Stochastic impulse control for non-Markov processes

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Abstract. When the dynamics of a portfolio of assets is Markov, variational inequalities (VI) turn out to be a powerful tool to characterize (and often explicitly find) optimal strategies for impulse control problems, when the reward function depends on the current state the portfolio. But, when this function depends on the whole path of the dynamics over a finite time interval, such as drawdown measures etc.. the VI's do no longer apply. In this talk, we will highlight a way to characterize optimal strategies that turn out to be suitable for such path-dependent reward functions. This characterization uses techniques involving reflected BSDEs and the Snell envelope. We also suggest a numerical scheme to compute the associated value function.