Lease Payments in "Perfect Market"

1) *If you buy an asset for* $100,000 *today and sell it for* $30,000 *in* 7 *years, what would you have to charge as a monthly lease rate in a perfect market? Interest rate is* 6% *with monthly compounding. Lease payments are made at the beginning of each month.*

Selling Price of Asset in "Perfect Market"

2) *How much would you have to sell an asset for in* 5 *years in a perfect market if you buy it today for* $50,000 *and lease it every* 3 *months for* $2,514 *for* 5 *years*? *Interest rate is* 8% *compounded quarterly and the lease payments are made at the beginning of each quarter*.

Lease Timing Differences Part 1 (Straight Line Depreciation)

3) *You are debating whether to buy or lease a machine. You can buy the machine for* $3.2 *million. It will depreciate straight line for* 4 *years to a salvage value of zero. Alternatively, you can lease the machine for* $900,000 *a year for* 4 *years. Lease payments are tax deductible and made at the beginning of each year. Tax rate is* 40% *and the discount rate is* 7%*. Should you lease or buy? What is the breakeven lease payment?*

Lease Timing Differences Part 2 (CCA Depreciation)

4) *You are debating whether to buy or lease a machine. You can buy the machine for* $3.2 *million. It will depreciate with a CCA rate of* 20% *for* 4 *years to a salvage value of zero. Alternatively, you can lease the machine for* $900,000 *a year for* 4 *years. Lease payments are tax deductible and made at the beginning of each year. Tax rate is* 40% *and the discount rate is* 7%*. Should you lease or buy? What is the breakeven lease payment?*

Lease Timing Differences Part 3 (Range of Lease Payments)

5) *A lessor buys a machine for* $120,000 *and rents it out to a lessee for* 4 *years. The machine has a CCA rate of* 100% *and will have a salvage value of zero at the end of* 4 *years. The discount rate is* 7%*. The lessor and lessee have tax rates of* 35% *and* 10% *respectively. Lease payments are tax deductible and made at the beginning of each year.*

a) What range of lease payments will make the transaction profitable for both parties?

b) At the lessee's break even lease payment, what will be the gain to the lessor?

c) At the lessor's break even lease payment, what will be the gain to the lessee?

Solutions

1) $1166.77

2) $11,992

3) *Net Advantage to Leasing* $= -\$43,617.47$ *therefore buy*. (*see excel sheet*)

INPUTS	
Lease Payment	$900,000.00
Capital Expenditure	$3,200,000.00
Salvage Value	$0.00
Tax Rate	40%
Discount Rate	7%

	Year 0	Year 1	Year 2	Year 3	Year 4
Leasing					
Lease Payment	-$900,000.00	-$900,000.00	-$900,000.00	-$900,000.00	
Tax Shield		$360,000.00	$360,000.00	$360,000.00	$360,000.00
Total Leasing Cash Flow	***-$900,000.00***	***-$540,000.00***	***-$540,000.00***	***-$540,000.00***	***$360,000.00***
Buying					
Capital Expenditure	-$3,200,000.00				
Depreciation Tax Shield		$320,000.00	$320,000.00	$320,000.00	$320,000.00
Salvage Value					$0.00
Total Buying Cash Flow	***-$3,200,000.00***	***$320,000.00***	***$320,000.00***	***$320,000.00***	***$320,000.00***
Net Advantage to Leasing Cash Flows	$2,300,000.00	-$860,000.00	-$860,000.00	-$860,000.00	$40,000.00
Net Advantage to Leasing PV Cash Flows	$2,300,000.00	-$825,335.89	-$792,068.99	-$760,142.99	$33,930.41
Net Advantage to Leasing	**-$43,617.47**				

Break even lease payment $= \$881,194.91$ (*see excel sheet*)

INPUTS	
Lease Payment	$881,194.91
Capital Expenditure	$3,200,000.00
Salvage Value	$0.00
Tax Rate	40%
Discount Rate	7%

