Insights
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Commonly asked questions on MFRS 13 fair value hierarchy

At a glance

MFRS 13 "Fair Value Measurement" defines fair value ("FV"), sets out a single framework for measuring FV and requires disclosures about FV measurements. It expanded the guidance on assessing FV measurements within the three levels of the FV hierarchy which was originally introduced in MFRS 7 "Financial Instruments: Disclosures". As a result, the classification as Level 1, Level 2 or Level 3 is also required for non-financial assets and liabilities measured at FV and disclosures of FV in the notes to the financial statements.

Experience suggests that challenges arise in practice when determining where measurements fall within the FV hierarchy. This publication discusses some of the key considerations in determining the appropriate classification of FV measurement in a series of FAQ.

1. What is the 'FV hierarchy'?

FV is defined in MFRS 13 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.

In addition, MFRS 13 requires a FV measurement to be categorised within the 3 levels of the FV hierarchy for disclosure purposes. The categorisation within the FV hierarchy is based on the inputs to valuation techniques used to measure the FV. In principle, the observability and market activity determine the categorisation of an input. MFRS 13 notes that valuation techniques should maximise the use of observable inputs and minimise the use of unobservable inputs.

When inputs used to measure the FV of an asset or a liability are categorised within different levels of the FV hierarchy, the FV measurement is categorised in its entirety in the same level of the FV hierarchy as the lowest level input that is significant to the entire measurement. [MFRS 13 para 73]

1. What is the 'FV hierarchy'? (continued)

Some examples of inputs and their respective categorisation are outlined below:

Hierarchy	Description	Examples
Level 1	Unadjusted quoted prices in active markets for identical assets and liabilities that the entity can access at the measurement date.	• Financial instruments (for example, shares, exchange traded options and future contracts) traded on active markets. • Commodities (for example, corn, soybeans, crude oil, gold and silver) traded on active markets.
Level 2	Other observable inputs not included within Level 1 of the FV hierarchy.	• Recently observed prices in markets that are not active (for example, quoted prices in inactive markets). • Quoted prices for similar assets or liabilities in active markets (for example, inputs derived from yield curves when observable at commonly quoted intervals). • The unadjusted price per square metre for a building derived from observable market data (for example, prices derived from observed transactions involving comparable buildings in similar locations).
Level 3	Unobservable inputs for the asset or liability.	• Credit spread calculated using unobservable internal data. • Management's cash flow projections (for example, future revenue level and other financial forecasts). • Adjustments to the price per square metre for similar buildings derived from observable market data (for example, adjustments reflecting differences in physical conditions and location of the properties).

2. Why is the classification within the three levels of the FV hierarchy important?

The classification within the three levels of the FV hierarchy is important because it increases the consistency and comparability of FV measurements among different financial statements. In addition, more disclosure is required for Level 3 FV measurements than for those in Level 1 and Level 2.

For many years, financial reporting has been prepared using Level 3 FV measurements (typical examples include intangible assets acquired in business combinations, unquoted equity instruments and investment properties). The classification within the lowest level of the FV hierarchy does not suggest that the quality of the FV measurement is poor. The FV hierarchy provides users with useful information on the nature of inputs used to develop FV measurements.

3. What is the meaning of observable and unobservable inputs?

Both Level 1 and Level 2 of the FV hierarchy consider the use of observable inputs, while all unobservable inputs will fall in Level 3. So, the question is how to determine whether an input is observable or unobservable.

Observable inputs are publicly available information about actual events or transactions. Such inputs include those developed using market data.

Unobservable inputs are inputs for which there is no market data available. They are developed using the best information available about the assumptions that market participants would use when pricing the asset or liability. In other words, unobservable inputs reflect the reporting entity's own view on the assumptions that market participants would use.

The table below summarises the main characteristics of observable and unobservable inputs, and it provides illustrative examples of what those could be:

Input	Characteristic	Examples
Observable	Publicly available information about actual events or transactions.	• Securities traded on stock exchanges. • Prices for identical or similar assets in markets that are not active (for example, market data for sales of comparable land and buildings). • Quoted prices of future contracts available on commodities exchanges. • Available market data for rentals of properties. • Interest rates and yield curves observable at commonly quoted intervals.

