



Energy Trading

The Market's Response to Deregulation

By Vito Stagliano and Sarah Emerson

Remarkable changes have resulted from the decision to deregulate oil markets sixteen years ago. What lessons can be applied to increased competition in the markets for electricity and natural gas? Will expectations be realized?

The energy sector of the U.S. economy has changed in extraordinary ways. Today the prices we pay to heat and light our homes and offices, cook our food, and drive our cars are, when adjusted for inflation, about what they were in 1949. Widespread concerns about the security of energy supplies have diminished, also. Sooner or later Americans will buy all of their energy on the open market—probably from nationally known

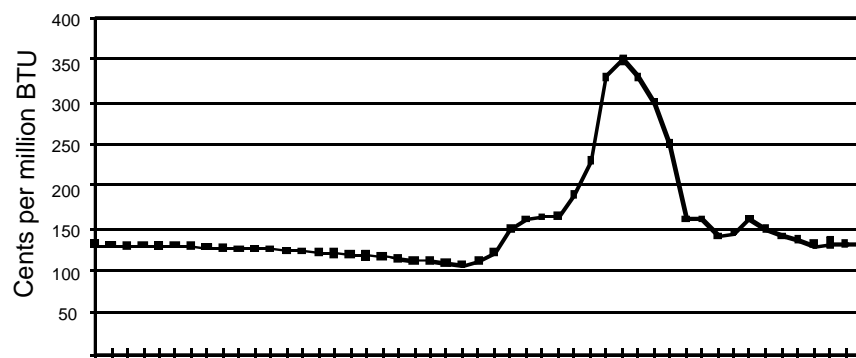
energy companies rather than local utilities—and get better service into the bargain. These benefits derive from an epochal shift in responsibility for setting energy prices—from the purview of governments and

cartels acting in secrecy to free agents trading publicly in the marketplace.

Oil markets have been free of regulation for sixteen years. More recently, policymakers have been focusing on increasing competition in the natural gas sector and on liberating electric utilities from government's long-established control. The shift away from government regulation of energy has led to something per-

haps even more important than implacable downward pressure on the price of a barrel of oil. It has instigated development of multiple trading centers—in New York, Rotterdam, Singapore, and elsewhere—that are

Composite Fossil Fuel Production Prices: 1949–1997
1987 Real Dollars



Energy prices today are about what they were in 1949, when adjusted for inflation. It is noteworthy that these prices reached historically aberrant levels only during a period of intense government regulation—1973–80.

Deregulating Natural Gas

Much remains to be done before American consumers realize the full benefits of what will certainly become a highly competitive market for gas. Congress intervened heavy-handedly in the natural gas sector from 1973 to 1989. It sought to control most aspects of the production and use of this energy, which it considered limited in supply and too precious to use widely. For a decade, Congress actually banned its use in industry and for power generation. The consequence of this restrictive policy was that the price of a thousand cubic feet of gas rose from its typical wholesale price of about \$1.50 to over \$3.00 by 1980, despite clear evidence that the United States—and North America—had supplies of it that would last centuries, and would be cheap to produce. The evidence did finally convince a Democratic Congress and a Republican President to deregulate gas production prices in 1989. But even then the resulting Natural Gas Wellhead Decontrol Act did not fully let go of federal price fixing until 1992.

Meanwhile, most state regulators still do not allow residential and commercial gas consumers to choose their suppliers in an open market. Rather, such customers must continue to purchase gas from so-called local distribution companies (LDCs) that remain regulated monopolies. Does this make a difference in the price that these consumers pay for gas? The evidence suggests that it does.

But change is coming. Some states have accepted the idea of a fully competitive natural gas market and are beginning to allow some retail consumers to choose suppliers. These states are proceeding along this path at the very same time that they are coming to terms with consumer choice and market competition in the electric power industry.

dedicated to competition in free trade for crude oil and related products.

Free trade has unearthed more knowledge about the value of fuels—and of the technology that transforms them into useful energy—than was ever the case in a regulated market. The New York Mercantile Exchange (NYMEX) has been especially active in developing trading structures and trading instruments for oil, gas, and power. In the United States alone, which accounts for only a fraction of world trade in petroleum, the NYMEX oil futures market trades anywhere between 80 million and 150 million barrels of oil daily. This volume of trade, which is almost *ten times greater* than U.S. daily consumption of about 17 million barrels, exerts greater influence on the price that consumers pay for gasoline, fuel oil, and other products than does any other force at play in the international oil market, including the Organization of Petroleum Exporting Countries (OPEC).

