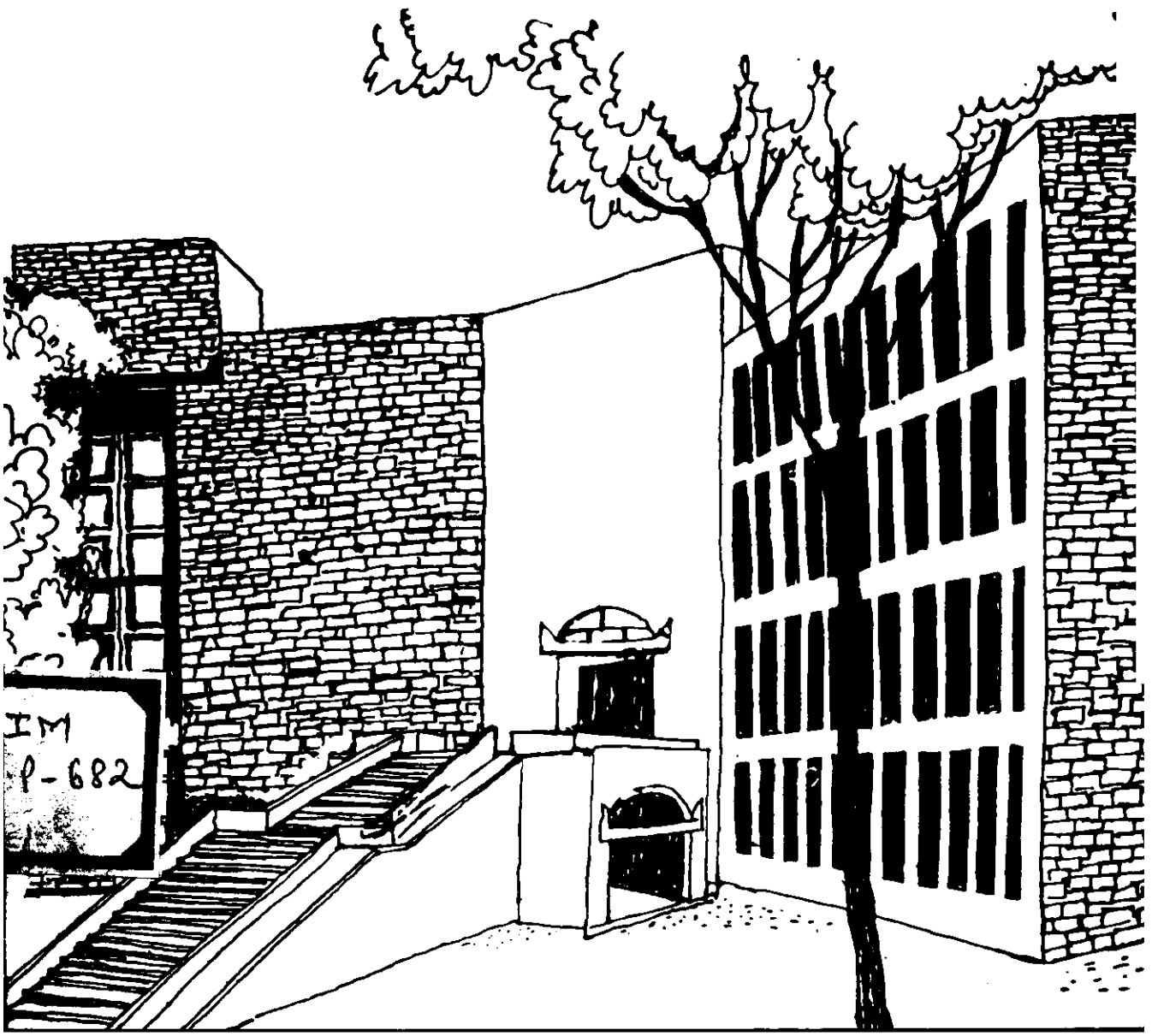
Working Paper



EFFECT OF CHANGING TAXATION AND DEPRECIATION POLICIES ON THE LEASING INDUSTRY

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ABSTRACT

In the recent years the government's policy of reducing the corporate tax rate and increasing the depreciation rate has been welcomed by the industrial sector. The changes so obviously benefit the sector that it appears incredible that there could be an industry which may not benefit from the changes. In this paper we present an analysis which shows that these changes reduce the spread available to the lessors and the lessees to strike a lease deal which is beneficial to both the parties. This would necessarily reduce the margins available to the lessors and affect the viability of the leasing industry in the long run.

