

Valuation of financial assets/liabilities



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Present Value and the Opportunity Cost of Capital

Time value of money is one of the most fundamental ideas of finance, one which is firmly grounded in the concept of compound interest

Types	Description	Example			
<p>1</p> <p>Simple interest</p>	<ul style="list-style-type: none"> Interest is not paid on previous interest 	<p><u>Year</u></p> <p>Principal</p> <p>Interest @ 10%</p>	<p><u>2007</u></p> <p>£100</p> <p>£10</p>	<p><u>2008</u></p> <p>£100</p> <p>£10</p>	<p><u>2009</u></p> <p>£100</p> <p>£10</p>
<p>2</p> <p>Compound interest</p>	<ul style="list-style-type: none"> Interest is paid on previous interest 	<p><u>Year</u></p> <p>Principal</p> <p>Interest @ 10%</p>	<p><u>2007</u></p> <p>£100</p> <p>£10</p>	<p><u>2008</u></p> <p>£110</p> <p>£11</p>	<p><u>2009</u></p> <p>£121</p> <p>£12.1</p>

• For the our purposes we are **only** concerned with compound interest

Using compound interest, we can calculate an investment over several periods of time

Example

- If you deposit £100 into a savings account that gives 10% interest and keep it there for 2 years, you will get £121

Calculation

$$\begin{aligned} & \text{£}100 \times (1 + 0.10)^2 \\ & = \text{£}121 \end{aligned}$$

Since £100 in 2 years will become £121, we can say that the **future value** of £100 in 2 years is £121

If we turn this into a generic formula...

$$FV = C \times (1 + r)^t$$

where C is cash flow,
r is interest rate and
t is time

From this example, it is possible to see the relationship between present and future values

Premise

- If £121 is the future value of £100, then...

...we can say that the **present value** of £121 in two years is £100

- Following this logic, we can say that £121 in two years time is worth as much as £100 today

From this relationship between present and future values, we can reach a very important concept of finance – time value of money

Hence, we can say that **a pound today is worth more than a pound tomorrow**

You can think about this statement this way:

A pound today is worth more than a pound tomorrow because you can invest the pound today and start earning interest immediately

- This is the 1st principle of corporate finance
- Money has different value over time – hence the expression Time Value of Money
- Indeed, the further a £ is into the future, the less it is worth today

The formula for calculating future value is shown earlier. To calculate present value, we simply have to re-arrange the same formula

$$PV = \frac{C}{(1+r)^t}$$

$\frac{1}{(1+r)^t}$ is called the **discount factor**

Using the earlier example

$$\frac{£121}{(1+0.10)^2} = £100$$

A perpetuity refers to a constant stream of payments without end

Aspects

Perpetuity

Description and example

- A perpetuity is a level stream of cash flows which continues forever (e.g. £1,000 a year forever)
- Formula for calculating the PV of a perpetuity is:

$$\text{PV of a perpetuity} = \frac{C_1}{r}$$

Question

- You want to create a scholarship that pays £2,000 a year. How much do you have to donate if the interest rate is 10%?

A growing perpetuity, on the other hand, is a payment stream without end and is expected to rise at the same rate indefinitely

Aspects

Growing Perpetuity

Description and example

- A growing perpetuity is a stream of cash flows that grow at a rate forever
- Formula for calculating the PV of a growing perpetuity is:

$$\text{PV of a growing perpetuity} = \frac{C_1}{r - g}$$

Question

- How much do you have to donate to create the above scholarship if the annual inflation rate is 3% with £2,000 paying out starting in year 1?

It is important to note that the numerator in this and the previous equation is the cash flow in period 1 (C_1) and **not** at date 0 (C_0)

An annuity is a level stream of regular payments that lasts for a fixed number of periods

Aspects

Annuity

Description and example

- An annuity is a stream of constant or level cash flows that occurs at the end of each period for a fixed number of periods (e.g. the £1,000 a year for 5 years)
- Formula for calculating the PV of an annuity is:

$$\text{PV of an annuity} = C \times \left[\frac{1}{r} - \frac{1}{r(1+r)^t} \right]$$

Questions

- A) An asset promises to pay £500 at the end of each of the next 3 years and you want to earn 10% a year on your investment. What is the present value of this asset?
- B) What is the present value of this asset if it is 30 years instead of 3 years?

A growing annuity is a stream of growing cash flows that occur at regular intervals and eventually come to an end

Aspects

Growing Annuity

Description and example

- A growing annuity is a stream of cash flows that occurs at the end of each period. It grows at a constant rate for a fixed number of periods
- The formula for calculating the PV of a growing annuity is:

$$\text{PV of growing annuity} = C \times \frac{1}{r - g} \left[1 - \left(\frac{1 + g}{1 + r} \right)^t \right]$$

Questions

- You have been offered a job at £80,000 a year. You anticipate your salary increasing by 9% a year until your retirement in 40 years. Given the interest rate of 20%, what is the PV of your lifetime salary?

