

*Behind the myths of an oil crisis and an oil weapon is a very real danger posed by a clumsy and shortsighted cartel.*

# The Real Oil Problem

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**A**CCORDING TO “CONVENTIONAL wisdom,” humanity’s need for oil cannot be met and a gap will soon emerge between demand and supply. That gap will broaden as the economies of Europe, Japan, and several emerging nations grow and increase their energy needs. The United States is at the mercy of Middle Eastern exporters who can use the “oil weapon” to cripple the U.S. economy. Unless we increase domestic oil production radically or cut consumption, or nations like Russia quickly exploit recently discovered oil fields, the United States will find itself in an oil crisis.

But conventional wisdom “knows” many things that are not true. There is not, and never has been, an oil crisis or gap. Oil reserves are not dwindling. The Middle East does not have and has never had any “oil weapon.” How fast Russian oil output grows is of minor but real interest. How much goes to the United States or Europe or Japan — or anywhere else, for that matter — is of no interest because it has no effect on prices we pay nor on the security of supply.

The real problem we face over oil dates from after 1970: a strong but clumsy monopoly of mostly Middle Eastern exporters cooperating as OPEC. The biggest exporters have acted in concert to limit supply and thus raise oil’s price — possibly too high even for their own good. The output levels they establish by trial-and-error are very unstable. OPEC has damaged the world economy, not by malice, but because its members cannot help but do so.

The group’s power is slowly decreasing, but I do not see it

ending anytime soon. In 1979 and again in 2003, the consuming nations made a public unconditional surrender to the current cartel. They may or may not know what they are doing.

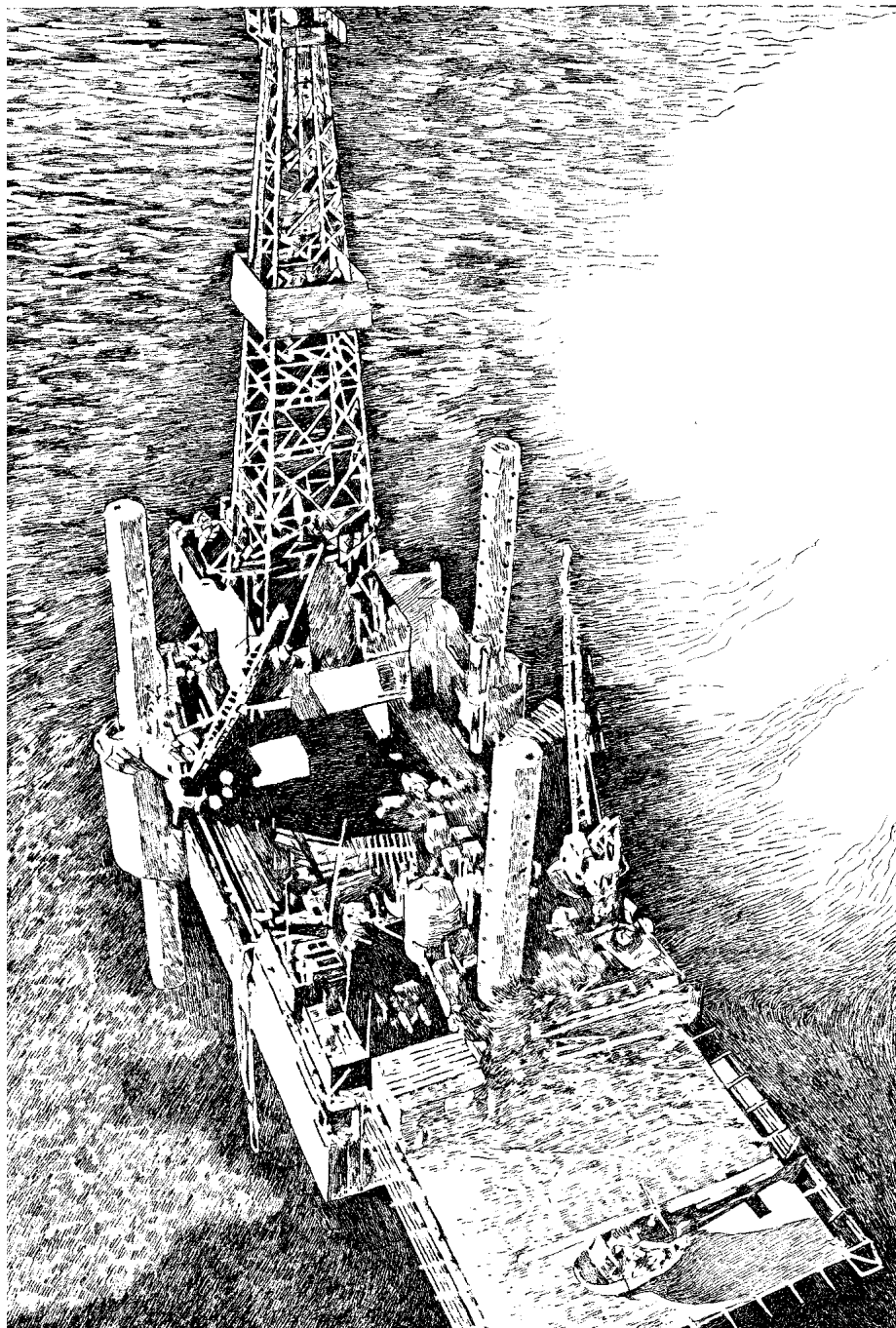
To see the harm that OPEC has done and can continue to do, we need to dispense with the myths about an oil gap and an oil weapon. Once we do that, we will begin to see that many of the problems in the world oil market are the result of this shortsighted cartel, as well as the failure of importers to seize opportunities to weaken it.

