

Valuation Background Paper

*Wealth Tax Commission*

# Valuation of businesses and intellectual property assets

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# VALUATION OF BUSINESSES AND INTELLECTUAL PROPERTY ASSETS

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## Abstract

There are well established techniques for valuing businesses and intangible assets. However, all valuation is predicated on forecasts of future returns and, as such, are subject to uncertainty. Different valuers can form very different conclusions as to the value of a particular asset – this may simply reflect a different view of the future. As different expert valuers can produce ‘correct’ valuations with large ranges, this creates challenges for any process that relies on an individual point estimate, such as values for fiscal purposes.

# 1. Valuation concepts

## The concept of 'value'

1.1 The starting question in understanding any valuation exercise, is to consider what is meant by the word 'value'. It can be defined as:

*the desirability of a thing, often in respect of some property such as usefulness or exchangeability.<sup>1</sup>*

1.2 The 'usefulness' concept relates closely to a consideration of the economic benefits that an owner or investor is able to extract from the asset; this is generally taken to mean the future economic returns that the asset will generate over time.

1.3 The 'exchangeability' concept is more transactional. It relates to the idea that instead of owning an asset in order to enjoy future economic benefits, an investor is able to sell the rights of ownership to another party in order to crystallise all the future benefits in an immediate single lump sum payment.

1.4 An alternative for an investor to purchasing a particular business would be to purchase separately the individual assets (both tangible and intangible) that make up the business (to the extent this is possible); for individual assets an alternative to purchasing them may be (re)creating them.

1.5 These different ways of considering value are mirrored in the three primary methods of valuation:

- (1) The income approach: how the asset is/can be used;
- (2) The market approach: what the asset can be sold for;
- (3) The asset approach: how much it would cost to replace the asset.

1.6 These different ways of valuing assets are encapsulated in accounting standards that define how assets should be treated in financial statements. This is shown in the diagram below (Fig. 1).

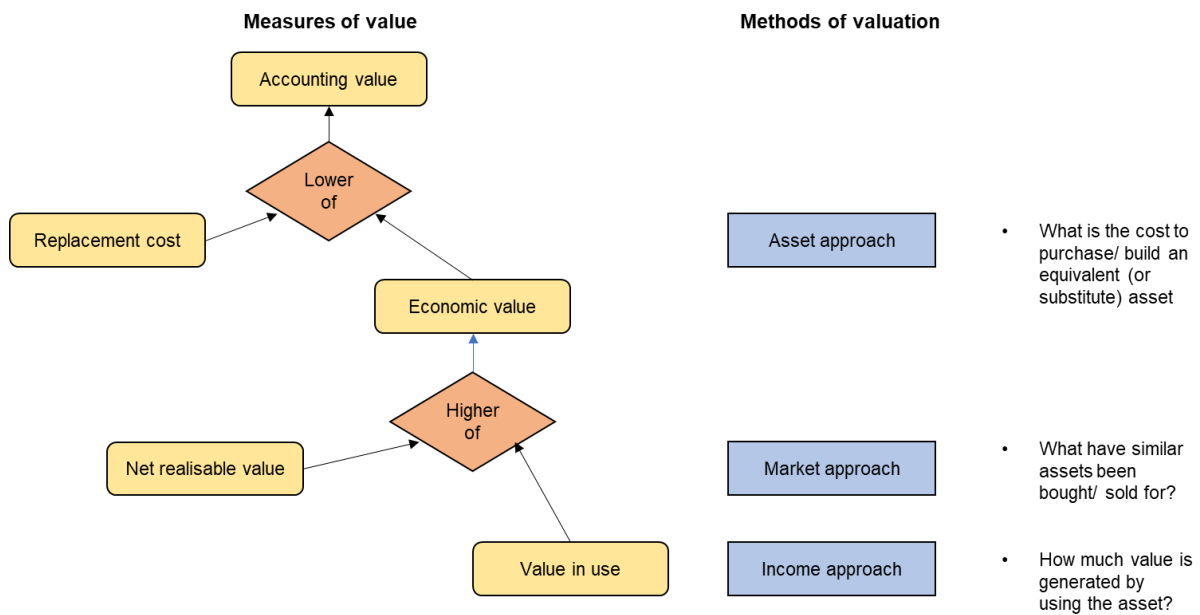
1.7 The most appropriate method for valuing a particular asset will depend on the circumstances of the valuation. In general, it is always better to use more than one method of valuation in order to triangulate and rationalise the results from the different approaches.

## The concept of risk

1.8 Regardless of which method of valuation is used, value is forward-looking and based on expectations about the future. History is irrelevant to value except to the extent that it informs a valuer about what is likely to happen in the future.

1.9 The future is intrinsically uncertain and therefore an investor's (or valuer's) expectations about the future may turn out to be incorrect: expectations, or forecasts, of the future can therefore be described as 'risky'. The more uncertainty surrounding the likely future for the business (or asset), the more risk attaching to that investment.