Discounted Cash Flow Techniques (DCF)

While we can calculate the PV for a cash flow in one period, we can calculate the PV for a stream of cash flows in multiple periods

Aspects

Description

Problem

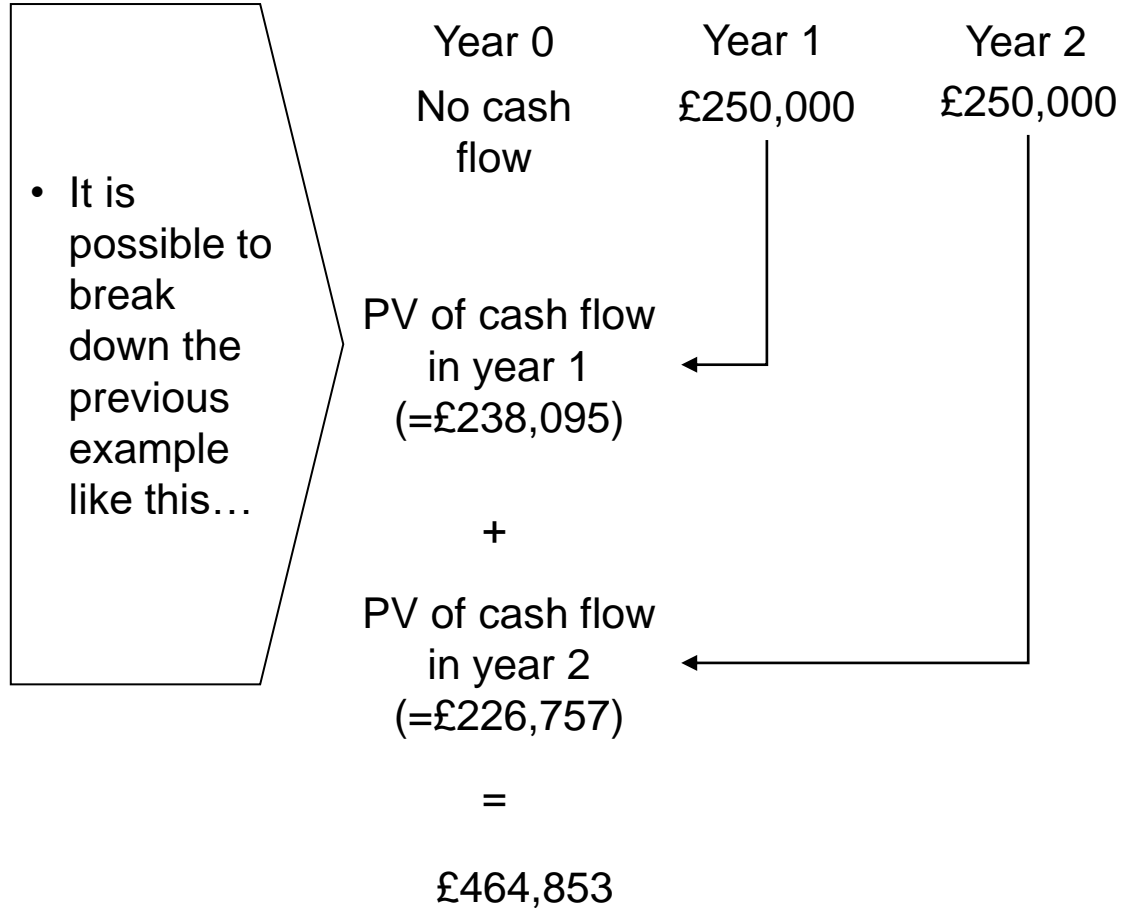
- *Suppose your equipment supplier proposes to you a new machine that will produce £250,000 worth of products next year and another £250,000 in the year that follows. The machine costs £450,000. Is it a good purchase if the discount rate is 5%?*

Solution

$$\begin{aligned} PV &= \frac{£250,000}{(1+0.05)} + \frac{£250,000}{(1+0.05)^2} \\ &= £464,853 \end{aligned}$$

- Since £464,853 is greater than the cost of the machine of £450,000, it is a good purchase

One of the best ways to understand the calculation of the PV of multiple cash flows is to translate it into a diagram



- Formally, the formula is written as:

$$PV = \frac{C_1}{(1+r)} + \frac{C_2}{(1+r)^2}$$

Valuation of Straight Bonds

Since the face value and the price of the bond can be different, the relationship between the two can be described as premium, discount or at par

Aspects	Description
Premium	<ul style="list-style-type: none">• When the bond's price is higher than its face value, the bond is said to sell at a premium
Discount	<ul style="list-style-type: none">• When the bond's price is lower than its face value, the bond is said to sell at a discount
At par	<ul style="list-style-type: none">• When the bond's price and face value are the same, the bond is said to sell at par

But how do I price a bond if I do not have the traded price of the bond?

