

## [The Oil Drum: Net Energy](#)

### Discussions about Energy and Our Future

#### What Does "Peak Oil" Mean to You?

Posted by [David Murphy](#) on January 20, 2010 - 9:55am in [The Oil Drum: Net Energy](#)

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The ["Don't Fear the 2010s"](#) article written by Nick Gillespie of the Wall Street Journal featured a section on Peak Oil and, after reading it, I found myself uttering the famous words of Homer Simpson: "Doh." The article claims that "something always gets in the way" of peak oil, and since no clear peak has occurred globally, Peak Oil is and will remain unimportant. Although early discussions about peak oil involved estimations of the actual date of the peak, today the discussion has transcended its past mathematical proclivities to include more complex (and more meaningful) issues. Let's examine some of the more important insights to be gained from the discussion of peak oil.



#### **1. Peak Oil is more about transitioning from a world with an increasing supply of oil to a world with a decreasing supply of oil, and less about the actual date of the peak.**

Peak Oil as represented by the WSJ article diminishes the issue to a debate over a date. The more pressing question—the question most often considered here on The Oil Drum and within the Peak Oil community at large—is, “What does a peak in global oil production mean for economies and societies throughout the world?”

Oil is a non-renewable resource, which means that oil reserves began declining after the first barrel was produced. Over time, the combination of technological advancements and big discoveries allowed for the extraction of larger amounts of oil, but at some point oil production will peak and begin to decline. Numerous countries, including the United States, have illustrated this trend. So, if we know that at some point oil production will begin to decline, why deny the inevitable instead of preparing for that decline?

#### **2. The important question is not “How much oil is left?” but rather “How much oil can be extracted at a significant energy profit?”**

Howard Odum wrote in the early 1970's that:

The true value of energy to society is net energy, which is that after the energy costs of getting and concentrating that energy are subtracted.

Net energy represents the energy that we use to power our vehicles, our hospitals, build our

roads, fly our planes, etc. In the early 1900s, the U.S. was getting upwards of 100 barrels of oil out of the ground for every barrel used to get that oil (Cleveland 2005). Today, the estimates in the literature report that on average across the globe, 18 barrels of oil are produced for every barrel used in getting that oil (Gagnon et al. 2009). Despite the fact that today's society produces vastly more oil than it did in the early 1900s, it is producing less net energy per barrel. This declining net energy is driven mainly by the fact that oil has become harder and harder to find and extract, and/or the oil that has been found is generally of lower quality. For example, Chevron's Tahiti project cost [2.7 billion dollars](#) just to construct. Meanwhile, Petrobras is [hoarding deep water rigs](#) to develop oil projects off their coast and [BP discovered Tiber](#), another ultra deepwater field in the Gulf of Mexico. Each of these will have price tags comparable to Tahiti. The point is that it doesn't matter how much oil these companies claim that they can recover, the question is how much of that oil will be gained at an energy profit (i.e. that left after accounting for the cost of extraction).

### 3. Increasing energy costs have preceded every major recession in the last 40 years.

Many believe that the current recession was caused, at least in part, by rising oil prices from 2004 – 2008 ([Jeff Rubin 2008](#), [James Hamilton 2009 \(warning- pdf\)](#)), and although it is difficult to show statistically that action A *caused* action B (just ask the climate change people!), data show that oil prices and recessions are highly correlated (Figure 2). Over the past 40 years the same sequence of events occurred before each recession: a spike in the price oil, followed by an increase in the percent of GDP used to purchase oil, followed by a recession.