## IS OIL RUNNING OUT?

Oil is not the first fossil fuel that conventional wisdom has identified as nearing exhaustion. Even before 1800, the worry in Europe was that coal — the supposed foundation of their greatness — would run out. European production actually did peak in 1913, and is nearly negligible today. Is that the result of exhaustion? Hardly — there are billions of tons in the ground in Europe. But it would cost too much for the Europeans to dig it out. At a price that would cover cost, there is no demand. Hence, the billions of tons of European coal are worthless and untouched. The amount of a mineral that is in the ground has no meaning apart from its cost of extraction and the demand for it.

In 1875, John Strong Newberry, the chief geologist of the state of Ohio, predicted that the supply of oil would soon run out. The alarm has been sounded repeatedly in the many decades since. In 1973, State Department analyst James Akins, then the chief U.S. policymaker on oil, published “The Oil Crisis: This time the wolf is here,” in which he called for more domestic production and for improved relations with oil-producing nations in the Middle East. In 1979, President Jimmy Carter, echoing a CIA assessment, said that oil wells “were drying up all over the world.” Just last year, the *New York Times* reported that “oil reserves are expected to dwindle in the decades ahead,” while the International Energy Agency fore-

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casted that oil output will grow in the Persian Gulf between now and 2030, but it will decline elsewhere.

The doomsday predictions have all proved false. In 2003, world oil production was 4,400 times greater than it was in Newberry's day, but the price per unit was probably lower. Oil reserves and production even outside the Middle East are greater today than they were when Akins claimed the wolf was here. World output of oil is up a quarter since Carter's "drying up" pronouncement, but Middle East exports peaked in 1976–77.

Despite all those facts, the predictions of doom keep on coming.

### THE REAL OIL CRISIS

The true crisis (or whatever it is) started in 1973–74 when a dozen mostly Middle Eastern nations mutually agreed to cut their out-

put. They have been constraining production ever since. They lock away and sterilize the cheapest oil in the world to raise the price and their revenues.

The resulting effects have prompted a series of government efforts to avert an oil crisis. As a *New York Times* editorial observed last September, "Every president starting with Richard Nixon and the 1973 oil embargo has promised to reduce America's ravenous appetite for oil while investing heavily in new energy sources." Few members of those administrations disagreed with the Carter belief in an oil gap and an energy gap — and each administration has advocated a broad range of energy policies and government spending.