- I rely on DCF techniques
- I know the cash flows of the bond from the term sheet
- What I need to determine is the rate of interest that I need to use to discount these cashflows
- The Net Present Value of the cash flows arising from the discounting is the price of the bond
- So in any unquoted bond valuation the key is determining the discount rate
- This is where we need the yield curve.

Yield Curve

What is a Yield Curve?

- A yield curve is a line that plots yields (interest rates) of bonds having equal credit quality but differing maturity dates.
- Yield curves plot interest rates of bonds of equal credit and different maturities.

Types of Yield Curves

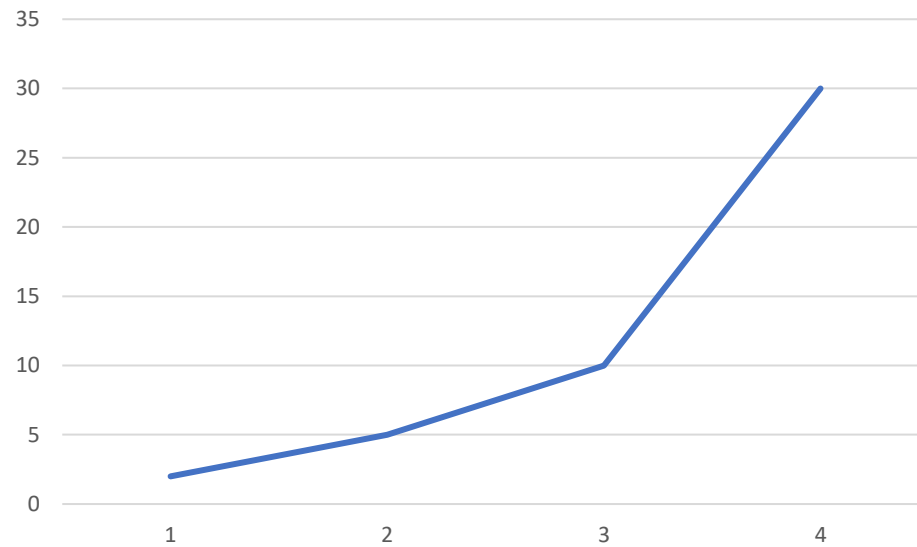
The government liability nominal yield curves are derived from gilt prices and General Collateral (GC) repo rates – Credit Risk - Government

Commercial bank liability curves- based on London interbank offered rates (LIBOR) – Credit Risk – AA or banks.

Yield Curve – Simple Example

Simple Example of an Yield Curve – UK Government Yields

Year	Rate
2	3.75%
5	3.56%
10	3.69%
30	4.09%



Yield Curve – Real Example – UK Government Yields @ 2nd May 2023



Valuation of a Government Bond

Let us consider the following bond:

Issuer – Ethiopia Government Bond

Par Amount – Birr 1,000,000

Coupon – 10% payable annually

Maturity – 3 years

Valuation of a Government Bond (contd.)

Key Variables:

Principal or Nominal Amount – Birr 1,000,000

Interest on the bond – Birr 100,000

Payment Interval – Annual

Risk Profile – Government

Traded - Unquoted

Valuation of a Government Bond (Contd.)

I need the Yield Curve:

Assumed:

1 yr – 8%

2 yr – 9%

3 yr – 10%

Year	Cashflow	Discount Rate	Discount Factor	Present Value
-	-	1	1	-
1	100,000	8%	0.925926	92,592.59
2	100,000	9%	0.841680	84,168.00
3	100,000	10%	0.751315	75,131.48
3	1,000,000	10%	0.751315	751,314.80
			Fair Value	1,003,207

Valuation of a Corporate Bond

Let us consider the following bond:

Issuer – XYZ Company in Ethiopia

Par Amount – Birr 1,000,000

Coupon – 10% payable annually

Maturity – 3 years

Valuation of a Corporate Bond (contd.)

Key Variables:

Principal or Nominal Amount – Birr 1,000,000

Interest on the bond – Birr 100,000

Payment Interval – Annual

Risk Profile – Corporate

Traded - Unquoted

Valuation of a Corporate Bond (Contd.)

I need the Yield Curve:

Assumed:

1 yr – 8%

2 yr – 9%

3 yr – 10%

However this is the Government Yield Curve and Not the corporate yield curve

I need the corporate yield curve

There are number of ways of doing this but the simplest is to add a credit spread for the increased risk and assume that to be constant for now.

Assume the Spread for corporate is 3%.

Valuation of a Corporate Bond (Contd.)

