

Chapter 8, Problem 11

Shrinking Stomach: Option to Wait

Input Data

Present value of future cash flows	\$70	million
Volatility	30%	annual
Risk-free rate of return	5%	annual
Time to expiration	5	years
Time step	1	year(s)
Strike price (Investment cost)	\$60	million

Results

NPV	\$10
ROV	\$30
Value added	\$20

Calculated Parameters

Up factor (u)	1.350
Down factor (d)	0.741
Risk-neutral probability (p)	0.510

Asset Valuation Lattice

Time period	0	1	2	3	4	5
Valuation of underlying asset	\$70	\$94	\$128	\$172	\$232	\$314
		\$52	\$70	\$94	\$128	\$172
			\$38	\$52	\$70	\$94
				\$28	\$38	\$52
					\$21	\$28
						\$16

Option Valuation Lattice

Time period	0	1	2	3	4	5
Valuation of wait option	\$30	\$48	\$77	\$118	\$175	\$254
		\$14	\$24	\$42	\$70	\$112
			\$4	\$8	\$17	\$34
				\$0	\$0	\$0
					\$0	\$0
						\$0

