Blundering *To* $300 *Per* Barrel

BY PHILIP K. VERLEGER, JR.

And the blame for the coming period of catastrophic energy price volatility will be widespread.

Before the decade ends, U.S. consumers will be paying $10 per gallon for gasoline while on the same day others pay $0.50 per gallon for E85 (an 85:15 ethanol/gasoline blend). Before 2021, consumers in Europe will see diesel prices rise from the current €1.40 per liter level to €2.50 if the euro/dollar exchange rate stays where it is and taxes do not increase. Before the decade closes, U.S. consumers will also pay less than $2 per gallon for gasoline as their European counterparts pay under €1 per liter, again assuming no tax or exchange rate changes.

These price peaks and troughs could even occur in the same year!

Europe and the United States will likely see four major price cycles between 2012 and 2020. The cause of these ups and downs will not be the usual suspect: surging global demand. In other words, rapacious Chinese consumers will not be to blame. The twenty-first century American stagecoach, the SUV, will not be at fault either. Nor can one assign responsibility for the increased frequency and volatility of price cycles to environmentalists who delayed U.S. government efforts to accelerate offshore drilling. Lastly, the speculators and passive investors so frequently criticized for their activity in commodity markets will bear no guilt.

Instead, future historians will identify the cause as a failure to coordinate agriculture, energy, and environmental policies in major countries. They will add that misguided tax policies and incentives offered to business made the situation worse, laying the foundation for the chaos that will dominate markets for years. This

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disorder will knock percentage points from global growth rates, subtract trillions from global GDP, strengthen terrorists in commodity-exporting countries, and undermine respect for government institutions.

Make no mistake about it. The rise in petroleum retail prices and the discrepancy between renewable fuel and traditional gasoline prices will denigrate the public view of the U.S. government in a way that rivals the widespread civic ire brought on by the 2008 bank bailouts. President Obama has already seen his credibility undermined by gasoline prices rising unnecessarily from $3 to $4 per gallon. The situation will get worse.

Blame for the increased volatility can and must be spread widely. Necessary and important environmental regulations have been poorly drafted, needlessly squeezing clean fuel supplies. Conservation-oriented energy policies in Europe inadvertently boosted diesel fuel consumption without providing a compensating supply boost. Laws requiring increased renewable fuel use (ethanol mostly) could create monumental market distortions. Current circumstances have given multinational oil companies huge financial incentives to produce more crude oil rather than invest in much-needed refinery upgrades. These policies force oil-exporting countries to limit heavy sour crude production to maximize revenue. Lastly, the global oil industry has kept its head tucked firmly in the sand (or worse) for more than forty years now. Whereas brilliant leaders have emerged in energy sectors such as the U.S. power generation business, bland faceless individuals unwilling to venture far from narrow silos still dominate the international oil industry.

Tighter environmental regulations are a primary contributor to the greater oil price volatility. Over the last three decades, new environmental rules have been imposed on fuels sold in the United States, Europe, Japan, China, and much of the developing world. Initially, regulators mandated lead removal from gasoline. Then, over the last twenty-five years, they have demanded the removal of sulfur and other harmful chemicals. Much of the focus has been on sulfur. Diesel fuel once contained as much as 25,000 parts per million. (Those of a certain age will remember the black smoke belching from trucks and buses. That choking exhaust came from sulfur in the fuel.) Today, much of the world's diesel fuel is limited to 10 ppm of sulfur or less.

Sulfur regulations have also spread to ships. Oceangoing vessels can use fuel with sulfur content of 4.5 percent until 2012 under International Maritime Organization rules. However, sulfur content must be reduced 90 percent by 2020 and much sooner for ships plying European, Japanese, and U.S. waters.

The strict environmental rules on sulfur can be met by investing more in refineries or buying crudes with very low sulfur content. Most refiners, including some multinational oil companies, chose the less-expensive route. Their focus is on acquiring low-sulfur crudes. Consequently, prices for these crudes are bid to record levels when supplies are squeezed. For instance, refiners competing for sweet crude sent prices to $147 per barrel in 2008 when supplies of desirable, low-sulfur oil from Nigeria were reduced. At the same time, sour crude supplies went begging because refiners lacked the capacity to remove sulfur. As the International Energy Agency noted in an obscure oil market report, "there was no clear indication of a [crude] shortage." The agency did, however, acknowledge a tightening in sweet crude supply.

Agricultural policies further worsen the situation. For four decades, agricultural interests have insisted that the global energy squeeze could be eased by substituting biofuels, particularly ethanol. The U.S. Congress ordered 35 billion gallons per year of non-diesel ethanol to be consumed by 2022. Unfortunately, there is no way to use 35 billion gal-

lons of ethanol in conventional fuel mixes given the improved fuel economy and declining vehicle use following the 2008 price increase and Great Recession. Compliance with the law can only be achieved by increasing the ethanol amount blended into gasoline, an action that probably invalidates most vehicle warranties, or boosting E85 sales.

By 2015 at the latest, marketers will be offering E85 at discounts of 50, 60, or 70 percent to gasoline. These discounts will attract consumers and lead many to convert their vehicles to use the fuel.

Energy policies regarding fuel use pursued by consuming nations inadvertently make matters worse. Diesel engines have been favored over gasoline engines for decades for their durability, dependability, and fuel economy. European governments in particular have offered strong incentives for purchasing diesels. This effort was so strong that diesel-powered cars have accounted for a large percentage of new vehicle registrations in recent years (80 percent in France, for example).

Unfortunately, not all crude oils produce high diesel yields when initially refined. As a further impediment, many refineries built over the last fifty years were designed to maximize gasoline rather than diesel production. This is especially true for Europe. Thus, a mismatch has developed between strong diesel demand and limited supply.