The Carter White House advanced legislation discouraging the use of natural gas for "low-end" uses like power generation, even though natural gas is plentiful and burns cleaner than oil or coal. Instead, the administration advocated tax credits and subsidies for the use of synthetic fuels and for expansion of the use of coal. The Internal Revenue Service recently confirmed that the \$20 billion-a-year "spray and pray" credit, which encourages the production of a supposed synthetic fuel by spraying fuel oil on purportedly unusable coal dust to make usable lumps, is still in place. The current Energy Bill — or "Energy Barbecue" — will create all sorts of new handouts, vested interests, and jobs that will be hotly defended in later years. The more wasteful a law, the more defenders it creates.

From the Nixon White House to the present, all administrations have approached oil and energy with command-and-control policies. None of them attempted to analyze the problems using the price mechanism. "Not enough" oil was being produced, and that problem was too important to leave to a sloppy price system.

### WHEN WILL THE OIL RUN OUT?

It is commonly asked, when will the world's supply of oil be exhausted? The best one-word answer: Never. Since the human race began to use minerals, there has been eternal struggle — stingy nature versus inquisitive mankind. The payoff is the price of the mineral, and mankind has won big, so far.

However, alarmists point to world oil prices and claim that what has happened "so far" will not continue much longer. They might have a point — if the world oil market featured sev-

eral different, competitive suppliers. But instead, it is dominated by a monopoly supplier, so the higher prices in themselves mean nothing. To understand this, one needs a quick course in resource economics.

Minerals are produced from reserves, which are mineral deposits discovered and identified as able to be extracted profitably. Are oil reserves dwindling? Is it getting harder to find or create them? Conventional wisdom says: Of course. But once again, conventional wisdom is wrong.

Reserves are a type of warehouse inventory, the result of investment. One cannot make a decision to drill and operate an oil well without a forecast of the well's production. Moreover, as the well's output falls over time with decreasing pressure, the unit operating cost of the well's output will rise. When the operating cost rises above the price that the oil will fetch in the marketplace, the well will be shut down. Whatever oil is left underground is not worth producing, given current prices and technology. The well's proved reserves are the forecast cumulative profitable output, not the total amount of oil that is believed to be in the ground.

In the United States and a few other countries, a nation's "proved reserves" is the programmed cumulative output from existing and pending wells. In other countries, the definition of "reserves" varies, and the number is often worthless. At its best (e.g., the estimates released by the U.S. Geological Survey), the "probable reserve" is an estimate of what will eventually be produced in a given area, out of existing and new wells, with current technique and knowledge, and at prevailing prices.

**ULTIMATE KNOWLEDGE?** But the size of "known reserves" is not an adequate forecast of eventual production, unless we assume that in oil, as in Kansas City, "they've gone about as far as they can go." Watching "Oklahoma!" we smile at those who actually believe this — and we should likewise smile at those who think they know how much oil will be extracted from a well or in an area. To predict ultimate reserves, we need an accurate prediction of future science and technology. To know ultimate reserves, we must first have ultimate knowledge. Nobody knows this, and nobody should pretend to know.

The dwindling of reserves is a legend firmly believed because it seems so obvious. Assume any number for the size of reserves. From it, subtract a few years' current output. The conclusion is absolutely sure: Reserves are dwindling; the wolf is getting closer. In time, production must cease. Oil in the ground becomes constantly more valuable — so much so that a gap forms between how much oil we want and how much we are able to afford because of scarcity. Civilization cannot continue without oil, so something must be done.

And indeed, in some times and places the oil does run down. Output in the Appalachian United States had peaked by 1900, and output in Texas peaked in 1972. But the "running out" vision never works globally. At the end of 1970, non-OPEC countries had about 200 billion remaining in proved reserves. In the next 33 years, those countries produced 460 billion barrels and now have 209 billion "remaining." The producers kept using up their inventory, at a rate of about seven percent per year, and then replacing it. The OPEC countries started with

about 412 billion in proved reserves, produced 307 billion, and now have about 819 billion left. Their reserve numbers are shaky, but clearly they had — and have — a lot more inventory than they used up. Saudi Arabia alone has over 80 known fields and exploits only nine. Of course, there are many more fields, known and unknown. The Saudis do not invest to discover, develop, and produce more oil because more production would bring down world prices.