3. What is the meaning of observable and unobservable inputs? (continued)

The table below summarises the main characteristics of observable and unobservable inputs, and it provides illustrative examples of what those could be (continued):

Input	Characteristic	Examples
Unobservable	Management's assumptions that cannot be corroborated with observable market data.	• Internal forecast of cash flows from intangible assets. • Internal historical data used to calculate counterparty's probability of default. • Adjustments to current prices for similar properties (for example, physical conditions and location). • Estimates of growth expectations and profitability when calculating goodwill impairment test. • Profit margin expectations.

4. As both Level 1 and Level 2 inputs consider observable information, what is the difference between them?

MFRS 13 defines Level 1 inputs as quoted prices (unadjusted) in active markets for identical assets or liabilities that the entity can access at the measurement date; while Level 2 inputs are defined as inputs other than quoted prices included within Level 1 that are observable for the asset or liability, either directly or indirectly. Both definitions consider observable inputs in different ways, and the table below summarises such differences.

	Level 1	Level 2
Characteristic	(i) The price must be for an asset or liability that is **identical** to the asset or liability being measured. (ii) The price must be unadjusted.[1] (iii) The price must be quoted in active markets. (iv) The entity must have access to the market at the measurement date.	(i) The price can be for an asset or liability that is **similar** to the asset or liability being measured if it is a quoted price. (ii) The price can be adjusted.[2] (iii) The price can be quoted in inactive markets. (iv) The price does not need to be directly observable, but it must be corroborated by observable market data.

[1] *Any adjustment to a Level 1 input results in a FV measurement categorised within a lower level of the FV hierarchy.*

[2] *If the adjustment is significant to the entire FV measurement, the whole FV measurement would fall in Level 3 category [see section (ii) Adjustments to inputs and FAQ 5 below].*

4. As both Level 1 and Level 2 inputs consider observable information, what is the difference between them? (continued)

(i) Identical vs. similar assets or liabilities

In order to be categorised as Level 1, the price must be for an asset or liability that is identical to the asset or liability being measured. One example is when the asset is a share actively traded on a stock exchange – the quoted price is for an identical asset, so it would be categorised as Level 1.

When the price for an identical asset or liability is not available, an entity can use a quoted price for an asset or liability that is similar to the asset or liability being measured. As a result, the input would be classified as Level 2 within the FV hierarchy.

In these situations, assets or liabilities being compared should be similar enough in order to provide an appropriate starting point for the FV measurement. It is important to understand the characteristics of the asset or liability being measured when compared to the item being used as a benchmark. Differences between the items can affect the FV, and adjustments might be required in order to reflect such differences. However, if a Level 2 input requires an adjustment which is unobservable and significant to the entire FV measurement, the measurement would be categorised within Level 3 of the FV hierarchy.

Example of similar non-financial assets

An entity owns a property located in the city centre which it measures at FV. At the reporting date, the entity obtains price per square metre information derived from observed transactions involving comparable properties. The comparable properties are similar assets, but not identical. The price per square metre is therefore a Level 2 input. Further adjustments to reflect differences in physical conditions and location of the properties are likely to be needed, which would normally result in the classification of the entire measurement as Level 3. See section (ii) below for further information on adjustments to observable inputs.

See also FAQ 5 below for further information on the categorisation within the FV hierarchy of investment property FV measurements.

(ii) Adjustments to inputs

Any adjustment to a Level 1 input results in a FV measurement categorised within a lower level of the FV hierarchy. [MFRS 13 para 79].

A price must be unadjusted in order to be categorised as Level 1. For example, financial instruments traded on active markets are categorised as Level 1 when no adjustments are made to the publicly available prices.

4. As both Level 1 and Level 2 inputs consider observable information, what is the difference between them? (continued)

(ii) Adjustments to inputs (continued)

However, as discussed in section (i) above, Level 2 inputs consider prices for items that are similar (but not identical) to those being measured. Therefore, an entity should consider which adjustments to a price for a similar asset or liability are necessary to reflect the differences between the items being compared. Adjustments to Level 2 inputs might vary depending on factors specific to each asset or liability. Those factors include the following:

(a) the condition or location of the asset (for example, adjustments to price per square metre data in order to reflect differences in the location and physical conditions of properties); and

(b) the level of activity in the markets within which the inputs are observable [see section (iii) below for adjustments to prices traded on inactive markets].

