



From Grain to Natural Gas: The Historical Circumstances That Led to the Need for Futures Contracts

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The article, "[Brief Case Studies on Futures Contract Successes and Failures](#)," which appeared in the [Spring 2016 GCARD](#), summarized that there are three elements that determine whether a futures contract succeeds: (1) There must be a commercial need for hedging; (2) A pool of speculators must be attracted to a market; and (3) Public policy should not be too adverse. As noted by Kemp (2018), this type of analysis is useful for new financial centers when designing high-profile futures contracts.

In the current digest article, we will cover examples of successful contracts that responded to new large-scale commercial risks over the past 170 years. Each section below discusses the new commercial circumstances that ushered in the intense need for hedging instruments.

Chicago Became a Large-Scale Grain Terminal in the Mid-1800s

Once Chicago became a transportation hub and grain terminal in the mid-nineteenth century, grain merchants had to figure out how to manage the price risk for their accumulating volume of grain inventories. Eventually in 1848, the solution was the formation of an exchange: the Chicago Board of Trade, whose function gradually evolved from arbitrating commercial disputes and spot trading to bilateral forward trading, and finally to becoming a member-owned exchange with standardized futures contracts.

For further historical context, one should also note that "[b]y the time of the Crimean War in the 1850s, Chicago, with its rich outlying agriculture area, was in an excellent position to supply the disrupted world grain trade. During the [U.S.] Civil War, Chicago served as the chief grain concentration point of the Union armies," wrote Hieronymous (1971). And with the concentration of grain in Chicago came the need for managing the price risk of these immense inventories during the unpredictable times brought on by the two successive wars. Hence, a commercial hedging need arose that was met with the institutional development of a commodity exchange in Chicago.

The Collapse of the Bretton Woods System Ushered in a New Era of Financial Market Volatility

Examining the history of currency arrangements, in "the summer of 1944, delegates from 44 countries met in the midst of World War II [at Bretton Woods, New Hampshire to reshape] the world's international financial system," recounted Schifferes (2008). At this conference, John Maynard Keynes unsuccessfully floated the idea of an alternative post-war currency, the "Bancor," which was to be anchored by 30 commodities, a broader base than the Gold Standard. Instead, noted Conte and Karr (2001), "the leaders decided to tie world currencies to the dollar, which, in turn, they agreed should be convertible into gold at \$35 per ounce." This created a modified gold standard. Therefore, when the



Bretton Woods system functioned, there was no pressing economic need for derivatives to hedge currency risk.

“In 1971, the US ... unilaterally went off the gold standard and devalued the dollar ... This led to the abandonment of fixed exchange rates and the introduction of floating rates, where the value of all the main currencies was determined by market trading,” explained Schifferes (2008). With the U.S. dollar no longer pegged to gold or anything of fixed value, the risk of large price changes entered the markets. As reviewed by Leo Melamed, Chairman Emeritus of the Chicago Mercantile Exchange (CME) in Melamed (1994), “the collapse of the Bretton Woods Agreement ... ushered in an era of considerable risk in currency price fluctuation – risks which could be limited if there were a viable market for currency futures trading.” As a result, the Chicago futures exchanges developed innovative financial hedging instruments in both currencies and interest rates in the 1970s and 1980s. Equity index futures contracts were added in the 1980s. “[T]he economic benefits of risk transfer and price discovery that were indigenous to futures became available to those outside the agricultural sector,” explained Melamed (1994).

Given that the launch of financial futures trading in Chicago did become hugely successful, it may be surprising to read about the early skepticism that greeted these efforts. According to Melamed (1994), “Some ... thought it ludicrous that [in the early 1970s] a ‘bunch of pork belly crapshooters’ would dare” launch futures contracts on foreign exchange.