EFFECT OF CHANGING TAXATION AND DEPRECIATION POLICIES ON THE LEASING INDUSTRY

INTRODUCTION

In the last two years, the corporate taxation rate has been reduced from 57.75% (55% + surtax of 5% on the Tax) to 50%. At the same time depreciation rate has been revised upwards from a normal rate of 15% (implying 30% on triple shift basis) to a flat rate of 33.33% , 50% and 100% for different categories of equipment. The changes have been unanimously welcomed by the industrial sector and yet, if we investigate the impact of these changes on the leasing industry in particular, the concessions made may have an unfavourable impact.

This paradoxical situation arises because of the nature of a lease transaction. The main reason why leasing is preferred to buying an asset is that the break-even lease rent for the lessee is higher than the break-even lease rent for the lessor, primarily because of the difference in their costs of capital. The difference between the two break-even rents (the spread) provides a measure of the room available for negotiations between the lessee and the lessor. The rent at which a contract is

finally struct would depend on the bargaining strength of the two parties. In such a situation, the greater the spread, the greater is the chance of successful negotiations. In this paper we show that a decrease in the corporate tax rate and an increase in the depreciation rate reduces this spread available for negotiations and hence may adversely affect the chance of striking a lease contract.

The paper consists of four sections. This introductory section is followed by a section explaining the method used for arriving at the break-even lease rent for both lessees and lessors. The third section primarily contains computations of lease rents, using the approach outlined in section two, for various parameter values that prevail for lessees and lessors in the indian corporate sector. The concluding section examines the impact of the changes in the taxation and depreciation rates on the spread available for negotiation between the lessees and the lessors.

DETERMINATION OF THE BREAK-EVEN LEASE RENT

When a lessee leases an asset rather than buying it, he saves the acquisition cost of the asset and pays periodic lease

rentals instead. Further, he receives tax shield on the lease rentals paid, but forgoes the tax shield on depreciation which would have been available had the asset been bought. Also he forgoes the salvage value of the asset, if the asset is to revert to the lessor at the end of the lease. The break-even lease rent would then be that value of rent which equates the acquisition cost of the asset to the present value of the costs involed under the lease option. This mathematical relationship is described in expression (1) below[1]. Each of the terms in the expression is further explained in detail in box 1, following the expression.

$$A - \sum_{i=1}^{n} \frac{L}{(1+k)^i} + \sum_{i=1}^{n} \frac{LT}{(1+k)^i} + \sum_{i=1}^{n} \frac{D_i T}{(1+k)^i} + \frac{S_t}{(1+k)^n} = 0 \quad \ldots.(1)$$

(1) (2) (3) (4) (5)

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1 There is considerable debate in the literature on laesing about the correct expression for determination of break-even lease rent. We have used the expression suggested by Raghunathan. For a more detailed discussion of the subject the reader may refer to his paper (reference [1]).

where A = Acquisition cost of the asset,

L = Equalised periodic break-even lease rental,

T = Corporate tax rate,

D_i = Depriciation in period i = $Ad(1-d)^{i-1}$,

where d = depriciation rate.

S_t = After tax salvage value of the asset at the end of the lease period net of terminal depreciation / balancing charge / capital gain,

n = Lease period, and

k = weighted average cost of capital of leases

$$= K_e \frac{E}{D+E} + r(1+T) \frac{D}{D+E}$$

where K_e = Cost of equity capital for leasee,

r = Rate of interest, and

D:E = Target debt-equity ratio of leasee on market value basis

The above theoretical model needs to be modified for the following realities prevailing in the Indian scene.