Please note that, if a Level 2 input requires an adjustment which is unobservable and significant to the entire FV measurement, the measurement would be categorised within Level 3 of the FV hierarchy. FAQ 5 below deals with situations where an unobservable input is significant enough to make the whole FV measurement Level 3.

Example of adjustments to observable inputs: non-financial assets

An entity owns an office building which is classified as investment property and is measured at FV. Some similar properties in close proximity have been traded during the year, providing a reasonable starting point in order to determine the FV of the building owned by the entity. Management concluded that the average price per square metre should be adjusted to reflect differences in physical characteristics (for example, location, physical conditions and size). The judgement as to whether such adjustments are significant or not will drive the conclusion on whether the whole FV measurement should be categorised in Level 2 or Level 3.

Example of adjustments to observable inputs: financial instruments

An entity uses discounted cash flow analysis to measure the FV of a cross currency interest rate swap ("CCIRS"). Management determines the appropriate discount rate based on yield curves observed at commonly quoted intervals, which meets the definition of a Level 2 input. At the reporting date, the CCIRS is in a liability position (assume that there are no significant credit enhancements related to the CCIRS).

4. As both Level 1 and Level 2 inputs consider observable information, what is the difference between them? (continued)

(ii) Adjustments to inputs (continued)

Example of adjustments to observable inputs: financial instruments (continued)

Management must take into account credit risk when measuring the FV of financial instruments, including derivatives in liability position. [MFRS 13 para 42]. However, public information on the entity's own credit risk (for example, credit default swaps, bond spreads, external ratings and other comparable instruments) is not available. Therefore, management uses internal assumptions in order to determine its own credit spread, which meets the definition of a Level 3 input.

The computation of the discount rate included two variables: yield curves, which are observed at commonly quoted intervals (Level 2); and the entity's own credit risk (Level 3). The judgement as to whether the entity's own credit spread is a significant input will drive the conclusion on whether the whole FV measurement should be categorised within Level 2 or Level 3.

(iii) Active vs. inactive market

A price must be quoted in active markets in order to be categorised as Level 1 within the FV hierarchy. An active market is defined in MFRS 13 as a market in which transactions for the asset or liability take place with sufficient frequency and volume to provide pricing information on an ongoing basis.

When the price is quoted in a market that is not active, quoted prices might not be indicative of FV, because they could include transactions that are not orderly (for example, forced liquidations or distress sales). Some common indicators of inactive markets include low volume of recent transactions and when price quotations are not based on current information. In this situation, the price should be adjusted in order to reflect the assumptions that market participants would use in pricing an asset or liability in an orderly transaction at the reporting date.

Example of prices quoted in inactive markets

An entity holds a 1% equity interest in a public company. The volume of trading for this equity instrument on the stock exchange was relatively low during the reporting period (for example, there were only a few widely dispersed transactions during the year). There is a wide bid-ask spread, and price quotations vary substantially among market-makers. The most recent trade happened two months before the closing date. Management has concluded that the effects due to passage of time over the last months are not significant and uses the available quoted price as the best estimation for the FV of the non-controlling equity interest at the closing date. Because the information relates to a quoted price in an inactive market, the price does not meet the definition of Level 1 input.

4. As both Level 1 and Level 2 inputs consider observable information, what is the difference between them? (continued)

(iv) Access to the market at the measurement date and observability

Under MFRS 13, management determines FV based on a transaction that would take place in the principal market or, in its absence, the most advantageous market. The principal market is the market with the greatest volume and level of activity for the asset or liability.

An entity must have access to the market at the measurement date in order to categorise the measurement as Level 1 within the FV hierarchy. An entity would have access to the market if:

- it has the ability to transact at that quoted price in an exchange market; or
- there are dealers standing ready to transact with the entity at that price.

The definition of Level 2 inputs includes inputs that are not directly observable but are corroborated by market data. Such market-corroborated inputs could be determined through mathematical or statistical techniques, such as correlation and interpolation. MFRS 13 does not provide specific guidance on the application of such techniques.

