Derivatives: Commercial Uses
International, USA (National/Federal) Related Content

A Practice Note describing some of the basic ways commercial end users of swaps and derivatives use these instruments in their commercial operations.

Many firms use derivatives to manage the risks inherent in their businesses. Derivatives are instruments that derive their value from an underlying asset, meaning that it is possible to use derivatives to transfer both the risks and potential rewards of an asset to another party without transferring the asset itself. This makes derivatives a useful tool for transferring risk from risk-averse entities to parties more inclined (and ideally, more suited) to accept it.

Derivatives are therefore used by:

- Manufacturers and merchants, to protect themselves from particular risks of their businesses.
- Institutional investors, to match their investments to their obligations and to manage their portfolios.
- Lenders, to reduce risk from fluctuations in currency exchange rates or interest rates.

The alternative to a derivatives product is a spot **contract**. A spot **contract** is the sale and purchase of an asset in the present. Unlike spot transactions, derivatives **contracts** can contemplate a purchase at future dates and/or incorporate the choice as to whether or not to enter into the transaction. The three major types of derivatives **contracts** are:

- **Forward/futures contracts:** vary the element of timing by arranging the purchase and sale at a particular time (or times) in the future.
- **Option contracts:** are essentially futures **contracts** that add the element of choice by providing one of the parties with the option as to whether or not to enter into the transaction at a designated future date (or within a range of future dates).
- **Swap contracts:** contemplate the simultaneous future exchange of money, assets, or obligations.

Derivatives are also categorized according to how they are traded:

- **Exchange-traded derivatives:** are standardized **contracts** traded on a recognized exchange such as the New York Mercantile Exchange (NYMEX) or the Chicago Mercantile Exchange (CME).
- **Over-the-counter (OTC) derivatives:** are customized, privately negotiated, **bilateral contracts**.

Use of Derivatives by Manufacturers and Merchants

Companies use derivatives to minimize the impact that variables outside their control have on their costs and cash flows. Below are some examples of how derivatives are used by companies to hedge currency, interest rate, commodity price, and weather risks.

Managing Currency Risk

To manage currency risks, companies use currency **forwards** or futures, or foreign exchange (FX) options. The following sections provide examples of these uses.

Currency Forwards and Futures

A US company sells its products in the US but manufactures them in China. Some of its liabilities are therefore in renminbi (yuan). The company has a substantial **forward**-order book and knows that it will be required to purchase its next batch of product in three months' time, using yuan, from its supplier in China. Rather than entering into a spot currency exchange in three months, the company may enter into a **forward** or futures **contract** today to buy a fixed amount of yuan in three months at a predetermined price in US dollars.

In doing so, the company is guaranteeing the cost of its foreign currency commitment and reducing its exposure to the volatility of the dollar-yuan exchange rate. It is protecting itself in case the cost of yuan goes up but loses the possibility to get any upside if yuan is less expensive in three months. The bank providing the **forward** or futures **contract** charges the company a fee, which is built into the price of the **contract**. The volatility of the currency, the length of the **contract**, and emerging-market factors such as regional instability may affect the price of these types of **forward** and futures currency **contracts**. However, this is one way in which businesses can use derivatives to manage the risks inherent in its FX costs.

Foreign Exchange Options

In the event that the company does not wish to actually purchase the currency but prefers to add an element of choice, rather than purchasing a **forward** or futures **contract**, the company can purchase a currency option. With a currency option, the company has the right, but not the obligation, to buy yuan at the predetermined price in three months' time. If in three months the price of yuan (in dollars) is higher than the price that the company must pay under the option, the company would exercise its option to purchase the yuan at the lower option price. If the price of yuan (in dollars) is lower than the price that the company must pay under the option, the company would let the option lapse (not exercise the option) and instead purchase the yuan in the market at that time through an FX spot transaction.

Rather than guaranteeing the price of its currency commitments, the company is setting itself a benchmark where it knows what its maximum costs will be, without depriving itself of the opportunity to buy the currency at a lower price if the market moves the other way. The option **contract** itself has a value, which fluctuates throughout its life relative to the value of the exchange rates for each currency.

Managing Interest Rate Risk: Interest Rate Swaps

Most businesses borrow money in the course of their business at the rates offered by their relationship bank, which in most cases is a floating rate of interest based on **LIBOR** plus a percentage or **spread** (expressed in **basis points**).

A company may be concerned about the effect that changes in LIBOR or another variable-rate benchmark may have on its cost of borrowing. A fixed rate over the life of the loan, or at least for a portion of the loan, is therefore usually preferred by the borrower. However, fixed rate loans are rare and, if made, expensive for the borrower because lenders do not want to lock themselves into a rate that could potentially be lower than their own cost of funds in the event of an unforeseen rise in LIBOR. So, an alternative is for the company to enter into a variable-rate loan and an **interest rate swap** under which the company swaps its monthly floating rate liability for a fixed interest rate.