**FIGURE 1: RELATIONSHIP BETWEEN VALUE MEASURES AND METHODS**



1.10 A guiding valuation principle is that the value of an asset is a function of the expected future benefits and its level of risk. If two potential investments have identical expected future benefits, but one of the investments bears a higher level of risk, then the asset that bears more risk will be worth less than the asset with more certain expectations.

## Subjective nature of valuation

1.11 The forward-looking nature of any valuation means that, when valuing any business, the inherent uncertainty of future cash flows means that the valuation is subjective and there will never be a 'right' answer.

1.12 The starting point for considering forecasts of future performance is often current performance. A valuer needs to then consider how the returns generated by the business are likely to change in the future and what capital investment is required to fund any future growth.

1.13 Different valuers may have different expectations concerning the future prospects of a particular investment and therefore will produce different estimates of the value of the investment depending on their perspective. In the context of disputes as to the value of particular assets, the values produced by different experts can differ by more than 100% particularly where questions as to minority discount or marketability are factors in the valuation.

1.14 It is also possible that differences in value are more than just differences in expectations. Certain owners of a particular asset may be able to realise greater value from that asset than other owners; for example, if the future benefits to them from ownership would be higher than to other parties due to particular skills, combinations of assets or whatever synergistic benefits that owner is able to bring to bear. The question of 'value to whom?' is a critical part of any valuation process.

1.15 There will, therefore, always be a range of values that a valuer could produce depending on the particular assumptions made about the future prospects of the business. This



is why it is important to understand and rationalise the output of any valuation exercise and, where possible, to use more than one valuation approach. The existence of a range of 'reasonable' values obviously has implications from a fiscal perspective, where a single point estimate will be required to determine the level of tax payable. From that perspective, is any point within the range acceptable, or the mid-point, or some other method of determination?

## The basis of valuation

1.16 The basis of value under which any given valuation is to be performed can be a key determinant of the valuation methods and assumptions applied by a valuer. Different bases can have a material effect on how certain valuation principles and concepts are applied and determining the appropriate basis for the valuation is, therefore, a critical element of the valuation process.

1.17 Perhaps the most common basis of valuation, outside of an actual transaction, is 'Market Value', which is also referred to as 'Fair Market Value' ('FMV').

1.18 FMV is typically defined with reference to an assumed transaction between a willing buyer and willing seller. Four definitions of FMV are set out below:

- (1) The International Valuation Standards ('the IVS') set out Market Value as one of six bases of value. I consider Market Value to be equivalent to FMV and it is defined by the IVS as *'the estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction, after proper marketing and where the parties had each acted knowledgeably, prudently and without compulsion'*.
- (2) The definition of 'Fair Value' in accounting standard IFRS 13 is consistent with what I consider to be FMV. This is defined as *'the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date'*.
- (3) The OECD defines FMV as *'the price a willing buyer would pay a willing seller in a transaction on the open market'*.
- (4) The United States Treasury Regulation §20.2031-1 defines FMV as *'the price at which the property would change hands between a willing buyer and a willing seller, neither being under any compulsion to buy or to sell and both having reasonable knowledge of relevant facts'*.

1.19 Other bases of valuation (though less common than FMV) include:

- 'Investment Value', which is the value to a particular investor (often the current owner) and generally estimates the value of the underlying future cash flows that a particular owner would be able to generate. As such, it does not assume a transaction and so any costs or discounts associated with an assumed transaction are not generally relevant;
- 'Fair Value', which is most commonly encountered in minority shareholder disputes. Fair Value can be particularly challenging for valuers as the definition is a legal construct and can vary from matter to matter (and also between different jurisdictions). The definition of Fair Value has been considered recently by the Privy Council in the matter of *Shanda Games v Maso Capital Investments Ltd* and others (Privy Council Appeals No 0062 and 0058 of 2018), which shows that uncertainty remains as to the application of this method in particular circumstances.

1.20 FMV is the closest basis of value to Market Value in a fiscal context and so is the basis that is discussed throughout the remainder of this paper.

## Implications of the FMV basis of valuation

1.21 The FMV basis is predicated on a hypothetical transaction involving a hypothetical buyer and a hypothetical seller. The assumed characteristics of the hypothetical buyer and the hypothetical seller, and the circumstances in which they transact can have a significant impact on the resulting valuation.

1.22 While market value refers to the value in a transaction between hypothetical parties (rather than the parties that actually participated in the transactions) this should take into account the likely identity of the buyers and sellers for the specific asset in question. The value of an asset to one buyer can differ from that to another buyer; similarly, the value a seller gives up when it sells an asset can differ from seller to seller.

1.23 The appropriate consideration of the characteristics of the buyer and seller can also determine the most appropriate method of valuation, as well as the value of the asset. For example, in *Iliffe News and Media Ltd, Herts and Essex Newspapers Ltd, Staffordshire Newspapers Ltd, Cambridge Newspapers Ltd and LSN Media Ltd vs HMRC*<sup>2</sup>, the Tribunal found that the most likely hypothetical purchaser of a number of trade marks relating to local newspapers were the existing publishers of the newspapers and, on that basis, it was unlikely that they would be prepared to pay more than the cost of rebranding the publications. These values were significantly less than the values produced using other valuation methods.