Example of access to a market at the measurement date

A commodities trader holds commodity X for which it has access to a wholesale market. The retail and wholesale markets have similar volume and level of activity for the commodity. However, the retail market selling prices are usually higher. The commodities trader cannot use the higher retail price as the FV of commodity X, because the commodities trader cannot access the retail market.

Example of input corroborated by observable market data

An entity entered into a two-year interest rate swap (“IRS”). The IRS pays KLIBOR + 1% and receives 5%. At the reporting date, the FV of the IRS is positive and the counterparty credit risk is considered insignificant (assume significant amount deposited as collateral and high-quality credit risk of the counterparty). The IRS is not exchange traded and there are no other transaction prices available, so management uses discounted cash flow analysis to measure FV. The contractual cash flows of the IRS are discounted at rates provided by a yield curve observed at commonly quoted intervals.

The yield curve is built based on yields on instruments linked to KLIBOR, such as future contracts traded on an active market. Future contracts have standardised maturity dates (for example, the first working day of each month). Because future contracts are limited to specific maturities, an interpolation methodology must be applied in order to find the market rate for all other maturities. For example, in the case of two future contracts expiring on 1 October 20X1 and 1 November 20X1, an interpolation methodology would need to be applied in order to determine the market rates for all dates between 1 October 20X1 and 1 November 20X1.

As the intervals of the yield curve can be corroborated by observable market data (in this example, future contracts quoted on active markets are the market evidence), such inputs meet the definition of Level 2 input.

5. When is an unobservable input significant enough to make the whole FV measurement Level 3?

There is no specific guidance in MFRS 13 regarding how to assess the significance of unobservable inputs. The absence of bright lines allows an entity to develop an internal methodology for determining significance, which should be applied consistently.

Either a qualitative or a quantitative approach, or a combination of both, could be applied for this purpose. Developing a qualitative approach will require judgement and consideration of facts specific to the asset or liability being measured. For example, projected cash flows are generally a key input in an income approach measurement; so, where those cash flows are unobservable and cannot be corroborated by market data, the whole FV measurement will be categorised as Level 3.

The determination of which inputs are significant to a FV measurement depends on facts and circumstances. However, the table below provides a number of inputs which might be considered significant to FV measurements:

Input	Description	FV hierarchy
(i) Future rental cash inflows	(i) Based on the actual location, type and quality of the properties and supported by the terms of any existing lease, other contracts or external evidence (such as current market rents for similar properties).	(i) Typically Level 3
(ii) Discount rates	(ii) Reflecting current market assessments of the uncertainty in the amount and timing of cash flows.	(ii) Can be either Level 2 or Level 3
(iii) Growth expectations	(iii) Considering market expectations on future performance of the entity's industry sector.	(iii) Can be either Level 2 or Level 3
(iv) Credit spread	(iv) Considering any credit enhancements related to the financial instrument.	(iv) Can be either Level 2 or Level 3

(i) Future rental cash inflows

The FV of an investment property can be measured using discounted cash flow projections based on reliable estimates of future rental income and expenditure, supported by the terms of existing lease contracts. When practicable, external evidence should also be used, such as current market rents for properties of a similar nature, condition and location. The use of the income approach to measure the FV of investment properties is likely to result in a Level 3 measurement, because the most significant inputs to the valuation technique will be the projected rental income and expenditure which are unobservable inputs.

5. When is an unobservable input significant enough to make the whole FV measurement Level 3? (continued)

(ii) Discount rates

Discount rates that reflect current market participant assessments of uncertainty regarding the amount and timing of cash flows should be used to discount the projected future cash flows. Whether the inputs used in computing the discount rate are significant will depend on specific facts and circumstances.

For example, when applying discounted cash flow analysis to measure FV of derivatives (for example, swaps and forwards), future cash flows are usually estimated based on contractual terms, and the discount rate computation typically includes a yield curve observable at commonly quoted intervals (which is a common example of a Level 2 input).

