


# Energy Prices And The Global Economic Recovery

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## ABSTRACT

*Global economies seem on their way to recovery after the recent downturn. However, one dilemma has emerged that could halt expansion and raise the specter of inflation – energy prices.*

## INTRODUCTION

lobal economies seem to be either started or well on their way to recovery from recent downturns. Even the Japanese economy, after a decade of recession and deflation, appears to be expanding. However, one possible problem looms on the horizon that could halt expansion and raise the specter of inflation – the increasing price of energy.

Over the past few months, the headlines almost daily recorded the ever-increasing price of energy – particularly oil. Businesses and consumers around the world watched as the price of oil approached and then passed \$40 per barrel, exceeding the previous record set during the Iraqi invasion of Kuwait in 1990. American consumers saw the price at the gas pump hit all-time records, with the average price in the U.S. approaching \$2.00 per gallon.

Central bankers around the world warned of the inflationary impact of higher oil prices. Jean-Claude Trichet, president of the European Central Bank (ECB), stated that the increase in oil prices may pose “an upside risk to price stability” and that eurozone inflation could rise above 2 percent over the next few months.<sup>1</sup> Alan Greenspan, Chairman of the U.S. Federal Reserve (Fed) added that the “dramatic rise” in oil and natural gas futures prices in recent years carried the potential to “significantly affect the long-term path of the U.S. economy”. He continued that recent price increases have “been substantial and persistent enough to influence business investment decisions, especially for facilities that require large quantities of natural gas”.<sup>2</sup>

The Organization of Economic Co-operation and Development (OECD) and the International Monetary Fund (IMF) added their warnings. The OECD stated “higher prices are contributing to stubbornly high levels of unemployment and exacerbating budget deficits in oil importing countries”. It continued that the impact is greater on developing countries because they are more dependent on imported oil. The IMF suggested that a \$10 increase in the price of a barrel of oil subtracts 0.4 percent from a country’s Gross Domestic Product (GDP) and pushes inflation up 50 basis points.<sup>3</sup>

How dramatic are the price increases? What is causing prices to increase? Will higher energy prices impact the global economic recovery? Will countries depending on heavy industry, such as China, Japan, and Germany, face a slowed recovery as production costs increase? And, while certain sectors such as aviation and ground transportation feel the pinch, will the switch from a manufacturing to a service orientation protect the U.S. recovery? These are the questions this paper will address.

## HOW DRAMATIC IS THE INCREASE?

Obviously prices have increased – and increased rapidly and unrelentingly. But, how high are they? The price of a barrel of oil surged 27 percent from May 2003 to May 2004. Prices increased 3.6 percent during the week of May 10<sup>th</sup> alone. Crude oil for June delivery on the New York Mercantile Exchange closed at \$41.38 a barrel on

May 14, eclipsing the previous record of \$41.15 set in October 1990 during the Iraqi occupation of Kuwait. Crude oil previously approached \$40 a barrel in the early 1980s in response to turmoil in Iran.

However, adjusting for inflation, oil prices are lower than they were two decades ago. A barrel costing \$40 in 1981 would cost almost twice that amount in today's dollars.<sup>4</sup> So, we must keep the price increase in perspective. Prices have jumped dramatically, they are hitting all-time records in nominal value, but in real terms, they are not at historical highs.

### **WHY ARE PRICES INCREASING?**

Why are oil prices rising? The most common cause of increasing oil prices over the last thirty years has been a decrease (or threatened decrease) in supply. Prices increased during the early 1970s as Arab states reduced supply to protest actions in the West. Again prices increased in the early 1980s as the collapse of the government of the Shah of Iran and subsequent war between Iran and Iraq threatened supply. And, prices increased in the early 1990s when the Iraqi invasion of Kuwait and subsequent war caused interruptions in the flow of oil from the Middle East.

But, this does not seem to be the case this time around. Officially, members of the Organization of Petroleum Exporting Countries (OPEC) did agree in 2003 to decrease production and keep prices high. This was partially a reaction to the fall in the value of the dollar against other currencies. Oil transactions are denominated in dollars and the depreciation of the dollar substantially reduced the flow of funds into the coffers of oil producing countries.