1.24 Another important factor in relation to the characteristics of the buyer and seller is what that means in terms of the information and skills available to these parties. For example, would they only have access to publicly available information, which may be the case when looking at purchasers of small parcels of shares in a company, or whether one can assume access to management, or 'insider' information, which may be the case when purchasing a business as a whole. Again, this can have a significant impact on value. In the case of *Patel, Venkataraman, Foster, Freeman and Jakeway vs HMRC*<sup>3</sup> it was held that the purchasers in the relevant share transactions would be sophisticated buyers and so would have been able to determine the extent to which the software at the core of the valuation had been developed, which led to a conclusion that the value of the shares was significantly lower than would otherwise have been the case.

1.25 Any forecasts of the future prospects of the business should be grounded in economic reality. Asset values themselves are also subject to market economics:

- In a perfectly competitive market, where assets are homogeneous and there are numerous buyers and sellers with perfect information, asset values will always represent the 'theoretical value'. This is the type of value represented by listed share prices (subject to lack of perfect information in these markets);
- Where the market for an asset is not perfect, the value of an asset will depend on the characteristics of the asset and the potential buyers and sellers. For example, limited buyers and numerous sellers would tend to reduce the value of an asset, whilst limited sellers and numerous buyers would generally increase the value of an asset.

## The valuation date

1.26 Value is determined at a particular point in time and should reflect both the economic conditions and expected future performance of the business or asset at that point in time. Value can therefore change as circumstances change.

1.27 This can be particularly significant if events occur that have a significant positive impact (such as an oil company discovering new reserves, or a pharmaceutical company passing a regulatory trial), or a significant negative effect (such as discovery of underlying faults for an airline manufacturer, or a technology company being declared illegal in a major territory). In fact, for start-up companies and companies with significant IP assets, value is likely to change dramatically over time, with the rise or fall in the outlook of those new products or services (whether due to the success / failure of the product/service itself or the emergence of substitute products or services). An example is the dotcom bubble of the late 1990s during which the value of many internet businesses soared based on unrealistic expectations only to vanish just as quickly when market expectations changed. A more recent example is the \$50 billion fall in the value of Tesla following certain comments by its CEO, Elon Musk.<sup>4</sup>

1.28 The potential for significant changes in asset values has important implications for certain assets from a wealth tax perspective because tax may have been levied on potentially valuable assets that turn out to be of limited value. This would appear to create a barrier to innovation which in itself has public policy implications.

1.29 The valuation date also determines what information would have been available to a valuer at the valuation date. It is important that information that would not have been available to a buyer or seller is not used in determining value. Whilst that may not have such a significant impact as some of the events discussed above, it means that any management accounts, or other reports, relied on in the valuation should only reflect information that would have been known at the valuation date; this is likely to mean a delay of at least a month in terms of accounting data that could reasonably have been produced at the valuation date.



## 2. Methods of valuation

2.1 Whilst there are a range of valuation methods, the value of an asset is (or ought to be) independent of the method by which it is calculated. If different methods result in different values, it indicates that some of the underlying assumptions may be inappropriate and need to be reviewed.

2.2 It may be that particular methods are predicated on a different set of assumptions, such as an income based approach being used to calculate the value of an asset to potential acquirers, but the cost approach forming a cap on the price that would be paid if recreation is a viable alternative.

2.3 It is therefore better, where possible, to apply different valuation methods, to reduce the chance the valuer forms a judgement based on incomplete information. In other words, a valuation based on a number of complimentary valuation methods will help to add rigour to the overall valuation conclusion of the appraiser.

2.4 There are three primary approaches for estimating the value of an asset:

- (1) *The market approach:* methods which rely on benchmarks of value for similar assets that have been bought or sold in the past, or have clearly established market prices;
- (2) *The income approach:* methods which are based on the underlying future returns that an asset generates;
- (3) *The asset approach:* methods which are based on the net assets of the company being valued, with reference to the cost of replacing (or proceeds of selling) the net assets of the company being valued.

2.5 When estimating the value of an asset, a valuer will often use a combination of the above approaches to reinforce their overall valuation conclusion.

### The market approach

2.6 This method relies on market-based benchmarks of value in order to calculate the value of a particular asset or business. For some assets, such as shares in listed companies, or private companies where there is a history of share transactions, or where there are transactions in similar, 'comparable', companies, such benchmarks of value are often readily available.

2.7 However, as assets become more differentiated, such as is the case for many technology or IP-based companies, it becomes more difficult to obtain strong comparable reference points to use as benchmarks.