1. Lease rentals are paid monthly, in advance, at the beginning of every month, the first instalment being paid at the time of signing the contract.

Box 1

	Evaluation critaria when an asset is leased
1	Acquisition cost of the asset, which the lessee saves, if the asset is leased (A)
	Less
2	Present value of the lease rentals which the lessee pays to the lessor, if the asset is leased $\sum_{i=1}^{n} \frac{L}{(1+k)^i}$
	Plus
3	Present value of the saving on lease rental if the asset is leased $\sum_{i=1}^{n} \frac{LT}{(1+k)^i}$
	Less
4	Present value of the tax saving on depreciation, foregone by leasing the asset $\sum_{i=1}^{n} \frac{D_i T}{(1+k)^i}$
	Less
5	Present value of the after tax salvage value net of terminal depriciation/balancing charge/capital gains of the asset, foregone by leasing the asset $\frac{S_t}{(1+k)^n}$
	Aggregate effect at break-even point equals zero

2. The tax shield on lease rentals and depriciation are available only at the end of the year (or quarter).

3. Only 40% of capital gains are taxed, so that:

$$S_t = \frac{S - (A-WDV)\,T - .4\,(S-A)T}{(1+k)^n}, \quad \text{when } S > A$$

where S = Before tax salvage value, and

WDV = Written Down Value of the asset

and $$S_t = \frac{S - (S - WDV)\,T}{(1+k)^n}, \quad \text{when } S \leq A$$

Thus, when the above characteristics are built into expression (1), we have:

$$A - \sum_{i=0}^{12n-1} \frac{L}{(1+k_m)^i} + \sum_{i=1}^{n} \frac{12\,LT}{(1+k)^i} - \sum_{i=1}^{n} \frac{A\,d\,(1-d)^{i-1}}{(1+k)^i} - \frac{S_t}{(1+k)^n} = 0$$

Where L = Monthly equalised break-even rental,

k = Annual discount rate,

$k = \sqrt[12]{1+k} - 1$ = Equivalent monthly discount rate,

and n = The lease period in years.

$$\text{or } L = \frac{A - \sum_{i=1}^{n} \frac{Ad\,(1-d)^{i-1}}{(1+k)^i} - \frac{S_t}{(1+k)^n}}{\sum_{i=1}^{12n-1} \frac{1}{(1+k_m)^i} - 12\,T \sum_{i=1}^{n} \frac{1}{(1+k)^i}}$$

The computation of break-even lease rent for a lessor would require steps identical to those used for a leasee except that the cash inflows and outflows of the latter would be the cash outflows and inflows respectively for the former. Also the lessor's discount rate would be different from the lessee's, being his own weighted average cost of capital. This difference in the cost of capital would lead to a different break-even rent for the lessor.

COMPUTATION OF BREAK-EVEN LEASE RENTALS UNDER CHANGING POLICIES

Table 1 shows the monthly break-even lease rentals for Rs. 1000 worth of asset for different assumptions about discount rates, depreciation rates and length of lease periods. The tax rate assumed is 57.75% and the before tax salvage value at the end of the lease period is zero. Similarly, Table 2 gives the monthly break-even rentals for the same values of parameters as used in table 1, except that the tax rate assumed is 50%. Tables 3 and 4 give break-even lease rentals for the parameters corresponding to table 1 and 2 respectively for before tax salvage value assumed at Rs. 1250.

TABLES 1, 2, 3 & 4

From the above tables, it is clear that the monthly break-even rentals decrease with decrease in the tax rate from 57.75% to 50% and they decrease with increase in depreciation rates from 30% to 50%, other parameters remaining unchanged.

However in general an Indian lessor, because of considerably higher debt to equity ratio allowed to him by the government, has a lower discount rate than a lessee. This gives rise to a situation where the decrease in the break-even lease rent for a lessee and a lessor are different for the same changes in the policy of decreasing the tax rate from 57.75% to 50% and increasing the depriciation rate from 30% to 50%. This in turn affects the spread available for negotiations.

