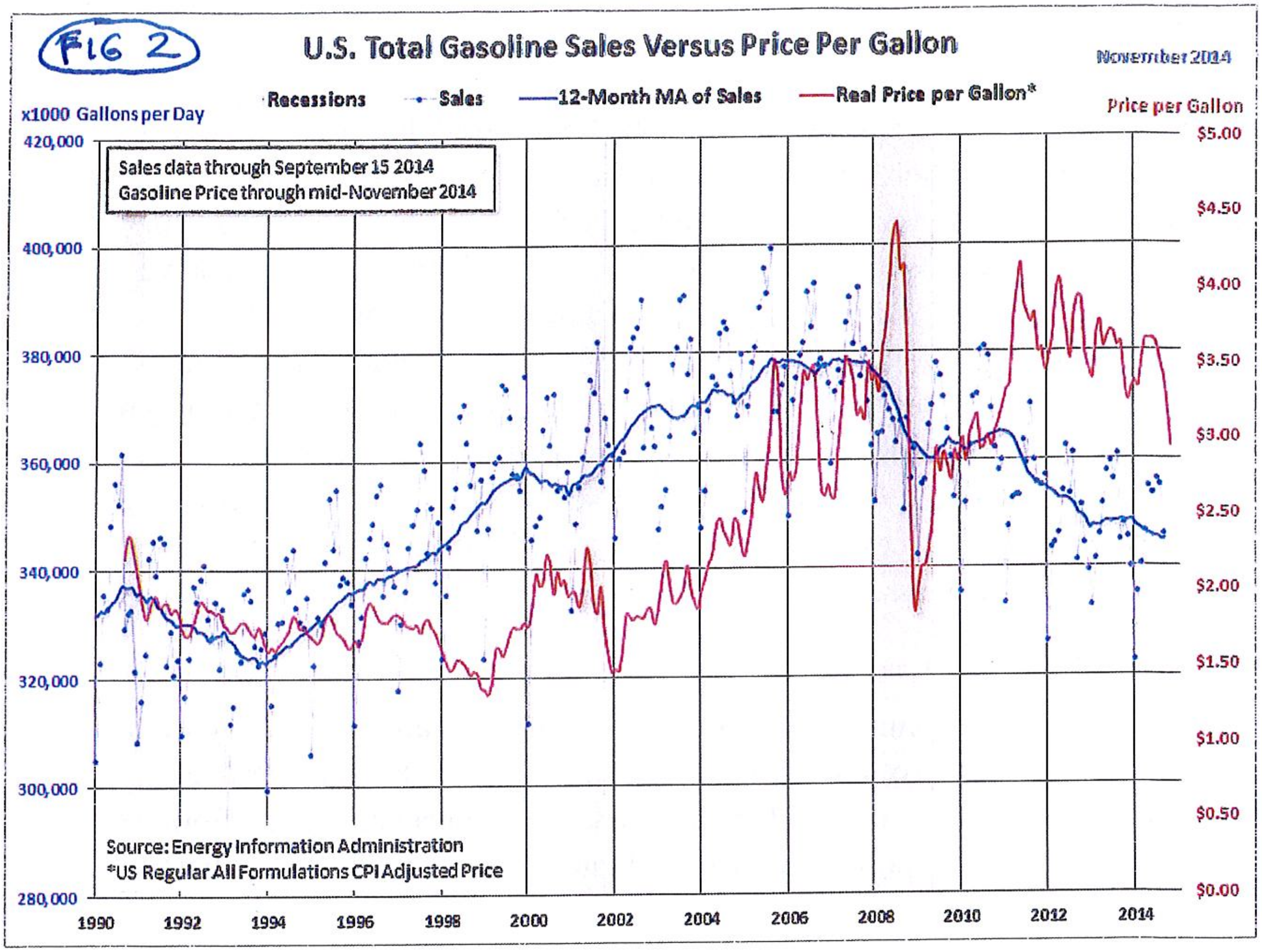
- The drop in price commenced in July, 2014 and gradually built momentum as continued reports of the growth in higher US oil production appeared.
- With press headlines of US oil independence, and potential exports from 'Saudi America', imports to the United States from a variety of suppliers were steadily reduced.
- Clearly the OPEC producing group must have become more apprehensive that the growth in US production could continue and, with increasing infrastructure and steady reduction in drilling and service costs, could be a major danger to OPEC's long term attempts to stabilize both prices and maintain market share.
- In light of the price collapse, Saudi Arabia's position was absolutely correct in 'washing its hands' of any decision to cut back supplies, principally from their analysis that only a major collapse in US horizontal drilling could restore stability and result in a resumption in the growth in prices.
- My view is that Saudi Arabia will monitor the degree of collapse of US shale activity and will intervene when the inevitable massive capitulation is apparent.

