

A Brief History of Derivatives

The history of derivatives is quite colorful and surprisingly a lot longer than most people think. A few years ago I compiled a list of the events that I thought shaped the history of derivatives. That list is published in its entirety in the Winter 1995 issue of *Derivatives Quarterly*. What follows here is a snapshot of the major events that I think form the evolution of derivatives.

I would like to first note that some of these stories are controversial. Do they really involve derivatives? Or do the minds of people like myself and others see derivatives everywhere?

To start we need to go back to the Bible. In Genesis Chapter 29, believed to be about the year 1700 B.C., Jacob purchased an option costing him seven years of labor that granted him the right to marry Laban's daughter Rachel. His prospective father-in-law, however, reneged, perhaps making this not only the first derivative but the first default on a derivative. Laban required Jacob to marry his older daughter Leah. Jacob married Leah, but because he preferred Rachel, he purchased another option, requiring seven more years of labor, and finally married Rachel, bigamy being allowed in those days. Jacob ended up with two wives, twelve sons, who became the patriarchs of the twelve tribes of Israel, and a lot of domestic friction, which is not surprising. Some argue that Jacob really had forward contracts, which obligated him to the marriages but that does not matter. Jacob did derivatives, one way or the other. Around 580 B.C., Thales the Milesian purchased options on olive presses and made a fortune off of a bumper crop in olives. So derivatives were around before the time of Christ.

The first exchange for trading derivatives appeared to be the Royal Exchange in London, which permitted forward contracting. The celebrated Dutch Tulip bulb mania, which you can read about in *Extraordinary Popular Delusions and the Madness of Crowds* by Charles Mackay, published 1841 but still in print, was characterized by forward contracting on tulip bulbs around 1637. The first "futures" contracts are generally traced to the Yodoya rice market in Osaka, Japan around 1650. These were evidently standardized contracts, which made them much like today's futures, although it is not known if the contracts were marked to market daily and/or had credit guarantees.

Probably the next major event, and the most significant as far as the history of U. S. futures markets, was the creation of the Chicago Board of Trade in 1848. Due to its prime location on Lake Michigan, Chicago was developing as a major center for the storage, sale, and distribution of Midwestern grain. Due to the seasonality of grain, however, Chicago's storage facilities were unable to accommodate the enormous increase in supply that occurred following the harvest. Similarly, its facilities were underutilized in the spring. Chicago spot prices rose and fell drastically. A group of grain traders created the "to-arrive" contract, which permitted farmers to lock in the price and deliver the grain later. This allowed the farmer to store the grain either on the farm or at a storage facility nearby and deliver it to Chicago months later. These to-arrive contracts proved useful as a device for hedging and speculating on price changes. Farmers and traders soon realized

that the sale and delivery of the grain itself was not nearly as important as the ability to transfer the price risk associated with the grain. The grain could always be sold and delivered anywhere else at any time. These contracts were eventually standardized around 1865, and in 1925 the first futures clearinghouse was formed. From that point on, futures contracts were pretty much of the form we know them today.

In the mid 1800s, famed New York financier Russell Sage began creating synthetic loans using the principle of put-call parity. Sage would buy the stock and a put from his customer and sell the customer a call. By fixing the put, call, and strike prices, Sage was creating a synthetic loan with an interest rate significantly higher than usury laws allowed.

One of the first examples of financial engineering was by none other than the beleaguered government of the Confederate States of America, which issued a dual currency optionable bond. This permitted the Confederate States to borrow money in sterling with an option to pay back in French francs. The holder of the bond had the option to convert the claim into cotton, the south's primary cash crop.

Interestingly, futures/options/derivatives trading was banned numerous times in Europe and Japan and even in the United States in the state of Illinois in 1867 though the law was quickly repealed. In 1874 the Chicago Mercantile Exchange's predecessor, the Chicago Produce Exchange, was formed. It became the modern day Merc in 1919. Other exchanges had been popping up around the country and continued to do so.

The early twentieth century was a dark period for derivatives trading as bucket shops were rampant. Bucket shops are small operators in options and securities that typically lure customers into transactions and then flee with the money, setting up shop elsewhere.

In 1922 the federal government made its first effort to regulate the futures market with the Grain Futures Act. In 1936 options on futures were banned in the United States. All the while options, futures and various derivatives continued to be banned from time to time in other countries.