2.8 In such cases, it can be necessary to rely on more remote comparables. More distant comparators, however, typically require more adjustment to take account of relevant differences in economic circumstances. The more distant these comparables become in terms of their key characteristics (for example, stage of development, growth prospects, stage in the business cycle) the more adjustment they require and the less reliable they become as comparables.

2.9 As discussed earlier, the two biggest factors in determining value are the future expected returns and the risk of those future returns. A market-based valuation must consider the relative level of growth in expected returns and the relative risk associated with those future returns when making adjustments in comparable reference points.

## The income approach

2.10 Under the income approach, the value of an asset is determined by reference to the net present value of cash flows that the asset is expected to generate. All methods under the income approach are effectively based on discounting future cash flows to their present value at a rate reflecting the time value of money and risks attached to those cash flows. This is known as the discounted cash flow (DCF) method.

2.11 One of the potential disadvantages of utilising the income approach is the requirement to forecast future returns; where forecast cash flows are unreliable, or are based on uncertain assumptions, the reliability of the valuation is likely to be reduced. Utilising an income approach in the following circumstances may not be appropriate, as the inputs employed might not be sufficiently robust to provide a meaningful assessment of economic benefits, or value:

- There is significant uncertainty regarding the quantification and/or timing of forecast cash flows related to the business / asset;
- There is imperfect information (or no data) related to the subject asset and/or industry;
- The business / asset has not begun generating income (and/or there is no history of generating income directly from the business / asset), although it is projected to do so.

## The asset approach

2.12 As with the income and market approach, the asset approach is based on the principle that an asset's value is a function of the future returns it generates. It is applicable where the net assets of a company are considered to be key drivers of value creation.

2.13 Common valuation reference points under this approach are:

- Historical cost: the accounting measure for most tangible assets, which is often not a useful reference point, particularly when a significant amount of time has elapsed since assets were first recorded at historical cost. This method will usually undervalue the business or asset due to the historical cost convention and the absence of intangible asset values in most balance sheets;
- Replacement cost: if a company had to replace all of its productive assets/earnings capacity, how much it would cost;
- Disposal value: if a company was selling all of its assets, what it would receive as consideration for those assets. This is not always relevant, particularly for a going concern, as selling assets is not always the best way to realise their value and it may be difficult to assume transactions for assets without assuming liquidation.

2.14 The asset approach is most commonly used for investment companies (meaning companies who principally invest in other assets, such as commercial property, shares in other companies, both listed and private, or in debt securities and loans), whose asset values are regularly updated to reflect actual market values, or for natural resource businesses like mining companies. It can also be used for early stage technology companies or individual assets, where the cost of creating an alternative asset can be estimated more easily than for a long established trademark or other form of intangible asset with longevity.

## 3. Application of valuation methods to businesses and shares

3.1 The application of the standard methods of valuation to individual businesses or shares is well understood, although for reasons already discussed previously valuers can arrive at significantly different valuers for a particular asset.

### Application of the market approach to the valuation of businesses and shares

3.2 For a quoted company the easiest, and frequently the most reliable, valuation method is to use the quoted share price. The quoted share price is often considered to be a good estimate of actual value, however there are times when it might not provide a reliable guide.

3.3 Although individual market participants may have different opinions on the actual value for a company, the market price for a traded share is the consensus of a range of opinions; this average value, based on the total population of market participants, is unlikely to have a bias either up or down in value. For the consensus estimate of a share price to properly reflect the value, the market should have the following four characteristics:

- (1) The quoted share price should be determined by transactions between willing buyers and sellers;
- (2) The price should appropriately reflect all the information that is publicly available and should respond quickly to new information becoming available that affects the value of the business;
- (3) There should be liquidity in the shares, provided by market participants who have a range of estimates for the price;
- (4) The transaction should be at arm's length, such that there is no relationship between the buyers and sellers leading to a distorted price.

3.4 When these conditions are met, the market for the shares can be described as 'efficient'<sup>5</sup> and empirical research suggests that the share price is likely to be a reliable guide to the market value of the shares. The analysis as to whether the shares for a particular company are 'efficient' is a hotly contested component of securities litigation in the US, and more recently in litigation under Section 238 of the Cayman Islands Companies Law.

3.5 In the case of an unquoted business (or where the listed share price is deemed unreliable), a market-based valuation is generally performed by identifying a set of 'comparable' companies to the company being valued. For a meaningful comparison, it is necessary to select companies that are comparable to the assessed company in terms of growth prospects and the risks associated with generating future cash flows. For that reason, it is typical to select comparable companies which operate within the same industry and geographical markets as the company being valued.

3.6 From these companies, a number of benchmarks are established that can be used to value the business, based on actual or forecast results for a single period. The main benchmarks used are earnings multiples, which are based on the values and results of comparable companies. The most commonly used ratio is the Market Capitalisation / Profit After Tax (PAT), which is also known as the Price to Earnings (P/E) ratio, but other ratios such as an Enterprise Value / Earnings Before Interest and Tax (EBIT) ratio are also used.

