

HJB equation for maximization of wealth under insider trading

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In this paper, we combine the techniques of enlargement of filtrations and stochastic control theory to establish an extension of the verification theorem, where the coefficients of the stochastic controlled equation are adapted to the underlying filtration and the controls are adapted to a bigger filtration G than the one generated by the corresponding Brownian motion B . Using the forward integral defined by Russo and Vallois, we show that there is a G -adapted optimal control with respect to a certain cost functional if and only if the Brownian motion B is a G -semimartingale. The extended verification theorem allows us to study a financial market with an insider in order to take advantage of the extra information that the insider has from the beginning. Finally, we consider two examples throughout the extended verification theorem. These problems appear in financial markets with an insider.