A SIMPLE GUIDE TO AMORTISATION OF FINANCIAL INSTRUMENTS

What is amortisation?

Amortisation (or amortization) is the process of decreasing or accounting for an amount over a period (Wikipedia). It is similar to what depreciation does to tangible assets in effect; e.g. the carrying amount of a motor vehicle is written down by depreciation charges over time, and the depreciation charges are matched against revenue in the income statement.

Where do we use amortisation in accounting?

Amortisation is used in the following areas:

- Intangible assets (i.e. amortisation of capitalised development costs over their useful lives [IAS38 *Intangible assets*])
- Leases (i.e. allocation of finance charge so as to produce a constant periodic rate of interest on the remaining balance of the liability [IFRS16 *Leases*].
- Financial instruments (i.e. amortisation of certain financial assets and liabilities [IFRS39/IFRS9 *Financial instruments*]).

We will focus only on financial instruments [FI] in this guide.

Why do we amortise?

One of the major accounting issues that accountants have to deal with when it comes to FI (e.g. a loan) is: How to account for its:

- *finance costs*[1] and
- *carrying amounts* in the financial statements *over the term of the loan*?

A loan can come in many varieties; e.g. fixed vs. variable interest rates; issue at discount/premium; long vs short life-span; etc. Longer term loans pose the most challenge since they straddle a few accounting periods[2]. When the terms of the loans are unusual, the accounting of their finance costs becomes less straight forward. In response to this challenge, accountants come up with **the amortisation method**. The rationale of amortisation is to spread/match the cost of a financial instrument e.g. a loan, systematically against the benefits that the loan confers over a period[3]. For instance, the cost of a loan (i.e. interest expense) is often charged to the income statement so that it can be matched against the revenue that the loan helps generate over the entire borrowing period. In other words, amortisation of FI is an application of the **matching concept**.

How do we amortise?

There are many ways one can conduct an amortisation of FI. In the context of financial liabilities (say, a loan), one can think of the following methods:

1. Average method
2. Nominal interest rate method
3. Effective interest rate method
4. Estimated forward interest rate method

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[1] In the case of financial assets, the issue is to do with finance *income* not cost.

[2] Short-term loans (or FIs in general) that begin and mature within a year will get 'realised' in the income statement and will not remain on the balance sheet at the year end.

[3] Alternatively, in the case of financial assets it is to spread/match the benefits of a financial asset e.g. a financial investment against the cost of that investment over a period.

The method favoured by IASB is No. 3 – the effective interest rate method. The following numerical examples show how Methods 1-3 above are applied and why method 3 is the preferred option under IAS39/IFRS9.

CASE 1:

Consider an entity that takes out a simple[4] bank loan with the following features:

- Length of loan = 3 years in total
- Par value of the bank loan = £10,000
- Cash amount received from the bank = £10,000 today
- Nominal interest rate/coupon rate = 10% payable in arrears (i.e. £1,000 interest p.a)
- Repayable amount = £10,000 (repayable three years from now)

Question: How should the loan be accounted for in the entity's financial statements?

- To tackle the above accounting question, one should first consider the cash flows of the loan:

  Cash flows and IRR of the loan:

Year	*Particulars*	*Cash flows*
0	Borrowing	+10,000
1	Interest payment	-1,000
2	Interest payment	-1,000
3	Interest payment	-1,000
3	Loan repayment	-10,000
	Net cash flows	-3,000

- Using Excel, the Internal Rate of Return (IRR) of the cash flows of this loan can be computed at 10% (nb. you may try to discount these cash flows using a discount rate of 10% to check if the net present value equals zero).
- The IRR is also the *effective interest rate* of the loan.
- Notice that the effective interest rate of 10% is exactly the same as the nominal interest rate of the loan. This is because the *initial* and *repayment amounts* of the loan are exactly the same → £10,000 (i.e. there is no discount/premium at issue and redemption). Moreover, the nominal interest rate of the loan is fixed at 10% for the entire term of the loan.
- Notice also that the amount of *net* cash flow = –£3,000 (i.e. total cash inflow – cash outflow). This represents the total finance cost of the loan. The next step is to find a systematic way to amortise this interest (i.e. allocate it to different accounting periods). This can be done via an amortisation schedule.

