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Uncertainty in valuation

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Jacky Tan and **Sabrina Choi**
FTI Consulting

Summary

IN SUMMARY

Uncertainty as a result of rapid changes in business environment due to technological developments, unforeseen economic, legal and regulatory changes, market volatility and environmental impact is inherent in valuation. It has an impact on the valuation, regardless of the valuation approach used to assess an asset or business. This is because, based on the information and data available to them, valuers will exercise professional judgment and make assumptions to assess and account for uncertainties as to the future outlook of the business, the industry and the economic environment in which it operates. Different assessments of these uncertainties by different valuers can potentially result in widely varied valuation conclusions of the same business, even when using the same valuation approach and the same set of information. It is therefore important to ensure that uncertainties are properly analysed and accounted for in the valuation so that valuation conclusions are reasonable, informative and justifiable.

DISCUSSION POINTS

- Uncertainties relating to an income-based valuation
- Uncertainties relating to a market-based valuation
- Uncertainties relating to an asset-based valuation
- Potential ways to account for uncertainties in a valuation

REFERENCED IN THIS ARTICLE

- Valuation Uncertainty, IVSC
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- Economic Survey of China 2022, OECD
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INTRODUCTION

The 'value' of an asset or business is often understood as the price that has been agreed, or would be agreed, in an actual or hypothetical transaction in that asset or business. In practice, there are three commonly applied approaches used by the valuers in assessing the value of an asset or business:

- income-based approach, under which the value of an asset or business is estimated by reference to the explicit forecasts of future financial performance and assessments of risk;
- market-based approach, under which the value of an asset or business is estimated by reference to the observed terms of transactions of a comparable asset; and

- asset-based approach, under which the value of a business is estimated by reference to the value of its assets net of liabilities.

Regardless of which valuation approach one uses, uncertainty needs to be considered by a valuer. The International Valuation Standard Council (IVSC) defines uncertainty in relation to the output of a valuation as the 'possibility that the estimated value may differ from the price that could be obtained in a transfer of the same asset or liability taking place at the same time under the same terms and within the same market environment'.[1]

This 'possibility' can be, among other things, caused by uncertainty as to the effects of future rapid changes in the business environment due to technological developments, unforeseen economic, legal and regulatory changes, market volatility and environmental impact. A combination of these factors may result in an ambiguous future outlook. As a result, valuers may make different assumptions to account for uncertainties regarding the future outlook, resulting in a potentially wide range of valuation conclusions for the same business, even when using the same valuation approach and with the same set of information.

In this article, we explore how uncertainty in this regard may lead to different valuation conclusions under the three valuation approaches outlined above and discuss a number of ways that valuers can attempt to account for the uncertainty in their valuation.[2]

UNCERTAINTY RELATING TO INCOME-BASED VALUATION

The income-based approach requires a valuer to prepare an explicit forecast of a business's cash flow generating prospects and the relevant uncertainties (or risks) attaching to those expectations.

Accordingly, differences in an income-based valuation between valuers can typically be explained by differences in the inputs and assumptions they make in relation to:

- the growth prospects of a business, such as the assumed short- or long-term, or both, revenue growth rate of a business; and
- the risks attaching to those expectations, such as discount rates or the weight assigned to possible scenarios.

To appropriately assess a company's growth prospects, there are several factors that valuers may consider in their assessment, including:

1. the company's historical financial performance;
2. expected growth of the economy/economies and the industry within which the company operates; and
3. other factors such as the regulatory or legal environment relevant to the company's business.

In respect of (1), valuers will usually evaluate a company's historical financial performance to understand its revenue, profitability and growth trends. However, this may not always be a good indicator of a company's future growth prospects during times of uncertainty, as the market conditions in which the company operates may have changed rapidly to a degree that the company's historical performance is no longer reflective of its future.

Furthermore, rapid technological development of artificial intelligence (AI) also raises a question of whether a company's historical performance is indicative of its future. For example, AI-powered demand forecasting can help companies improve their overall supply chain efficiency through optimising inventory levels and replenishment plans.[3] This helps reduce a business's operating gearing ratio (ie, the ratio of a company's fixed costs to its total costs) by decreasing warehouse space and other unwanted fixed costs. As such, a company's historical fixed costs may no longer be a good proxy for its future fixed costs.

AI can even be a 'game changer' in certain industries. Sora, a new AI model recently developed by OpenAI, has the ability to make high-resolution and realistic videos up to one minute long using the text prompts given by a user.[4] This feature lowers the threshold for anyone without relevant experience to create high-quality videos and has the potential to revolutionise, at least in the short term, the advertising and short videos industries. In these cases, it is challenging for a valuer to interpret to what extent past performance of the businesses operating in these industries is indicative of the future, given the rapid development and increasing popularity of the use of AI (including Sora).

