

Existence and uniqueness of solutions for BSDEs with locally Lipschitz coefficient

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Abstract

We deal with multidimensional backward stochastic differential equations (BSDE) with locally Lipschitz coefficient in both variables y, z and an only square integrable terminal data. Let L_N be the Lipschitz constant of the coefficient on the ball $B(0, N)$ of $\mathbb{R}^d \times \mathbb{R}^d$. We prove that if $L_N = O(\sqrt{\log N})$, then the corresponding BSDE has a unique solution. Moreover, the stability of the solution is established under the same assumptions. In the case where the terminal data is bounded, we establish the existence and uniqueness of the solution also when the coefficient has an arbitrary growth (in y) and without restriction on the behaviour of the Lipschitz constant L_N .

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Pages: 169-179

Published on: August 5, 2002

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