	Year 0	Year 1	Year 2	Year 3	Year 4
Leasing					
Lease Payment	-$881,194.91	-$881,194.91	-$881,194.91	-$881,194.91	
Tax Shield		$352,477.96	$352,477.96	$352,477.96	$352,477.96
Total Leasing Cash Flow	***-$881,194.91***	***-$528,716.95***	***-$528,716.95***	***-$528,716.95***	***$352,477.96***
Buying					
Capital Expenditure	-$3,200,000.00				
Depreciation Tax Shield		$320,000.00	$320,000.00	$320,000.00	$320,000.00
Salvage Value					$0.00
Total Buying Cash Flow	***-$3,200,000.00***	***$320,000.00***	***$320,000.00***	***$320,000.00***	***$320,000.00***
Net Advantage to Leasing Cash Flows	$2,318,805.09	-$848,716.95	-$848,716.95	-$848,716.95	$32,477.96
Net Advantage to Leasing PV Cash Flows	$2,318,805.09	-$814,507.63	-$781,677.18	-$750,170.04	$27,549.77
Net Advantage to Leasing	**$0.00**				

4) *Net Advantage to Leasing* = $9,296.50 *therefore lease.* (*see excel sheet*)

INPUTS			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
		Leasing						
Lease Payment	$900,000.00	Lease Payment	-$900,000.00	-$900,000.00	-$900,000.00	-$900,000.00		
		Tax Shield		$360,000.00	$360,000.00	$360,000.00	$360,000.00	
Capital Expenditure	$3,200,000.00	***Total Leasing Cash Flow***	***-$900,000.00***	***-$540,000.00***	***-$540,000.00***	***-$540,000.00***	***$360,000.00***	
Salvage Value	$0.00	**Buying**						
		Capital Expenditure	-$3,200,000.00					
Tax Rate	40%	Depreciation Tax Shield		$128,000.00	$230,400.00	$184,320.00	$147,456.00	$589,824.00
		Salvage Value					$0.00	
Discount Rate	7%	***Total Buying Cash Flow***	***-$3,200,000.00***	***$128,000.00***	***$230,400.00***	***$184,320.00***	***$147,456.00***	***$589,824.00***
CCA Rate	20%	***Net Advantage to Leasing Cash Flows***	$2,300,000.00	-$668,000.00	-$770,400.00	-$724,320.00	$212,544.00	-$589,824.00
		Net Advantage to Leasing PV Cash Flows	$2,300,000.00	-$641,074.86	-$709,546.46	-$640,217.17	$180,292.63	-$480,157.64
		Net Advantage to Leasing	**$9,296.50**					

CCA Schedule

Year	UCC (beginning)	CCA	UCC (end)	CCA Tax Shield
1	$3,200,000.00	$320,000.00	$2,880,000.00	$128,000.00
2	$2,880,000.00	$576,000.00	$2,304,000.00	$230,400.00
3	$2,304,000.00	$460,800.00	$1,843,200.00	$184,320.00
4	$1,843,200.00	$368,640.00	$1,474,560.00	$147,456.00

Break even lease payment = $904,008.06 (*see excel sheet*)

INPUTS			Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
		Leasing						
Lease Payment	$904,008.06	Lease Payment	-$904,008.06	-$904,008.06	-$904,008.06	-$904,008.06		
		Tax Shield		$361,603.22	$361,603.22	$361,603.22	$361,603.22	
Capital Expenditure	$3,200,000.00	***Total Leasing Cash Flow***	***-$904,008.06***	***-$542,404.84***	***-$542,404.84***	***-$542,404.84***	***$361,603.22***	
Salvage Value	$0.00	**Buying**						
		Capital Expenditure	-$3,200,000.00					
Tax Rate	40%	Depreciation Tax Shield		$128,000.00	$230,400.00	$184,320.00	$147,456.00	$589,824.00
		Salvage Value					$0.00	
Discount Rate	7%	***Total Buying Cash Flow***	***-$3,200,000.00***	***$128,000.00***	***$230,400.00***	***$184,320.00***	***$147,456.00***	***$589,824.00***
CCA Rate	20%	***Net Advantage to Leasing Cash Flows***	$2,295,991.94	-$670,404.84	-$772,804.84	-$726,724.84	$214,147.22	-$589,824.00
		Net Advantage to Leasing PV Cash Flows	$2,295,991.94	-$643,382.76	-$711,761.34	-$642,342.78	$181,652.58	-$480,157.64
		Net Advantage to Leasing	**$0.00**					