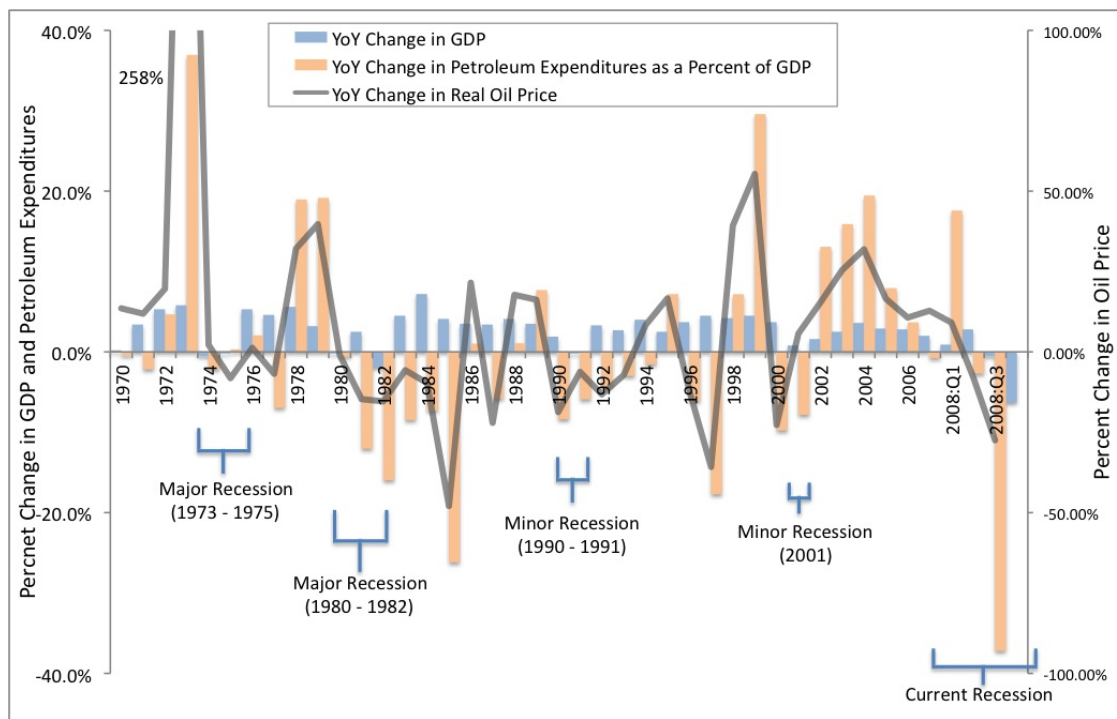


Figure 2. YoY changes in GDP, petroleum expenditures as a percent of GDP, and real oil prices. Oil prices were plotted using the secondary vertical axis (right) due to the enhanced volatility. All data is for the U.S.

The WSJ reported that

Peak oil has been predicted with regularity for decades now and something always gets in the way: new reserves are discovered, prices collapse due to economic slowdowns...

Everyone agrees (more or less) that oil prices collapsed because of the enormous economic contraction that occurred in the summer of 2008. But are we really to believe that it is pure coincidence that the price of oil was at an all-time high when that contraction occurred? More to the point – despite a tripling of crude oil prices from 2004 - 2008, supply of conventional crude remained relatively flat, conditions indicative of peak oil. Focusing on whether or not the peak has occurred distracts attention from the main conclusion of the 2004-2008 period: we have entered an era in which the supply of oil is constrained. I contend that the WSJ has it backwards. The economic contraction did not prevent peak oil from occurring; rather, the peaking of global oil production was a main cause the economic contraction.

#### 4. Oil is unique.

As Youngquist states, quoted in [The Olduvai Theory by Richard Duncan](#),

There is no comprehensive substitute for oil in its high energy density, ease of handling, myriad of end-uses, and in the volumes in which we now use it.

Oil is a one-time gift bestowed upon the inhabitants of earth. There is no substitute at the scale needed, and there is certainly no alternative energy source that returns the same amount of net energy at the scale that oil is used. Technology is often touted as the means by which society will surpass its need for oil, but technology is NOT a fuel, it is simply a means by which we convert energy of one form to another, usually more useful, form.

Other people believe that coal or natural gas will solve our problems. In fact, the [New York Times reported](#) that the US has over 600 years of natural gas, but we need to ask the same question about these sources as we do about oil, namely, “How much is available at a significant energy profit?” There are other problems with natural gas and coal as well. Coal has pollution issues, including carbon dioxide. Natural gas is often thought of as the cleanest of the three major fossil fuels, but almost all unconventional gas, which makes up a large part of future United States production, is being produced in most new plays in the U.S. using a hydrofracking process that uses upwards of [two and a half million gallons \(pg. 58\)](#) of dirty water per well. This is not to say that drilling for oil is better than coal or natural gas, rather that pursuing coal or natural gas as a solution for dwindling oil supplies is likely to create other costly problems.

In summary, Peak Oil is not just about *when*, but also *how* we will wean ourselves from our reliance on oil. The above points represent some new ideas or directions for innovative thought and discussion. Most importantly, I hope they convey a message to the peak oil naysayers that whether the peak occurs today, tomorrow, or in ten years is not as important as how we reach the peak and how we deal with the ensuing decline.



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