3.7 The advantage of using a market-based method is that, because it looks at what a large number of investors have paid for similar assets, it can provide a more 'grounded' valuation than a DCF based method, which is heavily dependent on the reliability of the forecasts being used.

3.8 The biggest problem with a market-based valuation is adjusting the benchmark multiples to reflect the different circumstances of the peer group companies and the entity being valued. Two of the key criteria relate to the relative risk and growth profiles of the businesses, but a valuer must also consider factors such as whether the company being valued is a private company and therefore is a less liquid asset than quoted company shares being used as a benchmark.

3.9 Adjustment may also be required if the asset being valued is the whole of the business, or a controlling stake in a business, as capitalisation multiples derived from listed companies will incorporate a discount to reflect their minority status. The size of this discount will depend on the jurisdiction in which the listed shares are quoted, and will be small in territories with strong minority shareholder protection, but more significant and material in jurisdictions with less shareholder protection.

## Application of the income approach to the valuation of businesses and shares

3.10 To calculate the value of a business (or shares in a business) using DCF analysis, it is necessary to calculate the present value of future cash flows. This takes into account the time value of money, e.g. receiving £100 in the future is worth less than receiving £100 today. The difference in value between these two payments depends on the uncertainty, or risk, associated with the future payment and any risk-free return that could be obtained, such as from investing £100 into government backed bonds and receiving interest.

3.11 This relationship can be represented using the formula:

$$V_0 = \frac{CF_1}{1+r}$$

Where  $V_0$  = value;  $CF_1$  = cash flow in period one; and  $r$  = discount rate in period one.

3.12 In the above equation, the discount rate takes into account both the risk-free return and the uncertainty associated with the cash flow.

3.13 Most assets and businesses have future cash flows derived from more than one future payment. In these cases, the total present value of multiple annual future cash flows can be calculated using the following formula:

$$V_0 = \frac{CF_1}{1+r} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{CF_4}{(1+r)^4} + \dots + \frac{CF_n}{(1+r)^n}$$

3.14 The use of this formula is limited by the difficulty involved in accurately forecasting cash flows many years into the future. To allow for a theoretically infinite timeline the Gordon Growth Model (GGM) can be used. The GGM is a simplified version of the DCF formula which calculates the present value of cash flows stretching infinitely into the future using the formula:

$$V_0 = \frac{CF_1}{r-g}$$

Where  $V_0$  = value;  $CF_1$  = cash flow in period one;  $r$  = discount rate and  $g$  = growth rate of cash flows.

3.15 When carrying out DCF analysis, the methods described above are often combined. For the period where cash flows are expected to change unevenly over time, such as during a period of growth, or the cash flows need to be explicitly forecast for some other reason, the formula in paragraph 3.13 can be used. For periods further into the future, after which it is expected the business has reached a stage where cash flows are expected to grow at a steady rate, the GGM can be used to calculate a terminal value which can be discounted back to the present value. These two values are then summed to calculate the total net present value of cash flows from the asset.

3.16 When valuing a company's equity using the DCF method, there are generally two approaches:

- (1) Projected free cash flows to the firm (FCF to Firm),<sup>6</sup> including a terminal value component relating to cash flows into perpetuity, which are discounted to present value using the Weighted Average Cost of Capital (WACC) as the discount rate to estimate the value of the firm.<sup>7</sup> The company's net debt is then deducted to calculate the value of equity; and
- (2) Projected free cash flows to equity (FCF to Equity), including a terminal value component relating to cash flows into perpetuity, which are discounted to present value using the company's estimated cost of equity. Since only cash flows relating to equity holders are valued, the resultant value is an equity value, with no need to adjust for net debt.

## Application of the asset approach to businesses and shares

3.17 The asset approach is less frequently used in the valuation of businesses for a number of reasons:

- The value of the business as a whole will often be worth more than individual components. It is therefore rare that individual assets will be sold rather than the business as whole, except perhaps in the case of distressed businesses.
- Accounting book values for many assets do not represent their book value and many intangible assets are not recorded in the accounting records at all.

3.18 Nevertheless, an asset-based approach based on accounting book values can provide a useful crosscheck to other valuation methods, giving an indication of the potential floor as to the value of the business. This will require some analysis of the accounting statements of the company to understand the basis on which assets are recorded in the accounts and an analysis to consider whether any assets may be worth less than their current book values.

3.19 However, in situations where a business is insolvent, or is otherwise distressed, even accounting book values may overstate the market value that could be achieved from a sale of the assets owned by a business, as they may need to be sold at a discount to their normal market value in order to maximise the overall value achieved in a winding up process.

3.20 There however, certain businesses for which an asset-based valuation is the most appropriate method of valuation, namely those companies where a significant portion of their value is derived from specific assets. Two recognised examples are financial services



institutions (such as banks and insurance companies) and natural resource companies (such as oil exploration and production and mineral mining companies).

3.21 These companies, whilst using valuation techniques that are based on asset values, can be somewhat specialised such that application of an asset-based approach is considerably more complex than simply taking the net asset value from the financial statements.

