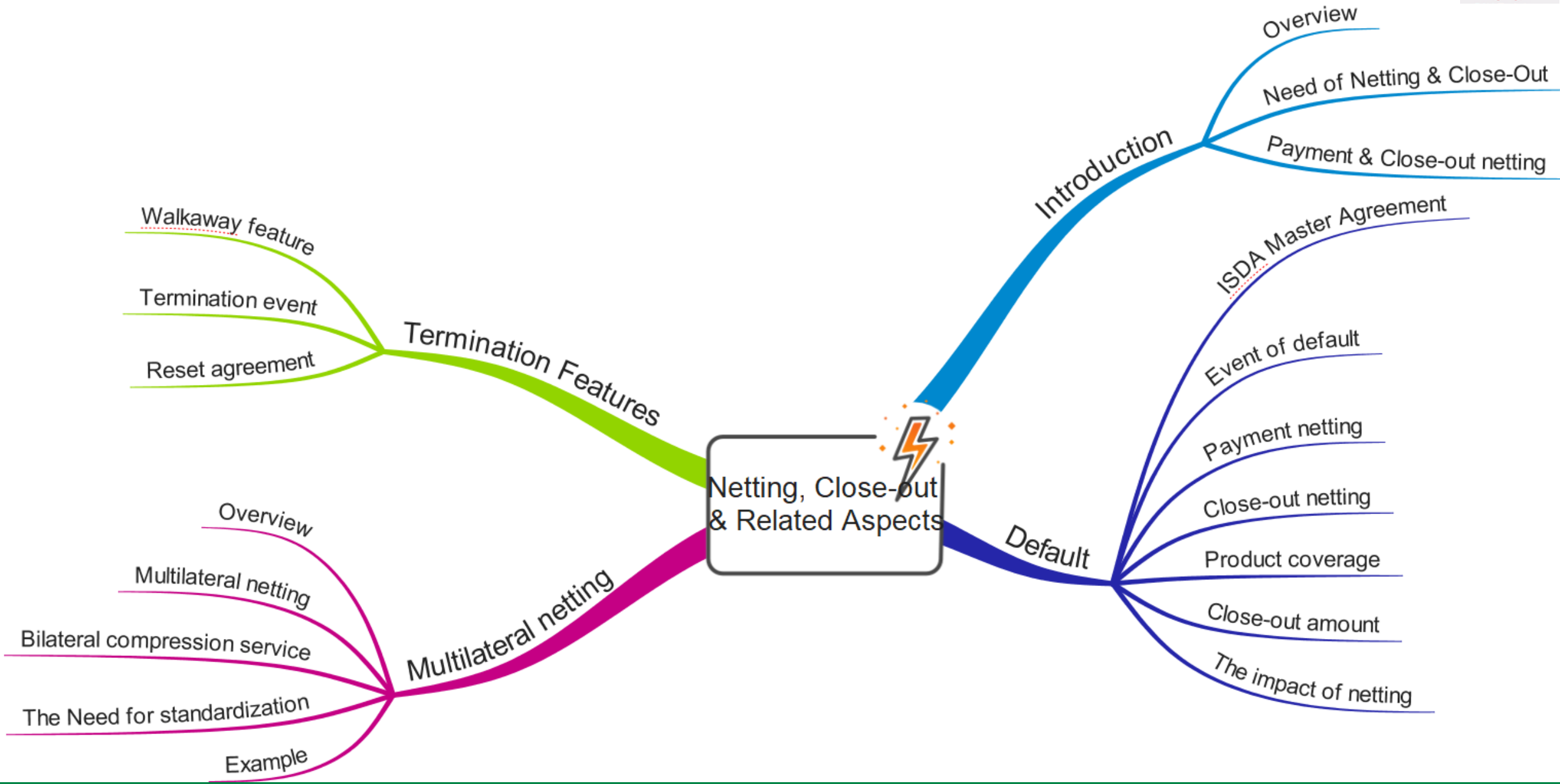# TOPIC 10: Netting, Close-out, and Related Aspects

1   **Introduction**

2   **Default, Netting and Close-out**

3   **Multilateral Netting and Trade Compression**

4   **Termination Feature and Reset**

Netting, Close-out & Related Aspects

Introduction
- Overview
- Need of Netting & Close-Out
- Payment & Close-out netting