However, the official quotas set at OPEC meetings rarely have anything to do with actual production and this has certainly been the case in the past few months. All members of OPEC have been producing at almost full capacity except Saudi Arabia. We should note that there has been reduction in output in some countries. For example, Venezuela shut down oil production in late 2002 because of political turmoil and crippling oil worker strikes. Although Venezuela is pumping again, some capacity has not yet been restored. Iraq stopped pumping oil at the beginning of the 2003 invasion by the U.S. and though production has rebounded, exports still lag because of sabotage.<sup>5</sup> Oil worker strikes have reduced production in Nigeria, and Indonesian production has declined because of a decrease in outside investment. Decreased production and increased domestic demand caused Indonesia to become a net importer of oil.<sup>6</sup>

Saudi Arabia agreed to increase its production by 6 percent in late May, but this is expected to have limited impact on prices – at least in the short-run. The increased production will not reach the shores of the U.S. for six weeks and when it does arrive, it will be primarily heavy crude rather than the preferred sweet light crude. Heavy crude is used mainly for heating oil rather than gasoline – which is the product most demanded in the U.S. currently. In addition, heavy crude from Saudi Arabia and other Middle Eastern countries is predominantly sour crude, which has a high sulphur content. Although U.S. refineries can refine sour crude, costs increase substantially. Most experts believe that the U.S. will seek additional supplies from West Africa – which produces sweet crude – and the higher Saudi Arabian output will be shipped to Asia. Asian countries, including China, still rely on oil-fired power generators, which use fuel oil.<sup>7</sup>

If supply is not the culprit or at least the major culprit, what is? Purnomo Yusgiantoro, the president of OPEC and energy minister of Indonesia, blamed high prices on factors beyond the control of OPEC. He cited “speculation, geopolitics, and structural problems in the U.S. gasoline market (refinery capacity and variations in automobile emissions standards)”.<sup>8</sup> We believe that speculation is partly driven by the geopolitical situation and the fear of production or distribution interruptions. But a major factor, not mentioned by Mr. Yusgiantoro and discussed here, is the spiraling increase in the demand for oil. We will address each of these separately.

## **The Demand Goes Up And Up!**

As stated previously, the economies of the world seem to be recovering from the downturn of the last few years. As economic activity increases, the demand for oil increases. But, the magnitude of the demand increase has taken many by surprise. The International Energy Agency (IEA), the group that watches the energy market for the OECD, recently revised its year-on-year demand growth estimate for the second quarter by 270,000 barrels a day to 78.3 million barrels – 2.2 million barrels per day above 2003.<sup>9</sup> This has been particularly true in the U.S. and China where economic growth has greatly increased the demand for oil.

In the U.S., the greatest increase has been in the demand for gasoline. American drivers use 45 percent of the gasoline consumed globally. The second biggest gas guzzler – Japan – consumes only 5 percent of the world's total.<sup>10</sup> In the week of May 5, American drivers used 9.37 million barrels per day an increase of almost 500,00 barrels a day from the previous week.<sup>11</sup> From mid-April to mid-May, gasoline demand averaged 9.1 barrels per day – an increase of 3.2 percent over the previous year.<sup>12</sup>

Chinese import figures illustrate the competition the U.S. is facing in securing foreign oil and oil products. The magnitude of China's demand has propelled energy prices – including crude oil, coal, diesel, and jet fuel – to record highs with the Chinese economy responsible for a third of the rise in daily global oil consumption. China's increasing affluence has caused automobile sales, domestic transportation costs, and air travel to surge. Its rapid industrialization has placed strains on its infrastructure including its ability to generate power. China has invested in energy-intensive industries such as steel and aluminum production, and plastics, which use inputs derived from crude oil. The combination of increased car ownership and industrialization has doubled Chinese oil consumption in the last 10 years. Increased oil consumption has caused China to pass Japan as the second largest oil consumer, following only the U.S.<sup>13</sup>

## **Limited Refinery Capacity**

Global oil refinery capacity could be stretched to the limit if demand estimates for the fourth quarter of the year are met. The IEA estimates global refinery capacity at 81.2 million barrels per day – about 2 million barrels per day above current consumption. However, refinery capacity is below IEA estimates for fourth quarter consumption of 82.4 million barrels per day.

