

Asymptotics and calibration for American options

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Based on a suitable representation of the exercise boundary for American options in a diffusion model, we derive an approximation of the exercise boundary close to maturity that refines the expansions known so far in the literature. By means of the early exercise formula, this allows to derive semi-closed expressions for the price of the American Put/Call. The final product is a calibration recipe of a local volatility surface to American option data, with a complexity equivalent to the application of Dupire's formula. This is an important step when only American options, and no European options, are available on the market (as it typically happens in the case of single stocks).