To illustrate the above point let us consider a five year lease for Rs.1000 worth of an asset, with a salvage value of zero at the end of 5 years. Let the discount rate of the lessor be 9% and that of the lessee be 15%. If the tax rate is 57.75% and the depreciation rate is 30%, the break-even monthly lease rent for the lessor and the lessee respectively would be Rs. 24.64 and Rs. 29.66 (Table 1). The spread available in the situation would be Rs. 5.02. If the tax rate is reduced to 50%, these break-even

rents drop to Rs. 23.56 and Rs. 28.00 (Table 2), thereby reducing the spread available to Rs. 4.44. Now, if the depreciation rate is increased to 50%, in addition to the change in the tax rate, these break-even rents change to Rs. 22.46 (Table 2) and Rs. 26.32 (Table 2), which reduces the spread still further to Rs. 3.86. Thus the room for negotiations shrinks considerably with the changes in tax and the depreciation rates.

CONCLUSION

As stated earliar the extent of spread between the break-even rentals of the lessor and the lessee reflects the ease with which a lease deal can be struct. The larger the spread, greater the ease with which a lease deal beneficial to both the parties can be struck and greater the average margin available to the lessor to cover his fixed costs. Conversely, a decrease in the spread implies greater difficulty in striking a mutually profitable deal and a reduced average margin to the lessor.

Assuming that the lessor's discount rates may typically from 8% to 13% and that of the lessee from say 14% to 20% annum, Table 5 shows the spread available for various pairs

of discount rates under different combination of tax rate, depreciation rate and salvage value. The lease period is five years, and the asset value assumed is Rs. 1000.

From Table 5, it is clear that for all combinations of discount rates for the lessor and the lessee, the spread considerably reduces when the tax rate decreases from 57.75% to 50% and depreciation rate increase from 30% to 50%. A similar pattern is also observed even when the salvage value of the asset assumed is as high as Rs. 1250 at the end of the lease period. This implies that a reduction in taxes[2] and an increase in the deprication rate would sequeeze the margin available to the leasing companies in a variety of situations likely to prevail in reality.

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2 In reality, when the taxation rate is reduced, the cost of capital is also affected. However its impact on the calculation of the spread is minor enough to be ignored.

REFERENCE

1. Raghunathan V., "Better Evaluation of a Lease", Vikalpa, vol.12, No. 2, April-June, 1987.

Break-even Rentals

Tax Rate = 57.75%

Salvage Value = 0

Depreciation Rate	Period (years)	Discount Rate												
		8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
30%	5	23.78	24.64	25.49	26.34	27.18	28.01	28.84	29.66	30.47	31.28	32.09	32.88	33.68
	8	16.84	17.66	18.48	19.30	20.13	20.96	21.79	22.62	23.45	24.26	25.11	25.93	26.76
50%	5	22.45	23.16	23.88	24.59	25.30	26.01	26.71	27.42	28.12	28.83	29.52	30.21	30.91
	8	15.64	16.33	17.02	17.72	18.42	19.13	19.84	20.55	21.27	21.99	22.71	23.44	24.17

Table 2

Break-even Rentals

Tax Rate = 50% Salvage Value = 0

preciation Rate	Period (years)	Discount Rate												
		8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
30%	5	22.81	23.56	24.31	25.06	25.80	26.54	27.27	28.00	28.73	29.45	30.17	30.89	31.60
	8	16.08	16.81	17.55	18.29	19.03	19.77	20.52	21.26	22.01	22.76	23.51	24.27	25.02
50%	5	21.82	22.46	23.11	23.75	24.40	25.04	25.68	26.32	26.96	27.60	28.24	28.88	29.51
	8	15.20	14.87	16.46	17.10	17.75	18.40	19.06	19.72	20.38	21.04	21.71	22.39	23.06