The number of refineries in the U.S. has decreased by about two-thirds in the last 20 years to approximately 150 plants. Total capacity has decreased from 19.78 million barrels per day in 1990 to 17.68 today. The reduction in capacity was caused by the closure of small refineries due to low profit margins during the 1990s. Because of reduced capacity and increasing demand, U.S. refineries are operating at 96 percent capacity.<sup>14</sup> No new refineries are planned in the U.S. or Europe because of tighter environmental standards. However, current high profit margins are stimulating proposals for increased refinery capacity in Asia, where environmental standards are lax. While the U.S. imports only 13 percent of its domestic gasoline requirements today, experts suggest that in the future, crude oil will be shipped from the Middle East to refineries in Asia and the final product then shipped to the U.S.<sup>15</sup>

In addition to reduced capacity, U.S. refineries face stronger environmental standards. To meet tighter emissions controls, refineries have been upgrading plants prolonging the stretches they close for maintenance and reducing their production.<sup>16</sup> Unfortunately, many foreign refineries have not upgraded to meet the new standards. The import of gasoline fell 20 percent in April as compared to April 2003, putting a further strain on U.S. refineries and upward pressure on gasoline prices.<sup>17</sup> Several states including California, New York, and Connecticut petitioned to delay the introduction of tighter emissions laws that would require changes in gasoline blends. Spencer Abraham, the U.S. Energy Secretary is said to be seriously considering the California petition.<sup>18</sup>

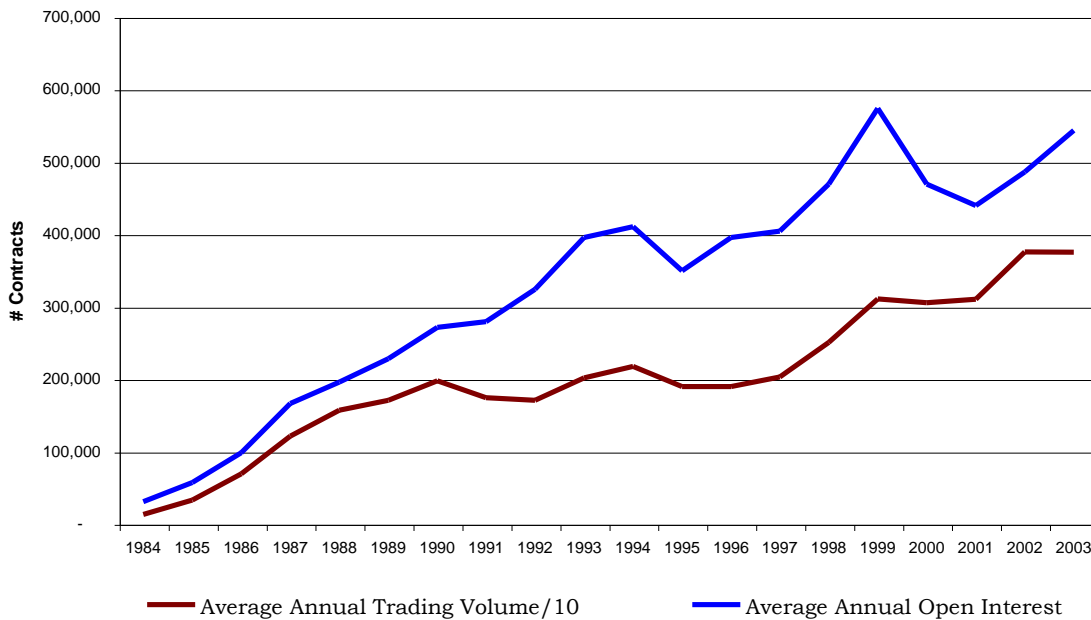
Beyond capacity and environmental issues, structural problems impact the distribution of gasoline. That is, emissions standards differ from state-to-state in the U.S. Therefore, gasoline blends vary from state-to-state. This makes it often difficult to move excess capacity in one state to another state in need and increases the overall price of gasoline.<sup>19</sup>

**Speculators Move In**

Speculative investors have impacted oil prices in two ways. First, it appears that the volume of trading in oil futures is above that expected for hedging purposes alone. The excess volume and increased volatility may be the results of trading by speculators. Second, terrorist activities in the Middle East appear to have increased the risk premium added to these contracts. Let’s examine both of these in more detail.