In respect of (2), in assessing the short- and long-term growth of a business, valuers may rely on different inputs such as third-party forecasts of macroeconomic and industry growth. These forecasts may, however, vary significantly.

For example, valuers often consider projected economic growth of an asset or business's host country (or countries) when assessing its value, such as in their estimate of terminal growth rate.

A country's economic growth can, however, be difficult to forecast, particularly for emerging markets. For example, China's economy has historically experienced double digit growth rates, with annual GDP growth rates averaging approximately 10 per cent since the 1980s.[5] The rapid economic development of China complicates the forecast of its GDP growth. Table 1 shows that different agencies and databases provide different forecasts as to how China's GDP will grow in real terms between 2024 and 2027.

Table 1: Real GDP Growth Forecast For China, 2024 To 2027

Data provider	2024	2025	2026	2027
IMF	4.2%	4.1%	4.1%	3.7%
Goldman Sachs	5.3%	3.9%	3.8%	3.7%
Morgan Stanley	4.2%	3.6%	3.6%	3.6%
Standard Chartered	4.8%	4.5%	4.3%	4.1%
Oxford Economics	4.4%	4.0%	3.9%	3.8%

Sources: World Economic Outlook - China real GDP growth rate, IMF, 2023; China 2023 Outlook, Goldman Sachs Economic Research, 17 November 2022, page 5; China's Economy Faces Deepening Troubles in Years Ahead, Wall Street Journal, 18 October 2023.

As the table shows, forecasts of China's economic growth rate diverge between macroeconomic data providers, with an average of 0.8 percentage point difference between the highest and lowest forecasted growth rate across the same period.

Currently, forecasts of China's long-term economic growth rate are also affected by factors such as contractions in the property sector, geopolitical tension, local government fiscal strains, and demographic and productivity changes.[6] Based on the Economic Survey of China conducted by the Organisation for Economic Co-operation and Development (OECD) in 2022, China is expected to be at a turning point, where the economy faces a rebalancing from investment to consumption, from manufacturing to services and from rural to urban migration.[7] These factors result in additional uncertainties and thus introduce a question to the valuer as to the appropriate growth rate to adopt in their valuation.

Industry growth is another input that valuers often consider when assessing a company's growth prospects. In particular, if a company is expected to maintain a stable market share in an industry, then a valuer may use the growth rate of the industry as a whole in his or her projection of revenue.

Similar to the macroeconomic growth rate, industry growth rate projections are subject to uncertainties, which can in turn result in a wide range of valuation conclusions, particularly for emerging industries. For illustration, Table 2 shows that market analysts have widely different views as to the future growth for the global AI industry (a nascent industry with significant growth potential), ranging from around 18 to 40 per cent over similar periods of time.

Table 2: Growth Forecasts For The Global AI Industry

Source	Time period	CAGR
BCC Research	2021 to 2026	39.7%
Valuates Reports	2021 to 2030	38.0%
IDC	2022 to 2026	18.6%
Technavio	2022 to 2027	22.3%
Fortune Business Insights	2022 to 2029	20.1%
Exactitude Consultancy	2023 to 2028	35.0%

Source: Global Artificial Intelligence (AI) Market - Investments vs Potential, BCC Research, February 2022, page 1; Artificial Intelligence (AI) Market Report, Valuates Reports, November 2019, page 1; IDC Forecasts 18.6% Compound Annual Growth for the Artificial Intelligence market in 2022-2026, IDC, 25 July 2022, page 1; Artificial Intelligence-based Cybersecurity Market Analysis, Technavio, January 2023, page 2; Artificial Intelligence (AI) market size, share and COVID-19 impact analysis, Fortune Business Insights, July 2022, page 1; Artificial Intelligence (AI) Market by Offering (Hardware, Software, Services), Technology (Machine Learning, Natural Language Processing), Business Function (Law, Security), Vertical, and Region (North America, Europe, Asia Pacific, South America, Middle East and Africa), Global trends and forecast from 2023 to 2028, Exactitude Consultancy, March 2022, page 2.