I need the revised Yield Curve:

1 yr – 8% + 3% = 11%

2 yr – 9% + 3% = 12%

3 yr – 10% + 3% = 13%

Year	Cashflow	Discount Rate	Discount Factor	Present Value
-	-	1	1	-
1	100,000	11%	0.900901	90,090.09
2	100,000	12%	0.797194	79,719.39
3	100,000	13%	0.693050	69,305.02
3	1,000,000	13%	0.693050	693,050.16
			Fair Value	932,165

Valuation of a Corporate Bond (Contd.)

I have assumed the spread for corporate is 3%.

In reality how do I find this spread assuming there is no trading in the bond.

We look at comparable companies and then try and estimate the spread.

We look at companies that are 'similar' to the corporate we are trying to evaluate.

JUDGEMENT IS A KEY FACTOR HERE

We will look more at 'comparables' when we come to valuation of unquoted equity instruments.

Valuation of a Corporate Bond (Contd.)

Using Foreign Currency Denominate Debt

The cost of debt of an emerging country investee denominated in the currency of a developed country is 5 per cent.

The expected inflation rates are 3 per cent in the currency of the developed country and 12 per cent in the currency of the emerging country.

An investor estimates the cost of debt of the emerging country investee denominated in the currency of the emerging country as follows:

$$K_d = (1.05) \times (1.12)/(1.03) - 1 = 14.17\%$$

Yield Curve – Ethiopia

22nd February				
	WA Yield	Accepted	Offered	Take Up
28 days	8.388%	1,905	2,910	65.46%
91 days	8.774%	12,200	17,300	70.52%
182 days	8.771%	17,100	20,200	84.65%
364 days	8.390%	17,551	26,870	65.32%

Yield Curve – Ethiopia

8th March				
	WA Yield	Accepted	Offered	Take Up
28 days	8.129%	410	1,860	22.04%
91 days	10.306%	2,400	17,400	13.79%
182 days	8.347%	12,040	22,840	52.71%
364 days	8.219%	8,450	15,690	53.86%

Yield Curve – Ethiopia

22nd March				
	WA Yield	Accepted	Offered	Take Up
28 days	8.129%	410	1,860	22.04%
91 days	10.306%	2,400	17,400	13.79%
182 days	8.347%	12,040	22,840	52.71%
364 days	8.219%	8,450	15,690	53.86%

Spot Lending Rates – Ethiopia (2023)

Term	Credit Grade						Coupon Bonds SOEs and Regional Finance
	Export and Other FCY Related	Non-Export Commercial Loans	Micro Finance Institution Loans	Condominium Loans	Public Sector - SOEs and Government	Capital Goods	
<= 3months - Advances on Import Bills	-	17.00%	-	-	-	-	-
<= 1 Year	8.50%	14.50%	11.50%	-	14.00%	11.50%	-
1-5 Years	10.00%	15.50%	12.00%	-	12.00%	12.00%	-
>= 5 Years	11.50%	16.50%	12.50%	12.00%	12.50%	12.50%	10.50%

Valuation of Equity Instruments

Approaches to Valuing Unquoted Equity Instruments

Valuation approaches and valuation techniques	
Valuation approaches	Valuation techniques
Market approach	<ul style="list-style-type: none"> ● Transaction price paid for an identical or a similar instrument of an investee <ul style="list-style-type: none"> ● Comparable company valuation multiples
Income approach	<ul style="list-style-type: none"> ● Discounted cash flow (DCF) method <ul style="list-style-type: none"> ● Dividend discount model ● Constant-growth DDM <ul style="list-style-type: none"> ● Capitalisation model
A combination of approaches might be used	<ul style="list-style-type: none"> ● Adjusted net asset method

Approaches to Valuing Unquoted Equity Instruments – Market Approach

The market approach uses prices and other relevant information that have been generated by market transactions that involve identical or comparable assets. A number of techniques are consistent with the market approach. The market approach techniques that are most commonly referred to for valuing unquoted equity instruments are related to the data sources that they use (for example, quoted prices of public companies or prices from merger and acquisition transactions).

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Approaches to Valuing Unquoted Equity Instruments – Market Approach

When an investor has recently made an investment in an instrument that is identical to the unquoted equity instrument being valued, the transaction price (ie an *entry price*) might be a reasonable starting point for measuring the fair value of the unquoted equity instrument at the measurement date.

Transaction price paid for an identical instrument by other investors

In 20X0 Entity C bought ten equity shares of Entity D, a private company, representing ten per cent of the outstanding voting shares of Entity D, for CU1,000. Entity C prepares annual financial statements and is required to measure the fair value of its non-controlling equity interest in Entity D as at 31 December 20X2 (ie the measurement date).

