What’s up with Gasoline Prices?

A WHITE PAPER

Introducing some of the economic issues regarding;

Gasoline Prices

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What’s up with Gasoline Prices?

We know that gasoline prices have been very volatile over the past couple of years. We’ve all heard the cry that gas prices are too high, that the oil companies are making a killing on gasoline! So let’s examine some basics of the market for gasoline to shed some light on what’s happening, and consider the following questions;

- How are crude oil prices and retail gasoline prices related?
- What are some of the costs that get added to the price of crude oil, before it gets sold as gasoline?
- Who’s making the profits? (in the short space provided, and limited research, we can only suggest some possibilities)

There is a historically tight relationship between the price of a barrel of oil and the retail price of a gallon of gasoline. Consider the following comparison over the last ten year period [figure 1]:

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Notice that even as the price of crude oil and gasoline have become more volatile over the past two years that the two track virtually in tandem. The difference in the cost of one gallon of crude oil and one gallon of gasoline is more than just the profit of the retailer. It includes the following additional significant components:

- The cost of refining crude oil into gasoline
- The refiner’s profit
- The cost to transport gasoline from the refinery to the gas station.
- Federal, State & Local sales & excise taxes

The related nature of these two prices moving in tandem elicits a closer look at whether anyone is taking additional profits as the price of gasoline increases. The first question is whether refiners, transporters and retailers are marking up the product by a constant dollar amount, or by some fixed multiplier. The data over the last ten years to some extent supports both possibilities. You be the judge [figure 2]:

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2 The markup is calculated by dividing the price of a gallon of gasoline by the price of a gallon of crude. The plotted line indicates the difference as a multiple of the price of a gallon of crude oil.
When the price of a gallon of gasoline is evaluated as a fixed multiplier of crude oil, the data suggest that refiners, transporters, and retailers are utilizing a fixed multiplier to determine the retail price. That said, it is also clear that the size of this “multiplier” has been declining over the past 10 years. Consider then, what the fixed dollar ($) markup actually amounts to over the same time period [Figure 3]:

When examined from this perspective, the fixed dollar mark-up appears to be fairly constant from the late 1990’s through 2003. Since then, the size of the dollar markup has increased from around $1 per gallon to something in the neighborhood of $1.25 per gallon. The volatility or lack of consistency of this has grown significantly in the last two years as well, largely as a result of the spikes in the fall of 2005 and the spring/fall of 2006.

While most experts indicate that the largest portion of the price increases over the last few years reflect the increased cost of crude oil, a significant contributor to the 2005 increase was the result of a confluence of increased demand around labor day 2005, and restricted supplies (reduced supply) as a result of the 2005 hurricane season.

The reasons for the 2006 increase are somewhat less clear. The current consensus is that expectations & speculation over ever rising fuel prices was driving the increases in prices, especially at the retail level. In other-words, refiners, transporters, and retailers were reflecting in higher prices the perceived higher risk that they would not be able to recover all future price increases from their customers. Only after these fears abated in late August & September of this year, did prices begin to fall.

3 The dollar markup is the price of a gallon of gasoline minus (-) a gallon of crude oil.
Note too, that the total dollar mark-up also seems to track gasoline prices. Compare the price of a gallon of gasoline to the dollar mark-up, and you will see that there seems to be a pattern that as the retail price rises, so does the dollar mark-up, as the retail price falls, so does the dollar mark-up. Thus it could also be argued that as the price rises, profits are helped, but as prices fall, profits are hurt. This also makes sense if refiners, transporters, and retailers utilize a fixed multiplier pricing strategy.

In the big picture though, the dollar markup is absolutely constant when compared to the actual price of a gallon of crude oil. So the question becomes, who then profits from the increased spot prices of crude oil?

The answer comes down to who owns the oil. Is it the oil companies? Is it OPEC? Is it some combination of all of the above? As it turns out, the “oil” companies appear to own only a small portion of the total amount of oil refined. In examining Exxon/Mobil’s 2005 10K (financial statements) that are filed with the SEC, we find the following information:

- They report refining 8.24 million barrels of oil a day (refinery throughput)
- They report pumping 2.52 million barrels a day from wells (net liquids production)\(^4\)

While generalizing Exxon’s experience to the entire oil market may not be representative, in Exxon’s case, it appears that it owns or has rights to only about 30% of all the oil it refines. Further, without investigating how Exxon accounts for the 2.52 million barrels, whether they own outright the oil wells, or whether they lease the oil wells (in which case they would have to pay the going/negotiated crude oil rate to the well owner) it is possible that Exxon and other refiners must pay market rates even for a portion of the crude oil that is produced under their own banner.

This means (based on the Exxon example) 70% of the remaining crude oil must be purchased on the open market. A recent report from National Public Radio’s Morning Edition\(^5\) entitled, Curb Your Conspiracy Theories on Gas Prices, reported that 90% of the world’s oil reserves are owned by Countries. This includes countries such as Saudi Arabia, Iraq, Iran, Venezuela and Mexico.

As a result, the owners of oil resources, the majority of which are sovereign countries, appear to be the beneficiaries of increases in the world market price for oil, not the oil companies. This is not to say that oil companies don’t benefit from increased oil prices, because they do, but the gap between what they truly benefit from increased prices and the perception of what they benefit is likely quite large. The perception gap is this big because of the misconception that oil companies are the owners of the majority of the world’s oil reserves.

Lastly, what do you think? There is much more detailed research that could be done to quantify what’s been discussed here, and possibly change the conclusions you may reach!

\(^4\) These figures from page 26 of Exxon/Mobil’s fiscal 2005 10K report.
\(^5\) Transcript available from npr.org, broadcast September 27, 2006