

# Module 5: Liquidity and Regulation

Comprehensive Study Notes

Lessons 1-4

Prepared for MSc Financial Engineering Students

## Lesson 1: Securitization

- Key concepts: securitization, MBS, CDO, SPE/SPV
- Mortgage origination: fully amortizing mortgages, credit risk, types (prime, subprime, ARM, jumbo)
- Credit analysis: 5 Cs (Capacity, Capital, Character, Collateral, Conditions)
- Securitization process: retail bank -> investment bank -> SPE -> investors
- Tranches & waterfall: senior, mezzanine, equity, credit enhancement, prepayment/time tranching
- Case study: Jacob's mortgage, risk analysis using 5 Cs

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## Lesson 2: Valuation Challenges

- Market frictions: liquidity risk, transaction costs, funding constraints
- Model risk: incorrect assumptions, parameter errors, ignoring tail risks
- Real-world implications: financial crisis lessons, underestimating credit risk, illiquidity
- Regulatory context: Dodd-Frank Act, rating agency reliance
- Practical examples: MBS analysis, cash flows, risk-return selection, tranche prioritization
- Key formulas: LTV, DTI, tranche loss allocation, prepayment impact
- Visuals: MBS flow diagram, tranche waterfall, risk mitigation example

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## Lesson 3: Liquidity and the Credit Market

- Credit Market Overview: bonds, corporate bonds, high-yield bonds, market size, liquidity
- Credit Spreads & CDS:  $CS = \text{yield} - \text{risk-free rate}$ ,  $PD = CS / (1 - RR)$ , recovery rate, CDS mechanics, moral hazard examples
- Ratings & Credit Spread: PD rating credit spread, lag of rating agencies, CDS spread as forward-looking signal
- Liquidity Risk: bid-ask spread, volume, fungibility, liquidation horizon

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# Lesson 4: Leverage and Crisis

- Correlation & Market Dynamics: stock vs real estate, wealth effect, credit-price effect
- Leverage Risk: margin trading, mortgages, corporate leverage, ETFs, swaps, DTI, LTV ratios
- Regulation & Crisis: GFC lessons, moral hazard, centralized vs decentralized regulation, policy response
- Conclusion: synthesis of correlation, leverage, liquidity, credit risk, regulation

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