Growing knowledge lowers cost, unlocks new deposits in existing areas, and opens new areas for discovery. In 1950, there was no offshore oil production; it was highly "unconventional" oil. Some 25 years later, offshore wells were being drilled in water 1,000 feet deep. And 25 years after that, oilmen were drilling in water 10,000 feet deep — once technological advancement enabled them to drill without the costly steel structure that had earlier made deep-water drilling too expensive. Today, a third of all U.S. oil production comes from offshore wells. Given current knowledge and technique, the U.S. Geological Survey predicts offshore oil will ultimately comprise 50 percent of U.S. production.

The offshore reserves did not just happen to come along in time. In an old Mae West movie, an admirer of one of her rings declared, "Goodness, what a diamond!" She coldly replied, "Goodness had nothing to do with it." Likewise, offshore production did not begin and develop by providence or chance, but only when new knowledge made investment profitable. And the high potential economic rewards were a powerful inducement for the development of the new knowledge. Offshore drillers found a new way to tap oil beneath the deep ocean. Oilmen in Canada and Venezuela discovered how to extract oil from those nations' oil sand deposits. As new techniques decreased the cost of extraction, some of the oil slowly began to be booked into reserves.

**NEW RESERVES** Worldwide, is it getting harder and more expensive to find new deposits and develop them into reserves? Up to about 15 years ago, the cost data clearly said no. Since then, much of the relevant data are no longer published.

To make up for that lack, Campbell Watkins and I tabulated the sales value of proved reserves sold in-ground in the United States. Our results are a window on the value of oil reserves anywhere in which entrepreneurs can freely invest. (That rules out the OPEC countries and a few more.) If the cost of finding and developing new reserves were increasing, the value per barrel of already-developed reserves would rise with it. Over the period 1982–2002, we found no sign of that.

Think of it this way: Anyone could make a bet on rising in-ground values — borrow money to buy and hold a barrel of oil for later sale. With ultimate reserves decreasing every year, the value of oil still in the ground should grow yearly. The investor's gain on holding the oil should be at least enough to offset the borrowing cost plus risk. In fact, we find that holding the oil would draw a negative return even before allowing for risk.

To sum up: There is no indication that non-OPEC oil is getting more expensive to find and develop. Statements about non-OPEC nations' "dwindling reserves" are meaningless or wrong.

## A SINGLE WORLD MARKET

Another tenet of conventional wisdom is that the United States' energy supply is precarious because we must buy oil from Middle Eastern nations who do not like us. This tenet is no more accurate than the other "wisdoms" we have considered so far.

Most oil moves by sea, and ships can be diverted from one destination to another relatively easily. Moreover, much additional oil can be diverted from land shipment to sea. Hence, it is fairly easy to reroute shipments of oil from nations that have a sufficient supply to nations that are experiencing a shortage. It is only a minor exaggeration to say that every barrel in the world competes with every other. If one is blocked, another can replace it.

One cannot help reading a lot about how "fortunate" it is that new fields on Sakhalin Island will soon export to nearby "oil-starved Japan," or that West Africa can do the same for the "oil-hungry" U.S. East Coast. Such statements sound important but make no sense. Higher output helps consumers and lower output hurts them, no matter where the oil is from or where it goes. Exports will go to the more profitable destination. To

able, the United States did a little worse than Japan, a little better than Western Europe. (I think those differences are accidental results of imperfect statistics, but that is another story.)

The real moral is this: It does not matter how much oil is produced domestically and how much is imported. Presidents may declare that there is an "urgent need" to cut imports and boost "energy independence" — no one ever lost political support by seeing evil and blaming foreigners. The facts are less dramatic. Imports do not make any importer "dependent" on any particular exporter, or even all of them taken together. Therefore, direct or indirect spending to reduce imports is a waste of resources. Some public support of research into energy may bring us knowledge worth paying for, but public outlays for energy development are a waste.

So, if the ills are imaginary, what is the true problem with the world oil market?

## THE WORLD MONOPOLY

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the buyer, the distance from exporter to importer makes only a minor difference in total cost.