CCA Schedule

Year	UCC (beginning)	CCA	UCC (end)	CCA Tax Shield
1	$3,200,000.00	$320,000.00	$2,880,000.00	$128,000.00
2	$2,880,000.00	$576,000.00	$2,304,000.00	$230,400.00
3	$2,304,000.00	$460,800.00	$1,843,200.00	$184,320.00
4	$1,843,200.00	$368,640.00	$1,474,560.00	$147,456.00

5a) lease payments between $32,381.72 *and* $32,903.56 (*see excel sheet*)

Lessor breakeven

INPUTS			Year 0	Year 1	Year 2	Year 3	Year 4
		Leasing					
Lease Payment	$32,381.72	Lease Payment	-$32,381.72	-$32,381.72	-$32,381.72	-$32,381.72	
		Tax Shield		$11,333.60	$11,333.60	$11,333.60	$11,333.60
Capital Expenditure	$120,000.00	***Total Leasing Cash Flow***	***-$32,381.72***	***-$21,048.12***	***-$21,048.12***	***-$21,048.12***	***$11,333.60***
Salvage Value	$0.00	**Buying**					
		Capital Expenditure	-$120,000.00				
Tax Rate	35%	Depreciation Tax Shield		$21,000.00	$21,000.00	$0.00	$0.00
		Salvage Value					$0.00
Discount Rate	7%	***Total Buying Cash Flow***	***-$120,000.00***	***$21,000.00***	***$21,000.00***	***$0.00***	***$0.00***
CCA Rate	100%	***Net Advantage to Leasing Cash Flows***	$87,618.28	-$42,048.12	-$42,048.12	-$21,048.12	$11,333.60
		Net Advantage to Leasing PV Cash Flows	$87,618.28	-$40,218.19	-$38,467.90	-$18,417.94	$9,485.75
		Net Advantage to Leasing	**$0.00**				

CCA Schedule

Year	UCC (beginning)	CCA	UCC (end)	CCA Tax Shield
1	$120,000.00	$60,000.00	$60,000.00	$21,000.00
2	$60,000.00	$60,000.00	$0.00	$21,000.00
3	$0.00	$0.00	$0.00	$0.00
4	$0.00	$0.00	$0.00	$0.00

Lessee breakeven

INPUTS			Year 0	Year 1	Year 2	Year 3	Year 4
		Leasing					
Lease Payment	$32,903.56	Lease Payment	-$32,903.56	-$32,903.56	-$32,903.56	-$32,903.56	
		Tax Shield		$3,290.36	$3,290.36	$3,290.36	$3,290.36
Capital Expenditure	$120,000.00	***Total Leasing Cash Flow***	***-$32,903.56***	***-$29,613.20***	***-$29,613.20***	***-$29,613.20***	***$3,290.36***
Salvage Value	$0.00	**Buying**					
		Capital Expenditure	-$120,000.00				
Tax Rate	10%	Depreciation Tax Shield		$6,000.00	$6,000.00	$0.00	$0.00
		Salvage Value					$0.00
Discount Rate	7%	***Total Buying Cash Flow***	***-$120,000.00***	***$6,000.00***	***$6,000.00***	***$0.00***	***$0.00***
CCA Rate	100%	***Net Advantage to Leasing Cash Flows***	$87,096.44	-$35,613.20	-$35,613.20	-$29,613.20	$3,290.36
		Net Advantage to Leasing PV Cash Flows	$87,096.44	-$33,502.54	-$31,516.97	-$24,653.90	$2,576.97
		Net Advantage to Leasing	**$0.00**				

