Low Oil Prices: An Indication of Major Problems Ahead?

Many people, including most Peak Oilers, expect that oil prices will rise endlessly. They expect rising oil prices because, over time, companies find it necessary to access more difficult-to-extract oil. Accessing such oil tends to be increasingly expensive because it tends to require the use of greater quantities of resources and more advanced technology. This issue is sometimes referred to as diminishing returns. Figure 1 shows how oil prices might be expected to rise, if the higher costs encountered as a result of diminishing returns can be fully recovered from the ultimate customers of this oil.

![Unsophisticated View of Impact of Diminishing Returns With Respect to Oil](Gail Tverberg
OurFiniteWorld.com)

In my view, this analysis suggesting ever-rising prices is incomplete. After a point, prices can’t really keep up with rising costs because the wages of many workers lag behind the growing cost of extraction.

The economy is a networked system facing many pressures, including a growing level of debt and the rising use of technology. When these pressures are considered, my analysis indicates that oil prices may fall too low for producers, rather than rise too high for consumers. Oil companies may close down if prices remain too low. Because of this, low oil prices should be of just as much concern as high oil prices.

In recent years, we have heard a great deal about the possibility of Peak Oil, including high oil prices. If the
issue we are facing is really prices that are too low for producers, then there seems to be the possibility of a different limits issue, called Collapse. Many early economies seem to have collapsed as they reached resource limits. Collapse seems to be characterized by growing wealth disparity, inadequate wages for non-elite workers, failing governments, debt defaults, resource wars, and epidemics. Eventually, population associated with collapsed economies may fall very low or completely disappear. As Collapse approaches, commodity prices seem to be low, rather than high.

The low oil prices we have been seeing recently fit in disturbingly well with the hypothesis that the world economy is reaching affordability limits for a wide range of commodities, nearly all of which are subject to diminishing returns. This is a different problem than most researchers have been concerned about. In this article, I explain this situation further.

One thing that is a little confusing is the relative roles of diminishing returns and efficiency. I see diminishing returns as being more or less the opposite of growing efficiency.

The fact that inflation-adjusted oil prices are now much higher than they were in the 1940s to 1960s is a sign that for oil, the contest between diminishing returns and efficiency has basically been won by diminishing returns for over 40 years.

In the 1970s, oil became unaffordable. Its use couldn’t grow without lower interest rates and growing debt.
Oil Prices Cannot Rise Endlessly

*It makes no sense for oil prices to rise endlessly, for what is inherently growing inefficiency.* Endlessly rising prices for oil would be similar to paying a human laborer more and more for building widgets, during a time that that laborer becomes increasingly disabled. If the number of widgets that the worker can produce in one hour decreases by 50%, logically that worker’s wages should fall by 50%, not rise to make up for his/her growing inefficiency.

The problem with paying higher prices for what is equivalent to growing inefficiency can be hidden for a while, *if the economy is growing rapidly enough*. The way that the growing inefficiency is hidden is by adding Debt and Complexity (Figure 4).

![We Have a Multi-Dimensional Problem](Figure 4)

Growing complexity is very closely related to “Technology will save us.” Growing complexity involves the use of more advanced machinery and ever-more specialized workers. Businesses become larger and more hierarchical. International trade becomes increasingly important. Financial products such as derivatives become common.

Growing debt goes hand in hand with growing complexity. Businesses need growing debt to support capital expenditures for their new technology. Consumers find growing debt helpful in affording major purchases, such as homes and vehicles. Governments make debt-like promises of pensions to citizen. Thanks to these promised pensions, families can have fewer children and devote fewer years to child care at home.

The problem with adding complexity and adding debt is that they, too, reach diminishing returns. The easiest (and cheapest) fixes tend to be added first. For example, irrigating a field in a dry area may be an easy and cheap
way to fix a problem with inadequate food supply. There may be other approaches that could be used as well, such as breeding crops that do well with little rainfall, but the payback on this investment may be smaller and later.

A major drawback of adding complexity is that doing so tends to increase wage and wealth disparity. When an employer pays high wages to supervisory workers and highly skilled workers, this leaves fewer funds with which to pay less skilled workers. Furthermore, the huge amount of capital goods required in this more complex economy tends to disproportionately benefit workers who are already highly paid. This happens because the owners of shares of stock in companies tend to overlap with employees who are already highly paid. Low paid employees can’t afford such purchases.