Collapse of US shale oil drilling

The unraveling of the US shale play should be marked by:

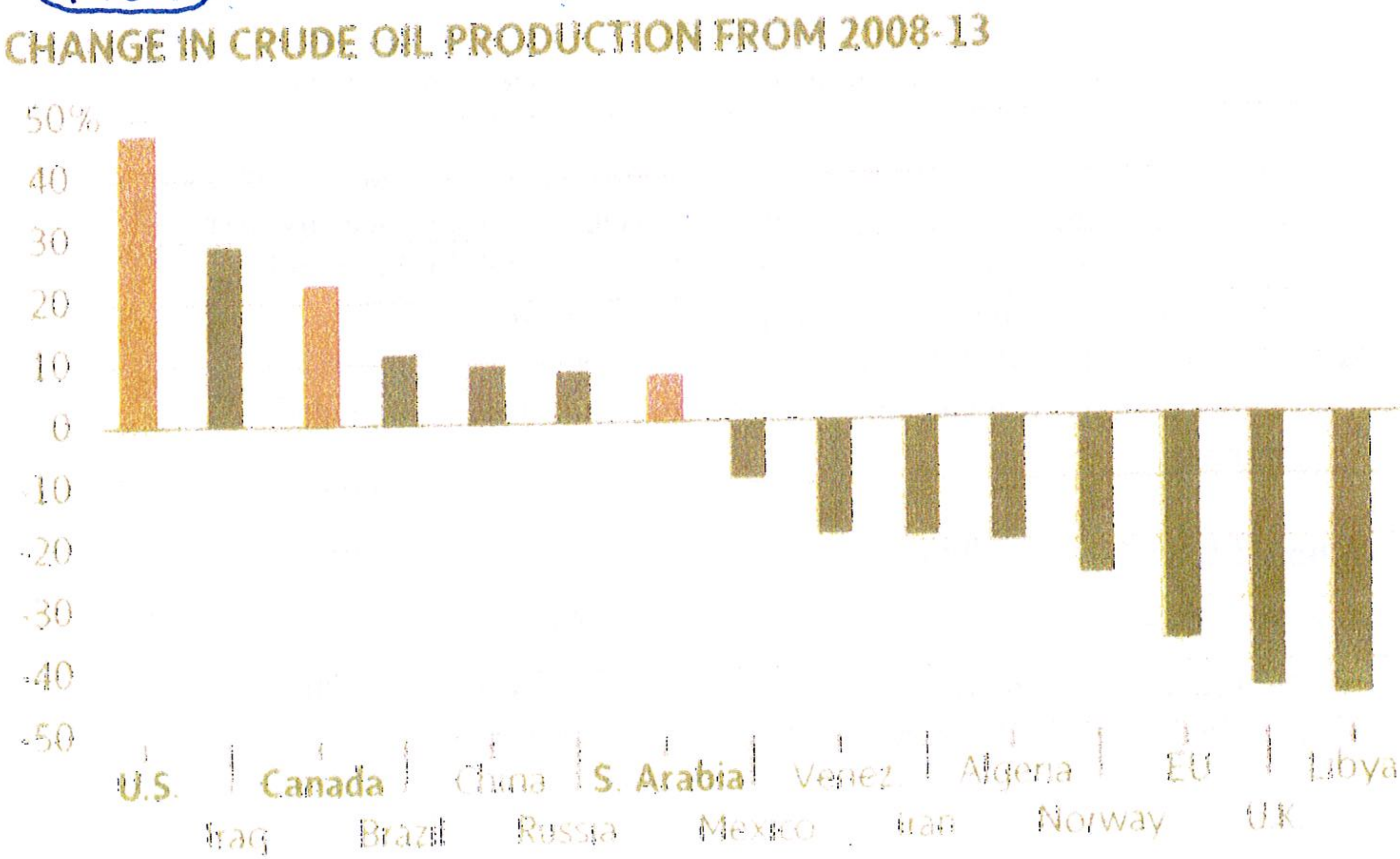
- A substantial drop in drilling licenses. This has already occurred with reported US drilling licenses dropping 40% in November.