CCA Schedule

Year	UCC (beginning)	CCA	UCC (end)	CCA Tax Shield
1	$120,000.00	$60,000.00	$60,000.00	$6,000.00
2	$60,000.00	$60,000.00	$0.00	$6,000.00
3	$0.00	$0.00	$0.00	$0.00
4	$0.00	$0.00	$0.00	$0.00

5b) at a lease payment of $32,903.56, *the lessee will break even and the lessor will gain* $1,300.54 (*see excel sheet*)

INPUTS	
Lease Payment	$32,903.56
Capital Expenditure	$120,000.00
Salvage Value	$0.00
Tax Rate	35%
Discount Rate	7%
CCA Rate	100%

	Year 0	Year 1	Year 2	Year 3	Year 4
Leasing					
Lease Payment	-$32,903.56	-$32,903.56	-$32,903.56	-$32,903.56	
Tax Shield		$11,516.25	$11,516.25	$11,516.25	$11,516.25
Total Leasing Cash Flow	***-$32,903.56***	***-$21,387.31***	***-$21,387.31***	***-$21,387.31***	***$11,516.25***
Buying					
Capital Expenditure	-$120,000.00				
Depreciation Tax Shield		$21,000.00	$21,000.00	$0.00	$0.00
Salvage Value					$0.00
Total Buying Cash Flow	***-$120,000.00***	***$21,000.00***	***$21,000.00***	***$0.00***	***$0.00***
Net Advantage to Leasing Cash Flows	$87,096.44	-$42,387.31	-$42,387.31	-$21,387.31	$11,516.25
Net Advantage to Leasing PV Cash Flows	$87,096.44	-$40,542.62	-$38,778.22	-$18,714.75	$9,638.62
Net Advantage to Leasing	**-$1,300.54**				

CCA Schedule

Year	UCC (beginning)	CCA	UCC (end)	CCA Tax Shield
1	$120,000.00	$60,000.00	$60,000.00	$21,000.00
2	$60,000.00	$60,000.00	$0.00	$21,000.00
3	$0.00	$0.00	$0.00	$0.00
4	$0.00	$0.00	$0.00	$0.00

5c) at a lease payment of $32,381.72, *the lessor will break even and the lessee will gain* $1,729.43 (*see excel sheet*)

INPUTS	
Lease Payment	$32,381.72
Capital Expenditure	$120,000.00
Salvage Value	$0.00
Tax Rate	10%
Discount Rate	7%
CCA Rate	100%

	Year 0	Year 1	Year 2	Year 3	Year 4
Leasing					
Lease Payment	-$32,381.72	-$32,381.72	-$32,381.72	-$32,381.72	
Tax Shield		$3,238.17	$3,238.17	$3,238.17	$3,238.17
Total Leasing Cash Flow	***-$32,381.72***	***-$29,143.55***	***-$29,143.55***	***-$29,143.55***	***$3,238.17***
Buying					
Capital Expenditure	-$120,000.00				
Depreciation Tax Shield		$6,000.00	$6,000.00	$0.00	$0.00
Salvage Value					$0.00
Total Buying Cash Flow	***-$120,000.00***	***$6,000.00***	***$6,000.00***	***$0.00***	***$0.00***
Net Advantage to Leasing Cash Flows	$87,618.28	-$35,143.55	-$35,143.55	-$29,143.55	$3,238.17
Net Advantage to Leasing PV Cash Flows	$87,618.28	-$33,060.72	-$31,101.34	-$24,262.90	$2,536.10
Net Advantage to Leasing	**$1,729.43**				

CCA Schedule

Year	UCC (beginning)	CCA	UCC (end)	CCA Tax Shield
1	$120,000.00	$60,000.00	$60,000.00	$6,000.00
2	$60,000.00	$60,000.00	$0.00	$6,000.00
3	$0.00	$0.00	$0.00	$0.00
4	$0.00	$0.00	$0.00	$0.00