Default
- ISDA Master Agreement
- Event of default
- Payment netting
- Close-out netting
- Product coverage
- Close-out amount
- The impact of netting

Termination Features
- Walkaway feature
- Termination event
- Reset agreement

Multilateral netting
- Overview
- Multilateral netting
- Bilateral compression service
- The Need for standardization
- Example

Overview

- CCR Mitigation
    - Netting: Off-setting positive and negative positions with the same counterparty --> Reduce settlement risk
    - Close-out: Process of terminating and settling contracts with a defaulted counterparty --> Reduce CCR

- Scope of this chapter
    - Contractual and legal basis of netting and close-out
    - Impact on xVA
    - Related forms of risk mitigation: trade compression and break clauses

The Need for Netting and Close-out

- Rationale: A bank has thousands of transactions with a defaulted counterparty --> Terminating transactions and rehedging them ASAP + Offset them

- Example: A and B have 2 transactions to each other
    - Cash flow: 2 cash flows (same day) with gross amount cause settlement risk --> Netting
    - Close-out: In the event that either A or B defaults, the surviving party may suffer from being responsible for loss transaction but not be paid for the other gain transaction --> Uncertainty over cashflow payment or ability to replace the transaction
    - Period: Long term (maturity of the contract)

- Documentation in defining the processes that would occur when one party defaults

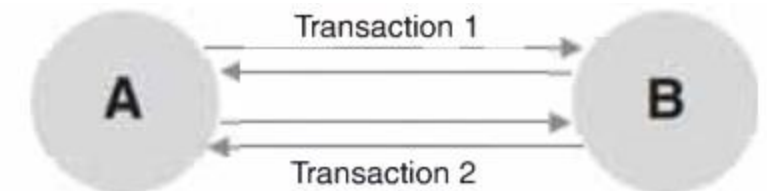- Netting legislation: ISDA Master Agreement

Figure 10.1 Illustration of the need for netting in bilateral markets.

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The ISDA Master Agreement

▪ Rationale: Reducing CCR + Increase efficiency --> Development in derivative market

▪ History: In 1985, ISDA (Trade organization for derivative) introduce Master Agreement = Market standard for derivative

▪ ISDA Master Agreement:

- Components: A common core section + schedule containing adjustable terms to be agreed by both parties
- Contractual terms: netting, collateral, termination events, definition of default, close-out process
- Target: Remove legal uncertainty.
- Negotiating terms: time-consuming but once it's completed, trading tends to occur without the need to update or change
- Law: Usually English or New York

▪ Risk mitigation features:

- Posting collateral
- Events of default and termination
- All transactions referenced are combined into a single net obligation
- The mechanics around the close-out process are defined

Events of default

▪ Failure to pay or deliver

▪ Breach of agreement

▪ Credit support default

▪ Misrepresentation

▪ Default under specified transaction

▪ Cross default

▪ Bankruptcy

▪ Merge without assumption

Payment netting

- Scope: Same transaction same currency < Multiple transaction on the same day, same currency

- Benefit: Reduce workload and operational risk

- Case study: KFW bank ("The Germany dumbest bank"): Automated payment to Lehman Brother hours before the latter's default

- Payment netting in FX transaction: Continuous Linked Settlements (CLS)
  - Payment vs Payment (PvP): When both deliveries arrive, CLS makes payment to both party

Close-out Netting

- Issues: Payment netting is not enough
  - Usually, many transaction with various asset classes
  - Hedging or close contract through opposite position
  - Largely independent position (asset classes or underlying asset)

- Rationale for Close-out netting: uncertainty recovery and hedging, replacement contract

- Component: Close-out (terminate transaction) + Netting (offset the value of transactions --> Net balance

- Scope: All transaction with various maturities, currencies, conditions (ITM or OTM),...

