***Valuation of European Options with Discrete Dividends***

To value an option written on a stock that pays a discrete dividend at time , simply replace all instances of with , where is the present value of the dividend, so .

Last modified 11.4.17 KW

***Calculation Example: European Option Valuation with Discrete Dividends***

**Question:** Find the price of a 6 month European call option with a strike price of $50, written on a stock currently trading at $60 which will pay a:

* $1 dividend in 2 months;
* $1 dividend in 5 months; and a
* $1 dividend in 8 months.

The risk-free interest rate is 10% p.a. continuously compounded and the standard deviation of the stock’s returns is 20% p.a..

**Answer:**

Find the present values of the dividends (). Note that we only care about the dividends paid within the life of the option which is 6 months. So the dividend at 8 months can be ignored since it occurs after the option has expired. It’s a red herring!