Amortisation of the loan:

Since the nominal and effective interest rates are the same, the amortisation of this simple, conventional loan is straight-forward:

Year	*Opening bal. (£)*	*Nominal/ Effective interest (10%)*	*Repayment (£)*	*Closing bal. (£)*
1	10,000	1,000	-1,000	10,000
2	10,000	1,000	-1,000	10,000
3	10,000	1,000	-11,000	0

[4] Simple in the sense that the initial borrowed and the final repayment amounts are identical, the transaction cost is nil, and the interest rate is constant throughout the loan term.

The above amortisation schedule can be interpreted from left to right as follows:

- The entity starts off with £10,000 that it borrowed from a bank on day 1.
- The loan attracts an effective interest rate of 10%, and this interest expense of £1,000 (£10,000 x 10%) is accounted for as the finance cost incurred in Year 1 in the income statement.
- At the end of year 1, the entity pays the bank £1,000 interest in accordance with the terms of the loan (i.e. £10,000 x 10% nominal rate in arrears).
- The loan outstanding at the end of year 1 is thus: £10,000 (opening bal.) + £1,000 (interest charged) – £1,000 (repayment) = £10,000 closing balance. This then gets presented as a liability in the statement of financial position.

Accounting for the loan:

From the amortisation schedule above, we can work out the following:

	Year 1	*Year 2*	*Year 3*
Income statement (P&L)	*£*	*£*	*£*
• Interest expense (finance cost)	1,000	1,000	1,000
Statement of financial position (BS)			
• Loan outstanding at the year end	10,000	10,000	-

Comments:

Notice that a financial statement user can easily deduce from the above accounts that the interest rate of the loan has been as follows:

	Year 1	*Year 2*	*Year 3*
Interest rate (interest expense / *opening* loan)	10%	10%	10%

This way of accounting arguably shows a true and fair view of the loan transaction because it reflects the economic substance of the loan; i.e. the finance cost of a period is a function of the (opening) amount borrowed.

However, this 'tidy result' (i.e. nominal = effective interest rate) only occurs under very simple circumstances (e.g. the opening and final repayment amounts are the same, the nominal interest rate remains fixed throughout the period, zero transaction costs, etc.).

Now let's consider a slightly more complicated example:

CASE 2:

Consider the following loan transaction that has been entered into by another entity:

- Length of loan = 3 years in total
- Par value of the bank loan = £10,000
- Cash amount received from the bank = £10,000 today
- Nominal interest rate/coupon rate = 10% payable in arrears (i.e. £1,000 interest p.a)
- Repayable amount = £11,700 (repayable three years from now)

This second loan differs from the first one in that the amount repayable at maturity (£11,700) is greater than the par value of the loan (i.e. the loan is redeemable at a premium). Because of this, the effective interest rate of the loan will be different from its nominal rate, as shown below:

Cash flows and IRR of the loan:

Year	*Particulars*	*Cash flows*
0	Borrowing	+10,000
1	Interest payment	-1,000
2	Interest payment	-1,000
3	Interest payment	-1,000
3	Loan repayment	-11,700
	Net cash flows	-4,700

- Using Excel, the Internal Rate of Return (IRR) of the cash flows of this loan can be computed at 14.9%. This is also the effective interest rate of the loan.
- The effective interest rate is higher than the nominal rate because the total interest expense is £4,700 (nb. the net cash flow of the loan).
- This is £1,700 higher than the interest in the previous case (recall that this entity has to pay £11,700 instead of the £10,000 par value to redeem the loan at maturity).
- This poses an interesting challenge to the accountant: **How should he/she reflect this finance cost in the entity's income statements of years 1, 2, and 3?**

OPTION 1: using the AVERAGE method to spread the interest cost

Interest expense = Total interest cost / No. of years = £4,700 / 3 = £1,567

Amortisation of the loan:

Year	*Opening bal. (£)*	*Average interest*	*Repayment (£)*	*Closing bal. (£)*
1	10,000	1,567	-1,000	10,567
2	10,567	1,567	-1,000	11,134
3	11,134	* 1,566	-12,700	0

* £1 rounding difference.

Accounting for the loan:

From the amortisation schedule above,

	Year 1	*Year 2*	*Year 3*
Income statement (P&L)	*£*	*£*	*£*
• Interest expense (finance cost)	1,567	1,567	1,566
Statement of financial position (BS)			
• Loan outstanding at year end	10,567	11,134	-
Interest rate (interest expense / *opening* loan)	15.7%	14.8%	14.1%

Comments and reflection:

- Under the average interest method, the interest charge is the same every year even though the opening loan balance varies from year to year.
- Is this the best way to reflect the economic substance of the loan transaction?
- What will the users think when they see the accounts? That the entity's cost of borrowing (i.e. interest rate) is getting progressively lower as the loan matures?
- What about the closing carrying amounts of the loan? Are they not simply 'artefacts' of some arbitrary accounting adjustments?