- Mechanic: MTM at the time of default and not matching cashflow --> Single net value --> Immediately realize gain and loss + jump into bankruptcy queue

- Other benefit: reduce complexity involving close-out transaction

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No netting

Bilateral netting

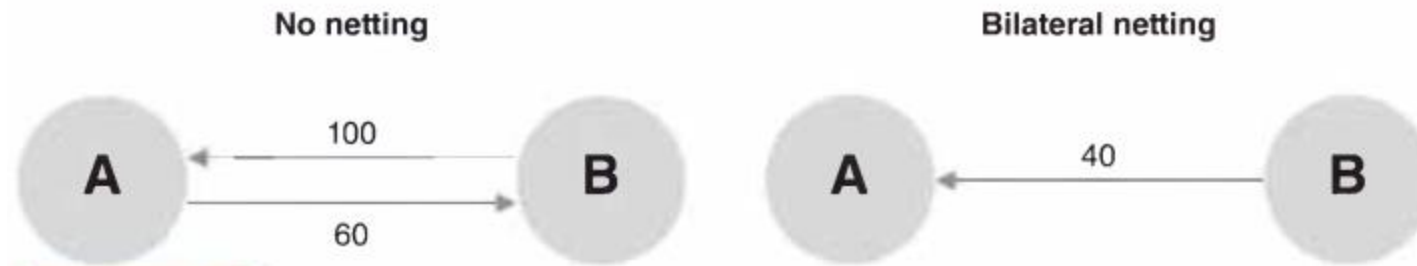**Figure 10.2** Illustration of the impact of payment netting.

No netting

Bilateral netting

Figure 10.3 Illustration of the impact of close-out netting. In the event of the default of party A, without netting, party B would need to pay 200 to party A and would not receive the full amount of 140 owed. With netting, party B would simply pay 60 to party A and suffer no loss.

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Product coverage and Set-Off Rights

- Transactions btw banks can be divided into following categories: OTC derivatives, repo-style transaction, On-BS loan & deposit

- Issue: Close-out netting is typically possible within a category but not across categories (not in straightforward documentation)

- Solution: Set-offs rights allows offsetting obligations across categories --> Standardized under ISDA Master Agreement 2002

- Example: Set-offs btw OTC derivatives and loans as long as the loan master agreement permits

Close-out amount

- Issues: Close-out --> MTM --> Price with which bid-ask spread? (illiquid position with broad bid-ask spread

- Solution: Market quotation vs "loss method"
    - Market quotation: minimum of 3 quotes from market markers --> What if non-standard or illiquid position
    - Loss method (in case of lack of quotes): Good faith & reasonable assumptions (discretion to determining party)

- Difficulties in practice
    - Market quote: ineffective for complex and structured products --> Disputes in determination of the market quotation
    - Loss method: Too subjective and give too much discretion to the determining party
    - Contradictory decisions made by the English and US courts

- Solution: definition of close-out amount - more flexible than market quote
    - Diluted form of market quote: Address some practical problems in achieving market quote for complex product in stressed condition
    - Don't require actual tradable quotes but can instead rely on indicative quotations, public sources of prices and market data
    - Take into account the determining party's own creditworthiness and cost of funding and hedging

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The impact of netting

- Netting = the biggest risk mitigant for CCR (90%) --> Growth in derivative market
  - Note: netted position are inherently more volatile --> Create systemic risk

- Netting has some subtle effects on the dynamics of OTC derivative markets
  - Position with a counterparty --> Close-out and enter transaction with another counterparty
  - If a party know an institution wanting to trade out a position --> unfavorable term to extract the maximum financial gain

- Incentive to repeatedly trade with a counterparty: diversification thank to imperfect correlation btw asset classes
  - Note: Increase concentration risk

- Change the way market participants react perception of increasing risk of a particular counterparty
  - Less worried as long as it's MTM is negative --> Unnecessary to terminate existing position with a trouble counterparty --> reduce systemic risk

- Note: Benefits from netting are under threat from the drive towards mandatory clearing of OTC
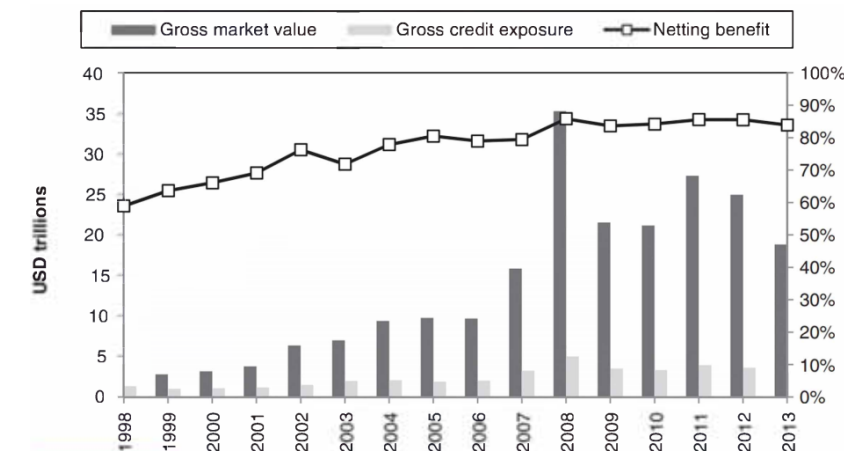

Figure 10.4 Illustration of the impact of netting on OTC derivatives exposure. The netting benefit (right hand y-axis) is defined by dividing the gross credit exposure by the gross market value and subtracting this ratio from 100%.