The New York Mercantile Exchange began trading crude oil futures in 1983. Since then, the volume and open interest – the number of contracts outstanding – has increased rapidly. The average monthly volume of contracts traded averaged over 3.7 million in 2003 compared to approximately 37,000 in 1983. Figure 1 illustrates the growth in both the “trading volume” and the “average open interest”.

**Figure 1: Average Annual Trading Volume and Open Interest, NYMEX**



Energy futures have an obvious economic purpose to large consumers of oil and natural gas, allowing them to hedge against adverse price movements. Additionally, even though the correlation between crude oil and many commodities is minor, energy futures provide valuable tools for constructing cross-hedges – hedging against adverse price movements in a commodity for which there are no futures contracts with contracts of a different commodity.

The leverage available from futures trading makes these instruments an attractive tool for speculation. Trading strategies involving futures typically involve margin or applying only a “down payment”, which can be as little as 5 percent of the total notational value. Additionally, new instruments have been introduced making leveraged energy bets relatively inexpensive and within the reach of even the smallest of investors. A new form of contract, called “e-mini’s”, represent 1/10<sup>th</sup> of a normal contract and hence require only 1/10<sup>th</sup> the margin.

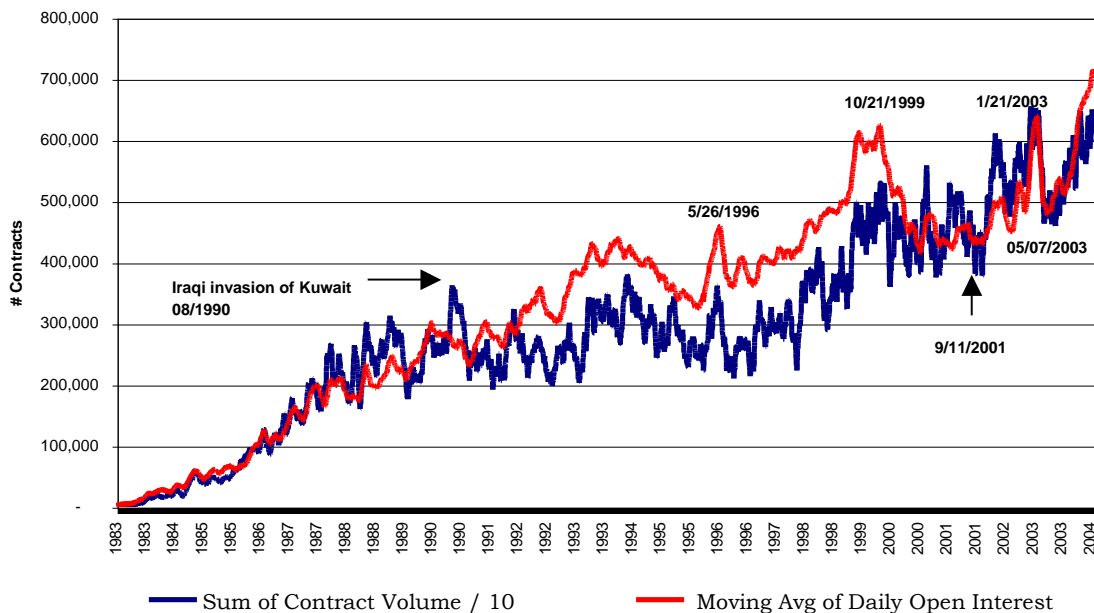
There are several methods to estimate the impact of speculative influences on world energy prices. One method examines the net position between those who buy on the long side – the camp that expects prices to continue to rise – and those who buy on the short side – investor who expect prices to fall. If we observe a positive net position, then speculative interest is creating a bubble that produces a premium in the price. Net position has fallen

from its peak in March meaning that fewer people now think prices will keep rising and speculative activity is decreasing. However, the current level is still double that of last year, a record at the time.<sup>20</sup>