During 20X2, Entity D raised funds by issuing new equity capital (ten shares for CU1,200) to other investors. Entity C concludes that the transaction price of the new equity capital issue for CU1,200 represents fair value at the date those shares were issued.

Both Entity C and the other investors in Entity D have shares with the same rights and conditions. Between the new equity capital issue to other investors and the measurement date, there have been no significant external or internal changes in the environment in which Entity D operates. No other factors of the types mentioned in paragraphs 28 and 29 occurred. As a result, Entity C concludes that CU1,200 is the amount that is most representative of the fair value of its non-controlling equity interest in Entity D at the measurement date.

Approaches to Valuing Unquoted Equity Instruments – Market Approach

Transaction price paid for a similar instrument of an investee

The transaction price paid recently for an investment in an equity instrument of an investee that is similar, but not identical, to an investor's unquoted equity instrument of the same investee, would be a reasonable starting point for estimating the fair value of the unquoted equity instrument.

Examples of such transactions include the issue of new classes of shares to other investors and transactions in such shares between other investors.

An investor prepares annual financial statements and is measuring the fair value of its non-controlling equity interest in Entity E, a private company, as at 31 December 20X0 (ie the measurement date).

Three years ago the investor acquired an *ordinary share* interest in Entity E. Entity E is developing a new manufacturing process and during the reporting period it has raised additional equity capital through the issue of a new class of preferred shares to a venture capital fund that now holds a controlling interest in Entity E. The objective is for Entity E to progress to an initial public offering (IPO) within the next five years. The terms of the preferred shares, including the voting rights, are similar to those of the ordinary shares, except that the preferred shares have a cumulative fixed dividend entitlement for a period of five years and the preferred shares rank ahead of the ordinary shares upon liquidation of Entity E.

The investor follows the process set out below to measure the fair value of the ordinary shares at the measurement date by adjusting the recent transaction price (CU10 per share) for the preferred shares.

CU per share

Transaction price for the preferred shares 10.00

- Adjustment to reflect differences between preferred and ordinary shares (eg adjustment to reflect the priority of the preferred shares upon liquidation).
- The investor has concluded that there is a benefit associated with control. This adjustment relates to the fact that the investor's individual ordinary shares represent a non-controlling interest whereas the preferred shares issued reflect a controlling interest.
- Adjustment for lack of liquidity to reflect the lesser ability of the ordinary shareholder to initiate a sale of Entity E to realise its investment relative to the preferred shareholder
- Adjustment for the cumulative dividend entitlement of the preferred shares. This is calculated as the *present value* of the expected future dividend receipts on the preferred shares, less the present value of any expected dividend receipts on the ordinary shares. The *discount rate* used must be consistent with the uncertainties associated with the relevant dividend streams.

Approaches to Valuing Unquoted Equity Instruments – Market Approach

Factors to Consider:

- a significant change in the performance of the investee compared with budgets, plans or milestones;
- changes in expectation as to whether the investee's technical product milestones will be achieved;
- a significant change in the market for the investee's equity or its products or potential products;
- a significant change in the global economy or the economic environment in which the investee operates;
- a significant change in the performance of comparable entities, or in the valuations implied by the overall market;
- internal matters of the investee such as fraud, commercial disputes, litigation, changes in management or strategy; and
- evidence from external transactions in the investee's equity, either by the investee (such as a fresh issue of equity), or by transfers of equity instruments between third parties.

In addition, an investor must consider the existence of factors such as whether the environment in which the investee operates is dynamic, whether there have been changes in market conditions, or the passage of time itself. Such factors might undermine the appropriateness of using the transaction price as a means of measuring the fair value of unquoted equity instruments at the measurement date.

Approaches to Valuing Unquoted Equity Instruments – Market Approach

Comparable Company Valuation Multiples

Step 1: Identify comparable company peers.

Step 2: Select the performance measure that is most relevant to assessing the value for the investee (ie the performance measure that market participants would use to price the investee). This would typically be by reference to measures of, for example, earnings, book value of equity or revenue. Once the performance measure is selected, derive and analyse possible valuation multiples and select the most appropriate one.

Step 3: Apply the appropriate valuation multiple to the relevant performance measure of the investee to obtain an indicated fair value of the investee's *equity value* or the investee's *enterprise value (EV)*.

Step 4: Make appropriate adjustments (for example, for lack of liquidity) to ensure comparability between the unquoted equity instruments held in the investee and the equity instruments of the comparable company peers.

Approaches to Valuing Unquoted Equity Instruments – Market Approach

Step 1: identify comparable company peers

What am I comparing?

- capacity to generate cash flows,
- the expected growth in those cash flows and
- the uncertainty associated with the timing and amount of those cash flows.

We Proxy the above by looking at similar to the investee in terms of :

- business activities,
- markets served,
- size and
- geographical region.

