



Derivatives-the Beginning

Who invented financial derivatives?

Some authorities view derivatives as the most significant financial development of the 20th Century. Many people contributed to this complex and enormously successful range of financial products. However, the key moment seems to have been in a London conference room in the mid-1970's, when four American and British lawyers took the vital steps that led to a multi-trillion dollar industry.

What are financial derivatives? In simple terms, they are a kind of investment created by contract, which is based upon some asset, but is not a direct form of ownership of that asset. In other words, its value is "derived" from the asset. One example is a call option to buy shares. Purchase of a derivative can create a different risk-reward relationship from that of the underlying asset or group of assets.

Some writers attribute the creation of derivatives to three economists who developed the Black-Scholes-Merton mathematical formula in 1973. That formula, in very simple terms, allowed calculation of current market value (and apparently the level of risk) of an asset, such as shares of stock, and of options to buy that same asset. This was seen as a major breakthrough for traders and investors, who could presumably evaluate risk and make counter-investments to hedge against that risk. Indeed, this formula was so impressive that Merton and Scholes received a Nobel Prize in 1997, Black having previously died.

Nonetheless, the formula alone did not create derivatives. It took actual financial transactions to do that, and in fact the purpose had nothing to do with any pricing formula.

Other persons think that the options exchanges in Chicago or the similar trading there of futures contracts in corn and other agricultural products were the origins of present-day derivatives. In part, they were, but stock options have existed for years without creating such a gigantic industry. Other forms of derivatives have existed for generations. The earliest on record are rice future contracts in Osaka in the Edo Period.

As of 2003, the global market for derivatives traded outside exchanges had grown to U.S. \$170 trillion, more than five times as big as the world's GDP in 2002. Obviously,

something happened beyond the existence of options and futures to focus the attention of the financial community on a new product.

In the mid-1970's, I was a young lawyer working for Monsanto Company in St. Louis, Missouri. It was an exciting job for me. In those days, American lawyers in private firms often looked down on lawyers in company law departments, but the quality of the professionals in a company like Monsanto was superb. Several of its lawyers (including me) later became chief legal officers or General Counsels of other big companies, one is now the highest revenue-producing partner in a major international law firm, another became United States Attorney (the chief federal prosecutor) in Atlanta and recently Deputy Attorney General of the United States and yet another currently serves as a Justice of the Supreme Court of the United States.

Because I had already done "parallel loan" agreements and an issue of Eurodollar debentures, when Monsanto developed a need for additional loan financing in Europe, I was ready to handle this.

In very simple terms, a "parallel loan" package was a financing technique, principally used by American and British companies, to meet mutual needs for money in other countries. Under this technique, an American company would lend U.S. dollars in the United States to a British company. The British company simultaneously lent an equal amount in pounds sterling in England to the American company.

Why did they bother to do this? Under United Kingdom exchange control laws, one could not easily remit large sums of money in and out of the country. Even parallel loan transactions required permission in each case from the Bank of England under the Exchange Control Act of 1947. It was also a means of insuring against changes in exchange rates.

All borrowing involves risks, but with very large amounts of money, the risks must be analyzed with care. We reviewed several types. For example, there is political risk, in that government policy may change or that some other event may jeopardize the ability to receive the principal and interest. There is exchange risk, since values of the respective

currencies may vary. Moreover, there is party or credit risk – in that a party might default.

Because the loans to each company were for equal amounts, the financial aspects of these deals were pretty straightforward. Once the amounts and rates were fixed, much of the work in completing a deal was turned over to the lawyers.

We did several of these loans. I was regularly flying to London for the negotiations, and I developed confidence in Francis Neate, a London solicitor, whom I used as local counsel. Generally, we did these deals together with the other company's inside and outside lawyers.

As the deals continued, a very troublesome issue arose. Companies do business in other countries through subsidiaries – separate legal entities. For example, Monsanto Company itself could lend the U.S. dollars in the United States to the other party, but it would be receiving the pounds sterling through its British subsidiary, Monsanto Limited, which was the entity that would put those pounds to use. The other party would also have two separate entities lending the pounds and borrowing the dollars.

This could possibly create a disaster in the event of insolvency of one of the parties. Francis started examining what might happen if one of those companies got into financial trouble. The answer – to the extent there was any answer – was found in old British legal decisions regarding the "banker's right of set-off." Set-off is a matter that rarely appears in court, but during the economic depression of the 1930's, it became quite important. We found to our horror that our using separate legal entities meant there would most likely be no right of set-off. If the other party became insolvent and could not pay back its loan as payments became due, we could be obliged to return the money we had borrowed from it, without being able to subtract the money it owed us.

