

SUPPLY, SUPPLY, SUPPLY!

We were tempted to name this piece “**It’s the Supply, Stupid!**” because of Wall Street’s almost total fixation with demand. However, we wanted to carry forward our thoughts on the longer-term *Tide* versus the short-term *Waves*, and explore how current macroeconomic events affect supply and demand in the context of our thesis of a new Incoming Energy *Tide*. The comments below review what we perceive to be consensus, our position, and where and why we disagree with the consensus.

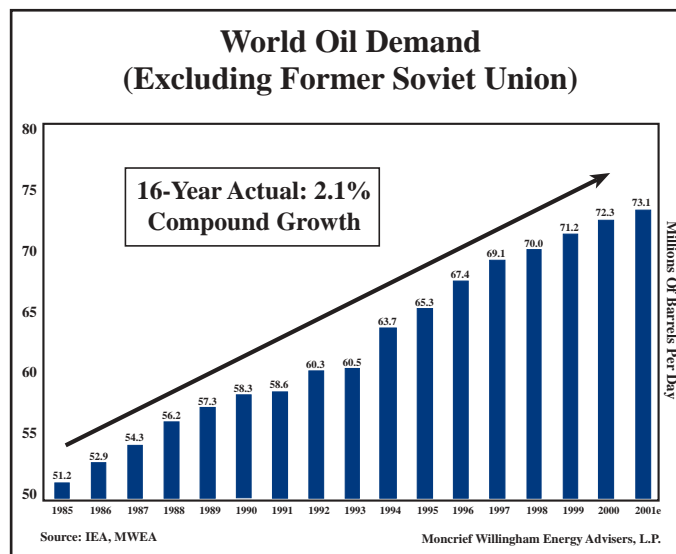
DEMAND-FOCUSED RESEARCH

Virtually all of the Wall Street research reports we receive have detailed analyses about how much demand for oil and natural gas has contracted, which we believe is shortsighted and illustrative of Wall Street’s tendency to look only for the *Waves*. For oil, there is a presumption that jet fuel demand will be sharply lower – most estimates are in the 700,000 barrels/day (B/D) range – and that fuel oil demand will contract because of the worsening of the synchronous world recession. In general, estimates for total oil demand call for about 1.5 million B/D less than before September 11. Natural gas reports similarly focus on the destruction of industrial demand, the surprising no-show of electrical generating demand, and, most of all, the full storage system. For both commodities, the conclusion is price weakness ahead. We have seen oil price estimates as low as \$12/barrel.

Our view of the world has a different focus. Our *Tide* thesis has long been based on the under investment in energy supply for the last two decades, which has left us with too little spare capacity. Oil prices, therefore, could be controlled by OPEC with relatively modest production cuts, and gas prices would have to center on levels much higher than before in order to elicit the needed higher level of drilling. Our expectations are still that oil will trade primarily in a range of \$22 to \$28 per barrel and gas in a range of \$3 to \$4 per MCF with occasional seasonal spikes. The balance of this report explores our view of the oncoming data in the context of this very different outlook compared to the consensus. Suffice it to say we are still very much convinced of our Incoming Energy *Tide*, and encourage our readers to look beyond the *Waves*.

CRUDE OIL

The logical place to start this comparison is with oil demand. In this first chart, we show the history of world oil demand for the last sixteen years with 2001 revised down 1 million B/D. Please note that despite the market crash of 1987, recession in 1991, European convergence recession of 1993/4, and Asian meltdown of 1997/8, demand has stayed remarkably on trend at over 2% per year. In other words, the forces of industrialization and population growth overwhelm macroeconomic events with regard to energy use.



Our conclusion is that the current circumstances will prove no different. Demand may be suppressed temporarily, but will snap back quickly to trend. To that end, we have been watching the U.S. Department of Energy releases to discern U.S. oil usage subsequent to September 11. While jet fuel use is lower, down 10% or 200,000 B/D, it is not down as much as expected. (Perhaps someone failed to include the burn rate of F-16s.) Gasoline usage has rebounded to a level nearly 3% above last year, which more than offsets the decline in jet fuel. There is no general collapse in oil demand in the U.S., rather a slight decline of a fraction of 1% for the last four weeks. We realize that worldwide impacts of the worsened recession and reduced air travel also must be considered. Our conclusion is that the U.S. experience is probably typical, which means world oil demand has been suppressed by about 700,000 B/D to 1 million B/D.