Preferrable to have a number of company peers

Approaches to Valuing Unquoted Equity Instruments – Market Approach

Step 2: select the investee's most relevant performance measure and the most appropriate valuation multiple

A relevant performance measure

The selection of an investee's most relevant performance measure will depend on the business of the investee, its asset base and its capital structure relative to the comparable company peers. In other words, focusing first on identifying the performance measure that is most relevant to assessing the value of the investee can help an investor to select the most appropriate valuation multiple.

Commonly used valuation multiples		
Performance measure	Valuation basis	Valuation multiple
EBITDA	Enterprise value	EV/EBITDA
<p>An EBITDA multiple removes interest, tax, depreciation of tangible assets and amortisation of intangible assets from the earnings stream. Depending on the circumstances, an investor might consider EBITDA multiples to be more appropriate for valuing entities whose comparable company peers have different capital structures, different levels of asset intensity and different methods of depreciating and amortising tangible and intangible assets. For example, this multiple might be useful if there are entities within the group of comparable company peers that predominantly lease their operating assets (ie less capital-intensive entities) while others own them (ie more capital-intensive entities). However, an investor must exercise judgement and consider all facts and circumstances when using this valuation multiple, because it might tend to favour more highly capital-intensive entities.</p>		
EBIT	Enterprise value	EV/EBIT
<p>An EBIT multiple recognises that depreciation and amortisation reflect economic expenses associated with the use of an entity's assets that will ultimately need to be replaced, even though they are non-cash charges. However, this multiple might be distorted by any differences in the accounting policies for depreciation and amortisation between an investee and its comparable company peers. EBIT might also be very different between entities growing organically and entities growing by acquisition due to the amortisation of intangibles recognised in business combinations.</p>		
EBITA	Enterprise value	EV/EBITA
<p>An EBITA multiple is sometimes used as an alternative to the EBIT multiple when the level of intangible assets and associated amortisation is significantly different between an investee and its comparable company peers.</p>		
Earnings	Equity value	P/E (ie net income)
<p>A price/earnings multiple is appropriate when the entities have similar financing and tax structures and levels of borrowing. In practice, it is uncommon for entities to have similar financing structures. The price/earnings multiples of entities with different financing structures might be very different. This multiple is commonly used for entities in the finance sector (banking, insurance and leasing) where interest expense or interest income is a relevant operating expense or income line. See Example 6.</p>		

Performance measure	Valuation basis	Valuation multiple
Book value	Equity value	P/B
<p>A price/book value multiple is considered a useful indicator for comparing the book value of an entity's equity with its market value (ie quoted price). Aside from being a key value indicator in some industries such as hotels or financial institutions, this multiple can also be a tool for identifying potentially undervalued or overvalued companies. This multiple is not suitable for asset-light industries, such as technology companies, because the carrying amounts of the assets in the statement of financial position are usually low compared to their market values as a result of such entities often having unrecognised intangible assets.</p> <p>A variation of this multiple is the <i>price/tangible book value</i>, which is sometimes used in the valuation of financial institutions.</p>		
Revenue	Enterprise value	EV/Revenue
<p>A revenue multiple is most useful if an entity's earnings are highly correlated with its revenue, because capitalising revenues can be considered a shortcut to capitalisation of earnings (ie this multiple is useful if a certain level of revenues is able to generate a specific earnings level in a given type of business). Multiples of revenue are applied most frequently to start-up companies, service businesses (for example, advertising companies, professional practices, insurance agencies etc) and to entities that are loss-making at an EBITDA level or that have profitability levels that are very similar to those of comparable company peers. Multiples of revenue are typically only applied as a cross-check.</p>		

Approaches to Valuing Unquoted Equity Instruments – Market Approach - Adjusting Comparables

An investor has concluded that CU250 million of the CU1,000 million cash balance of its investee, Entity F, a private company, is not being held by Entity F for operating purposes but it is held in excess at the end of the reporting period, which coincided with the measurement date. The investor estimated that the interest income generated by the CU250 million excess cash was CU10 million at the measurement date. The investor additionally concluded that having excess cash is a recurrent matter in the entities within the group of comparable public company peers of Entity F and, consequently, the investor adjusts the valuation multiples of each of those entities. For the purposes of deriving the indicated fair value of Entity F's equity, the investor selected the P/E multiple. The investor adjusted each of the comparable public company peers' P/E multiples and Entity F's net earnings as shown below:

$$(A) \text{ Adjusted P/E ratio} = (\text{Market capitalisation} - \text{Excess cash}) / \text{Net earnings} - \text{Interest income from excess cash}$$

$$(B) \text{ Entity F's net earnings (adjusted)} = \text{Net earnings} - \text{Interest income from excess cash} = \text{Net earnings} - \text{CU10}$$

The investor subsequently derived the indicated fair value of Entity F's equity (C) by applying an average of the comparable public company peers' P/E adjusted multiples to the Entity F's adjusted performance measure as follows.

$$(C) = (A) \times (B) + \text{Excess cash} = (A) \times (B) + \text{CU250}$$

- Usually, it is recommended to have a portfolio of Peer Companies and then use the appropriate average or median ratio as the multiple.
- An average or median valuation multiple is selected if the investee has characteristics that are similar to the average of the comparable company peers.
- If the investee experiences superior performance relative to the comparable company group, then use a multiple at the upper end of the range of comparable company multiples.
- Reverse, a multiple at the lower end of the comparable multiple range.

