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Untangling the knots: navigating disputes arising from complex financial instruments

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Untangling the knots: navigating disputes arising from complex financial instruments

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Summary

IN SUMMARY

Complex financial instruments can create a labyrinth of risks and uncertainties, even for experienced traders and investors. Their inherent complexity and increased potential for unexpected losses often result in disputes. To properly address these disputes, it is essential to rely on expertise regarding the financial instruments themselves, the market conditions prevailing at the time of the dispute, industry practice in respect of transacting, the risk management and valuation of such instruments, and the relevant legal and regulatory frameworks.

DISCUSSION POINTS

- Examples of complex financial instruments
- Common risks
- How investments can go wrong
- Common grounds for claims in disputes
- Challenges in valuation

REFERENCED IN THIS ARTICLE

- Long-Term Capital Management
- Amaranth Advisor LLC
- Einar Aas
- Monte Dei Paschi di Siena
- Cum-ex and cum-cum schemes
- Archegos Capital Management
- US Securities and Exchange Commission
- Hong Kong Monetary Authority
- International Financial Reporting Standards

INTRODUCTION

Investing in complex financial instruments (CFIs), such as derivatives, can create a labyrinth of risks and uncertainties, even for experienced traders and investors. Their inherent complexity and increased potential for unexpected losses often result in disputes, which can arise from a multitude of sources, including divergent understanding of risks, rewards, valuation and economic expectations. To properly address these disputes, it is essential to have a deep understanding of the CFIs themselves, their markets and industry practice in respect of the trade, risk management and valuation of CFIs.

This article discusses the common themes in CFI-related disputes and indicates areas where specialist industry knowledge and expertise are necessary to assist solicitors, courts and tribunals to resolve disputes.

WHAT ARE CFIS?

CFIs, broadly, are instruments that are less common or more esoteric in nature, and for which the risks (and, therefore, value) are hard to model. This includes instruments that:

- do not rely on standardised documentation or are tailored to the specific requirements of the involved parties (non-standard or unique terms);
- have embedded derivatives or optionality, or hybrid, profiles (debt-to-equity);
- are dependent on complex relationships (eg, several dependent economic variables);
- have no obvious proxy market or are illiquid in nature; and
- are not inherently complex but their valuation becomes complex due to a special situation (eg, a restructuring or a rapid and unexpected change in market circumstances).

A few examples of CFIs are:

- preferred redeemable shares;
- restricted shares;
- shareholder priority rights;
- warrants;
- futures;
- swaps;
- options;
- structured products;
- contingent products, such as:
    - credit default swaps;
    - convertible or reverse-convertible bonds; and
    - certain non-financial contracts that resemble or include significant derivative elements, such as virtual power purchase agreements.[1]

Virtual power purchase agreements do not involve the physical delivery of electricity but instead exchange periodic cash flow based on a fixed and a floating benchmark price as well as delivery of the related renewable energy credits over a known period. Such agreements are considered essentially contracts for difference along with an agreement to deliver the renewable energy credits, so may be deemed derivatives contracts.

Different CFIs have different levels of complexity and can be used by experienced and sophisticated investors, such as:

- retail investors, who may invest in relatively simple structured deposits to gain exposure to assets or markets that are otherwise difficult to access;
- experienced high net worth individuals, who may invest in more customised structured products to suit their specific market views;
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corporates, which may use tailored interest rate hedging products to manage the interest rate risks of borrowings or the foreign exchange risks of exports,

- collective investment vehicles, which may invest in hybrid instruments such as convertible bonds to benefit from the equity-like upside potential while maintaining debt-like downside risk protection; and
- hedge funds, which may invest in complex combinations of options or option strategies; for example, to isolate their investment exposure to volatility from equity, credit risk or interest rates.

WHAT ARE THE COMMON RISKS?

CFIs are the result of a long history of financial innovation in financial engineering. CFIs are at the forefront of financial innovation and can be a solution to manage risk, provide new investment opportunities, accommodate risk and return compromises, and resolve new financial engineering dilemmas. Although CFIs have some positive attributes, some of their other features can result in unexpected adverse outcomes. Some of the risks associated with CFIs are discussed below.

