On the valuation of loss carry forwards

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It is well known that the future cash flow from losses carried forward is comparable to the cash flow from a long call position. Therefore, it seems straight forward to use option price theory for the valuation of losses carried forward by an enterprise. In this paper it is shown, that the standard Black-Scholes Model cannot not be used for the valuation of losses carried forward. The assumption of a geometric Brownian Motion does not fit the behaviour of the taxable base which is the underlying of the assumed option. Therefore, we derive a new pricing formula for losses carried forward using a stochastic process that fits better the behaviour of a taxable base. This is done in a one period framework. For this derivation we use major insights from financial mathematics and Brownian Motion calculus. The resulting formula is a little bit more complex than the Black Scholes formula, but its application is straight forward. The formula also takes into losses carried forward and interests paid both need a positive taxable base, if they should yield a tax shield. The financing policy influences the value of losses carried forward and enters the formula as well.
Furthermore, we analyze the valuation of losses carried forward in a multiperiod setting. It results, that due to intertemporal interdependencies it is quite difficult to use option price theory in a multiperiod setting, but some upper boundary on the value can be calculated, using the valuation formula derived in the paper.

Keywords: Valuation, Loss carry forwards, Option price theory, Stochastic integration, Risk neutral valuation