A second method is to examine trading volume and open interests. Figure 2 contrasts “trading volume” to “open interests”. From 1983 to 2000, trading volume normally averaged below total open interest, a sign of a well-balanced market. Exceptions can be noted particularly from 1988 –1990, the time preceding and during the first Gulf War. Since late 2000, however, a new dimension has been seen in crude oil futures. Perhaps traders, no longer viewing equities as an attractive trading medium have switched their focus. For whatever reason, contract volume has increased and now, at times, exceeds open interest, a sign of speculative activity.

The large spike in contract volume occurring in 1990 undoubtedly stemmed from uncertainty among investors or speculators over the supply of oil. The same scenario can be seen today with the increase in terrorism occurring throughout the Middle East. It can then be argued; increased trading in the futures must be related to increased uncertainty in the supply of oil. Looking at this from another point of view, uncertainty creates volatility and market inefficiencies, volatilities create short-term profit opportunities, and short-term profit opportunities will ultimately attract speculators.

**Figure 2: Light Crude Futures Daily Trading  
NYMEX, continuous contract, 5/1983 – 5/2004**



Speculators are also increasing the price of crude futures contracts by requiring a larger risk premium caused by the fear of supply disruption from terrorist activities. Iraq’s oil fields, pipelines, and export terminals have been a favorite target of insurgents. Sabotage on the Kirkurk-Ceyhan pipeline has virtually halted northern oil exports. The suicide boat attack on the main oil export terminal at Basra in April increased concern about future supplies from Iraq as exports approached pre-war levels, and doubled insurance costs for tankers going to Basra – causing oil prices to increase.<sup>21</sup> Exports fell by 1 million barrels per day after the southern pipeline was bombed on May 8 almost wiping out production increases from OPEC.<sup>22</sup>

But, as crippling as the attacks in Iraq have been, the increase in attacks in Saudi Arabia has been even more devastating. After a series of raids on suspected terrorist safe houses, thwarting several planned attacks, and

confiscating large quantities of weapons and explosives, the Saudi luck ran out. In early May, five Western contractors were killed at Yanbu, Saudi Arabia’s western oil hub. The attackers drove through neighborhoods housing foreign oil workers firing randomly with semiautomatic weapons. The attack led to the withdrawal of foreign workers by several firms and the offer of removal by many others. Security has been upgraded in Yanbu and other locations housing foreign workers. But, the loss, even temporarily, of a large number of foreign oil workers could cripple Saudi production.<sup>23</sup> These events have added to the fears that oil flow will be disrupted and added upward pressure to oil prices.

**IMPACT ON WORLD ECONOMIES**

**Will The Global Economic Recovery Be Impacted?**

All industrialized countries are sensitive to energy prices. The question becomes how sensitive and what will be the impact of higher energy costs on economic growth? The degree of sensitivity relies on two factors – whether the economies are service-oriented or dominated by heavy industry and whether they are net importers or exporters of energy.

Service-oriented economies will likely consume less energy or at least be able to maintain an acceptable level of growth in an increasing oil price environment. The economies facing difficult pricing are those whose industries are heavy users of energy or are heavy industry.

**Table 1: Correlation between Industrial Production and Oil Prices**

	West Texas		UK Brent	Dubai
	Intermediate			
United States	0.1367		0.2980	0.3037
United Kingdom	-0.0983		0.2295	0.2274
France	0.1797		0.4195	0.4155
Germany	0.0686		0.3302	0.3197
Japan	-0.1090		0.3642	0.3531
India	0.1419		0.2459	0.2496
Mexico	0.1826		0.4577	0.4617
1) Industrial Production data seasonally adjusted				

Table 1 looks at the correlation between industrial production and three different oil prices – West Texas Intermediate, UK Brent and Dubai oil. The chart shows that industrial production in the U.S. is positively correlated to all three oil prices. That is, oil prices impact production. But, France, Germany, Japan, and Mexico production – all of whom either depend on heavy industry or are net importers – are more susceptible to oil prices increases.