Valuation

CFIs typically do not have a readily available market on which they can be purchased or sold. This is due to their inherently complex nature, which presents a valuation challenge. To address the lack of a market, CFI valuations often rely on theoretical mathematical models and proxy market data.

For example, consider a European option on publicly listed equity, which is usually valued using the well-known Black–Scholes option pricing model.[2] Despite this model's relative simplicity, it requires a critical input in the form of the expected volatility of the underlying stock prices over a future period. Implied volatility is available for standardised options (ie, most common currencies, maturities and strikes), but not for bespoke options; if an investor wants to trade a non-standard maturity and strike, it will not be able to observe a price in the market on which standard options are listed. In this specific case, although investors will not know the price, market makers can estimate it by marking the non-standard option to the model. In other words, valuers can estimate the implied volatility of an option with bespoke maturity and a strike by referencing widely available data from the standardised market (similar to interpolating between the closest maturity and strikes available in the market), and then use the Black–Scholes model to value the option. This is a process known as calibration, wherein a non-traded instrument is valued by calibrating a market standard model by looking at proxy instruments.

Beyond the Black–Scholes model, which is suitable for vanilla European options, option pricing models become increasingly sophisticated with the inclusion of exotic features (eg, barriers and averaging pay-offs) or more complex underlying assets (eg, a basket of equity shares or an index). These additional elements render the pricing of CFIs more complex and challenging. For example, a convertible debt instrument has features of both a bond and an option on a stock. As a result, both features need to be valued separately to arrive at an appropriate valuation, and basket options need to account for correlations between the assets that are part of the basket.

Additionally, market data and economic conditions can change rapidly, further complicating the valuation process. As a result, valuing CFIs requires a deep understanding of the models,

valuation techniques, and market data and circumstances that prevail at the time of a valuation.

Market Liquidity

An asset is considered liquid when it can be disposed of for cash at short notice without a significant discount to its value. A market is considered liquid if it has sufficient trading volume and allows for buying and selling with minimal price impact and delay.

Secondary markets (ie, markets where issued products are traded among investors) for CFIs are not always liquid or may not even exist. For example, not all listed equity shares have listed derivatives trading. Furthermore, warrants on privately held companies are often structured in various transactions, such as M&A or restructuring transactions, but there are no secondary markets for the warrants to be traded. In fact, there are no secondary markets for private company shares at all. In the case of structured products, although issuers often try to provide liquidity in secondary trading (eg, by buying back issued products from investors), such products are often, if not always, traded on a best endeavour basis. There is no guarantee of a liquid secondary market.

The lack of liquid secondary markets means that, when exiting a position before maturity, investors could be subject to significant exit costs, often in the form of large bid–ask spreads, illiquidity discounts, marketing or other transaction costs. Illiquid assets also attract higher haircuts (ie, the discount applied to the value of an asset to assess its lending value) when used as collateral to obtain financing.

Lack of marketability will therefore have an impact on value and add to the challenge of valuing CFIs.

Leverage

Risks due to a lack of transacted prices and market liquidity are further exacerbated by the embedded leverages of CFIs. Here, we discuss leverage in the basic economic and financial sense (ie, the magnification of the underlying performance as well as risk), not the legal or regulatory definition of the word.

The term 'financial leverage' refers to using borrowed funds to increase return on investment. In other words, financial leverage amplifies the potential gains from an investment, but also magnifies the potential losses. Investors and traders often use it to increase their buying power and invest in assets that they otherwise might not be able to afford. The amount of leverage used can significantly impact the overall risk and return of an investment (and, therefore, its value).

Not all CFIs involve leverage. However, if leverage is used (eg, a holding company raising debt to buy equity in an underlying operating company), investors will expect additional returns in exchange for taking higher levels of risk. For example:

- A call option allows an investor to participate in the upside potential in an underlying share while paying only a fraction of the cost of purchasing the underlying share upfront (ie, the premium required to purchase the call option is a fraction of the underlying share value).
- Futures and swaps provide investors with full exposure to an underlying asset and usually require investors to place collateral in the form of an initial margin

(representing a fraction of the underlying value) and an additional margin following adverse market price movements.