3.22 For example, in relation to the valuation of mining companies, the Canadian Institute of Mining, Metallurgy and Petroleum Special Committee on Valuation of Mineral Properties produces a set of Standards and Guidelines for Valuation of Mineral Properties. These standards are widely recognised as a benchmark for valuing mineral related assets. In order to apply these standards it is necessary not only to have access to data on future commodity prices (which is quite widely available) but also detailed feasibility studies as to the quality of mineral reserves in a particular mine along with an assessment as to the ease, or difficulty, of extraction.

3.23 Nevertheless, for such companies, even market-based methods may be based on a price-to-book multiple, rather than one based on earnings.

## 4. Application of valuation methods to intellectual property (IP) and other intangible assets

4.1 The various different valuation approaches applied to more routine valuations of businesses and shares are also applied when considering the valuation of intangible assets. All of the valuation concepts and principles remain equally relevant, but the application can be slightly different due to the unique nature of intangibles.

4.2 When performing a valuation of IP or other intangible assets, it is particularly important to understand the IP being valued and the context in which it is being used (or projected to be used in), because the value of intangible assets lies in their ability to generate economic benefit for its owner/user.

4.3 Some businesses have a competitive advantage in their industry because of the unique IP they have developed (or acquired). Companies who are able to secure exclusivity for certain products or key industry-reliant technology, usually generate greater relative value, as the legal protections provided by the IP rights can help create significant barriers to entry for competitors and potential new entrants, thereby helping companies create greater economic returns than their competitors.

4.4 These increased returns arise when the owner of the intangible asset is able to (i) increase, or preserve, revenue; (ii) manage cost and/or improve productivity; (iii) increase brand value; (iv) facilitate, or enhance, product functionality; and/or (v) improve the end user experience.

4.5 The ability to maintain this competitive advantage (and the resulting value) depends on how hard it is for competitors to replicate the benefits produced by the intangible assets. Rational purchasers will not pay more for a product when an identical product is easily available more cheaply. Therefore, the availability of similar substitutable products is an important factor in determining the value of an intangible asset. This also means that intangible assets (such as patents) with strong legal protection to prevent copying or imitation may have significantly more value than less protected forms of intangible assets.

4.6 Acquired or internally generated IP can also be licensed and made available to a third party. For example, a patent, trade mark, or copyrighted content can be licensed to external parties, providing an income (in the form of received royalties) to the owner of the IP (or licensor). Royalty payments are income that is typically generated with limited associated direct costs, meaning that their contribution to firm profitability can be relatively significant.

4.7 The valuation of the intangible assets within a business can be more complex where there is an interaction between different intangible assets, all of which may add some value to the business, but where some may be more important than others. For some products, and in certain industries, value can be mapped clearly to a particular piece of IP. In the pharmaceutical industry the value of a blockbuster drug is likely to relate to a specific patent (or family of patents); similarly, there are many consumer businesses where a large proportion of the value of the intangible assets of the business relate to specific trademarks. However, in other cases it is not just that value is attributable to multiple different intangibles: the interaction of those intangibles creates additional value.

4.8 The most common market-based valuation approach used in IP valuation does not rely on directly observed values but rather on market data on royalty rates from which values can be derived indirectly. This approach is known as the 'relief from royalty method'. Whilst this

particular approach relies on market information and is therefore market based, it is also an income-based approach, which relies on forecasts of future revenue to which the royalty rates can be applied; the relief from royalty method is discussed in more detail in the income-based approaches section below.

## Application of the market approach to the valuation of intangible assets

4.9 The market approach can be used to estimate value through an analysis of transactions involving similar or related IP assets, using market implied transaction prices as a basis of valuing the subject intangible asset.

4.10 Although the number of transactions which deal solely with the sale of intangible assets (as opposed to the entire business) is increasing, the number of benchmark prices that can be obtained is still limited. Further, even where reliable transaction data are available, the characteristics of IP assets vary considerably and it is hard to adjust benchmark values to reflect the differences between the different assets.

4.11 In addition, the value of IP can be very dependent on who is using the asset. Therefore, not only are data on the sale of IP assets uncommon, care must be exercised when using a benchmark value for an intangible asset, as the price paid in one context may not be representative of the value of the same asset in a different context.

4.12 The market approach is often useful in the valuation of certain patents, trademarks and copyrights. It is particularly useful in industries where comparable IP assets are purchased or licensed, and where there exists an active market for the IP and sufficient data to enable suitable analysis of the underlying market. However, it is very difficult to apply the market approach to individual unique IP assets where there is no active market.

## Application of the income approach to the valuation of intangible assets

4.13 Income based approaches seek to consider the value that is actually being realised by the business as a result of its ownership of the IP. There are two primary income-based approaches used in the valuation of IP:

- (1) Relief from royalty approach
- (2) Residual value approach.