Approaches to Valuing Unquoted Equity Instruments – Market Approach - Adjusting Comparables

Selecting comparable company valuation multiples

An investor is measuring the fair value of its non-controlling equity interest in Entity G, a private company. Entity G is a commercial bank operating in the financial services industry. The investor has selected five comparable public company peers: Entities A1, A2, A3, A4 and A5. These entities have the same risk, growth and cash flow-generating potential profiles as Entity G. Because financial services companies such as Entity G use their equity capital bases to generate earnings, the investor concludes that P/B is an appropriate valuation multiple to measure the fair value of Entity G.

When comparing Entity G with Entities A1–A5, the investor observes that, like Entity G, Entities A1 and A2 do not have material intangible assets in their statements of financial position. However, Entities A3–A5 do have material intangible assets arising from acquisitions. The investor notes that the presence of recognised intangible assets does not, by itself, indicate different growth strategies in the future and concludes that this would not mean that Entities A3–A5 could not be used as comparable company peers. However, the recognition of intangible assets seems to be the main distinguishing factor between the comparable public company peers.

The P/B and P/Tangible book value (P/TB) multiples are as follows:

	A1	A2	A3	A4	A5	Average	Median
P/B	1.5	1.4	1.1	1.3	1.3	1.3	1.3
P/TB	1.5	1.4	1.6	1.5	1.5	1.5	1.5

Because Entities A3–A5 have material intangible assets in their statements of financial position, their P/B ratios are relatively lower than for Entities A1 and A2. Consequently, the investor must determine whether it is necessary to adjust the book values of Entities A3–A5 to exclude the effects of their acquisitions by using the P/Tangible book value multiple (ie book values excluding acquired and internally generated intangible assets).

The investor concludes that P/Tangible book value is a more appropriate valuation multiple for valuing Entity G because:

- some of the P/B multiples have been derived from comparable public company peers that, unlike Entity G, have recognised intangible assets in their statements of financial position. Consequently, applying those companies' multiples to Entity G's book value, which does not have intangible assets arising from acquisitions or that are internally generated, might not be appropriate; and
- by eliminating the intangible assets from the valuation of Entities A3–A5, the resulting multiples of these three entities are within the range of the multiples for Entities A1 and A2, giving better support for the valuation of Entity G.

In determining where within the range to select the multiple, the investor observes that the average and median multiples are identical. The investor selects the average P/Tangible book value multiple because it believes that Entity G has characteristics (for example, risk, growth and cash flow-generating potential profiles) that are similar to the average of the comparable public company peers. The investor might have considered the median multiple instead of the average multiple if there were outliers among the comparable public company peers.

Approaches to Valuing Unquoted Equity Instruments – Income Approach

Free cash flow to equity (FCFE) – Equity Value, or

FCFE are the cash flows available to all equity capital providers. In other words, FCFE are cash flows from assets, after debt payments and after making reinvestments that are needed for future growth.

Enterprise value using *free cash flow to firm (FCFF)*

FCFF are the cash flows available to all capital providers (equity and debt holders). In other words, FCFF are cash flows from assets, before any debt payments but after making reinvestments that are needed for future growth.

Subtract the fair value of the investee's debt net of cash.

Both approaches result in discounted expected cash flows, the relevant cash flows and discount rates are different.

Approaches to Valuing Unquoted Equity Instruments – Income Approach

CAPM

$$R_s = R_f + \beta (R_m - R_f)$$

R_s = Expected Return/ Return required on the investment

R_f = Risk-Free Return/ Return that can be earned on a risk-free investment

R_m = Average return on all securities

β = The securities beta (systematic) risk factor.

Approaches to Valuing Unquoted Equity Instruments – Income Approach

β measures the sensitivity of the excess expected return on an individual share relative to that of the market.

Derived for individual public companies by using a regression analysis of an entity's share price returns against the returns of an appropriate market index (ie regression analysis capture historical β relationships).

Using historical β s assumes that the future will be sufficiently similar to the past to justify estimating β s using historical data.

When estimating the β of a private company, the investor will need to derive a proxy β that is based on comparable public company peers' β s.

Approaches to Valuing Unquoted Equity Instruments – Income Approach

Historical required equity premiums are computed for advanced markets.