The eurozone countries have voiced strong concerns about rising oil prices and their impact on economic recovery. This is particularly worrisome to Germany, which has depended on exports at competitive prices to drive its economy.

**Will The U.S. Recovery Be Stymied?**

What will be the impact of rising energy prices on the U.S. economic recovery? As shown in the table above, there is a positive correlation between increases in oil price and economic growth. However, most analysts believe that the economy as a whole will be impacted only slightly, although certain sectors will be negatively affected. The U.S., other than its attachment to its automobiles and driving, has become less energy dependent. New, innovative energy-saving technology and the shift from heavy manufacturing to a service-oriented economy

has reduced the U.S. economy's vulnerability to oil shocks. Currently each real dollar of GDP takes half as much energy to produce as before the oil embargo in 1973. In addition, overall consumption of energy per capita has been essentially flat for the last 30 years.<sup>24</sup>

Although limited, the impact is being felt. The high price of oil was a significant factor behind the record U.S. monthly trade deficit for March. The cost of crude oil and petroleum product imports increased from \$11.45 billion in February to \$13.72 billion in March – or 30 percent of the total trade deficit. The oil import bill for April and May are expected to be even higher as prices continue to rise and consumption has failed to fall.<sup>25</sup>

The price of gasoline at the pump has increased by more than \$.50 per gallon during the last year. Analysts predict that the rising price of gasoline will probably not curtail consumer spending enough to derail the economic recovery. But, analysts estimate that the price increase will cost U.S. consumers approximately \$50 billion in 2004<sup>26</sup> and the higher cost will impacted some consumer spending. Wal-Mart Stores, for example, reported in early May that the higher gasoline prices had taken an average of \$7.00 per week from the pockets of its customers and reduced their expenditures on the stores' goods. Additionally, sales of the larger, gas-guzzling Sport Utility Vehicles (SUV) were down in April as compared to April 2003 sales. However, sales of the medium and smaller SUVs jumped significantly.<sup>27</sup>

The bottom line of U.S. airlines has also been affected. Continental Airlines followed its announcement of fare increases to help offset higher fuel costs with a warning that lay-offs, wage cuts, and pension reductions may be necessary to ensure its viability in the current high cost environment. United Airlines matched Continental's fare increases and stated that high jet fuel costs were delaying its profitability and prolonging its bankruptcy. Other airlines selectively matched the fare increases. The airlines are facing their fourth consecutive year of heavy losses. Early predictions of a return to profitability as passengers returned and revenue began to recover have been dashed due to high oil prices.<sup>28</sup>

Other U.S. sectors have also felt the impact of higher oil prices. The increase in the price of diesel fuel – which has outpaced gasoline prices – has hit truck transportation and farmers hard. Diesel price increased 43 percent from May 2003 to May 2004. The transportation industry has been able to pass some of the increased cost to producers and consumers, but some will hit the bottom line. Farmers are trying to reduce the use of tractors, irrigation equipment, and other diesel run equipment, but with limited success. Farmers have to farm and that requires equipment. In addition, they are being hit with increased transportation charges when they ship their produce to market. With limited ability to pass-through higher costs, farmers are looking at cutting other expenses to stay profitable.<sup>29</sup>

## **CONCLUSION**

So, what does it all mean? On the supply side, OPEC countries will be able to provide only limited relief. However, Russia may be the key. Oil production has increased by 48 percent in the last five years, as new fields in Siberia have been developed and new pipelines completed. In addition, other countries such as Mexico and Canada pledged to increase their production. Some experts believe that production from non-OPEC countries will increase daily production by 20 million barrels by the end of the decade.

