Chapter 8, Problem 6
Anti-Fossil Fuels: Rainbow Options

Input Data

Present value of future cash flows	$250	million
Volatility1	30%	annual
Volatility2	20%	annual
Risk-free rate of return	5%	continuous
Time to expiration	2	years
Time step	1	year(s)
Strike Price (Investment Cost)	$300	million

Results

NPV	-$50
ROV	$59
Value added	$109

Calculated Parameters

Up factor (u_1)	1.350
Down factor (d_1)	0.741
Risk-neutral probability (p_1)	0.510
1-p_1	0.490
Up factor (u_2)	1.221
Down factor (d_2)	0.819
Risk-neutral probability (p_2)	0.577
1-p_2	0.423

Asset Valuation Lattice

Time period	0	1	2
Valuation of underlying asset			$680
			$456
			$373
		$412	$250
			$456
			$305
			$250
		$276	$168
	$250		$373
			$250
			$205
		$226	$137
			$250
			$168
			$137
		$152	$92

Option Valuation Lattice

Time period	0	1	2
Valuation of option			$380
			$156
			$73
		$158	$0
			$156
			$5
			$0
		$45	$0
	$59		$73
			$0
			$0
		$20	$0
			$0
			$0
			$0
		$0	$0