

Chapter 7, Problem 5

HiWiFi: Option to Expand

Input Data

Present value of future cash flows	\$100	million
Volatility	40%	annual
Risk-free rate of return	5%	annual
Time to expiration	3	years
Expansion factor	5	
Time step	1	year(s)
Cost of expansion	\$500	million

Results

NPV	\$0
ROV	\$200
Value added	\$200

Calculated Parameters

Up factor (u)	1.492
Down factor (d)	0.670
Risk-neutral probability (p)	0.464

Asset Valuation Lattice

Time period	0	1	2	3
Valuation of underlying asset	\$100	\$149	\$223	\$332
		\$67	\$100	\$149
			\$45	\$67
				\$30

Option Valuation Lattice*

Time period	0	1	2	3
Valuation of expansion option	\$200	\$354	\$637	\$1,160
		\$86	\$143	\$246
			\$45	\$67
				\$30

*Expand if green