The different expectations of economic and industry growth, in combination, will lead to very different valuation conclusions. As an illustrative example (and by reference to the two examples above), an AI service provider based in China with an assumed first year

undiscounted cash flow of US$100 million, an explicit forecast period of 10 years and a discount rate of 15 per cent, would have a significantly different value if a valuer assumes:

1. an explicit period growth rate of 18.6 per cent and a terminal growth rate of 5.9 per cent were applied (taking approximate reference from the lower bound of industry growth forecasts and nominal GDP forecasts for 2027 discussed above); versus
2. an explicit period growth rate of 39.7 per cent and a terminal growth rate of 6.4 per cent were applied (taking approximate reference from the upper bound of industry growth forecasts and nominal GDP forecasts for 2027 discussed above).[8]

The first scenario would result in a valuation of around US$2.3 billion whereas the second scenario would result in a valuation of around US$8.6 billion (approximately 3.7 times the first scenario).

Finally, certain factors informing growth inputs and assumptions may be matters that are outside of the expertise of a valuer, such as those related to regulation and the legal environment in which a company operates. For example, the valuation of a restaurant business as at a covid-affected date will depend on expectations as to whether, to what extent and by when the relevant government(s) will lift restrictions as regards to public gatherings etc. Valuers may usually conduct their own research to inform their assumptions in relation to these expectations, but the assumptions could be significantly different depending on the research and the region they are looking at.

In addition to considerations of growth prospects, valuers need to appropriately capture the risks associated with the growth expectations of a business in their valuation. In an income-based valuation, these risks will be reflected either in:

- the cash flow forecast, by assigning weights or probabilities to different cash flow scenarios that could arise; or
- the discount rate.[9]

In relation to cash flow forecasts, valuers may, as a matter of judgment, assign different weights to the cash flow scenarios that may arise in respect of a business. For instance, in the case of a company's capacity expansion plans, valuers may assign different weights to the 'no-expansion' and 'expansion' scenarios depending on their expectations of how likely the scenarios will materialise. Valuers may, therefore, have different views as to the appropriate weights to assign to each scenario based on the evidence available to them.

Alternatively, discount rates can be used to reflect the risks associated with the cash flows. They are used to discount expected future cash flows to their present value by taking into account the time value of money, and the risk or uncertainty associated with the expected future cash flows. The appropriate discount rate should reflect the cost of capital of the company in question. The cost of capital is the rate of return that investors require on a portfolio of all of the company's outstanding debt and equity. It is often referred to as the weighted average cost of capital (WACC), as the company's cost of equity and cost of debt are weighted by their respective market values, on a forward-looking basis.

A company's WACC is calculated based on several inputs, one of which is the interest rate. In times of uncertainty, interest rates can change rapidly. This is illustrated by the trend of interest rates during the covid-19 pandemic – for example, in response to the

pandemic, central banks around the world reduced interest rates significantly to stimulate the economy, but subsequently increased them to curb inflation. As a result, the yields on bonds issued by several major economies have fallen close to, or even below, zero but risen significantly afterwards. These changes pose additional complexities for valuers in estimating a company's cost of equity and cost of debt. In particular, it can be challenging to determine whether the interest rates as at a valuation date during the covid-19 pandemic is representative of a 'fair' cost of debt and equity for the company in the long term.

This can be illustrated by the movement of the average US 10-year treasury bond yield. It decreased from 1.8 per cent in January 2020 (at the start of the covid-19 pandemic) to 0.6 per cent in July 2020, and significantly increased to 3.7 per cent in December 2022 (almost six times higher than that in July 2020).[10] Given the volatility of interest rates during the covid-19 pandemic, valuers may make different assumptions to account for the uncertainty as to the interest rates going forward, and hence assume different interest rates in estimating the discount rate for a valuation during this period.

Separately, uncertainty regarding a business's off-balance sheet liabilities could also impact valuation conclusions. Off-balance sheet liabilities may arise from a business's environmental, social and governance (ESG) practices. A company with poor ESG practices is potentially subject to liabilities relating to, for example, labour claims or environmental damage. These liabilities can depress a company's future cash flows. In this respect, valuers should, where quantifiable, account for them by making cash flow adjustments, and where it is not possible to quantify, consider a higher discount rate to account for the risk. Depending on the valuers' judgement and the information available to them, this can result in different adjustments and, thus, a potentially wide range of valuation conclusions.

UNCERTAINTY RELATING TO MARKET-BASED VALUATION

Market-based valuation rests on the premise that comparable assets should have comparable prices. It involves valuing the business in question based on evidence derived from the observed terms of market transactions in the same or similar assets.

Where there have been proposed or completed transactions between unrelated parties in interest in the subject business or asset, then the terms of the transactions may provide evidence of the value of the business. This is because such transactions should reflect the views of actual buyers and sellers based on their assessment of expectations and risks on a particular date.