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Under these circumstances, refiners have had two choices: buy crudes with high diesel yields or build advanced facilities to convert heavy sour crude into diesel. In general, they took the first approach, purchasing light sweet crudes like those from Libya, Nigeria, and the North Sea.

The other alternative, investing in hydrocracking facilities, presents a daunting challenge for most refiners. These units can convert roughly two-thirds of the heavy residual fuel oil distilled from Arab Heavy crude, for example, into 100,000 barrels per day of distillate. The cost of these facilities is exorbitant, however—roughly $4 billion per 100,000 barrels per day of diesel produced. Put another way, the price tag for upgrading two or three refineries to produce 400,000 barrels per day of diesel equals the current cost of a large-scale nuclear power plant ($16 billion). By 2020, it will probably cost the industry $100 billion to construct the needed facilities. As yet, the money does not appear to be forthcoming.

Policies of consuming governments regarding resource development give the oil industry the wrong incentives. The economic incentives available to large integrated companies today place a premium on exploring for crude oil instead of refining. Thus, Shell Oil has spent billions drilling while closing or selling one-third (1.6 million barrels per day) of its refining capacity over the last decade. No doubt, the company would have invested in hydrocrackers had incentives been offered. Refining remains a low-margin business, however, while crude production is high margin.

The effect of Shell's refinery sales seems obvious. Global diesel productive capacity is less than it might have been because Shell did not put money into refining. As the IEA noted, sweet crude prices were pushed higher by the dearth of capacity. The lack of investment inadvertently boosted crude prices and Shell profits.

Tighter environmental rules and the failure to invest in needed refining upgrades limits demand for heavy sour crude. Oil-exporting countries are no different than multinational oil companies. Their leaders seek to maximize revenue. To do so, they must limit sales of heavy sour crude such as Saudi Arabia's Arab Heavy. Their national incomes would fall were they to do otherwise.

Increased production of heavy sour crude today would result in a sharp rise in the supply of unwanted, high-sulfur fuel oil. Fuel oil prices would decline, pulling down the sour crude price and the incomes of countries producing this type of crude.

The oil-exporting nations have addressed this problem by effectively setting an artificially high price for sour crude. Traders and refiners naturally take less, as would buyers of any commodity. Global crude supplies, of course, are cut and prices of all products and crude pushed higher.

Some individuals, such as IEA officials, assert that producing countries should offer larger incentives to refiners to take sour crude and thus promote needed investment in refining. The leaders of these nations fail, unsurprisingly, to see why they should make economic sacrifices when others, such as the multinational oil industry, are not being asked to take similar pain.

The multinational oil industry has also suffered from a lack of leadership for more than forty years. The impact of leadership cannot be quantified, yet it is clear that leaders matter. All one has to do is compare the success and growth of Apple with that of any major oil company. Steve Jobs has led Apple for most of its history. After a brush with bankruptcy, the firm has resisted the MS-DOS-centric approach led by Microsoft and continually created unique devices in addition to its innovative laptop and desktop computers. Apple has also perfected the marketing technique of offering one enticing product after another that buyers want as soon as they lay eyes on them. Behind the scenes, the company has cultivated relationships with governments and competitors to expand its offerings and lower prices.

The major oil companies have followed the opposite tack, withdrawing from markets, resisting inevitable government regulations, and warring with their natural allies such as automobile manufacturers. The CEO of the French company Total portrayed the industry's mindset perfectly when he protested to the French government over its push for diesel fuel. According to him, his firm had warned for twenty years that the policy would drive France into a "brick wall." The approach and outcome would have no doubt been different had Steve Jobs and Apple executives been running Total.

The E85 issue brings up another example of the industry's obsolescence. The American Petroleum Institute has strongly resisted renewable fuel programs. However, API has zero political clout in battles with agriculture and renewable fuel interests. The oil industry's failure to look forward and adapt to changing circumstances again results from a lack of leadership. The auto industry, following an Apple-type cooperative approach with the renewable fuels industry, obtained legislation which forced the oil industry's hand.

Time and again the oil industry has dug in its heels to resist environmental policies such as requirements to produce cleaner fuels, much to the global economy's detriment. One can only wonder how different things would be had an exciting leader such as Jobs taken a leadership role. Sadly, this is still unlikely today. The best and the brightest students entering the workforce want nothing to do with the oil business.

Lastly, financial markets have made, at worst, a minor contribution to increased price volatility and will have little impact in the future. The recent G20 meeting squandered significant time discussing the rise in commodity price volatility attributed to futures markets.

Energy and environmental officials, as well as oil industry representatives, could have told the assembled leaders that markets did not cause the problem. However, these individuals remained silent and let markets take the fall.

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This strategy of blaming speculators will ultimately fail. Regulations on speculative activity will be tightened and those blamed for price volatility forced out of the market. However, price volatility will still increase because the root causes of the market's growing instability have not been addressed.

Expect three or four oil price cycles of increasing volatility between 2012 and 2020. The lack of policy coordination and industry leadership guarantees larger and more frequent price cycles. Product prices will surge to new highs with each burst of economic activity because supply cannot increase. Crude will follow, pulled up by product prices. The price rise will quickly put the brakes on the economy. Employment, output, and GDP will fall across the globe, taking down gasoline and diesel prices. Crude will plummet. It is entirely possible that gasoline prices of $10 per gallon and $2 per gallon will be observed in the same year. It is equally possible that crude prices of $300 per barrel and $30 per barrel will occur in the same year.

This increase in volatility results from the failure to think systematically about the various policies pursued by governments individually and globally. The absence of leadership in the oil industry has made matters worse. Eventually, the battle between the oil industry, environmentalists, renewable energy advocates, and energy policy officials will become pitched. While the winners cannot be known now, there will be three clear losers: world consumers, the world economy, and the multinational oil companies. ◆