On the demand side, Americans will probably not significantly decrease the amount they drive. However, there may be a shift in the demand for new automobiles. In May, the requests for information on SUVs was down by 13 percent and requests for information on hybrid cars up by 73 percent. Year-to-year sales of large SUVs dropped substantially during the spring with the sales of Hummers hardest hit. Year-to-year sales of small SUVs, however, increased. It is too early to say whether this is a true modification of behavior or a temporary phase. Sales over the next few months will be closely watched to see if the pattern persists.

But, oil consumers other than U.S. drivers may also be reducing their demand. China announced plans in early June to generate 10 percent of its power through renewable sources by 2010. Facing power shortages and skyrocketing oil imports, China's ambitious plan will depend mainly on small-scale hydroelectric projects, although a national campaign to build windmills and solar-powered homes is also planned.

Limited oil refinery capacity will probably continue to be a problem. As stated earlier, no new refineries are planned in the U.S. or Europe. U.S. refineries have pledged to produce at full capacity and minimize downtime for maintenance. But an increase in refinery capacity is needed to meet demand. The world will probably look to Asia to solve this dilemma.

Speculation seems to be tempering as energy prices have retrenched in the last few weeks. However, uncertainty is high as violence in Iraq continues and additional attacks on foreign workers occur in Saudi Arabia. If the flow of oil were disrupted, the prices at least in the short-term would rise quickly.

Energy prices are a continuing concern to world economies. They have the potential to slow the recovery. Gasoline prices are expected to increase through the summer – the period of largest U.S. demand – but may decrease in the fall as demand drops, supply stabilizes, and refineries maintain their production. In the long run, high prices will cause supply to increase and demand to decrease. But, in the short run, the worse may occur.

## ENDNOTES

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- <sup>1</sup> *The Financial Times*, May 7, 2004, p. 1.
  - <sup>2</sup> *The Los Angeles Times*, April 28, 2004, p. C4.
  - <sup>3</sup> *The Financial Times*, May 4, 2004, p. 3.
  - <sup>4</sup> *The Los Angeles Times*, May 17, 2004, p. C1.
  - <sup>5</sup> *The New York Times*, April 9, 2004, p. C4.
  - <sup>6</sup> *The Financial Times*, March 29, 2004, p. 13.
  - <sup>7</sup> *The Financial Times*, May 28, 2004, p. 6.
  - <sup>8</sup> *The New York Times*, May 21, 2004, p. C1.
  - <sup>9</sup> *The Financial Times*, April 10/11, 2004.
  - <sup>10</sup> *The Financial Times*, May 18, 2004, p. 15.
  - <sup>11</sup> *The Financial Times*, May 13, 2004, p. 33.
  - <sup>12</sup> *The Financial Times*, May 14, 2004, p. 27.
  - <sup>13</sup> *The Financial Times*, May 21, 2004, p. 7.
  - <sup>14</sup> *The New York Times*, May 16, 2004, p. A1.
  - <sup>15</sup> *The Financial Times*, May 10, 2004, p. 16.
  - <sup>16</sup> *The Financial Times*, April 2, 2004, p. 33.
  - <sup>17</sup> *The Financial Times*, May 21, 2004, p. 4.
  - <sup>18</sup> *The Financial Times*, April 10/11, 2004, p. 11.
  - <sup>19</sup> *The New York Times*, May 21, 2003, p. C1.
  - <sup>20</sup> *The Financial Times*, May 26, 2004, p. 7.
  - <sup>21</sup> *The Financial Times*, April 27, 2004, p. 6.
  - <sup>22</sup> *The Financial Times*, May 20, 2004, p. 4.
  - <sup>23</sup> *The New York Times*, May 8, 2004, p. B1.
  - <sup>24</sup> *The Financial Times*, April 14, 2004, p. 16.
  - <sup>25</sup> *The Financial Times*, May 13, 2004, p. 7.
  - <sup>26</sup> *The Financial Times*, May 18, 2004, p. 15.
  - <sup>27</sup> *The New York Times*, May 16, 2004, p. A1.
  - <sup>28</sup> *The Financial Times*, May 20, 2004, p. 23.
  - <sup>29</sup> *The Los Angeles Times*, May 10, 2004, p. C1.