FIG 2



U.S. Total Gasoline Sales Versus Price Per Gallon
November 2014
Recessions
Sales
12-Month MA of Sales
Real Price per Gallon*
x1000 Gallons per Day
Price per Gallon
Sales data through September 15 2014
Gasoline Price through mid-November 2014
420,000
400,000
380,000
360,000
340,000
320,000
300,000
280,000
$5.00
$4.50
$4.00
$3.50
$3.00
$2.50
$2.00
$1.50
$1.00
$0.50
$0.00
Source: Energy Information Administration
*US Regular All Formulations CPI Adjusted Price
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014

FIG 5



CHANGE IN CRUDE OIL PRODUCTION FROM 2008-13
50%
40
30
20
10
0
-10
-20
-30
-40
-50
U.S.
Iraq
Canada
Brazil
China
Russia
S. Arabia
Mexico
Venez
Iran
Algeria
Norway
EU
UK
Libya

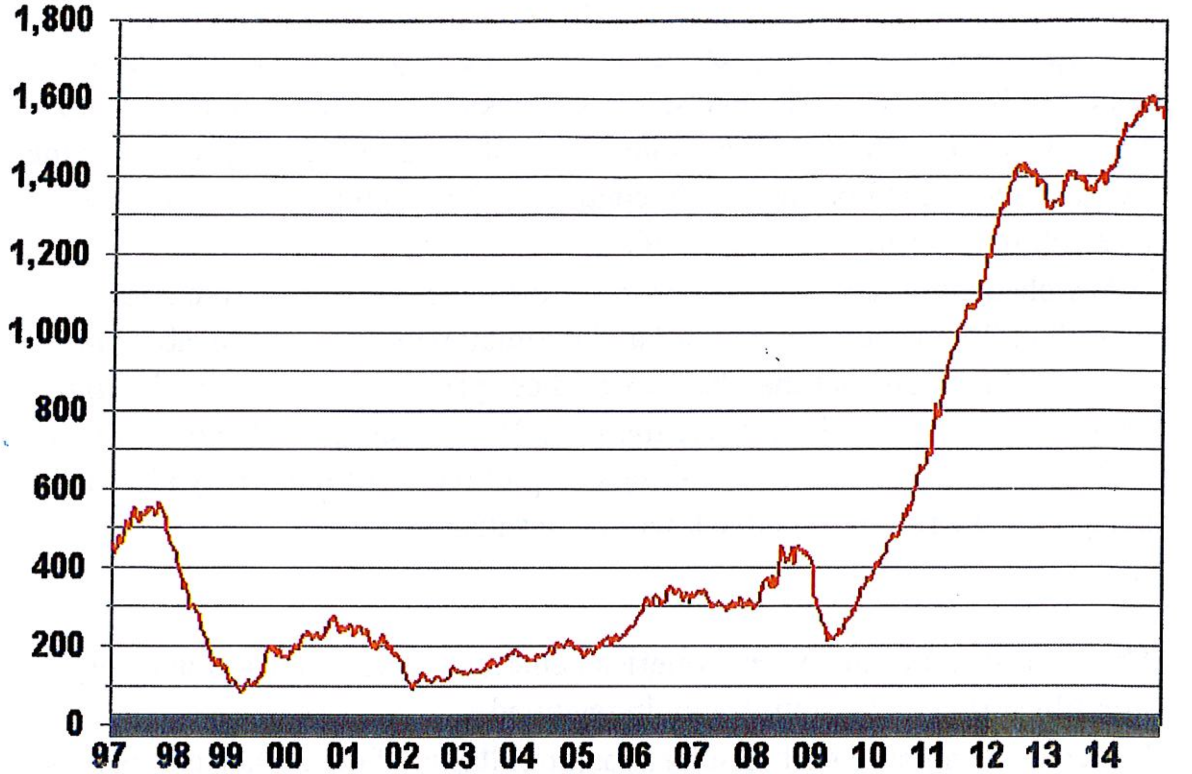
- A huge drop in US drilling activity in the shale plays. This can be readily followed by reviewing rig levels. As net-backs at the wellhead range from $40-50 a rapid cutback is inevitable. Many of the deep rigs, especially in the Bakken and Eagle Ford are likely contracted for lengthy periods so these rigs will only be gradually released.
- A key element of recovery will be to see a slower rate of oil production growth in the Bakken, Eagle Ford and Permian regions, if not an absolute decline. Due to the fact that the bulk of these projects have extremely high decline rates this should not take too long. While there are a large number of drilled wells in the Bakken, awaiting completion, these will likely also be delayed as the resulting netback will be unsatisfactory.