**THE "OIL WEAPON"** Whether a supplier loves or hates a customer (or vice versa) does not matter because, in the world oil market, a seller cannot isolate any customer and a buyer cannot isolate any supplier. But conventional wisdom (there is that term again) is that Middle Eastern nations wield an "oil weapon" that they can use to punish the United States or any other nation.

In support of this belief, many people point to the 1973 "oil embargo" against the United States by Arab members of OPEC (except Iraq — Saddam Hussein profited by it). Secretary of State Henry Kissinger cruised around the Middle East many times to negotiate an "end" to it. Ten years later, he explained that the significance of the "embargo" was psychological, not economic. Recently, the London *Economist* quoted approvingly what I said in July 1973: If an embargo was declared, it would have no effect because diversion would nullify it. And so it was.

The embargo against the United States never happened, and could not happen. The miserable, mile-long lines outside of U.S. gasoline stations resulted from domestic price controls and allocations, not from any embargo. We ought not blame the Arabs for what we did to ourselves.

The Arab and non-Arab cutbacks in output, then and later, were real though small. If we look at the amounts actually avail-

continue that cooperation today. Their cost of expanding output, which is mostly the return on the needed investment, is a small fraction of the price that they charge for oil.

The price of oil should be relatively stable. Compare the basic conditions with natural gas: Oil users are much more numerous and diversified. Seasonal fluctuations are milder, and storage costs lower. In fact, for 25 years after World War II, the real (inflation-adjusted) price of oil fluctuated very little. As in many industries, there was short-run volatility — up and down. Oil prices jumped in the Middle East crises of 1956 and 1967, but then fell back quickly. Some would ascribe the price stability to the fact that most oil then being sold worldwide was controlled by a few big companies, the "Seven Sisters." However, the real price fell by about two thirds from 1945 to 1970. The Seven Sisters' control, if any, was very limited.

But in the period 1970–1980, the real price rose by about 1,300 percent. From 1980 to 1986, it dropped by about two thirds. It was fairly steady in 1986–1997, fell further in 1997–1998, and then tripled after February 1999. Why have there been such huge ups and downs in recent years, and why — unlike in the old days — did the changes not reverse quickly?

**SPECULATION?** Any price is affected by the guesses of speculators. The professionals are in business to make money on price changes. But every producer, refiner, consumer, transporter, etc., who buys or sells ahead today in fear or in hope of

a different price tomorrow is speculating.

Speculation affects cartel prices more than competitive prices. Oil prices fluctuate more because betting on price must include calculations about not just supply and demand, but also about OPEC's quota decisions, plus the members' fidelity to their promises. Hence, the world oil market is less predictable, more volatile, and more herky-jerky. In the huge oil price spike of late 1973, the change in supply was almost trivial yet the price effects were massive. The "crisis" was a classic case of buyer's panic.

**THE CARTEL** OPEC is a forum whose members meet from time to time to reach decisions on price or on output. Fixing either one determines the other. There have in effect been several OPEC cartels since the countries first banded together more than three decades ago. The members re-constitute the cartel as needed to meet current problems.

In every oil price upheaval, there has been persistent excess capacity (which could not happen under competitive pricing). Even if we started with zero excess, every output reduction itself creates excess capacity among the OPEC countries. They refrain from expanding output in order to raise prices and profits. Recently, we have heard high prices explained by low inventories. That is true — the cartel cuts production, which lowers inventories, which raises prices. Because each member's cost is far below the price, output could expand many fold if each producer followed its own interest to expand output, which would lower prices and revenues. Only group action can restrain each one from expanding output.

The spike in oil prices since 1999 provides an excellent illustration. The Clinton and Bush administrations both applauded OPEC for setting a price target of \$23–28 a barrel. But OPEC actions have kept the price persistently above even the upper limit, with the usual contemptuous indifference to arguments from U.S. cabinet secretaries. Why so?

**TWO PROBLEMS** Any cartel must decide what price and output to fix for maximum profit. A higher price would cost them money because purchasers would cut consumption too far. Moreover, the price must eventually be updated, whenever supply and demand change enough to make corrective action essential. Opinions vary as to what is the right price for maximum profit, and OPEC has often had to find its right price through trial and error. The cartel made a dreadful mistake in 1980 when it pushed the price of oil to \$40 a barrel (which is nearly \$80 today, in inflation-adjusted terms). The member nations expected the price to go higher still, but the resulting reduction in demand forced OPEC to bring the price back down. Hence, one great problem with operating a cartel is finding — and maintaining — the right price.