In other circumstances, the determination of the appropriate discount rate might be more complex. For example, discounted cash flow analysis could be applied in measuring the FV of unquoted equity instruments. It would require estimating the future expected cash flows of an investee and discounting them to present value at a rate of return that accounts for the time value of money and the relative risks of the investment. Unlike the derivatives example in the previous paragraph, where future cash flows are estimated on a contractual basis, the future cash flows from an equity instrument are estimated based on possible future cash flows and their respective probabilities. Such input is one of the most significant inputs to the valuation technique and it would trigger, by itself, the classification as Level 3 within the FV hierarchy. With respect to the discount rate, the weighted-average cost of capital ("WACC") is generally an appropriate starting point for valuing unquoted equity instruments. In certain circumstances, the WACC might need to be adjusted if the cash flows do not represent market participant assumptions (for example, because the information needed to adjust the cash flows is not available). In this case, the WACC might need to be adjusted for premiums and discounts in order to reflect the relative risk associated with the particular business. These are key inputs to the valuation technique and, therefore, would result in classification as Level 3 within the FV hierarchy.

The determination of a discount rate that adequately reflects all of the relevant risks for example, projection risk, share price return estimation risk and an entity's own credit risk) involves judgement and will often require the use of unobservable inputs. The use of unobservable inputs to determine a discount rate is likely to result in a Level 3 FV measurement.

5. When is an unobservable input significant enough to make the whole FV measurement Level 3? (continued)

(iii) Growth expectations

An entity is applying the income approach to estimate the FV of a non-controlling interest in an unlisted company. Management estimates the terminal value based on long-term sustainable growth rates ranging from 2% to 4%. Growth rates are applied in order to extrapolate cash flow projections. Management's assumption is supported by the expected relevant average industry growth rate, which is based on observable market data.

The growth rate meets the definition of a Level 2 input, as it can be corroborated by observable market data. Another example of a Level 2 input is inflation, which is used as a starting point when developing growth expectation of some industry sectors. However, the expected future cash flows are one of the most significant inputs to the valuation technique. These are unobservable inputs and meet the definition of a Level 3 input. Therefore, the whole FV measurement will often be categorised within Level 3 of the FV hierarchy when applying discounted cash flow analysis to measure FV of unquoted equity instruments.

(iv) Credit spread

MFRS 13 requires disclosure of the FV of financial instruments measured at amortised cost and its corresponding level within the FV hierarchy.

An entity entered into a fixed long-term borrowing which is measured at amortised cost. The entity is not listed, and public information on its own credit risk (for example, credit default swaps, bond spreads, external ratings and other comparable instruments) is not available. The borrowing is uncollateralised and credit enhancements are considered immaterial.

At the reporting date, management applies discounted cash flow analysis in order to measure the FV of the borrowing. The discount rate computation included two key inputs:

- time value of money, based on a yield curve observable at commonly quoted intervals (Level 2 input); and
- credit risk, supported by management's assumptions on the entity's own credit risk (Level 3 input, because the input cannot be corroborated by market evidence).

In this example, the credit spread is an unobservable input, because it is based on management's internal assumptions. The credit risk is likely to have a significant impact on the FV measurement. Therefore, management concludes that the whole FV should be categorised as Level 3.

5. When is an unobservable input significant enough to make the whole FV measurement Level 3? (continued)

(iv) Credit spread (continued)

This example explores the consideration of credit risk when determining the FV of a borrowing. However, MFRS 13 requires the non-performance risk to be incorporated in the FV of financial instruments, including derivatives. The absence of credit enhancements (such as master netting arrangements effective upon default, collateral arrangements and termination provisions) could increase the credit risk and significantly impact the FV of the derivative.

Please note that there are a number of methods that an entity can apply to determine credit spread and this example illustrates only one of them. In measuring credit risk, an entity might consider including credit ratings, market credit spreads, credit default swap rates, other public information with respect to a particular or similar entity, and historical default rates. Some of these inputs might meet the definition of a Level 2 input.

Useful reference

The IFRS Foundation Education has develop educational material on FV measurement that describes, at a high level, the thought process and common valuation techniques for measuring the FV of individual unquoted equity instruments that constitute a non-controlling interest in a private company (ie the investee) within the scope of IFRS 9 / MFRS 9 "Financial Instruments" in accordance with the principles set out in IFRS 13 / MFRS 13. It also highlights the common oversights when applying the various valuation techniques.

Do you need further information on this topic?	Contact: Michelle Loh | Assurance Director from PwC Malaysia CMAAS Email: michelle.s.loh@pwc.com | Tel: +60 (3) 2173 0858
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