

A 5.54 year cycle in Oil Prices

By Ray Tomes

Review of Oil Price behaviour

At this time when oil prices have shown rapid increases it is appropriate to examine the trend and cyclic behaviour of oil prices to try and establish what the future might bring.

In the last 60 years there have been three periods of sustained price increase separated by two periods of fluctuations without strong trends. The rapid increases have been in the 1940s, the 1970s and the 2000s. Each of these periods has been an era of an expensive sustained war for the USA which has led to weakness in the currency, the same currency that is mostly used for oil price fixing. This alternation of stable and rising prices hints at a longer cycle of 30 to 36 years, but there are too few repetitions to draw any conclusions. If such a longer cycle existed, then the oil price could reach the vicinity of US\$300 per barrel by 2014 before entering another stable period.

On shorter time scales there have been fairly regular peaks in oil prices at 5 or 6 year intervals as can be seen in the graph of oil prices from 1946 to 2005 shown in figure 1.

Historical reports of oil cycles

Past analysis reported in Cycles magazine have mentioned a cycle of about 6 years in oil production. It would be surprising if there were not a cycle of the same length in both oil production and oil prices. Oil is such an essential item in all modern economies the global economy is very sensitive to oil price fluctuations.

In the Catalogue of Cycles, Cycles Classic Library Collection volume IV, page 243 there are 6 reports by Dewey from the 1950s of cycles relating to oil cycles of which 4 give periods. These are listed:

- A 3.5 year cycle in Continental Oil Company income. A crest occurred in the second half of 1930.
- A 6 year rhythm in Continental Oil Company income from 1933-1945. A crest occurred in 1943.
- A 6 year rhythmic cycle in income of Standard Oil Company of California 1929-1945. An ideal crest was dated at 1949.
- An 8 year rhythmic cycle in certain oil company sales .

The timing of these historical peaks are consistent with tracing back the present studies ideal peak timing. None of the historical studies has an accurate cycle determination as they were based on only 2 or 3 cycles data.

Oil cycle period determination

The average period between the oil price peaks has been 5.54 years. This period can be determined by examination of the dates of peaks in the price of oil over the 60 year period as shown in table 1. In order to determine the cycle period as accurately as possible, every peak has been used as a reference point. In the first line of the table the first and last peaks have been used which comprise an interval of 10 full cycles. In the next line the second and second to last peaks have been used and so on. However as there is one missing peak around 1963, that can obviously not be used.

Each of these measures gives a quite consistent period of 5.44 to 5.61 years except the single central cycle measure,

which is not surprising. Finally the last line of the table includes the total number of cycles and the total length of all the cycles to get a grand weighted average of 5.539 years.

It is reasonable to state that the average period of the oil price cycle is **5.54 ± 0.03 years**.

Table 1.

No. of cycles	Start date	End date	Interval in years	Average Period
10	1948-01	2003-02	55.08	5.508
8	1953-06	1996-12	43.50	5.438
6	1957-02	1990-10	33.67	5.611
3	1969-04	1985-11	16.58	5.528
1	1974-01	1980-04	6.25	6.25
28	=Total	Total=	155.08	5.539

Oil cycle timing determination

Using the established 5.54 year period, the timing of future cycles peaks can be found by taking the average timing of the 10 observed cycle peaks. These peaks are shown in table 2 along with the average timing predicted from them for the next peak. The table is in decimals of a year with January as .08 and so on.

The average date predicted for the next peak is 2008-01 which predicts the following peaks at 2013-07 and 2019-02. The average difference between the expected timing of a cycle and the actual timing is 6 months, although this has been only 4 months since the controlled oil price era finished.

Table 2.

Cycle peak date	No. of cycles added	No. of years added	Predicted next peak date
1948-01	11	60.94	2009.02
1953-06	10	55.40	2008.90
1957-02	9	49.86	2007.03
1969-04	7	38.78	2008.11
1974-01	6	33.24	2007.32
1980-04	5	27.70	2008.03
1985-11	4	22.16	2008.08
1990-10	3	16.62	2007.45
1996-12	2	11.08	2008.08
2003-02	1	5.54	2008.71
		Average	2008.07

Summary and Conclusions

Before the 1970s the price of oil was held constant for long periods with occasional moderate reviews. In the 1970s the weakness of the US dollar led to frequent large increases in the oil price and the entering into a new era of fluctuating prices.

In the 1940s, 1970s and 2000s the price of oil was unstable and rapidly rising. Between these periods it was more steady with fluctuations both up and down. These three eras are the same times that the USA was involved in expensive wars - WW II, Vietnam and Iraq, and it is natural to