### Relief from royalty approach

4.14 The relief from royalty methodology is based on the economic theory of deprival value. Based on this theory, the value of the IP is equal to the capitalised amount of the royalties that would be payable if the IP were not owned but had to be licensed at arm's length from a third party.

4.15 The three primary steps involved in applying this method are:

- (1) Identify the appropriate royalty rate;
- (2) Calculate royalty cash flows (by applying the royalty rate to an appropriate royalty base', often projections of turnover derived from use of the IP);

- (3) Capitalise periodic post-tax royalty payments by discounting at a suitable discount rate.

4.16 In this regard, the income approach is very similar to the income approach when applied to valuing the business as a whole or shares in a business. The additional complexity comes from the need to determine an appropriate royalty rate. There are a number of established ways of determining a reasonable royalty rate for use of a particular piece of IP, the three principle approaches being:

- (1) Comparable royalties;
- (2) Economic benefits analysis;
- (3) Rules of thumb.

4.17 These different approaches are discussed further below.

## Residual value approach

4.18 The residual value approach considers the profits and value generated across the entire value chain<sup>8</sup> of the business and allows each element of the business a reasonable return based on the functions they perform and the risks they bear. Any residual or 'excess' value is deemed to be attributable to the IP assets of the business that have not already been accounted for in the returns allowed along the value chain.

4.19 The three key steps involved in applying this method are:

- (1) Forecasting the post-tax profits for each element of the value chain within which the IP concerned is utilised;
- (2) Deducting a reasonable return for each component of the value chain based on the functions and risks they perform/bear;
- (3) Capitalise the forecast 'excess' earnings by discounting at a suitable discount rate.

4.20 The level of allowable returns in relation to the different elements of the value chain is often assessed through use of comparable company analysis, which seeks to identify the returns made by independent entities which perform only the particular functions being benchmarked.

4.21 One issue in relation to applying the residual value approach is that the residual (after eliminating other routine elements of the value chain) represents the value in relation to all the intangible assets of the business. If the valuation of a subset of the business's intangible assets is required, it may be necessary to apportion the overall intangible asset value derived from the residual value method. An alternative to apportioning the overall value is to adjust the allowable returns allowed to components of the value chain to reflect any use of intangible assets that are not being explicitly valued.

## Calculating a reasonable royalty

### The comparables approach to calculating a reasonable royalty

4.22 Comparator analysis (or benchmarking) is a standard tool in IP valuation and licensing. It is based on the notion that a reasonable royalty fee can be determined by reference to licences of other, similar IP. The rationale is that where sufficiently similar agreements between willing licensors and licensees exist, they can provide a reliable indication of the market value of the rights in question.

4.23 The extent to which a licence is comparable will vary somewhat from case to case. The following factors are some of those that are relevant when assessing whether potential comparators are likely to be useful:

- Does the comparator relate to similar, or even identical, IP?
- Does the comparator licensee provide a sufficiently similar product or service? To what extent are the licensees' respective services substitutes for one another?
- Is the contribution of the IP to the end product similar? Specifically, does the licensee monetise its exploitation of the IP in a similar way and does its business model influence the level of economic benefits it can generate from exploiting the IP?
- Are the specific terms of use and scope of the licence similar? For example, are the licences similar in terms of exclusivity, geographic coverage and duration?
- Was the licence freely negotiated or was it imposed by a rate setting body?
- Is the structure of the licence fees comparable? Is it possible to make meaningful comparisons of the amounts paid?
- Is the agreement recent? In rapidly changing industries, the terms that were acceptable to licensees or licensors several years ago may no longer reflect current realities.
- What were the negotiating positions of the parties, including the availability of substitutes, at the time the agreement was reached?
- Is the comparator licensee's ability to pay a licence fee similar?
- Is the volume and intensity of usage broadly similar?

4.24 In circumstances in which there are no direct comparators, other licences may still be useful, even if only directionally, or as a crosscheck on other reference points. It may be possible to conclude, for example, on the basis of less direct comparables, that the licence fee should be higher or lower than a particular benchmark.

4.25 An advantage of the comparables approach, which is, perhaps, the most widely used basis for estimating reasonable royalties, is that there are numerous commercial databases that specialise in providing comparable licence agreements that can be used to benchmark royalty rates. However, the quality and reliability of the data produced needs to be reviewed carefully to ensure a proper calibration of the licence fees is made by reference to the factors discussed earlier.

### **The economic benefits approach to calculating a reasonable royalty**

4.26 The economic benefits approach is based on the notion that a rational licensee would only choose to license IP if it expected to generate economic benefits by commercialising the IP. An IP licence is a mechanism for sharing those benefits between the rights owner (the licensor) and the user (the licensee). Two key questions to be answered as part of an economic benefits analysis are:

- (1) What is the value of the licence to the licensee?
- (2) What is the licensor giving up by agreeing to grant a licence?



