

Utility maximisation and utility indifference price

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We consider utility maximization problem for semi-martingale models when investor can trade one risky asset of maturity time T and receive some particular derivative such as contingent claims offering some pay-off at maturity time $T' > T > 0$. The asset related with contingent claim can not be traded since the trading is difficult or impossible for investor because of lack of liquidity or legal restrictions.

For HARA utilities we reduce initial maximization problem to the conditional one, using initial enlargement of the filtration and dual approach. We give the equations for indifference prices, involving conditional information quantities like Kullback-Leibler information and Hellinger integrals. We show that indifference price for seller and minus indifference price for buyer are risk measures.

Finally, we apply the results to Geometric Brownian motion case. Using identity in law technique we give explicit expressions for information quantities. Then, we apply the previous formulas to find indifference prices.