

## Accounting for loan finance

In order to understand the principles involved, we will consider a simple case before we analyse more complicated arrangements.

### 1. Debt when interest payments are at the market rate

This is the simple case. A company raises a 5 year loan of 100. The interest rate is 5% and the payments made by the company at the end of the period are the market rate. Hence the company clears the interest charges at the end of every year, leaving the principal as the liability. This is repaid at the end of year 5.

Period	Liability at beginning	Interest (5%) (charged to P&L)	Payments at end of period	Liability at end of period
1	100	5	-5	100
2	100	5	-5	100
3	100	5	-5	100
4	100	5	-5	100
5	100	5	-5	100

The accounting entries for each year are:

#### BALANCE SHEET OF A COMPANY

##### Assets

Current assets

-5

Fixed assets

##### Liabilities

Loan

100

+5

-5

<i>Equity capital:</i>	
Initial share capital	
Reserves (from previous years' P&L)	
This year's P&L	-5

## 2. Deep discount bonds

Of course the above example is not that usual. Companies sometimes issue deep discount bonds, where the nominal interest rate is not the market rate. Suppose a company raises 100, but pays only 2% nominal, even though the market rate is 6%. At the end of the loan period, the agreed amount to be repaid is 122.55.

Period	Liability at beginning	Interest (6%) (charged to P&L)	Payments at end of period	Liability at end of period
1	100.00	6.00	-2	104.00
2	104.00	6.24	-2	108.24
3	108.24	6.49	-2	112.73
4	112.73	6.76	-2	117.50
5	117.50	7.05	-2	122.55

When these instruments were first issued, only the nominal interest was charged to the P&L. However, now the effective rate of interest method is used; that is, the real interest cost is charged to the P&L. This is illustrated for period 1 below.

### BALANCE SHEET OF A COMPANY at the end of period 1

#### Assets

Current assets

-2

Fixed assets

#### Liabilities

Loan

100

+6

-2

#### Equity capital:

Initial share capital

Reserves

This year's P&L

-6

### 3. Lease financing

Leasing is a form of finance which has given the accounting profession much trouble. Essentially, it is a method by which a company can avoid the downside of owning an asset. After making payments for a minimum period, the asset may be returned. If the asset is not returned, then it becomes the property of the company.

Consequently, if a company believes that there is a significant chance that asset prices will fall, then the lease arrangement allows a company to return the asset (and then presumably renegotiate in the market place at a lower price). This is a form of insurance. However, insurance is not free! If the company lands up paying all the premiums and then owning the asset, the purchase will be more expensive than a simple bank loan. This is illustrated in the following example.

#### I - PURCHASE WITH A LOAN

An asset has a fair value of 170, and the interest rate is 10%. Repayments of 25.16 are made at the beginning of every period. The present value of the repayments is 170.06, (approximately) equal to the loan of 170, which is used to purchase the asset.

Fair value	170	Interest rate	Repayments
Present value of repayments	170.06	0.1	25.16
1	25.16		
2	22.87		
3	20.79		
4	18.90		
5	17.18		
6	15.62		
7	14.20		
8	12.91		
9	11.74		
10	10.67		

## II - RETURNING THE ASSET UNDER A LEASE

Suppose that the asset is acquired under a lease. The terms of the lease are: 10 payments of 27 at the beginning of each period; an option to return the asset at the beginning of period 9 (thereby avoiding payments for periods 9 and 10).

Suppose further that the asset is returned at the beginning of period 9, because at that time the market value of the machine is £5. The lessee will not have an incentive to continue with the purchase: there is no incentive to pay a further £54 when a similar asset may be purchased for £5.

In these circumstances, the lessor will make an abnormal loss, since she will receive only £160.78, (the present value of the payments plus the value of the machine, £5, at the beginning of period 9). This is illustrated below.

Fair value	170	Interest rate	Repayments
Present value of payments to lessor	160.78	0.1	27
1	27.00		
2	24.55		
3	22.31		
4	20.29		
5	18.44		
6	16.76		
7	15.24		
8	13.86		
9	2.33	(the present value of £5)	
10			

### III - PURCHASING THE ASSET THROUGH THE LEASE

However, suppose that the asset is not returned. All 10 payments are made. The value of the payments received by the lessor are 182.49, giving the lessor a profit on the initial outlay of 170, as shown below.

