Financial Analysis of Leasing

A lease is a contract outlining the terms under which one party agrees to rent property owned by another party


LEASE
PURCHASE

BUYING A CAR VS. LEASING A CAR

	BUY	LEASE
THE MONEY	Requires **more money up front,** and each month.	Costs **less up front** and each month, so you can afford a more expensive car.
THE BILLS	Can **pay off your auto loan,** which eliminates a monthly cost.	If you always lease, you'll **make car payments for life.**
THE COMMITMENT	Have the **freedom** to sell or trade it in whenever.	A **lease contract** is difficult and expensive to break.
THE DOLLARS AND CENTS	Usually **costs less** than leasing overall, over time.	You can get a **tax break** if you use the car for business purposes.
THE TIME	It's yours to sell, total, or drive for **20 years.**	Can upgrade to the newest model **every couple of years.**
AND KEEP IN MIND...	The car's **value depreciates** as soon as you drive it off the lot.	You'll **owe fees** for exceeding annual mileage limits or any damage to the car.

SOURCE: Edmunds.com

BUSINESS INSIDER

Net Present Value

- Net present value (NPV) is the difference between the present value of cash inflows and the present value of cash outflows over a period of time

- NPV = (Today's value of the expected cash flows) - (Today's value of invested cash)

$$NPV = \sum_{t=0}^{n} \frac{Rt}{(1+i)^t}$$

R_t = net cash inflow-outflows during a single period t

i = discount rate or return that could be earned in alternative investments

t = number of time periods

Residual Value

- The residual value is the estimated value of a fixed asset at the end of its lease or at the end of its useful life
- The lessor uses residual value as one of its primary methods for determining how much the lessee pays in lease payments
- As a general rule, the longer the useful life or lease period of an asset, the lower its residual value

Lease Rental Payment

Steps to calculate lease rental payment:

- Calculate the "net capitalized cost"
- Determine the residual value of the car at the end of the lease
- Identify the number of the monthly payments on the lease

$$\text{Depreciation Fee} = \frac{\text{Net capitalized cost} - \text{Residual value}}{\text{Number of monthly payments}}$$

$$= \frac{\$26{,}000 - \$1{,}000 + \$3{,}000 - \$30{,}000 \times 55\%}{3 \text{ years} \times 12 \text{ months}}$$

$$= \frac{\$22{,}000 - \$16{,}500}{36 \text{ months}}$$

$$= \frac{\$500}{36 \text{ months}}$$

$$= \$152.78$$

Monthly payments on the lease

Tax Shield

- A tax shield is a reduction in taxable income for an individual or corporation achieved through claiming allowable deductions such as mortgage interest, medical expenses, charitable donations, amortization and depreciation
- These deductions reduce a taxpayer's taxable income for a given year or defer income taxes into future years
- Tax shields lower the overall amount of taxes owed by an individual taxpayer or a business

	A	B	C
1	**HOW NOT TO ANALYZE A LEASE**		
2	Asset cost	600,000	
3	Interest rate	12%	
4	Lease rental payment	140,000	
5	Annual depreciation	100,000	
6	Tax rate	40%	
7			
8	NPV (leasing)	386,801	<-- =-PV(B3,5,B4*(1-B6))+B4*(1-B6)
9	NPV (buying)	435,544	<-- =B2+PV(B3,6,B6*B5)

$$NPV(leasing) = \sum_{t=0}^{5} \frac{(1-T_c) * Lease\ rental}{(1+12\%)^t} = \sum_{t=0}^{5} \frac{(1-T_c) * 140,000}{(1+12\%)^t} = 386,801$$

$$NPV(buying) = Asset\ cost - PV\,(tax\ shields\ on\ depreciation)$$

$$= 600,000 - \sum_{t=1}^{6} \frac{0.40 * 100,000}{(1+12\%)^t} = 435,544$$

- This analysis suggests that leasing the asset is preferable to buying it
- However, it is misleading because it ignores the fact that leasing is very much like buying the asset with a loan
- The financial risks are thus different when we compare a lease against a straightforward purchase without loan financing
- If the company is willing to lease the asset, then perhaps it should also be willing to borrow money to buy the assets
- This borrowing will change the cash-flow patterns and could also produce tax benefits
- Hence, our decision about the leasing decision could change if we were to take the loan potential into account
- We go for equivalent-loan method

Internal Rate of Return

- The internal rate of return (IRR) is a metric used to estimate the profitability of potential investments
- The internal rate of return is a discount rate that makes the net present value (NPV) of all cash flows from a particular project equal to zero

$$IRR = NPV = \sum_{t=1}^{T} \frac{C_t}{(1+r)^t} - C_0 = 0$$

Where:

- C_t = net cash inflow during the period t
- C_o = total initial investment costs
- r = the discount rate, and
- t = the number of time periods

- Leasing instead of purchasing the asset is like getting a loan of $516,000 with after-tax repayments of $124,000 in years 1–5 and an after-tax repayment of $40,000 in year 6
- The lease, in other words, can be viewed as an alternative method of financing the asset
- The internal rate of return of the differential cashflows 8.30% gives the after-tax cost of the financing implicit in the lease
- This is larger than the aftertax cost of firm borrowing, since in this case, this cost is 7.20%
- Our conclusion: Buying is preferable than leasing

Residual Analysis

The Lessor’s Problem

- The **lessee** has to decide whether, given a rental rate on the leased asset - it is preferable to buy the asset or lease it
- The **lessor** has to decide what minimum rental rate justifies the purchase of the asset in order to lease it out

Leveraged Leasing

- From the point of view of the lessee, there is no difference in the analysis of a leveraged or a non-leveraged lease
- From the lessor’s point of view, however, the cash flows of a leveraged lease present some interesting problems

- The straightforward financial analysis of the lease from the point of view of the lessor
- The accounting analysis of the lease

References

- Simon Benninga. (2014) Financial Modeling
- www.investopedia.org

Thank You