Energy and the Price of Toilet Paper

Does any of this trading activity really matter to ordinary people? Yes, but not obviously. Once goods and services enter the world of commodity markets, they become part of a trading system so vast, and now so global, as to make it difficult for any individual or group to manipulate supply and price as OPEC did during the notorious decade of energy crises. Identifying causes and effects of price changes also becomes difficult when markets take over. Consider something so common as toilet paper.

Paper mills, a great many of which burn residual fuel oil to power their plants, make products whose prices must necessarily reflect the energy cost of production. In the eastern half of the United States, the price that paper mills pay for fuel oil is set in the so-called New York Harbor (NYH) for fuel oil. The price of NYH oil is, in turn, shaped by the interplay between supply and demand on the U.S. East Coast, and by political and market developments in other regions of the world—as distant as Siberia.

Siberia? In recent years, one of the most influential factors shaping NYH prices has been Russian fuel oil export policy. During the last three winters, the Russian government has either banned fuel oil exports altogether, or has so heavily taxed the export barrels as to make them uneconomic on the world market. Russia has done so to guarantee availability of this same fuel to electric power plants in its own remote regions. Interestingly, barely a drop of Russian fuel oil ever actually makes it to the East Coast of the United States under any circumstances. But the imposition of Russian export controls dramatically elevates prices in NYH because it reduces the volume of fuel oil available to the highly integrated “Atlantic basin” market. Thus, because most paper mills buy fuel oil through long-term contracts tied to the spot price in New York, they are quite vulnerable to any price fluctuations anywhere in the system. Any increase in energy input costs ends up reflected in the price of toilet paper. (The spot price reflects a market where transactions take place immediately. Unlike futures markets, the commodity being traded is on hand and delivered to buyers “on the spot.”)

The impact of Russian oil export policy can also be felt by electricity consumers in New England. In that region of the United States, plant capacity to generate

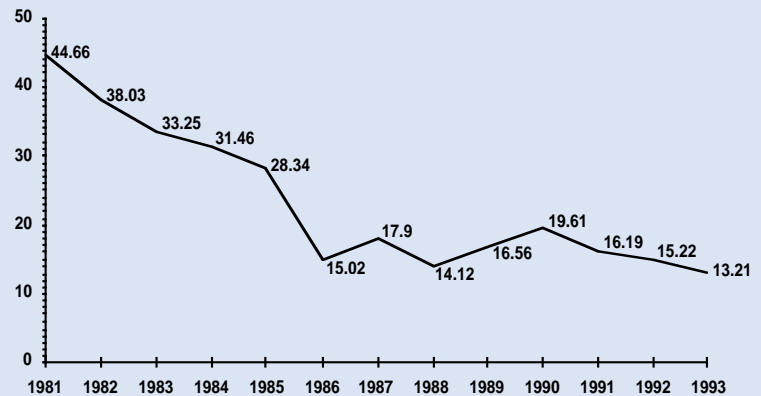
electricity by using oil happens to be significant. The fuel oil that New England utilities purchase is typically priced off the same NYH market used by paper mills. To the degree that the electric utilities have supply contracts tied to spot prices, they are as vulnerable to changes in Russian export policy as are the paper mills.

As deregulation of electric utilities moves forward, events in places as remote as the frozen tundra of northern Russia will affect energy buyers in New England. And so if an increase in the price of toilet paper does not grab the attention of U.S. consumers, the rise and fall of electricity prices surely will.

The news about deregulation is of course not invariably positive. Along with vigorous competition, free markets also bring uncertainty and unpredictability—a kind of trading frenzy that results in price volatility. From time to time, and for reasons that are not entirely obvious to the average consumer, prices of commodities such as oil go up, sometimes sharply, recurrently and repeatedly, and always inconveniently. This was the case, for example, in the winter of 1996–97, when American consumers experienced unexpectedly high prices for the oil they use to heat homes and buildings. During the same winter, consumers were also subjected, albeit briefly, to extremely high prices for natural gas. Politicians reacted to these events by calling for government to intervene by, for example, releasing stocks held in the Strategic Petroleum Reserve.