While banks can only estimate how floating rates will perform over the life of any loan, they will still provide a fixed rate for the swap. This does not necessarily mean the bank expects rates to fall. Ultimately, the bank's own view on interest rates does not matter because the bank typically hedges its own risk by entering into an offsetting or "back-to-back" transaction (the reverse of the transaction it enters into with the borrower) with a third party to protect its own position. The fee (or spread) that the bank charges the borrower for entering into the interest rate swap (usually a set number of basis points multiplied by the **notional amount** of the transaction, which is typically equal to the amount of the loan) includes the bank's cost of entering into the offsetting back-to-back swap with its third-party counterparty. The spread that the bank charges the borrower for entering into the interest rate swap between them is slightly higher than that which it is charged by its third-party counterparty (typically by another bank or financial institution) for entering into the back-to-back interest rate swap. This difference between the two fees/spreads is the bank's profit on the transaction.

Swaps in Asset-Backed Securities (ABS) Transactions

Parties often enter into interest rate and currency swaps as part of **asset-backed securities** (ABS) transactions. ABS issuers need to know that their costs (outgoing cash flows) are fixed every month. If exposed to interest rate fluctuations, the ABS issuer may not be able to make monthly payments of interest and/or principal (P&I) to holders of the ABS, who are usually paid a floating rate of interest on their securities based on LIBOR. The issuer therefore enters into a fixed-for-floating interest rate swap with a swap provider.

Under this swap, the ABS issuer makes a monthly payment to the swap provider of an agreed fixed rate of interest, which includes a fee (spread) to the swap provider for entering into the swap, multiplied by the transaction's notional amount, which matches the size of the **tranche** of ABS on which

the issuer needs to make monthly P&I payments. In return, the ABS issuer receives from the swap provider under the swap a monthly amount equal to LIBOR plus the spread multiplied by the same notional amount.

In this way, the cash flows of the ABS transaction are fixed, yet the issuer can pay the monthly interest due the ABS holders with the floating payment it receives from the swap provider under the interest rate swap. Again, the swap provider typically enters into an offsetting back-to-back swap with another financial institution to which it pays a fee/spread. The swap provider profits on the difference between the fee it charges the ABS issuer and the slightly lower fee it pays to its counterparty under the back-to-back.

Swap providers in ABS deals may also perform a similar function with respect to currency swaps, if tranches are denominated in a variety of currencies or in a currency that differs from the one in which the issuer primarily transacts.

For more information on the role of the swap provider in an ABS transaction, see Practice Note, Securitization: US Overview: Use of Derivatives in Securitization.

Managing Commodity Risk: Commodity Derivatives

Derivatives can also be used to manage the risk of price rises in all kinds of different commodities used by businesses. For example, an oil refiner and an oil producer agree to enter into a ten-year crude oil swap with monthly exchanges of payment. The refiner agrees to pay the producer a fixed price each month of $25 per barrel and the producer agrees to pay to the refiner on the final trading day of each month the settlement price of a futures **contract** for NYMEX-traded light sweet crude oil for that month. The notional amount of the **contract** is 10,000 barrels. Under this **contract** the payments are netted, so that the party owing the larger payment for the month makes a net payment to the party owing the lesser amount.

Therefore, if the settlement price on the final day of trading for a particular month is $23 per barrel, the refiner pays the producer $2 per barrel times 10,000 (that is, $20,000) for that month. If the price is $28 per barrel, the producer pays $30,000 to the refiner for the month. The swap guarantees a fixed price of $25 per barrel for the producer (though limiting its upside). The parties can combine their swaps with physical sales and purchases of quantities in the spot market that match the **contract** sizes, allowing them to manage their price-exposure risk without having to take actual possession of the oil. The same can be achieved using a series of futures **contracts**.

Managing Weather Risk: Call Options

Derivatives are not just used to control price rises. Events other than market movements can be hedged against. Many businesses are subject to the risk of adverse weather conditions on their operations, especially agriculture or energy businesses. Increasingly, however, other types of businesses, including retailers, leisure businesses, and media companies (whose revenues are linked, for example, to major sporting events) are taking advantage of weather-risk-management derivatives that enable them to have some degree of income certainty despite the unpredictability of the weather.

The revenue of a cinema company, for example, is in part dependent on the weather. That is, fewer people go to the movies in summer when it's warm outside. Based on an analysis of historic attendance figures and weather data, trends can be spotted. For example, weekends are the most important revenue-producing days for movies. By working out how many critical days there are a year and what the average loss is when the temperature on those days exceeds, say 65°F, the cinema company can tailor a derivative under which it buys a **call option** that allows it to receive the amount that it would expect to lose on any critical day where the temperature exceeds 65°F. Whether or not it actually loses that amount is irrelevant because the payout on a weather derivative is not linked to the actual amount of money lost due to weather conditions. Rather, it is linked to the difference between the actual weather conditions and the benchmark provided by historical weather data.

The cost or premium that the option seller will charge depends on several factors, including the historical pattern of weather, the future probability of certain weather occurring for the given period and the level at which the protection is to begin (that is, the likelihood of a payout, the size of the payout and weather forecasts and trends). Sometimes the fee is structured without a premium. Using the example above, the cinema company does not receive the benefits of any upside in revenue if it's a bad-weather summer. As global warming brings more weather uncertainty, many predict this area of the derivatives market will expand significantly.