Alternatively, where there is no, or insufficient, reliable data on transactions in interests in the subject business, market multiples can be calculated based on the observed prices of transactions or proposed transactions of interests in comparable businesses. Comparable businesses are ones that share similar economically relevant characteristics to the business that is the subject of the valuation (eg, growth, risks, industry, geography). The idea is that a buyer will pay no more than the cost to acquire a substitute business with the same characteristics.

Uncertainty in market-based valuation can arise as valuers rely on different sets of comparable companies, based on their understanding of the subject business and analysis of comparability. By way of illustration, in Table 3, we set out the last 12 months' price earnings (LTM P/E) multiple as of 4 March 2024 for the potentially comparable companies one may identify as a private company selling food products and beverages in the United States. Valuers, based on their analysis and views of its major operating segments, may

identify two sets of comparable companies – the first being the beverage companies and the second being the food product companies, assuming all other screening criteria to be the same. The table shows that the median P/E multiple, that one may apply for the valuation of this hypothetical company, can differ by approximately 20 per cent with only one difference in the identification parameters employed (ie, the industry criteria).

Assuming the hypothetical company's LTM earnings as of 4 March 2024 was US$500 million, applying the median P/E multiple of comparable beverage companies would result in an equity valuation of approximately US$15 billion, whereas applying that of comparable food product companies would result in an equity valuation of US$12.5 billion, (ie, a US$2.5 billion (or 20 per cent) difference in the valuation conclusions).

Table 3: LTM P/E Multiple As Of 4 March 2024 For Beverage And Food Product Companies

Comparable company	Beverages	Food product
National Beverage	29.7x	n/a
Primo Water	14.7x	n/a
Boston Beer Company	46.8x	n/a
Cal - Maine Foods	n/a	6.1x
J&J Snack Foods	n/a	6.1x
Seaboard Corporation	n/a	13.6x
Sovos Brands	n/a	76.8x
The Simply Good Foods Company	n/a	25.8x
Tootsie Roll Industries	n/a	24.1x
Median P/E multiple	n/a	25.0x

Sources: Capital IQ.
Note: We round the average P/E multiple to the nearest whole number. For the purposes of this illustration, we performed a screening for listed companies operating primarily in the United States with a market capitalisation between US$2 billion and US$5 billion as of 4 March 2024 for the two industries using the industry classification and data from Capital IQ. Company names have been shortened for presentation purposes.

Even in cases where valuers agree on the same set of comparable companies, the available market prices may not always accurately reflect a company's fair market value when there is a reason to believe that the price is not reflective of a company's future performance. For instance, the Hang Seng Index was extremely volatile during the covid-19 pandemic and fluctuated between 14,687 and 31,085 in the period from January 2020 to December 2022.[11] Specifically, the index rose by more than 12 per cent between 28 November 2022 (when protests over pandemic restrictions began to occur in the mainland China) and 8 December 2022 (when major Chinese cities began to loosen restrictions).[12] This shows that market participants' view could change rapidly (in only 10 days), especially during times of uncertainty. A market-based valuation that relies on the traded share price of a listed company may result in significantly different valuation conclusions, depending on whether the 28 November or 8 December 2022 share price is used.

UNCERTAINTY RELATING TO ASSET-BASED VALUATION

Asset-based valuation determines the value of a company based on the value of its total assets after deducting liabilities. It is premised on the idea that a market participant would not pay more for a business or asset than it would cost to purchase or construct a business or asset of equal utility.

Similar to other valuation approaches, asset-based valuation can also lead to a significantly different valuation, often due to differences in the sources of information upon which a valuer relied. In conducting an asset-based valuation, valuers typically use the financial information from the subject company's audited financial statement or the unaudited interim financial statements, or both. These financial documents set out the value of a company's assets and liabilities at a specific point in time. If there is a time gap between the reporting date of the company and the valuation date, valuers should consider any impairment indicators and make adjustments to appropriately reflect the value of the assets or liabilities as at the valuation date, but their views and adjustments may differ depending on the additional information available to them and how they interpret that information.

Furthermore, a company subject to off-balance sheet liabilities will likely give rise to an overstated valuation. For example, if the off-balance sheet liabilities relating to ESG matters such as potential regulatory penalties or litigation actions exist and are not accounted for in a valuation, the value of the company will be overstated by the value of these potential liabilities. In most cases, valuers may need to investigate further through discussions with management to assess the existence and potential quantum of these off-balance sheet liabilities.

POTENTIAL WAYS TO ACCOUNT FOR UNCERTAINTY IN VALUATION

While the output of a valuation will always be subject to a degree of uncertainty, there are some ways that can be used by the valuers to potentially reduce the impact of uncertainty on their valuation conclusions.