The Forced Shift to a Spot Oil Market

The volatile 1970s provide another example of new risks arising that were later successfully managed by the development of futures markets. In particular, Yergin (1992) recounted how the structure of the oil industry changed after numerous nationalizations in oil-producing countries in the 1970s. This forced some oil companies to shift from long-term contracts to the spot oil market. Verleger (2012) added that the U.K. government’s choice of how to tax North Sea oil, starting in the 1970s, also contributed to the development of spot oil markets. “[T]he U.K. Treasury granted itself the right to decide the value of any oil processed by the company that produced it. Exxon, for example, would have been at the mercy of U.K. tax authorities had it processed crude from its fields. Rather than take such a risk, producers chose to sell their crude and then buy crude for processing from others. Their transactions created the first observable spot market for crude.”

With the structure of the oil industry changing, an economic need for hedging volatile spot oil price risk emerged, which the New York Mercantile Exchange (NYMEX) responded to with a suite of energy futures contracts, starting with the heating oil contract in 1978.

According to Yergin (1992), “The initial reaction to the futures market on the part of the established oil companies was one of skepticism and outright hostility. ... A senior executive of one of the ... [major oil companies] dismissed oil futures ‘as a way for dentists to lose money.’ But the practice ... [of] futures [trading] ... moved quickly in terms of acceptability and respectability. ... Price risk being what it was, ... no [commercial entity] ... could afford to stay out.”



The Gradual Deregulation of the U.S. Natural Gas Market

The success of the petroleum-complex futures markets provided a precedent for how to manage the price risks of natural gas, once this market was deregulated.

In the past, the U.S. natural gas industry was so heavily regulated that there was no need for natural-gas-price hedging, analogous to the Bretton Woods fixed-rate era for currencies. The following is a brief recounting of the history of U.S. natural-gas regulation and deregulation, which is also conceptually illustrated in Figure 1 on the next page.

According to IEA (2012), the “1938 Natural Gas Act ... introduce[d federal] regulation ... on gas prices. The next four decades until 1978 saw a progressive growth of regulatory oversight of gas prices.” In particular, “[t]he US system in the 1950s to 1970s” was one where “regulatory agencies controll[ed] most parts of the business in different parts of the gas value chain.” Unfortunately, “[t]his heavy-handed regulation resulted in gas shortages appearing in the regions which needed to import gas from producing areas, notably in the Northeast and Midwest.”