Build required equity premiums for emerging markets from required equity premiums in developed markets, taking into account country risk spreads.

Emerging Economy $R_{ee} =$ Developed Country $R_{de} +$ Country Equity Risk Premium R_p

Usually available for valuation databases or valuation organisations.

Approaches to Valuing Unquoted Equity Instruments – Income Approach

Computing the WACC (Weighted Average Cost of Capital)

For Entity Q using CAPM the cost of equity capital estimated to be 14.35 per cent.

Market participants' expectations of Entity Q's effective income tax rate are 25 per cent.

Entity Q's actual capital structure is 30 per cent debt capital and 70 per cent equity capital.

Cost of debt capital (k_d)

The cost of debt capital was estimated by considering the long-term rates incurred at the measurement date for recent borrowings that are issued by entities with creditworthiness that is similar to that of Entity Q. On the basis of this data, the cost of debt was estimated at 6 per cent.

Including these parameters in the WACC formula, results in:

$$\text{WACC} = D/(D + E) \times (1 - t) \times k_d + E/(D + E) \times k_e$$

$$\text{WACC} = 0.30 \times (1 - 0.25) \times 6\% + 0.70 \times 14.35\% = 11.40\%$$

Approaches to Valuing Unquoted Equity Instruments – Adjusted Net Asset Method

The adjusted net asset method involves deriving the fair value of an investee's equity instruments by reference to the fair value of its assets and liabilities (recognised and unrecognised).

Usually not considered appropriate other than in limited circumstances : Where value is mainly derived from the holding of assets rather than from deploying those assets as part of a broader business such as property-holding companies and investment entities or in the very early stages of its development (for example, an investee that has virtually no financial history, no developed product or a small amount of invested cash).

Approaches to Valuing Unquoted Equity Instruments – Adjusted Net Asset Method

The adjusted net asset method requires an investor to measure the fair value of the individual assets and liabilities recognised in an investee's statement of financial position as well as the fair value of any unrecognised assets and liabilities at the measurement date. The resulting fair values of the recognised and unrecognised assets and liabilities should therefore represent the fair value of the investee's equity.

The assets and liabilities that are most commonly subject to adjustments are as follows (the list is not exhaustive):

- intangible assets (recognised and unrecognised);
- property, plant and equipment (for example, land and buildings);
- receivables, intercompany balances;
- financial assets not measured at fair value; and
- unrecognised contingent liabilities.

Approaches to Valuing Unquoted Equity Instruments – Control Premiums

Control Premiums – Do they exist?

Historically, the concept and/or measurement of the control premium has proven to be vexing and contentious to valuation specialists. Those of a more empirical disposition point to the range of premiums observed in closed transactions as a starting point for analysis, while others observe that the much larger population of public companies that are not acquired each year supports the theory that control premiums for most publicly traded companies either do not exist or are too small to justify the costs and uncertainties associated with an attempted acquisition.

(American Appraisal Foundation)

Approaches to Valuing Unquoted Equity Instruments – Control Premiums

Example 1

First, consider a business enterprise that is not publicly traded. The company's founder owns 70 percent of the outstanding shares and continues to exercise control over the enterprise. The remaining 30 percent of the outstanding shares are held by a number of investors, none of whom own more than 5 percent. Despite the availability of numerous investment opportunities with indicated positive net present values, the founder demonstrates little interest in growth and is averse to the use of debt financing. The price per share paid by market participants for a controlling interest is likely to exceed that paid for a noncontrolling (albeit hypothetically marketable) interest reflecting current stewardship of the company.

It is possible that in this case control premium exists and its magnitude likely will be influenced by the perceived ability of market participants to exercise the prerogatives of control to increase the cash flows and/or reduce the discount rate applicable to the subject interest. Available strategies include making investments to spur revenue and earnings growth (thereby potentially increasing cash flow), and employing a more typical financing mix for the industry (thereby reducing the weighted average cost of capital). Some market participants may also expect cost savings from eliminating redundancies. For privately held companies without near term liquidity expectations—much more so than publicly traded companies—there might also be cost savings from adjusting compensation and other costs to market rates.

Approaches to Valuing Unquoted Equity Instruments – Control Premiums

Example 2

Consider a business enterprise that is publicly traded. The business is generally believed to be well managed, reporting operating margins in line with industry peers. The company has created and marketed a unique technology and has generated significant historical revenue growth. In this case, opportunities to generate economic benefits by exercising the prerogatives of control are more limited. However, market participants may own complementary technologies that, if marketed alongside that of the subject entity, would increase revenue growth.

Alternatively, market participants may have existing distribution networks capable of handling the subject entity's products that would enhance profit margins. Similar to the other example, market participants' perceptions of how prerogatives of control translate into value influence the investment decision.