3. Multilateral netting and trade compression

No netting

A ←—— MTM = 200 —— B
A ——— MTM = 140 —→ B
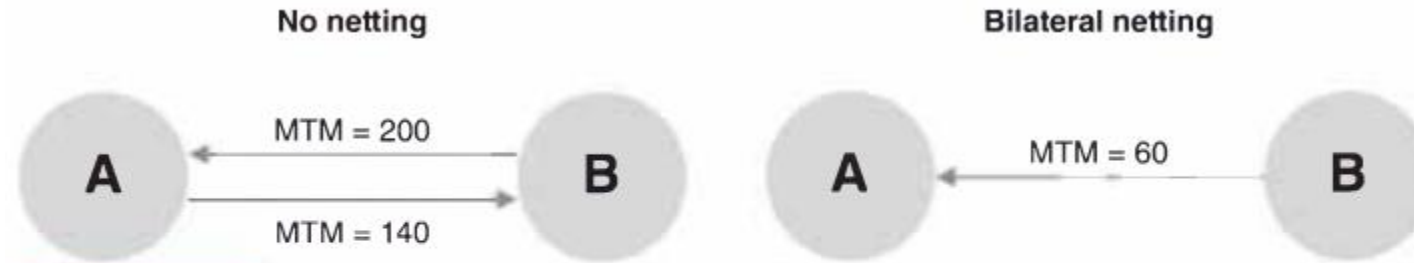
Bilateral netting

A ←—— MTM = 60 —— B

Figure 10.3 Illustration of the impact of close-out netting. In the event of the default of party A, without netting, party B would need to pay 200 to party A and would not receive the full amount of 140 owed. With netting, party B would simply pay 60 to party A and suffer no loss.
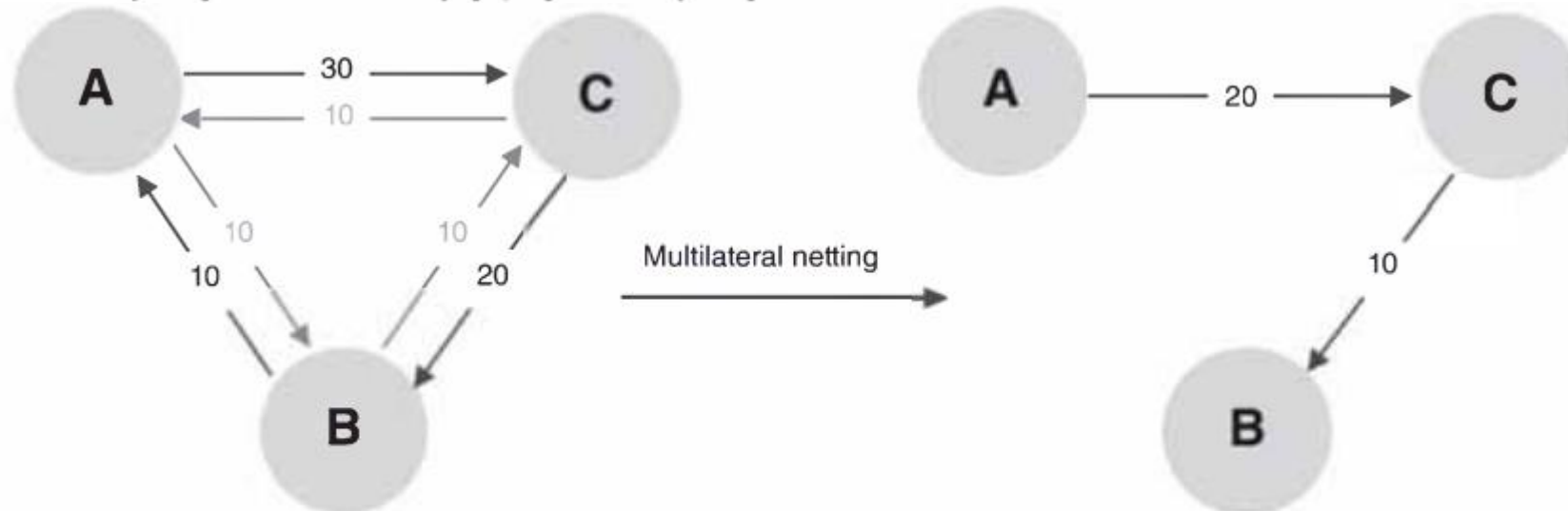
A —— 30 —→ C
A ←—— 10 —— C
A —— 10 —→ B (via 10 and 10)
B —— 20 —→ C