Fair value	170	Interest rate	Repayments
Present value of payments to lessor	182.49	0.1	27
1	27.00		
2	24.55		
3	22.31		
4	20.29		
5	18.44		
6	16.76		
7	15.24		
8	13.86		
9	12.60		
10	11.45		

### IV - ACCOUNTING FOR THE LEASE

From the above examples can be seen the key problem of accounting for leases. If the asset is brought on to the balance sheet, then a reasonable assumption should be that the company is going to make all the 10 payments. But in this case, the present value of the liability is 182.49. However, the fair value of the asset is 170. Since the balance sheet must balance, either the asset is overvalued or the liability is undervalued.

IAS 17 Leases (and the UK standard SSAP21) deal with this difficulty by having different rules, depending on the size of the difference between the asset and the liability values. If the difference between the two values is large, the leased asset is ignored; this is called an operating lease. The payments are simply recorded in the P&L as they are made.

If the difference between the two values is small (as in our case), then this is called a finance lease<sup>1</sup>. The asset is included at its fair value (170), and this is the liability that is recognised. However, the liability should be 182.49, being the present value of the 10 payments at the market rate of interest, 10%.

The way this is accommodated is to increase the interest rate until the present value of the 10 payments of 27 are equal to 170, the fair value of the asset. This is called the implicit interest rate of the lease, in this case 12.159%. These calculations are shown below.

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<sup>1</sup> This is because the lease is simply a way of financing the purchase of the asset.

	Liability at beginning of period	Payments made at beginning of period	Interest charged during the period	Liability at end of period	Interest rate implied in the lease	Repayments
Year					0.12159	27
1	170	-27	17.39	160.39		
2	160.39	-27	16.22	149.61		
3	149.61	-27	14.91	137.51		
4	137.51	-27	13.44	123.95		
5	123.95	-27	11.79	108.74		
6	108.74	-27	9.94	91.68		
7	91.68	-27	7.86	72.54		
8	72.54	-27	5.54	51.08		
9	51.08	-27	2.93	27.01		
10	27.01	-27	0.00	0.01		
Total		-270.00	100.01			

The liability at the beginning of year 1 is 170 (the fair value of the asset) less the first payment of 27. Interest on this amount (143) at 12.159% is 17.39 giving a liability at the end of the period of 160.39. The accounting treatment is that the the interest is charged to the P&L according to the effective rate of interest method, as illustrated below. Also of note is that the total interest charged to the P&L will be 100, being the difference between the fair value of the asset (170) and the total payments made (270). The asset will also be depreciated in the normal way; here we assume a life of 10 years and straight line depreciation (17).

**BALANCE SHEET OF A COMPANY at the end of period 1**

Assets		Liabilities									
Current assets	-27	Lease liability	170 +17.39 -27								
Fixed assets	170 -17										
		<table border="1"> <tr> <td colspan="2"><i>Equity capital:</i></td> </tr> <tr> <td>Initial share capital</td> <td></td> </tr> <tr> <td>Reserves (from previous years)</td> <td></td> </tr> <tr> <td>This year's P&amp;L</td> <td>-17.39 -17</td> </tr> </table>		<i>Equity capital:</i>		Initial share capital		Reserves (from previous years)		This year's P&L	-17.39 -17
<i>Equity capital:</i>											
Initial share capital											
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This year's P&L	-17.39 -17										
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It should be noted that because lease accounting is a 'fix', there are quite a number of *ad hoc* rules in practice. Firstly, the distinction between operating and finance leases relates to whether the fair value of the asset is very different from the present value of payments; what is large enough to constitute a difference is fairly arbitrary and accounting rules reflect this. Secondly, exactly what payments are required to be paid by the lessor in order to justify the inclusion of the asset on the balance sheet is matter of judgement; different accounting standards take slightly different views on this. What we have attempted to show here are the general principles which are used to bring leased assets on to the balance sheet.

## V - THE FUTURE

Leasing standards have been around for some time and the IASB has a project team to improve IAS 17. The main likely change is to eliminate the artificial distinction between operating and finance leases. This is partly driven by the inclination of companies to draft lease agreements so that they just fall with the definition of an operating lease (and are therefore excluded from the balance sheet).

The word on the street is that objective of the review is to include all leases in the balance sheet. However, it is likely that the value of the liability will drive the measurement. That is, a short lease on an expensive asset will mean a relatively small value for the asset in the balance sheet. An alternative would be to include the right to return the asset as a deduction from the fair value of the asset; at least then investors could see the significance of the equipment leased for a short time. More information about the project is available from the IASB [www](http://www.iasb.org) site.