We think the oil picture requires a careful look at supply. U.S. production is falling gradually. North Sea production has started to fall, with UK output particularly weak. Latin American production is down. Asian production is down. This leaves only Africa and Russia with increasing rates of production, outside of OPEC. Five or six large new deep-water fields will come on in 2003/05, raising production 300,000 to 500,000 per day from offshore the west coast of Africa. In the former Soviet Union, production is rising roughly 400,000 B/D in 2001 and will again in 2002. After that, it gets a lot harder to raise production, because decline rates kick in. However, if we add all the pluses and minuses, we conclude that most incremental oil demand will still have to be met by supply from the Persian Gulf.

The only aspect of supply that seems to get any press is the degree of OPEC “cheating.” We maintain that most OPEC producers rarely vary production, producing all they can all the time. For members like Indonesia, whose production will fall 15% next year, output cutbacks are a matter of geological reality, not choice. For analysts, focus should be on Saudi Arabia, Kuwait, and the UAE. They have cut production, and the latest API, DOE, and Euroil inventory numbers show an oil market in balance, with no unseasonal inventory build.

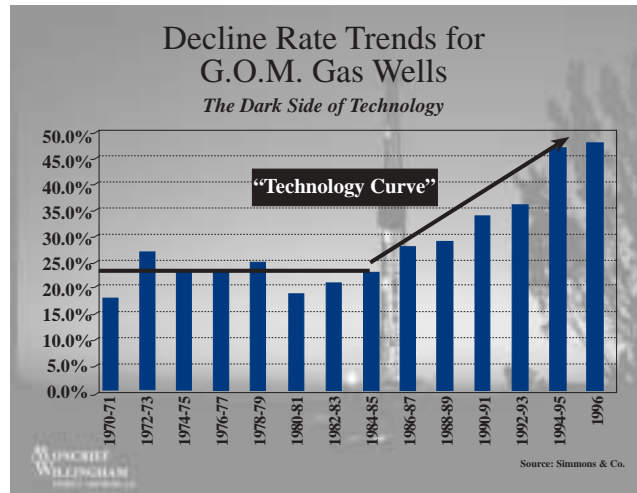
Our last Energy Update (October 9, 2001) went into considerable detail about these short-term oil supply and demand numbers. To recapitulate, because of previous cuts, current OPEC output is below the level required to meet demand calculated by subtracting one million B/D from pre-September 11 expectations. With the normal seasonal spike in heating requirements just weeks away, we expect to see inventories start to contract and prices firm. More important, the sharp slowing in demand growth from the attack provided a breather but no solution to the big picture supply constraint. Economic growth will resume, probably within six months, and with it oil demand growth. Yet virtually all the spare capacity in the world resides in three Persian Gulf countries and is barely enough to meet expected demand 12 months out, much less 2003 and beyond. The Incoming Energy *Tide* is definitely rising, while Wall Street is transfixed by the current commodity market *Wave*.

NATURAL GAS

U.S. natural gas demand this year has been significantly lower than normal. The extreme high prices of late 2000/early 2001, which peaked at \$10 per MCF, created a substantial amount of fuel switching away from gas; and the closing of many industrial plants (such as fertilizer manufacturing) which require gas as a feedstock. A mild summer in the Northeast also contributed to the softened demand. The combined effect was a demand loss of about 6 billion cubic feet per day (BCF/D), which provided the incremental quantities necessary to refill storage from the very low levels of last spring. Since late this summer, both effects have abated, and the current level of industrial demand is only down 1 to 2 BCF/D, primarily because of the weaker economy. Going forward, the use of gas for home heat-