Multilateral netting →

A —— 20 —→ C
C —— 10 —→ B

Figure 10.5 Illustration of the potential exposure reduction offered by multilateral netting. The black and grey exposures indicate positions in contractually identical (and therefore fungible) transactions, differing only in notional amount. The exposures in grey are removed completely, whilst those in black are reduced by ten units.

3. Multilateral netting and trade compression

Multilateral netting

- Trade compression: netting btw more than 2 counterparty → minimize notional of market position.

- Trade compression can reduce:
  - CCR (via reducing overall exposure)
  - Operational cost (via reducing number of transactions)
  - Regulatory capital via reducing gross notional amount (in standardized approach) or increasing margin period of risk
  - Leverage ratio in Basel III (based on gross notional)
  - Legal uncertainty around offseting transactions

Billateral compression service

- Compression in exchange or through CCP: netting through a central entity ~ Compression in OTC market

- Example: TriOptima's Trireduce service for major OTC derivatives such as IRS, CDS (on single names, indexes, tranches) and energy swap

- Benefits: reduce redandencies → Reduce numbers and gross amount of transactions → Reduce operational cost , CCR and marginal

- Process:
  - Legally
  - Comlemantary to central clearing: reduce total notional and number of contracts, complexity in close-out position in the event 1 of clearing member default

- Future: Optimize the cost of transaction, across both billateral and central cleared products. Using xVAs instead of gross notional

The need of standardization

- Rationale: OTC derivatives that don't fit the standard product templates cannot be compressed

- Example: Standardization of CDS in term of coupon (fixed premium and upfront payment) and payment date (termination date of 20th Mar, 20th Jun, 20th Sep, and 20th Dec) → Leave only reference (single name or index) and maturity

- Standardization is not always posible.
    - For example, IRS is difficult for compression → coupond blending

Example

- Total notional: Double (2 side)

- Target: reduce total notional but don't change net position

- Subjective: Object to minimize (Total notional vs Large exposure), Constrain (E.g. size of position)

- To minimize total notional: Netting with rings in the market
    - Eg. Counterparty 2,3,4 have notionals of 60,70, 85 → How much total notional can decrease?