That politicians feel pressure to step in and “fix” sudden price spikes is not surprising. Reliance on the market is hardly a policy carved in stone. And even when the commitment to competition is made, economic deregulation in a sense never really ends. Crude oil and markets for related products, for example, continue to require tinkering. The U.S. gasoline market was so fragmented by implementation of regulations related to the Clean Air Act amendments of 1990 that trading in gasoline futures remains unviable—an unintentional but nonetheless significant consequence. Similarly, the natural gas market, some aspects of which are still heavily regulated at both federal and state levels, has proven difficult to organize in a manner that protects the interests of all consumers (see “Deregulating Natural Gas”). The electric power market, meanwhile, is just getting organized. In terms of value and volume of trade, it

Crude Oil Refiner Acquisition Costs, 1981–1993 (Nominal Dollars/Barrel)(Domestic/Imported Composite Cost)



Source: Energy Information Administration, U.S. Dept. of Energy: Annual Energy Review, 1994

Deregulation of the energy marketplace can be said to have begun as a result of an Executive Order that President Reagan issued two weeks after taking office in January 1981. The order had an immediate effect on crude oil prices—an effect so powerful that it drove OPEC into a strategic tailspin. Deregulation of the U.S. oil sector fostered a profound reevaluation of the market value of a commodity, which barely two years earlier had been thought to be worth \$50 to \$100 per barrel.

will be larger than all other energy markets combined (see “Trading in Electrons”).

The Hedging Solution

For every problem created by deregulation, however, markets are proving capable of devising solutions. Some paper mills and electric companies, for example, have turned to investment banks and trading houses to find protection from the price volatility of markets like those for fuel oil. So-called hedging instruments for managing price risks, developed first in the oil markets, then in the natural gas markets, and now in the electric power markets, provide financial vehicles for large consumers to “lock in” energy prices over a specified period of time. These instruments free them from the price volatility that characterizes trade in spot markets. Moreover, they can use other financial tools, like price options, to capture a windfall if a price falls well below the guaranteed price they locked in previously. So, in the imminent market for competitive electricity—and for other energy traded as commodities—the happiest consumer will be the one that chooses a clever hedger for a supplier.

The average home owner is, of course, unlikely to

Trading in Electrons

Less than four years after Congress enacted the Energy Policy Act of 1992 (EPAAct), the New York Mercantile Exchange (NYMEX) made history by opening trade in electrons at two West Coast market hubs: California-Oregon Border and Palo Verde, a switchyard in Arizona. Since May 1996, NYMEX traders have taken on the difficult task of determining what electricity is truly worth in the marketplace. For the previous sixty-two years, regulators had established the value of electrons, and assigned rates that local utilities would have to charge their captive customers. But the cumulative consequences of regulating electricity proved to be uneconomic; a competitive market could deliver power at lower cost. This was—and is—the impetus for restructuring America's largest energy industry.

The market for trade in electric power is likely to be difficult to organize and manage. Unlike oil and gas, electrons cannot be produced and stored for later use, and the path they are made to travel from power station to home and business is subject to unforgiving laws of physics. Even with these complexities, markets for electric power are nonetheless emerging and being organized. "Spot markets" exist in every region of the country, where power is on hand and delivered to buyers immediately. The futures market, where the electrons usually are not physically present but are bought and sold via contracts that specify a delivery date and fix a price, will continue to evolve as new contracts are tested in new market centers. Within five years, free trade in the \$200 billion electricity market will likely be routine.

have the means or the opportunity to check on the financial management skills of the energy companies that offer service. Here the responsibility falls back on the regulators. They who previously devoted their greatest efforts to setting rates will, in the deregulated world, devote time and vigilance to ensuring that markets are competitive. A monopolist has no motivation to reduce price risk exposure because it can pass that risk (and the higher cost) on to the consumer. In a

competitive market, however, where consumers can shop around for the energy they need, the vendor with the lowest price is likely to prevail. Other factors being equal, the vendor that sells at the lowest price is also the most likely to have protected itself against volatility.

Freedom Is Worth the Risk

The value of energy has preoccupied governments on all continents since economies first became dependent on commercial fuels. Energy has been priced too high or too low relative to its market value because governments have insisted on saddling its trade with myriad social and security burdens. Despite the fact that deregulation remains an unfinished business, what has occurred thus far presents fairly clear evidence that free energy markets result in lower costs to consumers. If it remains for the political establishment to take this evidence and make it enduring policy, at least a precedent exists for doing so. The impetus toward greater energy sector deregulation can be traced to the hotly debated Energy Policy Act of 1992 (EPAAct). It took Congress nearly two years to forge a consensus in support of this legislation. But perhaps more than any other energy legislation in recent memory, this law sent a strong signal that the federal government was finally fully committed to free trade in energy.

Markets are risky, and their organization and management are sometimes flawed. But as Winston Churchill used to say of democracy, they are better than all the other alternatives.

The authors are directors of Energy Security Analysis Inc. (ESAI), a firm that specializes in analysis of physical and paper energy markets. Vito Stagliano was a visiting scholar at RFF in 1995–96 and was one of the authors of *A Shock to the System*, RFF's primer on electricity restructuring.