The 1950s marked the era of two significant events in the futures markets. In 1955 the Supreme Court ruled in the case of *Corn Products Refining Company* that profits from hedging are treated as ordinary income. This ruling stood until it was challenged by the 1988 ruling in the *Arkansas Best* case. The *Best* decision denied the deductibility of capital losses against ordinary income and effectively gave hedging a tax disadvantage. Fortunately, this interpretation was overturned in 1993.

Another significant event of the 1950s was the ban on onion futures. Onion futures do not seem particularly important, though that is probably because they were banned, and we do not hear much about them. But the significance is that a group of Michigan onion farmers, reportedly enlisting the aid of their congressman, a young Gerald Ford, succeeded in banning a specific commodity from futures trading. To this day, the law in effect says, "you can create futures contracts on anything but onions."

In 1972 the Chicago Mercantile Exchange, responding to the now-freely floating international currencies, created the International Monetary Market, which allowed trading in currency futures. These were the first futures contracts that were not on physical commodities. In 1975 the Chicago Board of Trade created the first interest rate futures contract, one based on Ginnie Mae (GNMA) mortgages. While the contract met with initial success, it eventually died. The CBOT resuscitated it several times, changing its structure, but it never became viable. In 1975 the Merc responded with the Treasury bill futures contract. This contract was the first successful pure interest rate futures. It was held up as an example, either good or bad depending on your perspective, of the enormous leverage in futures. For only about \$1,000, and now less than that, you controlled \$1 million of T -bills. In 1977, the CBOT created the T -bond futures contract, which went on to be the highest volume contract. In 1982 the CME created the Eurodollar contract, which has now surpassed the T -bond contract to become the most actively traded of all futures contracts. In 1982, the Kansas City Board of Trade launched the first stock index futures, a contract on the Value Line Index. The Chicago Mercantile Exchange quickly followed with their highly successful contract on the S&P 500 index.

1973 marked the creation of both the Chicago Board Options Exchange and the publication of perhaps the most famous formula in finance, the option pricing model of Fischer Black and Myron Scholes. These events revolutionized the investment world in ways no one could imagine at that time. The Black-Scholes model, as it came to be known, set up a mathematical framework that formed the basis for an explosive revolution in the use of derivatives. In 1983, the Chicago Board Options Exchange decided to create an option on an index of stocks. Though originally known as the CBOE 100 Index, it was soon turned over to Standard and Poor's and became known as the S&P 100, which remains the most actively traded exchange-listed option.

The 1980s marked the beginning of the era of swaps and other over-the-counter derivatives. Although over-the-counter options and forwards had previously existed, the generation of corporate financial managers of that decade was the first to come out of business schools with exposure to derivatives. Soon virtually every large corporation, and even some that were not so large, were using derivatives to hedge, and in some cases, speculate on interest rate, exchange rate and commodity risk. New products were rapidly created to hedge the now-recognized wide varieties of risks. As the problems became more complex, Wall Street turned increasingly to the talents of mathematicians and physicists, offering them new and quite different career paths and unheard-of money. The instruments became more complex and were sometimes even referred to as "exotic."

In 1994 the derivatives world was hit with a series of large losses on derivatives trading announced by some well-known and highly experienced firms, such as Procter and Gamble and Metallgesellschaft. One of America's wealthiest localities, Orange County, California, declared bankruptcy, allegedly due to derivatives trading, but more accurately, due to the use of leverage in a portfolio of short- term Treasury securities. England's venerable Barings Bank declared bankruptcy due to speculative trading in futures contracts by a 28- year old clerk in its Singapore office. These and other large losses led

to a huge outcry, sometimes against the instruments and sometimes against the firms that sold them. While some minor changes occurred in the way in which derivatives were sold, most firms simply instituted tighter controls and continued to use derivatives.

These stories hit the high points in the history of derivatives. Even my aforementioned "Chronology" cannot do full justice to its long and colorful history. The future promises to bring new and exciting developments.

Don Chance is a professor of finance at LouisianaStateUniversity. He can be reached at dchance@fenews.com

For More Reading

Black, Fischer and Myron Scholes. "The Pricing of Options and Corporate Liabilities." The Journal of Political Economy 81,637-654.

Chance, Don M. "A Chronology of Derivatives." Derivatives Quarterly 2 (Winter, 1995), 53-60.

Mackay, Charles. Extraordinary Popular Delusions and the Madness of Crowds. New York; Harmony Books (1841, current version 1980).

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