Naturally, this was unacceptable. The purposes of parallel loans were to avoid risk, move funds across borders and minimize transaction costs. Francis had raised the issue, and I had to force it upon the other party's outside lawyer in the pending deal. Fortunately, we were dealing with John Carroll, an extremely able lawyer, who ignited the spark that we finally adopted. He

デリバティブ その始まり



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immediately acknowledged the problem, and started toying with ways to eliminate the risk. If, for example, the principal amounts exchanged were not loans and did not have to be returned, the risk could be divided. Why not simply write an agreement to adjust payments to maintain currency rates, or to swap interest rates? At the end of the term, or periodically during the term, adjustments could be made and payments settled. Each party could maintain the value of its principal in its own currency, and differences would be handled through these adjustments.

The agreement we wrote became known as the currency swap. The rest is history. The concept was adopted by the investment banking community with great enthusiasm. A new product – and a new industry – was born.

A few years later, Francis wrote to me reminding me that this new industry all started in that conference room. He had made a great success of his part in it, and later he wrote a book on the banker's right of set-off. Who then created derivatives? To my surprise, we did.

Used with the Black-Scholes-Merton formula for calculating risk, which had been created for "plain vanilla" options, the concept of derivatives multiplied and divided into an exotic range of products, far beyond our original intentions. It is exciting to realize that so many people have built on our original work.

If properly used within limits a financial derivative instrument is an invaluable risk management tool. However, we were very much aware that we had not eliminated all risks, and indeed we had created the opportunity for new ones.

Indeed, Professors Merton and Scholes themselves seemed to have been carried away by the apparent ability to hedge against risks, not appreciating that market dynamics could change and that not all risks are purely financial. They took key roles in an investment company called Long-Term Capital Management, which traded heavily in a wide variety of derivatives. Two years after their 1997 Nobel Prize, LTCM was in danger of collapse, with an imminent threat of default on \$100 billion of derivatives, and had to be bailed out by government intervention.

誰が財務的デリバティブを発明したのか?

実際のところ多くの人々がこのデリバティブの発明に関与したが、その重大な局面は1970年代の半ばロンドンのある会議室にあった。そこで4人の米国と英国の弁護士が数兆ドル産業に導く重大なステップを踏んだことになる。それがどのようにおこったかをご説明しましょう。

多くの人が1973年にBlack-Scholes-Mertonの公式を作った3人のエコノミストがデリバティブを発明したように考えているが、その公式は株式のような資産の現在の価値を容易に計算することができるようにしたものであり、そのことによって多くの資産家がリスク計算し、そのリスクを回避するために逆投資をすることを容易にしました。その公式のおかげでシュールズとマートン両教授は1997年にノーベル賞を受賞することになる。しかし公式自体はデリバティブを作り出したとはいえない。

デリバティブとはなにか。簡単に言えば、これは契約によって作り出された一種の投資であり、それはある資産をもとにしたものであるが、それは資産のオーナーシップの直接的な形態ではない。換言すれば、その価値というのは、資産から派生したものである。株のコールオプション（買付選択権）がひとつの例である。デリバティブを購入することは、その条件にもよるが、原資産とは異なったリスクに対する報酬を確保することになる。もちろんストックオプション自体は、古くから存在し、シカゴではとうもろこしの先物取引に、またその最古の例として日本において江戸時代に堂島の米相場の先物取引で使われていたとされている。

1970年代初頭、わたしは米国のミズーリー州セントルイスでモンサントという企業で若い弁護士として、世界中を飛び回っていた。当時、パラレル(平行)ローンやユーロデラー社債が私の主要な業務であった。簡単に言うと、パラレルローンとは、米国の企業がドルで英国企業にお金を貸し、同時に英国の企業が米国企業に同額をポンドで貸す契約のことである。なぜそのような面倒なことをするのか。それは、英国の為替規制法が厳しく、資金を容易に海外に送金できなかった所以です。

金銭の貸借においては、その金額が大きければ大きいほど、そのリスクについて検討する必要があります。それは、政治的リスクであったり、為替リスクであったり、その際たるものが、与信リスクです。この場合、一方の当事者が破産等によって債務不履行が起こった場合、どのような方法でリスクを回避するかが問題となります。

当時私と他の弁護士が担当していましたパラレルローンにおいて、親会社がその子会社などの別法人を使って融資を行なっていたので、一方の当事者が財務的困難に陥った場合に、そのリスクは甚大なものになりました。つまり別法人であるために、相殺という手段をとることが困難となるのです。このような問題に直面した時に、相手方の優秀な弁護士の一人ジョン・キャロルが発火点となり、一つのリスク回避手段へとみんなを導きました。つまりこうです、元本をローンとは扱わず、返済義務をなくしたのです。そうすることにより一方の債務不履行というリスクを回避できると考えました。為替の価値を維持する又は利率をスワップ(交換)するために支払いを調節することを契約書に盛り込みました。その支払いを随時調節するのです。そうすることによって、それぞれの当事者が自国の通貨で元本の価値を維持し、為替の差を調整することを可能にしました。後にこのような契約を通貨のスワップ取引と呼ばれるようになり、それが歴史となりました。そして投資銀行はこのような概念に狂喜し、新しい産業が興ったといえます。で、誰がデリバティブを発案したと思いますか? そうです、驚くべきことに、私たちなのです。