- Contrains (e.g Counterparty 1 and 3 don't want to exposure CCR to each other) will weaken the impact of compression
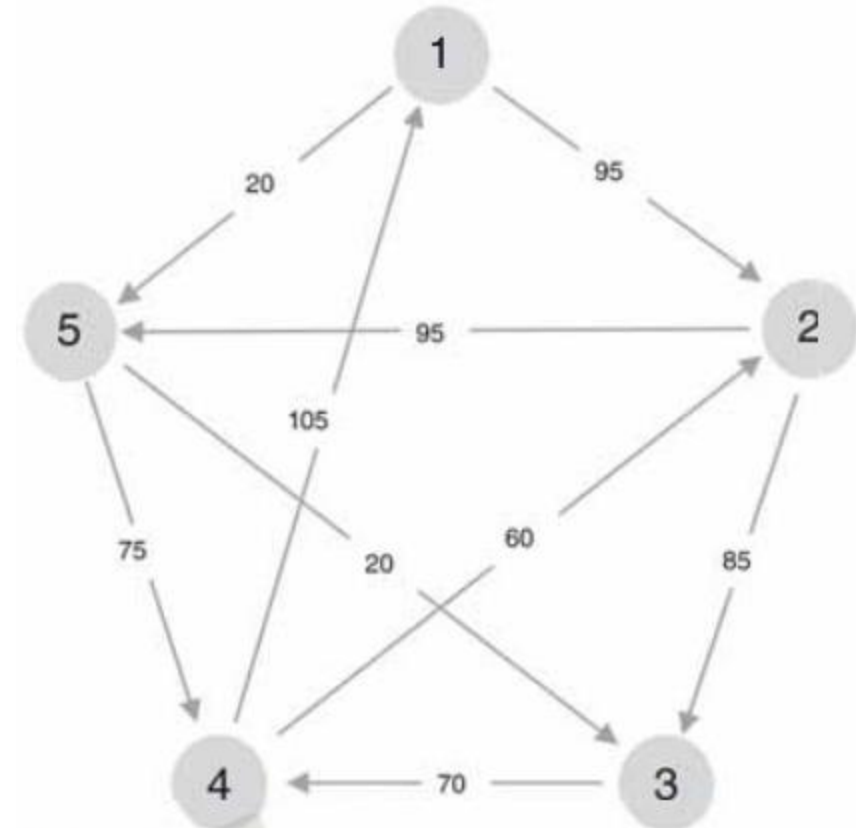
Figure 10.6 Illustration of a simple "market" made up of positions in fungible (interchangeable) contracts.
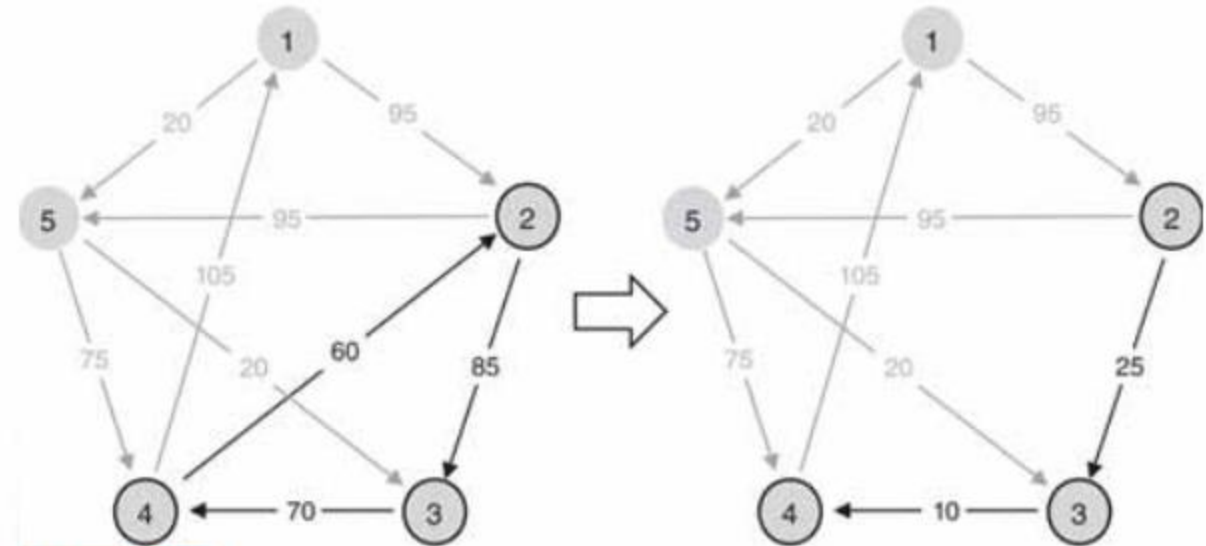
Figure 10.7 Illustration of using trilateral netting between counterparties 2, 3 and 4 to reduce the overall notional of the system shown in Figure 10.6.
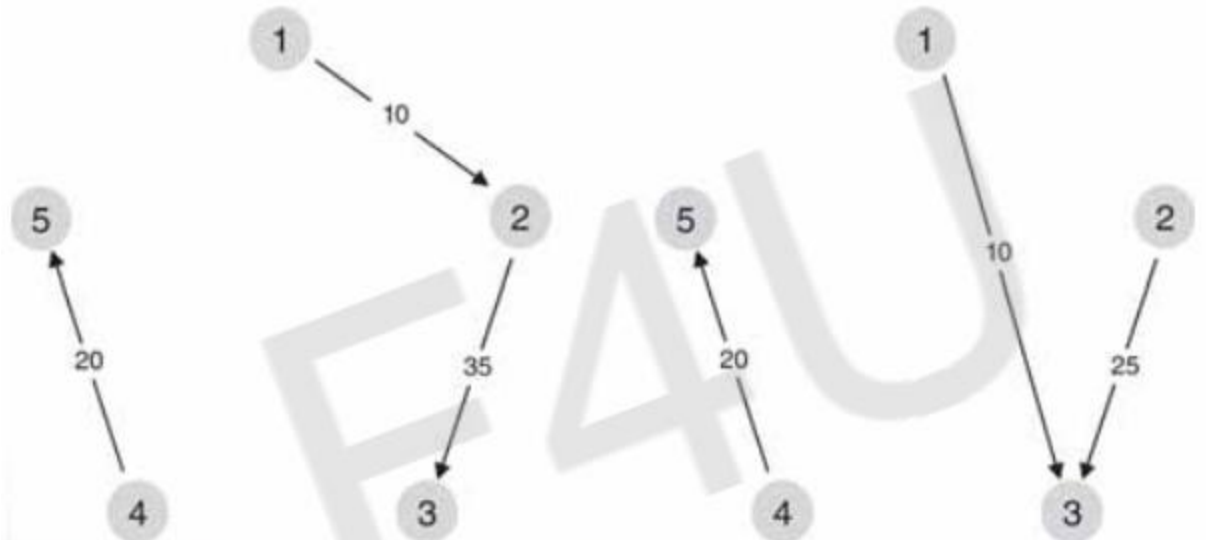
Figure 10.8 Illustration of two possible final results of compressing the original market in Figure 10.6 leading to total notionals of 130 (left-hand side) and 110 (right-hand side).