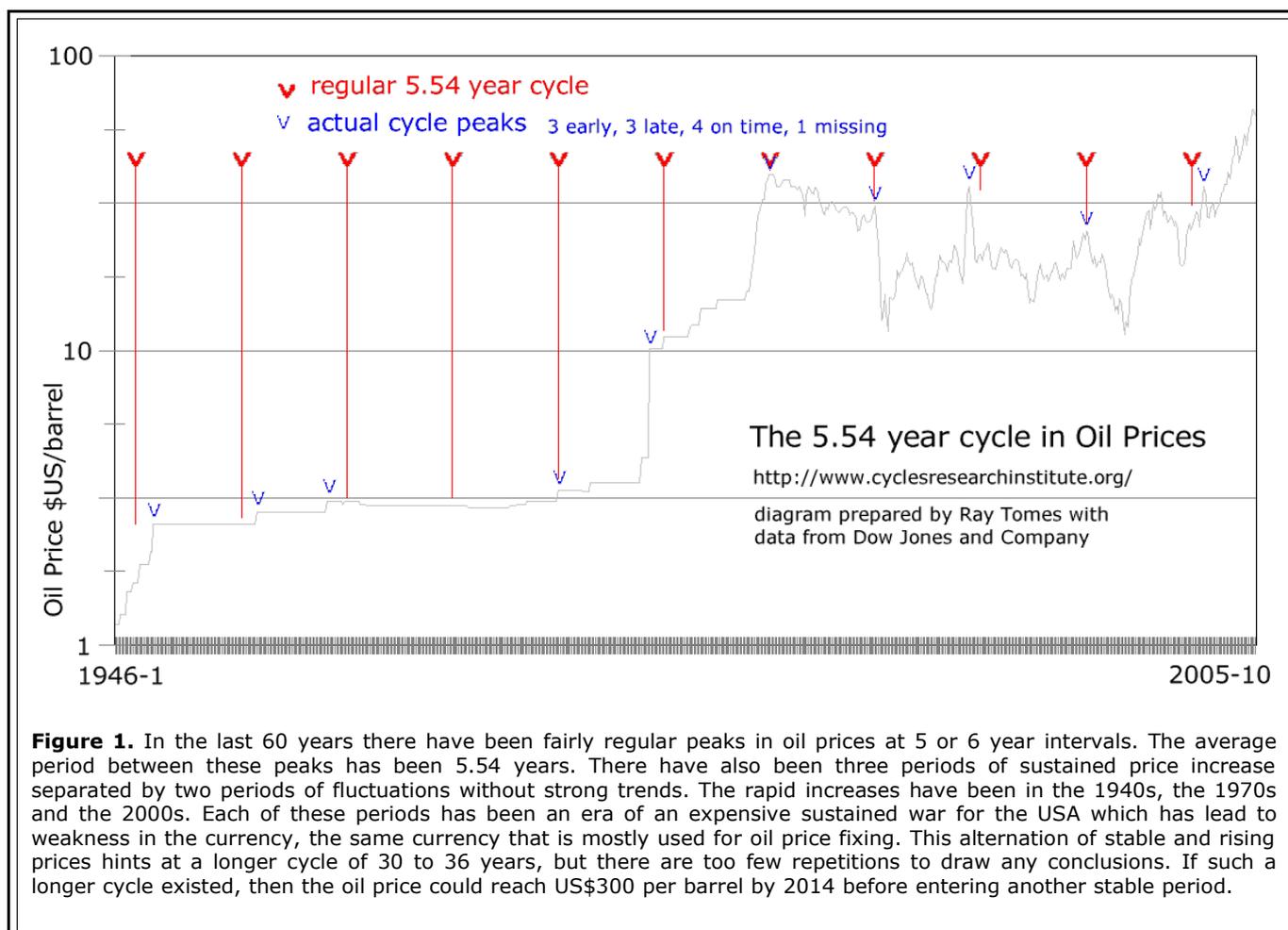


Figure 1. In the last 60 years there have been fairly regular peaks in oil prices at 5 or 6 year intervals. The average period between these peaks has been 5.54 years. There have also been three periods of sustained price increase separated by two periods of fluctuations without strong trends. The rapid increases have been in the 1940s, the 1970s and the 2000s. Each of these periods has been an era of an expensive sustained war for the USA which has led to weakness in the currency, the same currency that is mostly used for oil price fixing. This alternation of stable and rising prices hints at a longer cycle of 30 to 36 years, but there are too few repetitions to draw any conclusions. If such a longer cycle existed, then the oil price could reach US\$300 per barrel by 2014 before entering another stable period.

consider that there is a relation between the oil price increases and weakness in the US dollar. The possibility of an increase to the general region of \$300 per barrel between now and mid 2013 cannot be dismissed as fanciful.

A cycle of **5.54 years** is established as the dominant cycle in **oil prices** with future peaks estimated for 2008-01, 2013-07 and 2019-02. Previously oil cycle periods have been determined only as approximately 6 years.

There are other common cycles reports of around 5.5 to 5.6 years, the most common being 5.54 years in post office revenues, 5.54 years in wheat prices, 5.5 years in stock prices, hog prices, corn prices and production, cocoa bean prices, solar activity and many others, 5.57 years in cotton prices, 5.6 year cycles in sweet potato production, international battles, wheat and corn prices and sunspots.

This period is one of the common cycle periods mentioned by Edward R Dewey as being found in many different time series, and is exactly half the average sunspot cycle period of 11.08 years. Historically, the suggestion of connection between solar activity and effects on crops has generally received scientific scorn although was first raised by the famous astronomer Sir William Herschel. However in the last two decades the availability of so much excellent data from space has led to the recognition of "space weather" as something very real and measurable.

Although we are still far from understanding how all the effects result, the doors to understanding these effects have opened with the discovery that solar cycles affect the quantity of cosmic rays reaching the earth, and that cosmic rays in turn affect the production of clouds. So cosmic weather and earth weather are now known to be connected and we can easily understand how earth weather affects

crop production and crop prices.

Whether cycles in wars and oil prices are results of these crop cycles having further effects in the economy, or a direct electrical action of solar activity on human behaviour is a question that is gradually coming nearer to being answered. Edward R Dewey began to suspect the latter with his discovery that there was no time delay between one and the other, or that human activity changes sometimes even slightly preceded visible solar changes.

References

Catalogue of Cycles, **Cycles Classic Library Collection** volume IV, page 243 – 6 oil company sales cycle reports by Edward R Dewey from the 1950s.

Data used in this analysis obtained from **FRED**, St. Louis Federal Reserve Economic Data which is located at <http://research.stlouisfed.org/fred2/>, and referred to as OILPRICE.txt, "Spot Oil Price: West Texas Intermediate". They state that the source is Dow Jones and Company.