The second great problem is how to allocate sales among cartelists. Each OPEC member could reap a windfall by cheating and producing over quota because the cost of production is so far below the market price. But, if some cartel members were to defect, output would climb and the prices — and windfall profits — would fall.

In 1980, Saudi Arabia (for the first and last time) unilateral-

ly restricted its oil production. The kingdom let its cartel partners produce freely, tending to lower the world oil price. The Saudis decided only to make up the difference between the intended total cartel output and the sum of what the others produced; as other cartel members raised their production levels, the Saudis further lowered theirs.

They soon found that they could not hold the line without help. If the Saudis alone restricted output, too much oil would be produced and prices would fall. They called on the others to observe their quotas. The others preferred to keep producing and profiting at the Saudis' expense. In late 1985, Saudi exports approached zero, and they finally announced that they would match anyone else's prices. It took over eight months for the cartel ranks to re-form, and by then prices had fallen by two thirds from 1980 levels.

Since then, the Saudis have often repeated that they would never again cut output without prior assurances that the others would cut along with them. They no longer have any illusion that they can regulate the industry on their own. (So why do people in consuming countries believe that?)

As history shows, deciding on the group action is not easy. There usually is a game of chicken, until some agreement is achieved. Next comes mutual surveillance, to see who cheats how much. During the period 1986–1996, the price of oil stayed around only one-third of the 1980 highs, and was much more stable. But even then, OPEC lost market share. Non-OPEC oil-exporting nations expanded their production because the current price provided a return on their investment in new capacity.

At the moment, the cartel has good reason to be pleased. Beginning in 1999 and with the half-hearted cooperation of Russia, Mexico, and Norway, OPEC was able to constrain world oil production and thus raise prices. The target at first was \$17–21 per barrel, then \$22–28. Since 2000, the price has rarely been below \$28, and in December 2003 was over \$30. There was excess capacity among OPEC members even before the output cuts, and more afterward. They have restrained the excess, observed their quotas, and faithfully colluded to maintain the price.

### **FUTURE PRICES AND PRODUCTION**

OPEC's constant concern has been to restrict supply and resist downward price pressure. Whenever they forgot this, they were brutally reminded — as in 1980–85 and in 1997. But always, they were exhorted from inside and outside the organization to look to the bright horizon of the near future. Very soon, they were told, non-OPEC output would fail for lack of reserves and OPEC market share would rise. But non-OPEC production crept up and the share of OPEC exports fell. Once around 65 percent, OPEC exports are now 30–35 percent of the world oil market. Only as the production restriction became tighter did the cartel receive some cooperation from non-OPEC nations.

Saudi Arabia's oil minister has said that the kingdom will not cut production again without cooperation from inside and outside OPEC. Common sense supports that. Had the Saudis been the only ones to cut in 1999, they would have lost money

just as in 1980, and they would have failed to make the price increase stick.

**DEPENDENCE ON OIL** Price fixing by private companies on the OPEC scale would not be tolerated in any industrial country. In the United States, the officers of firms that engage in such activities go to jail. But the OPEC members are sovereign states, subject to no country's laws. Moreover, the United States and other nations want to think they have the OPEC nations' support — particularly the Saudis.

This alleged support consists in "access" to oil. But in a global market filled with buyers and sellers, everyone has access. Another myth is mutual obligation: The OPEC nations' supply oil, the United States protects them. In truth there is no choice; we must protect the OPEC nations from outsiders or neighbors. They owe us nothing for protection and will give us nothing. Of course, OPEC will supply oil. The only question is how much oil — and that determines the price. The supposed OPEC (or Saudi) obligation to supply is what lawyers call "void for vagueness." But those in government crave assurance that they are accomplishing something, and they will pay for that assurance.