First, valuers can perform a sensitivity analysis of their conclusion by modifying the key assumptions and assessing the impact of such changes on the financial forecasts. This helps valuers determine the key inputs and assumptions that drive their valuation. Similarly, valuers can perform a scenario analysis by considering different scenarios, such as 'best', 'worst' and 'base' to represent an 'optimistic', 'pessimistic' and 'status quo' outlook for the company, to identify key value drivers of the forecast. More generally, a sensitivity or scenario analysis allows a valuer to assess the validity and reliability of their models as well as effectively communicate the valuation conclusions.

Second, the subject company's compliance with the latest accounting standards and reporting requirements may help refine the way in which valuers consider the value of a company. Given the growing awareness of a company's ESG footprint on investment decisions, the International Financial Reporting Standards has issued a global baseline of disclosure standards to enable consistent and comparable disclosure of risks and opportunities related to sustainability and the climate. As the ESG data and disclosures become more standardised for public companies, valuers are recommended to account for ESG factors in their valuation exercises. This can be done through identifying and assessing relevant ESG criteria in the process of comparables screening and multiples calculation; and identifying and quantifying (where possible) potential future liabilities through explicit

forecast adjustments or scenario analysis, rather than assuming such risks are implicit in the discount rate or terminal growth assumptions.[13]

Third, valuers must take care not to 'double dip' with respect to valuation inputs. For instance, if future cash flows have been adjusted for ESG uncertainties, then the related increase in discount rate may be less than the increase in the discount rate if cash flows have not been adjusted for the impact.

Fourth, valuers must pay attention to the date of valuation and consider the most appropriate inputs and assumptions for their valuation as at that time. If a valuation needs to be updated to a later date, it is important for the valuers to reconsider whether the original inputs and assumptions remain relevant and to make any adjustments as necessary.

Fifth, as discussed above, businesses around the world are becoming more conscious of the ways in which AI might impact and enhance their work. This also applies to the valuation industry. With the AI tools, valuers are equipped with the ability to process vast datasets effectively and efficiently. This means that valuers can potentially expand the amount of information they consider, which improves the reliability of a valuation by adopting more informed assumptions and inputs to account for uncertainties.

Finally, it is important for valuers to document the information they considered in arriving at the inputs and assumptions made in a valuation analysis, especially where the business is in a nascent industry where there is no majority consensus as to the future prospect, so that readers can better understand the rationale of the inputs and assumptions adopted in the valuation and evaluate the relevance of the valuation conclusion for their purposes.

Endontes

[1] Valuation Uncertainty, IVSC, page 4.

[2] The views expressed in this chapter are those of the authors and not necessarily the views of FTI Consulting, Inc, its management, its subsidiaries, its affiliates or its other professionals.

[3] Welcome to the Cognitive Supply Chain, IBM, 1 June 2017, page 4.

[4] Introduction page to Sora, OpenAI, available at https://openai.com/research/video-generation-models-as-world-simulators.

[5] World development indicator - GDP growth rates, World Bank, 21 November 2017.

[6] People's Republic of China: Staff Report for the 2023 Article IV Consultation, International Monetary Fund, 19 December 2023, page 1.

[7] Economic Survey of China 2022, OECD.

[8] We convert the real GDP forecasted growth rate for China in Table 1 above to nominal GDP growth rates in 2027 by applying IMF's inflation forecasts for China in that year. (Source: World Economic Outlook - China inflation rate, IMF, 2023). For the first scenario, 5.9 per cent = (1 + 3.6 per cent) * (1 + 2.2 per cent) - 1. For the second scenario, 6.4 per cent = (1 + 4.1 per cent) * (1 + 2.2 per cent) - 1.

[9] IVS 105, paragraphs 40.4 and 50.38.

[10] US Department of the Treasury 10-year treasury bond yield, 1 January 2020 to 31 December 2022.

[11] Capital IQ.

[12] Capital IQ; 'China's zero-Covid protests', ***South China Morning Post***, 28 November 2022, page 2; 'China announces nationwide loosening of Covid restrictions, ***Hong Kong Free Press***, 7 December 2022.

[13] Perspectives Paper: ESG and Business Valuation, IVSC, March 2021, pages 7 and 9.

Jacky Tan jacky.tan@fticonsulting.com
Sabrina Choi sabrina.choi@fticonsulting.com

200 Aldersgate, Aldersgate Street, London EC1A 4HD, United Kingdom

Tel: +44 20 3727 1000

https://www.fticonsulting.com/

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