Butterflies, Condors, and Jelly Rolls: Derivatives Explained

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Derivatives Explained

- What are derivatives?
- What are they used for?
- Challenges for translators

What are derivatives?

- Definitions
  - Futures/forwards
  - Calls/puts
  - Swaps
- Exchange-traded vs. OTC
- Underlying instruments

Definitions

A **derivative** is an instrument
whose price is **derived** from
the price of an **underlying instrument**
(such as a reference asset or liability,
index, basket, etc.)

Definitions

A **future/forward** is a binding agreement to buy/sell a **specified amount** [contract size] of an **underlying instrument** on a **future date** [settlement/delivery date], at a **price agreed upon in advance** [forward price].

Definitions

A **call option** is the right (but not the obligation) to buy a **specified amount** of an **underlying instrument** on, or until a **future date**, at a **price defined in advance**.

Definitions

A **call option** is the right (but not the obligation) to buy a **specified amount** of an **underlying instrument** on, or until a **future date**, at a **price defined in advance**.

Definitions

A **put option** is the right (but not the obligation) to sell a **specified amount** of an **underlying instrument** on, or until a **future date**, at a **price defined in advance**.

Definitions

A **call (put) option** [option type] is the right (but not the obligation) to buy (sell) a **specified amount** [contract size] of an **underlying instrument** on, or until [option style] a **future date** [exercise], at a **price defined in advance** [exercise price / strike price].

Definitions

A **swap** is a binding agreement to exchange

a stream of cash flows
a series of assets or receivables

differences in value

over a defined term

Definitions

An **interest rate swap** is a binding agreement to **exchange** a series of **different interest payments** defined by reference to a **notional principal amount** over a **defined term**

Definitions

An **interest rate swap** is a binding agreement to **exchange** [payer / receiver] a series of **different interest payments** [fixed vs. floating] [fixed vs. fixed] [cross-currency] defined by reference to a **notional principal amount** over a **defined term**

Basic positions

- Long future

Basic positions

- Short future

Basic positions

- Long call

Basic positions

- Short call

Basic positions

- Long put

Basic positions

- Short put

Basic positions

- Straddle

Basic positions

- Butterfly

Exchange-traded vs. OTC

- Exchange-traded derivatives
  - Standardised contracts traded on regulated markets
  - Trading governed by rules and regulations
  - Settlement takes place through a clearing house (often acting as a central counterparty)
  - Benchmark products include contracts on interest rates, equities, equity indices, and currencies (US only)

Exchange-traded vs. OTC

- Major exchanges
  - Chicago Mercantile Exchange/Chicago Board of Trade (*recently announced merger plans*)
  - Eurex
  - Euronext.liffe
  - Singapore Exchange

Exchange-traded vs. OTC

- OTC derivatives
  - Customised contracts traded outside regulated markets
  - Trading governed by market conventions and standard documentation
  - Settlement generally takes place bilaterally – there is a growing trend to settle through a clearing house

Exchange-traded vs. OTC

- OTC derivatives
  - Benchmark OTC markets include contracts on interest rates (swaps, FRAs), equities, equity indices, and currencies (FX forwards)

Underlying instruments

- Interest rate products
  - Short-term interest rates
  - Medium- to long-term bonds
  - Synthetic swap rates
- Equity products
  - Single equity issues
  - Equity baskets
  - Equity indices

Underlying instruments

- Currency products
  - Foreign exchange forwards
  - Cross-currency swaps
- Credit products
  - Credit default swaps
  - Total return swaps
  - Credit-linked securities
  - Credit index tranches

Underlying instruments

- Commodity products
  - Precious/base metals
  - Agricultural products
  - Other commodities

Underlying instruments

- Other products *some still being developed*
  - Insurance
  - Pollution
  - Weather
  - Real estate
  - Wine
  - …

What are derivatives used for?

- Hedging
- Trading
- Arbitrage

Hedging

- Using derivatives to reduce, contain, or minimise existing or potential risks
  - Selling equity index futures to hedge an existing portfolio of shares
  - Buying fixed-income futures (or entering into a receiver IRS) to hedge the price of an anticipated portfolio purchase
  - Buying put options to hedge the currency risk of an exporter

Hedging

- Issues
  - Availability of a suitable hedging instrument
  - Mismatch between
    - the maturity of the risk position and the hedge
    - the performance of the risk position and the hedge
    - ►**basis risk**
  - Hedging cost
  - Tax and accounting issues

Trading

- Using derivatives to assume position risk, and to profit from anticipated market movements
- Benefits of using derivatives for trading:
  - Efficient capital usage
  - Massive liquidity in key products
  - Quick entry and closeout
  - Reliable market prices

Trading

- Issues
  - Reliability of liquid markets
  - Trading controls
  - Managing exposure

Arbitrage

- Using derivatives to exploit short-term imbalances between different markets or products
- Generating a ‘risk-free’ profit by arbitraging
  - derivatives vs. cash (IRS vs. bonds)
  - derivatives vs. derivatives (same contract on different markets)

Arbitrage

- Issues
  - Hidden risks (e.g. ‘pin risk’)
  - Trading controls

Challenges for translators

- Comprehension issues
- Sources of information

- Your experience?

Challenges – some examples

- A synthetic short futures position is created by combining a short call with a long put option.

Challenges – some examples

- Option premiums are not paid or collected on sale or purchase respectively, but transferred only on exercise/assignment or on expiration of the contract.

Challenges – some examples

- The buyer of a Vertical Call Spread combination buys component 1, a call option, and sells component 2, a call option with the same underlying instrument and expiration month as component 1, but with a higher exercise price.

Challenges – some examples

- With a barrier cap the additional payment will be made if the trigger level is approached from below, whereas with a barrier floor the additional payment will be made if the trigger level is approached from above.

Challenges – some examples

- Essentially ABC is transferring the major part of the credit risk on the loans in the pool by purchasing credit protection via a Credit Default Swap from DEF, who then in turn purchases credit protection on the reference pool from a number of banks and institutional investors: the £355.7 m non-funded Super-Senior Tranche (rated AAA/Aaa by S&P and Moody's respectively) has been insured by XYZ, the leading US monoline insurer.

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