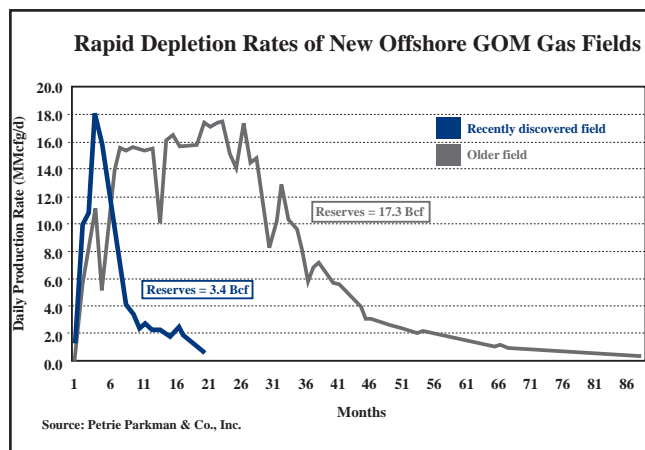
ing and cooking, commercial use, and electrical generation will restart growth and shortly offset the industrial demand, some of which may be lost forever.

The big story, and where we differ from the consensus, again, is **“It’s the Supply, Stupid!”** The only way for producers to grow or even sustain production is to continue a vigorous drilling program. This first gas chart shows the history of gas well decline rates in the Gulf of Mexico. As you can see, what we call the **“Dark Side of Technology,”** or speed-up in the degree to which gas can be produced from a new well, continues to trend higher. We have seen one estimate from a knowledgeable E&P company that the production decline rate in that first year of production may be as high as 60% now. The analogy we like to use is that gas producers are running up a down escalator that has speeded up enormously.



First-year average production rates of GOM gas wells.

Chart 3, below, shows how we have been able to accomplish this feat. Use of 3-D seismic, horizontal drilling, lateral completions, underbalanced drilling, and many other new technologies has had the effect of much more rapid production from any given field. This **“Dark Side of Technology”** is evidenced below in the production profile of a recently developed 3 BCF field compared to a 17 BCF field discovered a decade earlier. Both reach the same level of daily production (astounding!), but, of course, the smaller field is produced out very quickly. We see strong evidence that gas production is now falling rapidly because we are not finding enough new fields in this environment of rapid depletion. Third quarter reports of gas production show dramatic declines, many in the 5% range, led by Exxon Mobil down 14% year-to-year. This is a big story! Even if industrial demand is off 2 BCF/D permanently, a 5% drop in supply more than rebalances the system. What is particularly striking about the declines showing up in gas production is the fact that gas directed drilling in 2001 tripled from the 1999 lows, and doubled the 1997 peak, yet produced only an anemic supply response that is already dissipating. We conclude that gas prices must at least be in our \$3-\$4 MCF range in order to provide the economic incentive for a rig count high enough to sustain supply. With gas prices currently at the low-end of our range, we have seen a reduction of over 220 rigs drilling, since the peak earlier this year. Importantly, the rig count should be well above the peak level of 2001 to sustain the anticipated growth in demand of this cleanest burning fuel.



High rig-counts are necessary to offset the steep decline rates of these new & smaller fields, if our gas production capacity is to be maintained.

Higher gas directed drilling requires higher E&P profitability to generate the needed capital. We have now come full circle to the source of the energy *Tides*. Long periods of underinvestment such as 1985-1999 leave us seriously energy supply constrained. It is the extraordinary returns to energy investors resulting from chronically higher commodity prices, (our \$22-\$28 oil, \$3-\$4 gas forecasts), which generate, and attract, the needed capital. The current Wall Street fixation with demand tells us that they still are missing the *Tide*, which has many years to go.

SURETY OF SUPPLY

One final comment is necessary. Notwithstanding the supply issues referenced above, all of which existed before September 11, we are shocked at the apparent lack of concern over the geopolitical risk to world oil supply. Considering that the goal of the terrorists is to foment a West vs. Islam war, one has to be concerned. Since 18.6 million B/D come out of the Persian Gulf, and another 6.0 million B/D come from other Muslim countries, we recommend investment focus be on companies developing production in this country or hemisphere. Consider the comparison with the Gulf War period of 1991. Then, the world had 10 million B/D of spare capacity versus a world oil-demand level of 66 million B/D. Even if both Kuwait and Iraq were out of action for a while in 1991, there was still enough oil. Today, spare capacity is about 3 million B/D versus demand of 76 million B/D. The Iraqi food for oil program expires on December 6, and could be tough to renegotiate. There goes the spare capacity. Should any other disruption occur, we have the makings of a crisis that looks very much like the 1973 period in the last *Tide*.

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