Basics of Derivatives for Financial Risk Management

Financial Derivatives and its Applications

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- **Underlying Variables:** Can be almost anything – prices of assets, interest rates, exchange rates, even weather.

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- **Scale:** Derivatives markets are **huge** - much larger than stock markets in terms of underlying assets.

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  - Central counterparty (CCP) clearing or bilateral agreements are used to manage counterparty risk.

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- **Key Objective:** Increased market transparency and reduced systemic risk

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- **Payoff from a Long Put**

$$max(K - S_T, 0)$$

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  - Options can be used by hedgers to protect against adverse price movements while still allowing them to benefit from favorable price movements

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- **Leverage:** With an initial investment in futures or options, a trader has a position with a potential value much greater than the investment. The payoff from a futures contract is

$$\frac{S_T - K}{\text{Initial investment}}$$

The payoff from a long call option is

$$\frac{max(S_T - K, 0)}{\text{Initial investment}}$$

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  - The action of arbitrageurs help to keep markets efficient and prevent discrepancies

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- **Lesson:** Internal controls, risk limits, and appropriate systems and procedures are essential.

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- **Key Message:** The versatility of derivatives can create problems if they are used inappropriately

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- **Insurers:** Transferring risks of catastrophic events to other parties.

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  - Risk management and value at risk techniques

Reference and Further Study

- "*Options, Futures and Other Derivatives*" by John C. Hull