The net result of greater wage and wealth disparity is that it becomes increasingly difficult to keep prices high enough for oil producers. The many workers with low wages find it difficult to afford homes and families of their own. Their low purchasing power tends to hold down prices of commodities of all kinds. The higher wages of the highly trained and supervisory staff don’t make up for the shortfall in commodity demand because these highly paid workers spend their wages differently. They tend to spend proportionately more on services rather than on commodity-intensive goods. For example, they may send their children to elite colleges and pay for tax avoidance services. These services use relatively little in the way of commodities.

**Once the Economy Slows Too Much, the Whole System Tends to Impplode**

A growing economy can hide a multitude of problems. Paying back debt with interest is easy, if a worker finds his wages growing. In fact, it doesn’t matter if the growth that supports his growing wages comes from inflationary growth or “real” growth, since debt repayment is typically not adjusted for inflation.

![Figure 5. Repaying loans is easy in a growing economy, but much more difficult in a shrinking economy.](image)

Both real growth and inflationary growth help workers have enough funds left at the end of the period for other goods they need, despite repaying debt with interest.
Once the economy stops growing, the whole system tends to implode. Wage disparity becomes a huge problem. It becomes impossible to repay debt with interest. Young people find that their standards of living are lower than those of their parents. Investments do not appear to be worthwhile without government subsidies. Businesses find that economies of scale no longer work to their advantage. Pension promises become overwhelming, compared to the wages of young people.

The Real Situation with Oil Prices

The real situation with oil prices—and in fact with respect to commodity prices in general—is approximately like that shown in Figure 6.

What tends to happen is that oil prices tend to fall farther and farther behind what producers require, if they are truly to make adequate reinvestment in new fields and also pay high taxes to their governments. This should not be too surprising because oil prices represent a compromise between what citizens can afford and what producers require.
In the years before diminishing returns became too much of a problem (back before 2005, for example), it was possible to find prices that were within an acceptable range for both sellers and buyers. As diminishing returns has become an increasing problem, the price that consumers can afford has tended to fall increasingly far below the price that producers require. This is why oil prices at first fall a little too low for producers, and eventually seem likely to fall far below what producers need to stay in business. The problem is that no price works for both producers and consumers.

**Affordability Issues Affect All Commodity Prices, Not Just Oil**

We are dealing with a situation in which a growing share of workers (and would be workers) find it difficult to afford a home and family, because of wage disparity issues. Some workers have been displaced from their jobs by robots or by globalization. Some spend many years in advanced schooling and are left with large amounts of debt, making it difficult to afford a home, a family, and other things that many in the older generation were able to take for granted. Many of today’s workers are in low-wage countries; they cannot afford very much of the output of the world economy.

At the same time, diminishing returns affect nearly all commodities, just as they affect oil. Mineral ores are affected by diminishing returns because the highest grade ores tend to be extracted first. Food production is also subject to diminishing returns because population keeps rising, but arable land does not. As a result, each year it is necessary to grow more food per arable acre, leading to a need for more complexity (more irrigation or more fertilizer, or better hybrid seed), often at higher cost.

When the problem of growing wage disparity is matched up with the problem of diminishing returns for the many different types of commodity production, the same problem occurs that occurs with oil. Prices of a wide range of commodities tend to fall below the cost of production—first by a little and, if the debt bubble pops, by a whole lot.

We hear people say, “Of course oil prices will rise. Oil is a necessity.” The thing that they don’t realize is that the
problem affects a much bigger “package” of commodities than just oil prices. In fact, finished goods and services of all kinds made with these commodities are also affected, including new homes and vehicles. Thus, the pattern we see of low oil prices, relative to what is required for true profitability, is really an extremely widespread problem.

**Interest Rate Policies Affect Affordability**

Commodity prices bear surprisingly little relationship to the cost of production. Instead, they seem to depend more on interest rate policies of government agencies. If interest rates rise or fall, this tends to have a big impact on household budgets, because monthly auto payments and home payments depend on interest rates. For example, US interest rates spiked in 1981.

![Short and long-term interest rates increased until 1981, then declined.](image)

This spike in interest rates led to a major cutback in energy consumption and in GDP growth.

![World GDP Growth vs. Energy Growth (GDP in 2010 US$)](image)
Oil prices began to slide, with the higher interest rates.

If we look at historical oil prices, we see that these prices are very much influenced by interest rate adjustments.