After 30 years of high export earnings, the OPEC nations remain as dependent on selling oil as ever. In OPEC nations, oil exports still pay for nearly everything. Fifty years ago, Venezuela encapsulated the idea of using oil money to develop non-oil industries into a fine slogan: *Sembrar el petroleo* — "Plant the oil." In the Middle East, although some small OPEC states accumulated financial assets abroad, cartel members failed completely to develop other export industries. Those member nations now are usually broke, cannot save, and cannot plan ahead.

Where did the \$3 trillion in oil revenues go? Mostly to armaments, subsidies, payoffs, population growth, and grandiose prestige projects — *far la bella figura*, as the Italians say. Showy projects look bad when neglected. The Saudis in 1980 had \$180 billions in foreign assets. They are now in debt, running deficits even in the last few years.

In Iraq, history did an experiment. In 1991 when oil exports vanished because of UN action, national GDP shrank by 86 percent. Iraqi non-oil industries existed to sell to the oil industry or to locals with oil income, but suddenly there was no oil industry or income. Some Iraqi non-oil industries were state-owned Soviet-style clunkers, others were subsidized or shielded by tariffs and import quotas along with corruption. As a result, Iraq's non-oil economy — even today — is small and jobs are scarce. For thousands of years, Mesopotamia, "the land between the rivers," was a big wheat exporter, but no more. Saudi Arabia now grows and exports wheat at a cost many times the market price. To grow it, they use up underground water deposits at ever-rising cost. Of course, this builds a huge vested interest in continued spending.

OPEC nations have little but oil income, and most of them live in a rough neighborhood. Government decision-makers in those nations have a shorter time horizon than private companies. They pursue short-run gain, disregarding the long-run pain. Hence, OPEC cartels are hasty and extreme, and they push

to raise prices faster and further than would private firms. OPEC members get good advice to cut their price in order to slow or stop consumers' investment in energy savings and non-OPEC oil producers' investment in new capacity. But investment takes time, and the members cannot take time.

OPEC nations will continue to "take the cash and let the credit go/ Nor heed the rumble of a distant Drum." They choose higher prices now, despite lower sales later. Some 70 years ago, an oilman reported back to his company about Persian Gulf rulers: "The future leaves them cold. They want money now." They still do.

The OPEC nations' model is King Philip II of Spain, the richest king in Europe, who went broke the most often. He spent his vast mineral revenues to support bad habits, and buy glory. When a year's revenues were low, he borrowed against the following year's income. That behavior ruined Spain then, and it is ruining the OPEC nations now.

**COOPERATION WITH OPEC** The International Energy Agency (IEA) and the U.S. government recently reaffirmed their cooperation with OPEC. IEA discourages importing nations from using strategic stocks, including the United States' Strategic Petroleum Reserve. The importer nations have agreed not to use those stocks unless there is a serious "real shortage." If so, they will never be used. In a market economy, the price changes to equate the amount supplied to the amount demanded, precluding a "real shortage," then or now. As ever, the IEA and the United States ignore price.

In 1974, the IEA established the rule that no strategic stocks could be used without a "gap" between demand and supply of at least 7 percent. But in 1978–80, the oil price tripled for the usual reason: not that wells were giving out but because OPEC nations, particularly Saudi Arabia, shut in production rather than let it expand to make up for Iranian fluctuations. There was no use of strategic stocks. The Carter administration had previously agreed not to use the Strategic Petroleum Reserve without Saudi permission.

OPEC has just cut production quotas for precisely the same reason: to head off lower demand later. Thus we are in the same position today as in 1979. The cartel members supposedly cooperating with us were and are committed to nothing. They will raise or lower output to increase their profits. There is and will be no shortage; they are glad to produce the amount they have themselves decided. They will never cut off output in the future, any more than in the past — it would cost them money.

Use of the Strategic Petroleum Reserve would signal that there are some limits to our patience. It would lower prices and discourage speculation.

## **CONCLUSION**

U.S. oil policies are based on fantasies not facts: gaps, shortages, and surpluses. Those ideas are at the core of the Carter legislation, and of the current Energy Bill. The Carter White House also believed what the current Bush White House believes — that, in the face of all evidence, they are getting binding assurance of supply by OPEC, or by Saudi Arabia. That myth is part of the larger myth that the world is running out of oil. **R**