Outlook

- The oil segment of the North American energy business is entering a very stressful period, until equilibrium in regained.
- The correction phase will include a major collapse of oil service companies, a danger of bankruptcies of over leveraged energy companies, debt restructuring, and a great increase in merger and acquisition activity, unfortunately at the bottom of the market.
- No exact time can be placed on the downturn phase, but the rapid decline of shale wells and the decimation of shale focused companies should result in a significant recovery by the middle of 2015.

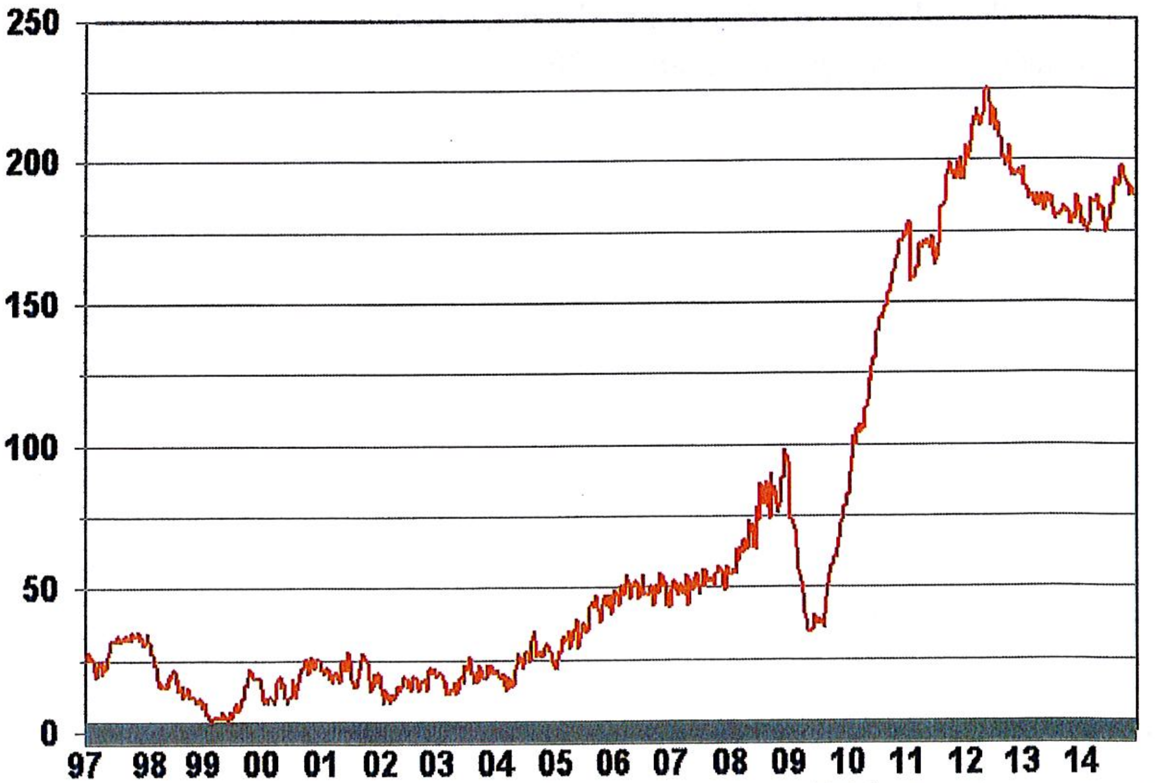
FIG 6

Oil - Rotary Rig Count
United States



January 1997 - December 12, 2014 WTRG Economics © 2014

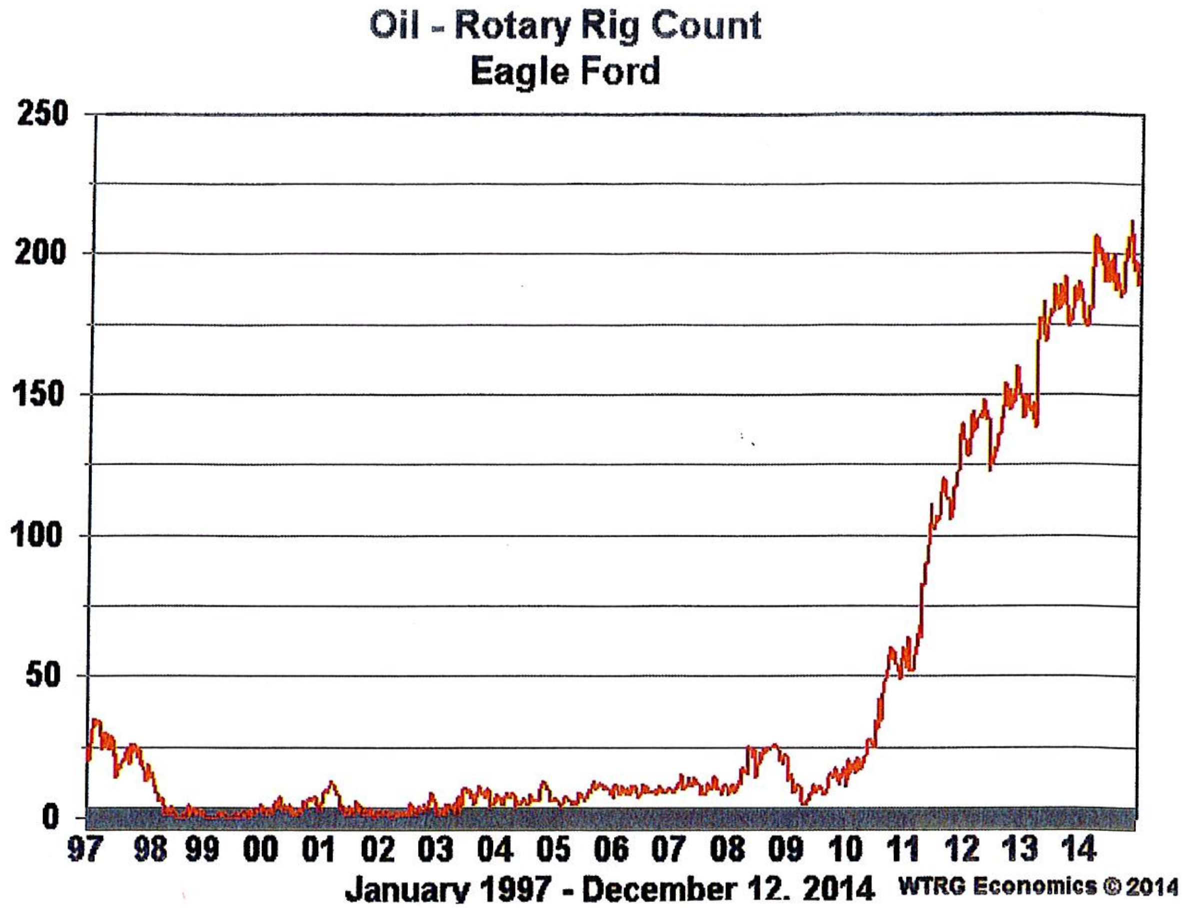
Oil - Rotary Rig Count
Bakken



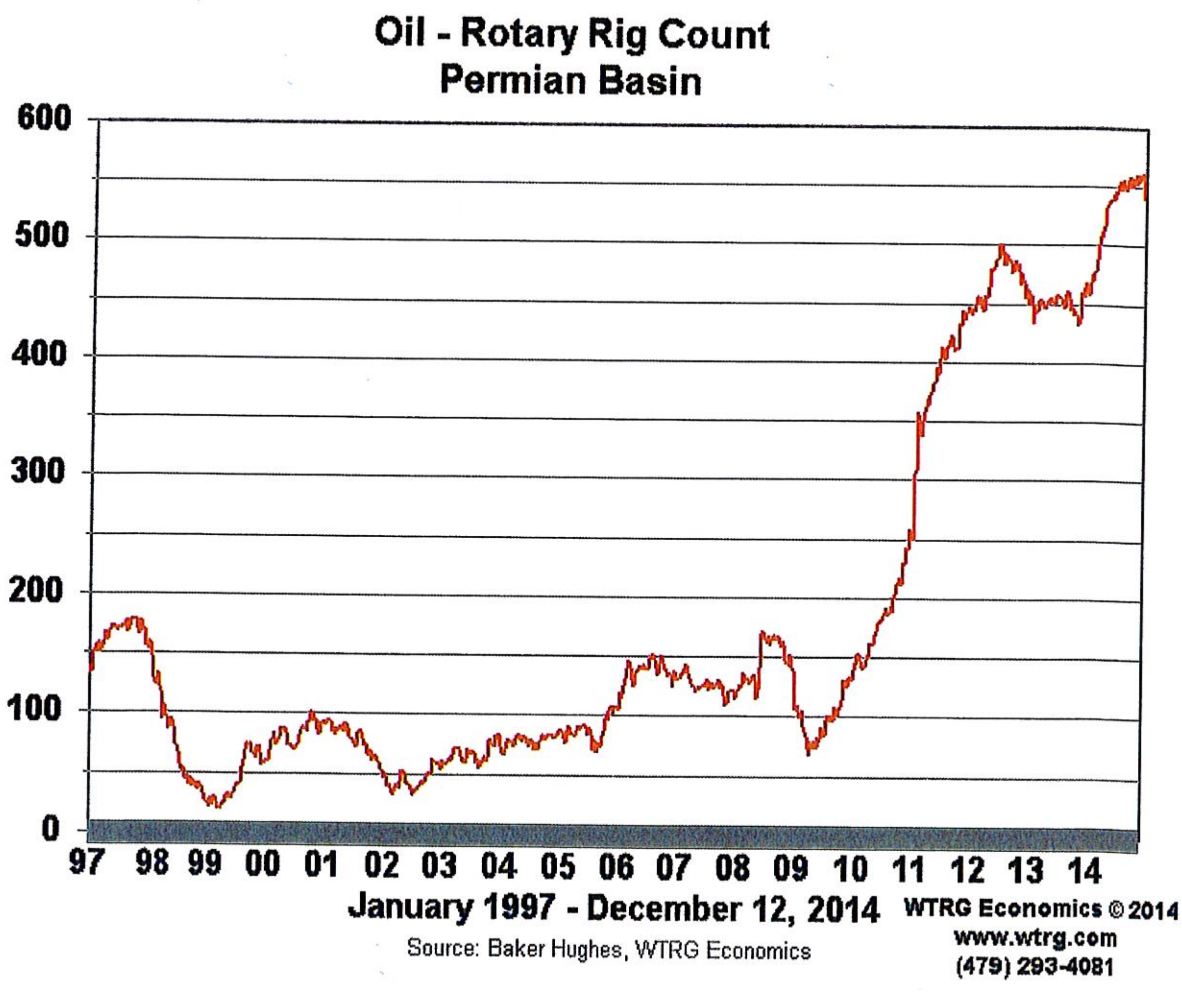
January 1997 - December 12, 2014 WTRG Economics © 2014

Source: Baker Hughes, WTRG Economics

www.wtrg.com
(479) 293-4081



Oil - Rotary Rig Count
Eagle Ford
250
200
150
100
50
0
97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14
January 1997 - December 12. 2014
WTRG Economics © 2014



Oil - Rotary Rig Count
Permian Basin
600
500
400
300
200
100
0
97 98 99 00 01 02 03 04 05 06 07 08 09 10 11 12 13 14
January 1997 - December 12, 2014
WTRG Economics © 2014
Source: Baker Hughes, WTRG Economics
www.wtrg.com
(479) 293-4081