Figure 10. Historical Inflation-Adjusted Oil Prices

Figure 11 indicates that the popping of a debt bubble (mostly relating to US sub-prime housing) sent oil prices down in 2008. Once interest rates were lowered through the US adoption of Quantitative Easing (QE), oil prices rose again. They fell again, when the US discontinued QE.

We also see that interest rate changes tie in with recent oil price changes. Oil price peaked in July 2008.

While these charts show oil prices, there is a tendency for a broad range of commodity prices to move more or less together. This happens because the commodity price issue seems to be driven to a significant extent by the affordability of finished goods and services, including homes, automobiles, and restaurant food.

If the collapse of a major debt bubble occurs again, the world seems likely to experience impacts somewhat
similar to those in 2008, depending, of course, on the location(s) and size(s) of the debt bubble(s). A wide variety of commodity prices are likely to fall very low; asset prices may also be affected. This time, however, government organizations seem to have fewer tools for pulling the world economy out of a prolonged slump because interest rates are already very low. Thus, the issues are likely to look more like a widespread economic problem (including far too low commodity prices) than an oil problem.

Lack of Growth in Energy Consumption Per Capita Seems to Lead to Collapse Scenarios

When we look back, the good times from an economic viewpoint occurred when energy consumption per capita (top red parts on Figure 12) were rising rapidly.

![An area graph makes it easier to see the uses of energy growth](image)

The bad times for the economy were the valleys in Figure 12. Separate labels for these valleys have been added in Figure 13. If energy consumption is not growing relative to the rising world population, collapse in at least a part of the world economy tends to occur.

![Troughs in energy consumption come at very bad times for the economy](image)
The laws of physics tell us that energy consumption is required for movement and for heat. These are the basic processes involved in GDP generation, and in electricity transmission. Thus, it is logical to believe that energy consumption is required for GDP growth. We can see in Figure 9 that growth in energy consumption tends to come before GDP growth, strongly suggesting that it is the cause of GDP growth. This further confirms what the laws of physics tell us.

The fact that partial collapses tend to occur when the growth in energy consumption per capita falls too low is further confirmation of the way the economics system really operates. The Panic of 1857 occurred when the asset price bubble enabled by the California Gold Rush collapsed. Home, farm, and commodity prices fell very low. The problems ultimately were finally resolved in the US Civil War (1861 to 1865).

Similarly, the Depression of the 1930s was preceded by a stock market crash in 1929. During the Great Depression, wage disparity was a major problem. Commodity prices fell very low, as did farm prices. The issues of the Depression were not fully resolved until World War II.

At this point, world growth in energy consumption per capita seems to be falling again. We are also starting to see evidence of some of the same problems associated with earlier collapses: growing wage disparity, growing debt bubbles, and increasingly war-like behavior by world leaders. We should be aware that today’s low oil prices, together with these other symptoms of economic distress, may be pointing to yet another collapse scenario on the horizon.

Oil’s Role in the Economy Is Different From What Many Have Assumed

We have heard for a long time that the world is running out of oil, and we need to find substitutes. The story should have been, “Affordability of all commodities is falling too low, because of diminishing returns and growing wage disparity. We need to find rapidly rising quantities of very, very cheap energy products. We need a cheap substitute for oil. We cannot afford to substitute high-cost energy products for low-cost energy products. High-cost energy products affect the economy too adversely.”

In fact, the whole “Peak Oil” story is not really right. Neither is the “Renewables will save us” story, especially if the renewables require subsidies and are not very scalable. Energy prices can never be expected to rise high enough for renewables to become economic.

The issues we should truly be concerned about are Collapse, as encountered by many economies previously. If Collapse occurs, it seems likely to cut off production of many commodities, including oil and much of the food supply, indirectly because of low prices.

Low oil prices and low prices of other commodities are signs that we truly should be concerned about. Too many people have missed this point. They have been taken in by the false models of economists and by the confusion of Peak Oilers. At this point, we should start considering the very real possibility that our next world problem is likely to be Collapse of at least a portion of the world economy.

Interesting times seem to be ahead.
About Gail Tverberg

My name is Gail Tverberg. I am an actuary interested in finite world issues - oil depletion, natural gas depletion, water shortages, and climate change. Oil limits look very different from what most expect, with high prices leading to recession, and low prices leading to financial problems for oil producers and for oil exporting countries. We are really dealing with a physics problem that affects many parts of the economy at once, including wages and the financial system. I try to look at the overall problem.

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