Table 10.1 Simple Illustration of Trade Compression for Single Name CDS Contracts. A Party has Three Contracts on the same Reference Credit and with Identical Maturities but Transacted with Different Counterparties. It is Beneficial to "Compress" the Three into a Net Contract, Which Represents the Total Notional of the Long and Short Positions. This may Naturally be with Counterparty A as a Reduction of the Initial Transaction. The Coupon of the New Contract is the Weighted Average of the Three Original Ones

Reference	Notional	Long/short	Maturity	Coupon	Counterparty
ABC index	40	Long	20/12/2019	200	Counterparty A
ABC index	25	Short	20/12/2019	150	Counterparty B
ABC index	10	Short	20/12/2019	300	Counterparty C
ABC index	5	Long	20/12/2019	250	Counterparty A

4. Termination Features and Resets

Walkaway features

- Walkaway / Tear-up feature: A survival party can cancel the transaction with the default party
  - Survival party benefits from ceasing payment and not be obliged to settle amount owed to the default party
  - No longer common: before ISDA Master Agreement 1992

- Case study: Drexel Burnham Lambert (DBL) bankruptcy in 1990
  - Counterparties of DBL decided not to walk away due to relatively small gains compared with the potential legal cost or reputation cost

- Implicit walk away :
  - Case study of Enron & TXU: when Enron defaulted in 2002, TXU refused to MTM and close-out → Court → Postpone payments until the maturity date
  - Case study of Lehman Brother: US court (against) vs English court (Allow withholding of payment)

- Criticism: unpleasant, moral hazard, additional cost for default party

Termination event

- Additional Termination Event (ATE): a party can terminate OTC derivatives in certain situations.

  - Certain situation: rating downgrade (bank) vs Market capitalization, NAV, key man departure (for unrated firms, such as hedge fund)

  - Action: termination or other risk-reducing actions such as posting additional collateral

  - Scope: usually good credit rating counterparty, long term transaction

  - Difficulties: Determine replacing cost in the event of termination + incorporate creditwithiness of survival party

  - In ISDA Master Agreement: "break clause" or "mutual put". Mandatory, Optional or Trigger-based

- Potential dangers of ATE

  - Risk-reducing benefit : systematic deterioration (in crises)

  - Weakness in credit rating: Only last minute → unlikely useful (too late)

  - Cliff-edge effect: small event (E.g. 1 notch-downgrade) → Dramatic consequence (Case study: near-failure AIG)

  - Determination of value in the event of a termination: difficult and subjective (similar to that of close-amount)

  - Ralationship issue: harm relationship → Refuse to use this clause → Internal clarity around who in bank is empowered to exercise ATE

  - Modelling difficulty: probability of migrating rather than default → Lack of market data (such as spread) + Lack of means for hedging

