

Optimal investment and contingent claim valuation in illiquid markets

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Abstract :

In incomplete financial markets, the classical hedging argument for valuation of contingent claims has two natural generalizations. The first one has to do with financial supervision and accounting while the second one is more relevant in actual business transactions of a financial institution. Under illiquidity, both these values become nonlinear functions of the underlying cash-flows. We extend basic results on contingent claim valuation to illiquid markets and general swap contracts where both claims and premiums may have multiple payout dates. Explicit consideration of swap contracts is essential in practice where the valuation of swaps cannot be reduced to the valuation of cumulative claims at maturity. We establish the existence of optimal trading strategies and the lower semicontinuity of the optimal value of optimal investment under conditions that extend the no-arbitrage condition in the classical linear market model. All results are derived with the "direct method" without resorting to duality arguments.