Table 3

Break-even Rentals

Tax Rate = 57.75%

Salvage Value = 1250

Depreciation Rate	Period (years)	Discount Rate												
		8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
30%	5	5.01	6.45	7.86	9.24	10.60	11.93	13.24	14.52	15.79	17.03	18.25	19.45	20.63
	8	6.49	7.79	9.07	10.33	11.57	12.79	13.99	15.18	16.35	17.51	18.65	19.77	20.88
50%	5	3.68	4.97	6.24	7.49	8.72	9.93	11.12	12.28	13.43	14.57	15.68	16.78	17.86
	8	5.29	6.46	7.61	8.74	9.86	10.96	12.05	13.12	14.78	15.22	16.26	17.28	18.28

Table 4

Break-even Rentals

Tax Rate = 50%

Salvage Value = 1250

Depreciation Rate	Period (years)	Discount Rate												
		8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
30%	5	4.49	5.78	7.04	8.29	9.51	10.72	11.90	13.07	14.22	15.35	16.47	17.57	18.65
	8	5.98	7.16	8.33	9.48	10.62	11.73	12.84	13.93	15.01	16.07	17.12	18.15	19.18
50%	5	3.50	4.69	4.40	6.99	8.11	9.22	10.31	11.39	12.45	13.50	14.54	15.55	16.56
	8	5.09	6.18	7.24	8.30	9.34	10.37	11.38	12.38	13.37	14.35	15.32	16.27	17.22

Table 5

Spread of the Rentals

n = 5 S = 0

Lessee's Discount Rate \ Lessor's Discount Rate	8%				9%				10%			
	Tax Rate Percentage / Dep. Rate Percentage				Tax Rate Percentage / Dep. Rate Percentage				Tax Rate Percentage / Dep. Rate Percentage			
	57.75 / 30	50 / 30	57.75 / 50	50 / 50	57.75 / 30	50 / 30	57.75 / 50	50 / 50	57.75 / 30	50 / 30	57.75 / 50	50 / 50
14%	5.06	4.46	4.26	3.86	4.20	3.71	3.55	3.22	3.35	2.96	2.83	2.57
15%	5.88	5.19	4.97	4.50	5.02	4.44	4.26	3.86	4.17	3.69	3.54	3.21
16%	6.69	5.92	5.67	5.14	5.83	5.17	4.96	4.50	4.98	4.42	4.24	3.85
17%	7.50	6.64	6.38	5.78	6.64	5.89	5.67	5.14	5.79	5.14	4.95	4.49
18%	8.31	7.36	7.07	6.42	7.45	6.61	6.36	5.78	6.60	5.86	5.64	5.13
19%	9.10	8.08	7.76	7.06	8.24	7.33	7.05	6.42	7.39	6.58	6.33	5.77
20%	9.90	8.79	8.46	7.69	9.04	8.04	7.75	7.05	8.19	7.29	7.03	6.40

Table 5 (Continued)

Lessor's Discount Rate / Lessee's Discount Rate	11%				12%				13%			
	Tax Rate Percentage / Dep. Rate Percentage				Tax Rate Percentage / Dep. Rate Percentage				Tax Rate Percentage / Dep. Rate Percentage			
	57.75 / 30	50 / 30	57.75 / 50	50 / 50	57.75 / 30	50 / 30	57.75 / 50	50 / 50	57.75 / 30	50 / 30	57.75 / 50	50 / 50
14%	2.50	2.21	2.12	1.93	1.66	1.47	1.41	1.28	0.83	0.73	0.70	0.64
15%	3.32	2.94	2.83	2.57	2.48	2.20	2.12	1.92	1.65	1.46	1.41	1.28
16%	4.13	3.67	3.53	3.21	3.29	2.93	2.82	2.56	2.46	2.19	2.11	1.92
17%	4.94	4.39	4.24	3.85	4.10	3.65	3.53	3.20	3.27	2.91	2.82	2.56
18%	5.75	5.11	4.93	4.49	4.91	4.37	4.22	3.84	4.08	3.63	3.51	3.20
19%	6.54	5.83	5.62	5.13	5.70	5.09	4.91	4.48	4.87	4.35	4.20	3.84
20%	7.34	6.54	6.32	5.76	6.50	5.80	5.61	5.11	5.67	5.06	4.90	4.41