- In practice:

  - Management: Credit & sale department → xVA desk

  - Becoming less common due to CRM such as posting collateral, CDS. Determination of replacing cost. Negative impact on liquidity coverage ratio (posting collateral in bad time when bank need to hold liquidity buffer)

  - User: bank, pension & hedge fund (after GFC)

Reset agreements

- Reset agreements:
  - Rationale: avoid transaction becoming strongly in-the-money
  - Action: adjust product-specific parameters that reset the transaction to be more at-the-money
  - Reset date may coincide with payment date or trigged by the breach of some market value
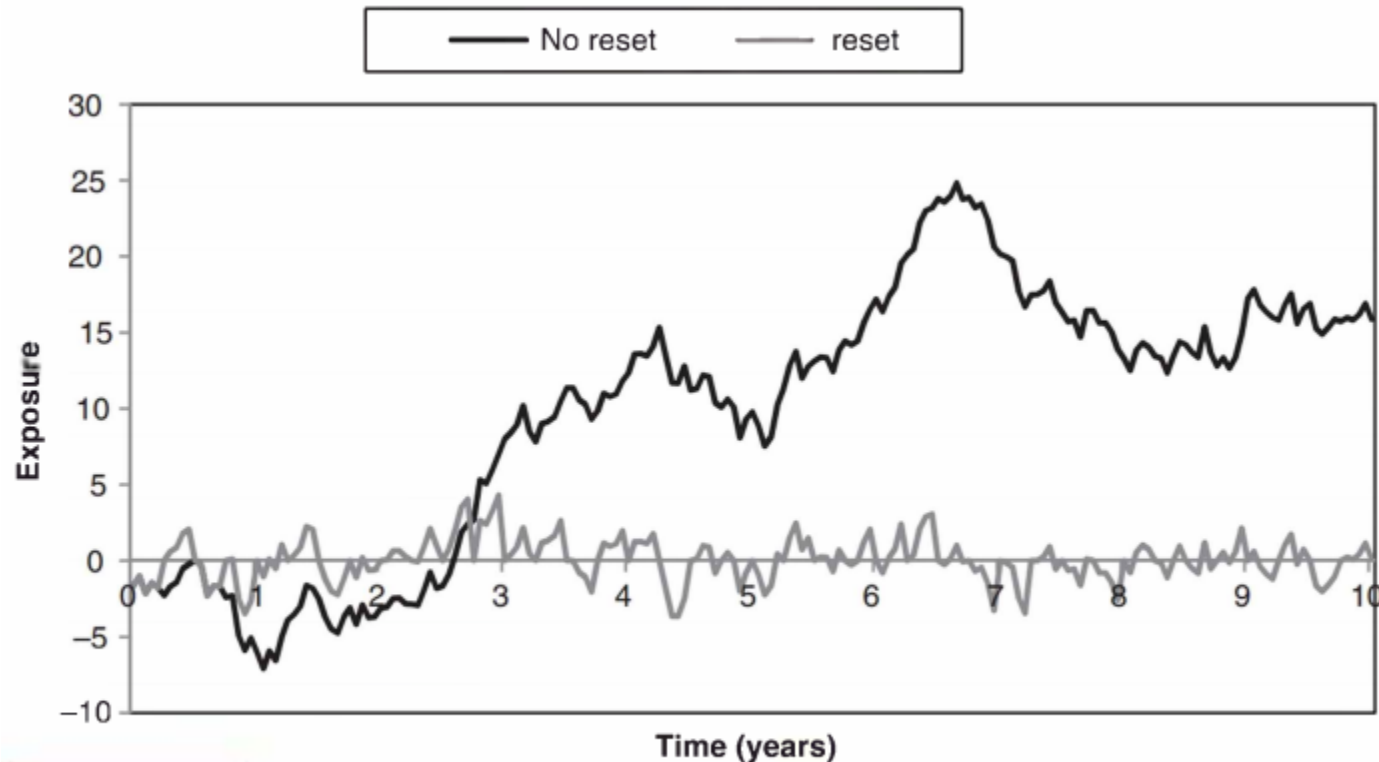 - Nature: Closing out a transaction and executing a replacement transaction (weaker form of collateralization)

Figure 10.9 Illustration of the impact of reset features on the exposure of a long-dated crosscurrency swap. Resets are assumed to occur quarterly.

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