OPTION 2: using the NOMINAL interest method:

Under this method, interest expense charged to the income statement follows the *legal* repayment terms of the loan (i.e. based on the repayment cash flows).

Amortisation of the loan:

Year	*Opening bal. (£)*	*Nominal interest (**10%**)*	*Repayment (£)*	*Closing bal. (£)*
1	10,000	1,000	-1,000	10,000
2	10,000	1,000	-1,000	10,000
3	10,000	* 2,700	-12,700	0

* £1,000 nominal interest + £1,700 redemption premium = £2,700 interest in total.

Accounting for the loan:

From the amortisation schedule above,

	Year 1	*Year 2*	*Year 3*
Income statement (P&L)	*£*	*£*	*£*
• Interest expense (finance cost)	1,000	1,000	2,700
Statement of financial position (BS)			
• Loan outstanding at year end	10,000	10,000	-
Interest rate (interest expense / *opening* loan)	10%	10%	27%

Comments and reflection:

- Under the nominal interest method, the interest expense and the interest rate of the loan are not even across the three years.
- Once again, is this the best way to reflect the economic substance of the loan transaction?
- Is it right to let users infer from the accounts that the entity seemingly pays nearly 3x as high an interest rate in year 3 (27%) than in years 1 and 2 (10%)?
- Moreover, the closing carrying amounts of the loan bear no resemblance to the actual liability (note: the final repayment amount is £12,700 and yet the balance sheet shows £10,000).

OPTION 3 – using the EFFECTIVE interest method:

Amortisation of the loan:

Year	*Opening bal. (£)*	** Effective interest (**14.9%**)*	*Repayment (£)*	*Closing bal. (£)*
1	10,000	1,490	-1,000	10,490
2	10,490	1,563	-1,000	11,053
3	11,053	1,647	-12,700	0

* Recall that the effective interest rate = IRR of the loan's cash flows.

Accounting for the loan:

From the amortisation schedule above,

	Year 1	*Year 2*	*Year 3*
Income statement (P&L)	*£*	*£*	*£*
• Interest expense (finance cost)	1,490	1,563	1,647
Statement of financial position (BS)			
• Loan outstanding	10,490	11,053	-
Interest rate (interest expense / *opening* loan)	14.9%	14.9%	14.9%

Comments:

- Under the effective interest method, the total finance cost of £4,700 is spread in a *systematic* manner over the life of the loan.
- The end result is that the periodic interest expense is now a constant 14.9% of the loan outstanding at the beginning of the year (i.e. 1,490/10,000; 1,563/10,490; and 1,647/11,053).
- In addition, the closing carrying amounts of the loan are also the present value of the future contractual payments (discounted at the effective interest rate of the loan):

  End of year 1 loan balance = $\frac{£1,000}{1.149} + \frac{£12,700}{1.149^2}$ =£10,490

  End of year 2 loan balance = $\frac{£12,700}{1.149}$ = £11,053
- This way of accounting arguably reflects the economic substance of the loan transaction better than the average and the nominal interest methods.
- For those that have not already spotted it, this effective interest method is the same one used in the accounting for finance leases under IAS17/IFRS16.

OVERALL COMMENTS:

- Although we review the amortisation concept using a financial liability (i.e. a bank loan) as an example above, the same principle can be applied to financial assets too. One just has to reverse the interpretation of the results, e.g. interest expenses → finance income.
- Whilst the exposition above shows why the effective interest method is better than the average and the nominal interest methods (and hence why it is the preferred method under IASB), it is by no means perfect.
- One criticism of the effective interest method is that it simply assumes a constant effective rate over the entire term of the contract. Since *market interest rates* may fluctuate from time to time, one could argue that the effective interest method does not really reflect the prevailing market conditions to which the contract relates.
- One remedy is to take current market conditions into account by deriving estimated forward rates[5] over the course of the contract. The rates are then used to amortise the finance income/cost of the FI. However, this method requires more advanced forecasting techniques on the part of the users. It is thus beyond the scope of this guide and will not be discussed further here.

[5] See e.g. Draper *et al*. (1993) An assessment of the effective annual rate method as a basis for making accounting allocations, *Journal of Business Finance & Accounting*, 20 (1), pp.143-151.