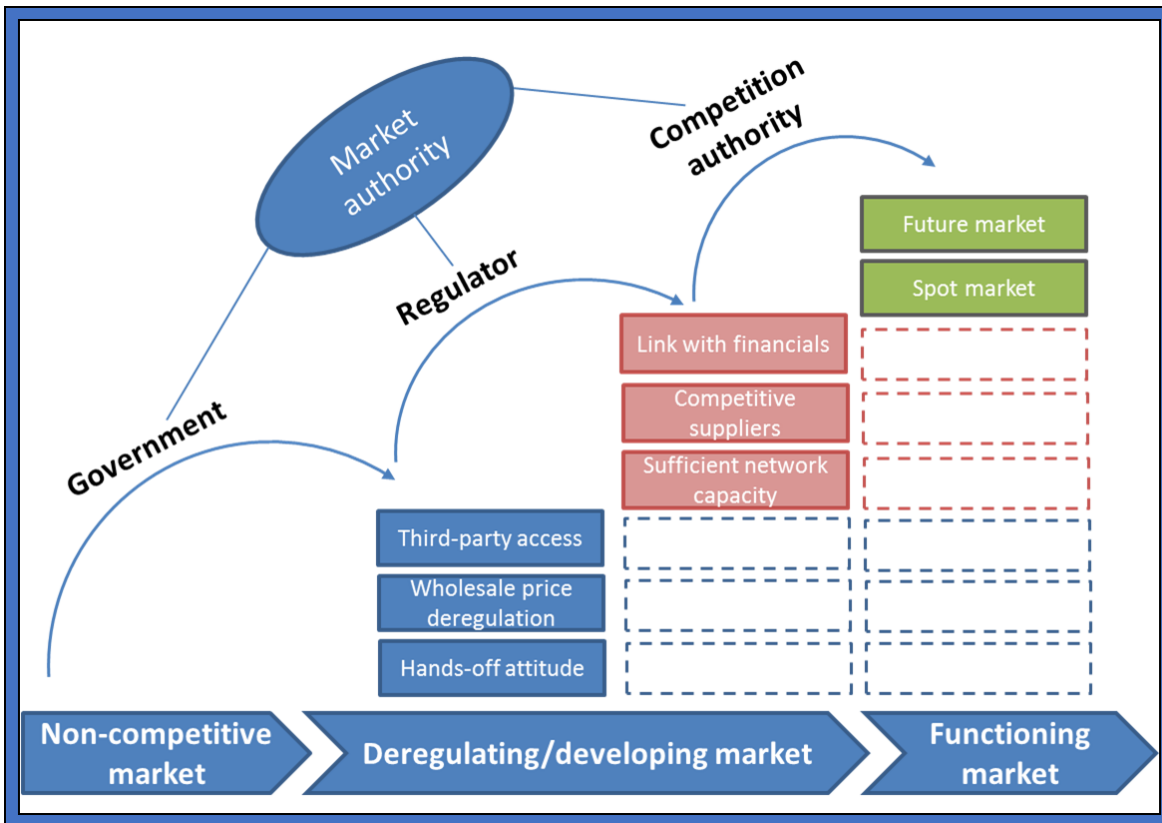
Starting in 1978, a very gradual deregulation of the U.S. natural gas market began. “In November of 1978, at the peak of the natural gas supply shortages, Congress enacted legislation known as the Natural Gas Policy Act (NGPA),” according to the Natural Gas Supply Association in NGSA (2013). “The Natural Gas Policy Act took the first steps towards deregulating the natural gas market, by instituting a scheme for the gradual removal of price ceilings at the wellhead,” recounted NGSA (2013).

“However, it wasn’t until Congress passed the Natural Gas Wellhead Decontrol Act (NGWDA) in 1989 that complete deregulation of wellhead prices was carried forth. Under the NGWDA, the NGPA was amended and all remaining regulated prices on wellhead sales were repealed. As of January 1, 1993, all remaining NGPA price regulations were to be eliminated, allowing the market to completely determine the price of natural gas at the wellhead,” noted NGSA (2013).

Wrote Joskow (2013): “By the early 1990s, wellhead price regulation had come to an end, the intra-state and interstate markets had been integrated, the natural gas production sector was governed by competitive market forces, and gas shortages ... disappeared. The natural gas market matured during the 1990s as liquid gas trading hubs ... [including the] Henry Hub developed, [and] liquid spot, term, and derivatives markets [also] developed.”



Figure 1
The Steps in Creating a Wholesale Natural Gas Market



Source of Schematic: IEA (2012), Figure 11.

Johnston (2002) explained that “[in] an important sense, exchange-traded contracts are a substitute for regulation in providing manageable stability in commodity prices, especially for energy.”

Following the creation of a spot market in natural gas, the NYMEX “launched the first gas futures contract with delivery at the Henry Hub in April 1990,” reported IEA (2012). “The trading activity related to financial gas markets has been increasing, enhanced by the development of internet and electronic trading systems over the past two decades. On the first day of trading on NYMEX, 918 contracts were traded compared to over ... [350,000] today The futures were progressively expanded to 36 months in 1997 and to 72 months in 2001. Today futures reach until 202[5],” noted the IEA (2012)’s report. (Updated figures since the IEA (2012) report was written are shown in square brackets.)

Conclusion

Future issues of the *GCARD* will include digest articles on how successful futures contracts also (a) need to be able to attract speculators and (b) need a regulatory environment in which interventions are not too draconian.



Endnote

This digest article is excerpted from a seminar that was prepared for staff at the Shanghai Futures Exchange.

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Keywords

Bretton Woods system, futures contracts, crude oil, natural gas, hedging, regulation.