4.27 This approach is most useful where it is possible to identify and forecast the specific economic benefits created through use of the IP, which can then be allocated between the licensor and licensee. The appropriate split of incremental benefits (or overall profits) between the parties will depend on the costs incurred, assets contributed, risks borne, and the functions performed by each party (a similar analysis to that performed under the residual value approach to valuing IP).

4.28 The economic benefits approach is easier to apply in circumstances where there is one principal IP asset contributing to the overall product or service. When there are multiple IP assets, it requires consideration of the relative contribution of the different assets to the product or service; in such situations the value of any individual piece of IP is likely to be lower than when a single IP asset is the key source of competitive advantage.

4.29 The economic benefits approach will often require quite detailed data in order to properly estimate the incremental value derived from a particular intangible asset. This data will often be available to owners of the intangible in question, however, at least for smaller business owners, they are less likely to have knowledge of the analysis required to turn this data into a meaningful economics benefits analysis.

### **The cost of substitutes approach to calculating a reasonable royalty**

4.30 The third standard approach to calculating a reasonable royalty rate is the cost of substitutes approach, which involves determining a reasonable licence fee by reference to the cost of alternative IP or 'design-arounds' available to the licensee including:

- Redesigning the product to avoid the need to license the IP;
- Creating new, alternative IP that has similar characteristics and functions;
- Licensing alternative IP that fulfils a similar purpose.

4.31 The basic premise of the cost of substitutes approach is that a rational licensee would not be prepared to pay more for an IP asset than the cost of an alternative that produced equivalent benefits. Where the available alternatives are inferior, a licensee would be prepared to pay more than the cost of those alternatives.

4.32 This approach is only relevant in circumstances in which the licensee has at least one genuine alternative. Where the licensor has a monopoly, the licensee may have no alternative but to take a licence; all else equal, this would increase the value of the licence fee that a licensee would be prepared to pay.

## **Application of the cost approach to the valuation of intangible assets**

4.33 The cost approach can be particularly relevant in assessing internally developed and/or company-specific types of IP that is not generally marketable. For example, the cost approach is frequently employed in the valuation of internal-use software and is often utilised in instances where the subject asset does not enjoy the advantages of significant legal protections (such as a patent), and in instances where it is difficult to secure exclusivity for the subject asset (and/or the asset is not particularly novel or industry critical) because the IP could be readily replicated.

4.34 There are two main cost-based methodologies that can be applied to valuing IP: historical cost and replacement cost. Both approaches seek to aggregate the costs incurred in developing the IP. Historical cost measures the actual cost incurred in creating the IP, whereas replacement cost quantifies the estimated cost of replacing the IP or creating an equivalent asset.

4.35 While historical cost-based approaches may satisfy the criteria of objectivity, consistency and reliability, their use has a fundamental drawback: there is not necessarily a correlation between expenditure on an asset and its subsequent value. For example, a patented drug developed at huge cost may never reach the market because it unexpectedly fails to obtain regulatory approval. Similarly, the success of a brand may not reflect the costs incurred in developing it.

4.36 There are also practical difficulties involved in applying historical cost-based approaches, such as:

- Differentiating between expenditure that maintains the value of the IP, as opposed to investment expenditure that enhances its value;
- Isolating the expenditure that is specifically related to developing the IP;
- The lack of relevant information on costs for older IP;
- The need to adjust historical costs to reflect current prices.

4.37 The replacement cost approach overcomes these difficulties to some extent. The problem of translating a historical cost into a current cost does not arise, since this approach is based on current prices. It can, however, introduce an additional practical obstacle in that estimating the costs of recreating the IP can be subjective if no market benchmarks are available.

4.38 Where it is relatively certain (or at least highly likely) that, with a certain level of expenditure, it is possible to recreate the brand (or other IP) being valued, replacement cost also overcomes the issue that the link between value and cost is unclear. In this case, replacement cost represents the cost the business is avoiding through its ownership of the IP, and, in theory, should be the maximum a business is willing to pay to purchase or license the asset.

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<sup>1</sup> Source: <https://www.collinsdictionary.com/dictionary/english/value>

<sup>2</sup> TC/2009/13897,13898,13899,16004, 16005, 16006

<sup>3</sup> TC07404

<sup>4</sup> <https://news.sky.com/story/what-did-elon-musk-say-to-make-tesla-shares-drop-by-50bn-12079327>

<sup>5</sup> The 'Efficient Market Hypothesis', which is a staple theory in the field of financial economics. See for example, Fama, E. (1970), 'Efficient Capital Markets: A Review of Theory and Empirical Work', *Journal of Finance*, Vol. 25, Issue 2, 383–417.

<sup>6</sup> FCF to Firm is the net cash flow generated by the company, excluding non-equity cash flows such as debt interest payments or interest income.

<sup>7</sup> The value of the firm's operations on this basis is commonly referred to as the enterprise value of the firm.

<sup>8</sup> 'Value chain' means the different activities that are performed in bringing a product/service to the end customer from research and development through manufacturing to sales, marketing and distribution. Depending on circumstances it may include support functions, such as IT and accounting.