A reliable, neutral source of historical data and current recordings of temperature, wind, and precipitation is essential to the measurement of this risk. The market for risk takers willing to sell weather protection is made up primarily of insurance companies, banks, and utility companies, as these types of derivatives products, as well as others, such as CDS (see below), resemble traditional insurance.

Managing Investment and Repayment Risk

Lenders or holders of debt securities use credit derivatives such as **credit default swaps** (CDS) to purchase protection against the risk that a borrower to which they have extended credit or the issuer of a debt security which they hold may fail to make scheduled P&I payments under the

obligation. For more information on how credit derivatives work and how they are used as hedges, see Practice Note, Credit Derivatives: Overview (US).

Use of Derivatives by Institutional Investors

As holders of many types of investments, institutional investors use derivative products to manage and protect their holdings.

Portfolio or Asset Management: Put Warrants

Derivatives can be used to protect against losses that may arise from a decline in the value of an asset. For example, if an insurance company holds a portfolio of **New York Stock Exchange** (NYSE) 100 equities for investment purposes, in order to hedge against the risk of the portfolio declining in value, the insurance company can purchase a **put** warrant (essentially a put option) on some of the equities that it perceives as the most risky. The insurance company (or, most likely, its investment manager) will therefore have certainty that it can sell those more risky equities on a predetermined date, at a predetermined (**floor**) price.

Pension Funds: Tailoring Investments to Liabilities

Pensions funds are subject to an array of unique risks, as their liabilities are "long dated." That is, their obligations extend out over a long period of time (investments in pension funds are typically held for many years) and can increase in time with a variety of factors, including inflation and salary growth. The investments in which a pension fund invests, predominantly bonds and equities, are unlikely to be able to provide returns that will match the lengthy term of those liabilities. The pension fund, therefore, is particularly susceptible to a wide array of unknowns and uses derivative products to manage those liabilities.

Hedging Portfolio Investments: Interest Rate Swaps

"Liability driven investment" (LDI) is the term used in pension investment circles to describe a strategy that seeks to match an entity's return on its portfolio assets with its funding commitments. Derivatives play a key part in that strategy, principally by providing flexibility. For example, a portfolio of bonds will provide an income stream for the pension fund. However, due to the fact that bond portfolios tend to have shorter life spans than a pension fund's liabilities, and because bond **redemption** payments it receives will not mirror its outgoing liabilities (payments to its investors), there will likely be mismatches in the fund's assets and liabilities. These mismatches may be addressed by overlaying a portfolio of interest rate swaps on top of the bond portfolio, by which payment streams on the bonds are exchanged with a swap counterparty for smoother long-term payments in a manner similar to that undertaken by companies when managing their interest rate risks, as described above (see Managing Interest Rate Risk: Interest Rate Swaps). This permits the pension fund's liabilities and income to be more closely aligned.

Inflation Swaps

Similarly, inflation swaps are used to ensure that a fund's exposure to inflation is minimized. To ensure that its future cash flows are not eroded and that it has some certainty as to the real future value of its investments, a pension fund can purchase inflation-linked derivatives products to protect it from increases in prices resulting from inflation. In its most simple form, an inflation swap allows a pension fund to swap its variable-linked payments to its investors in return for paying a pre-agreed rate of interest (similar to an interest rate swap, described above). This gives the pension fund greater control over the growth of its liabilities that results from inflation.

Mortality Derivatives

A market has also emerged for mortality and longevity derivatives to help pension funds and insurers manage exposure to the risk of people living longer than expected.

Synthetic Investments

Businesses often wish to avoid the incidents of ownership of an asset for reasons including accounting and balance sheet treatment, securities reporting requirements, and tax consequences. These parties therefore use a variety of derivatives products to simulate investment in these assets. These are known as **synthetic investments**.

Total Return Swaps

A large number of property derivatives are structured as **total return swaps** (TRS), under which the buyer of the **contract** exchanges the rate of return on a cash investment (plus a fee, or spread, for entering into the transaction) for the "total return" on a property index, which reflects the capital

growth of the relevant commercial property market over a specified period (usually two to three years). For detailed information on TRS including mechanics and more traditional uses, see Practice Note, Equity Derivatives: Overview (US): Total Return Swaps.

Commercial Property Derivatives

Property derivatives allow the transfer of property risk without the need to physically buy or sell properties. This can save parties the cost and time involved in buying and selling property, when speculative exposure is sought.

Synthetic Securitization

In standard securitizations, a pool of assets is transferred to a **special purpose entity** (SPE) which issues securities (ABS), the return on which is generated by the cash flows arising from the transferred assets. In synthetic securitizations there is no actual transfer of assets to the SPE. Instead, the SPE invests synthetically, typically by entering into CDS that provide it with exposure to a pool of assets without actually purchasing those assets. Certain entities find this technique useful in assisting with the management of asset-transfer issues such as tax and accounting. For more information on synthetic securitization, see Practice Notes, Securitization: US Overview: Synthetic Securitizations (Synthetic CDOs).

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