Fixed Income Derivatives

Contents

- Swaps
- Credit default swaps (CDS's)
- Indices
- Swaptions

What is a Swap?

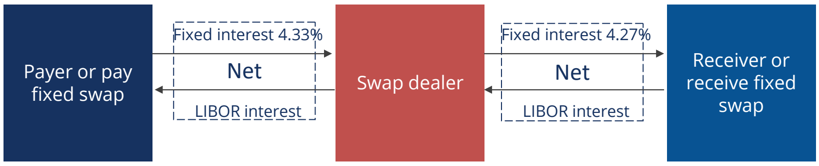
A swap is a derivative contract through which two parties agree to exchange a series of future cash flows, determined by pre defined but uncertain variable(s)

Common examples	
Interest Rate Swap	• Fixed Interest for Floating Interest • Floating Interest for other Floating Interest
Cross Currency Swap	• Floating Interest in one currency for Floating Interest rate in other currency
Equity Swap	• Equity performance for Floating Interest

Interest Rate Swap – Fixed for Floating

Example Terms	
Swap rate (Fixed rate)	4.30
Tenor	2 years
Notional principal	USD 170m
Frequency	Semi-semi
Floating rate	USD 180-day LIBOR

Interest Rate Swap – Swap Dealer



Example Terms	
Swap rate (Fixed rate)	4.27- 4.33
Tenor	2 years
Notional principal	USD 170m
Frequency	Semi-semi
Floating rate	USD 180-day LIBOR

Key Risks of Interest Rate Swaps

Interest rate risk	• Both parties are exposed to movements in interest rates and could either gain or benefit from changes in rates
Counterparty risk	• A counterparty which has benefited from the movements in interest rates will be exposed to the credit worthiness of the counterparty

Credit Default Swaps - CDS's

A Credit Default Swap is a derivative contract through which two parties transfer the credit exposure to bonds between them

Key terms	
Buyer	The buyer of credit protection
Seller	The seller of credit protection
Notional	Face value of the unrestricted credit bet between the two counterparties
Reference obligation	The underlying bond
Premium	The premium payable in basis points of the Notional amount
Settlement	Usually in cash
Term	Duration of contract

CDS Trade Example

Terms

- Buyer: Birkdale
- Seller: Augusta
- Notional: USD10mn
- Reference: Muirfield Plc 5 year bond
- Premium: 55bps
- Settlement: Cash
- Term: 1 year

Birkdale buys a 1-year CDS from Augusta on a notional amount of USD10 million on the 5-year bonds issued by Muirfield Plc.

The CDS has an annual premium of 55 basis points and cash settlement.

CDS - No Credit Event

Muirfield Plc does not default and no ‘credit event’ or ‘trigger’ occurs.

- Buyer: Birkdale Capital
- Seller: Augusta Inc.
- Notional: USD10mn
- Reference: Muirfield Plc bond
- Premium: 55bps
- Settlement: Cash
- Term: 1 year

	Birkdale	Augusta
0.0055 x USD10 million	(55,000)	+55,000
CDS pay out	Nil	Nil
Net	(55,000)	+55,000

9 FINANCIALEDGE

CDS - Credit Event

Muirfield Plc defaults on day 2. Consequently the bonds are now trading at 0 cents on the dollar and Augusta Inc. pays out on the CDS protection they sold.

- Buyer: Birkdale Capital
- Seller: Augusta Inc.
- Notional: USD10mn
- Reference: Muirfield Plc bond
- Premium: 55bps
- Settlement: Cash
- Term: 1 year

	Birkdale	Augusta
0.0055 x $10 million	(55,000)	+55,000
CDS payout (1-0.0) x $10 million	+10,000,000	(10,000,000)
Net	+9,945,000	(9,945,000)

10 FINANCIALEDGE

CDS – Credit Deterioration

Two days into the trade no credit event has occurred but Muirfield is experiencing difficult trading conditions. The CDS spread goes up by +40 basis points to reflect this and Birkdale unwinds the trade.

- Buyer: Birkdale Capital
- Seller: Augusta Inc.
- Notional: USD10mn
- Reference: Muirfield Plc bond
- Premium: 55bps
- Settlement: Cash
- Term: 1 year

	Birkdale	Augusta
0.0055 x $10 million	(55,000)	+55,000
Close out the CDS position by selling the CDS (+0.0040 + 0.0055) x $10 million	+95,000	-95,000
Net	+40,000	(40,000)

11 FINANCIALEDGE

CDS – Credit Improvement

Two days into the trade no credit event has occurred. Muirfield is experiencing better trading conditions and the CDS spread goes down by (30) basis points to reflect this. Birkdale unwinds the trade.

- Buyer: Birkdale Capital
- Seller: Augusta Inc.
- Notional: US$10mn
- Reference: Muirfield Plc bond
- Premium: 55bps
- Settlement: Cash
- Term: 1 year

	Birkdale	Augusta
0.0055 x $10 million	(55,000)	+55,000
Close out the CDS position by going short the CDS (-0.0030 + 0.0055) x $10 million	+25,000	-25,000
Net	(30,000)	+30,000

12 FINANCIALEDGE

CDS – Credit Event and Counterparty Default

Muirfield Plc defaults before the end of the year and the bonds are trading at 0 cents on the dollar but Augusta Inc. fails to pay out on the CDS

- Buyer: Birkdale Capital
- Seller: Augusta Inc.
- Notional: US$10mn
- Reference: Muirfield Plc bond
- Premium: 55bps
- Settlement: Cash
- Term: 1 year

	Birkdale	Augusta
0.0055 x $10 million	(55,000)	+55,000
CDS pay out	Nil	Nil
Net	(55,000)	+55,000

13

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Who Trades CDS's?

- **Commercial banks** – Risk management
- **Hedge funds** – Credit speculation
- **Investment banks** – Dealing & risk management
- **Insurance firms** – Ongoing business

14

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Types of CDS Credit Events

A **ratings downgrade**
e.g. (AAA→AA)

Non-payment or delayed payment of a fixed income obligation

Going concern issues
e.g. receivership, liquidation, capital restructuring or a Creditors Agreement

A **regulatory compliance breach** or penalty

Any **other variable** as defined by the OTC contract

Collectively known as 'credit events'

15 FINANCIALEDGE

CDS - Indices

Allows for buying or selling credit protection on an Index using Standardised contracts

Examples:

iTraxx Europe ("The Main")	HiVol	Xover
125 most liquid European credits	30 high spread credits	75 sub-investment grade credits

16 FINANCIALEDGE

Swaptions – Options on Swaps

Swaptions
The right but not the obligation to enter into a Swap
The underlying Swap will have pre determined dates, rates and term
Can be agreed on any type of Swap
An option on entering into a Swap contract!

Receiver swaption

gives buyer the right to sell a CDS in the future (i.e. go **long** in underlying bond)

Payer swaption

gives buyer the right to buy a CDS in the future (i.e. go **short** in underlying bond)

17

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