- Initial premiums paid or margins pledged represent the capital at risk, which typically accounts for a fraction of the cost of the underlying asset. Therefore, derivatives are considered instruments with inherent leverage.

Estimating leverage for derivatives can be complex, particularly when a combination of options and other derivatives is used. Different definitions, interpretations and calculation methods for leverage exist and can vary across financial instruments, regulators and asset classes.

Leverage Embedded In An Option – An Illustrative Example

Even in the case of instruments with capped losses (eg, bought options, where the maximum amount that an investor can lose is the premium paid), the speed at which the premium can be lost is higher than the changes in the underlying asset prices.

Suppose an investor bought a European call option on one hypothetical equity share currently trading at US$3,000. The option is bought at the money with a strike of US$3,000. The maturity of the option is half of one year, volatility is assumed at 30 per cent, the risk-free rate is assumed to be 4 per cent and the dividend yield is zero. Upon purchase, the premium of the call option would be approximately US$282. Consider the following scenarios:

- If the share price immediately increased by 17 per cent to US$3,500, the option would be worth US$638, representing an approximately 126 per cent gain to the option premium (approximately eight times the price increase).
- If the share price immediately dropped by 17 per cent to US$2,500, the option would be worth US$73, representing an approximately 74 per cent loss to the option premium (approximately four times the price drop).
- If the share price immediately dropped by 33 per cent to US$2,000, the option would be worth US$7, which represents a loss of approximately 98 per cent and nearly wipes out all the option premium's value. The embedded leverage is about three times in this case.

The reality is more complex than the above example as option prices are also affected by changes in remaining time to maturity, interest rates, volatility and dividend yields (in the case of equities) or convenience yields (in the case of commodities or energy). The sensitivity of option prices to changes in underlying prices is not linear and changes at different price levels. For simplicity, we have assumed no other changes in this example to clearly illustrate the embedded leverage of an option.

Counterparty Risks

Counterparty risk in derivatives trading comprises the risk of the counterparty failing to fulfil its obligations under a derivatives contract, including, among other things:

- failures to deliver assets or make payments;
- failures to provide additional collateral when requested;
- downgrades of the counterparty's credit rating;
- the counterparty repudiating or rejecting a contract;

- the counterparty cross-defaulting on other transactions;
- restructuring events;
- breaches of debt covenants; and
- bankruptcy.

What constitutes an event of default depends on the particular contract governing the transaction and could cover more than one type of default.

To mitigate counterparty risk, many financial institutions use collateral, credit default swaps and other financial instruments (eg, parental guarantees or letters of credit) to protect themselves. Additionally, industry-specific standard practices, such as the use of clearing houses, can also help to manage counterparty risk by ensuring that counterparties meet their obligations incrementally. Clearing houses or clearing brokers require margins to keep positions in derivatives open to mitigate the risk of counterparties failing to settle financial losses from the trade, which protects each party from the potential losses that would arise from the other party defaulting.

Margining Mechanisms – An Illustrative Example

In a clearing setup, the clearing house acts as a third-party intermediary between the two parties to a trade, ensuring that both parties fulfil their obligations under the contract. The clearing house's margins serve as a guarantee that each party can meet its financial obligations and as protection from loss in the case of default.

The clearing house typically requires an initial margin upon opening a position, which is determined based on the size of the trade in relation to market volume, price and the volatility of the underlying asset. The initial margin mitigates the possible losses that would arise when liquidating the position should one party default.

As market prices evolve over time and move away from the initial prices, unrealised gains or losses arise depending on the direction of trade and price movement. The clearing house periodically – typically daily, but also more than once per day in some cases – reassesses the value of the derivatives contract against the most recent market price. Any unrealised gains or losses arising from the price movement are settled by the parties on a daily basis in the form of the variation margin, which serves as protection to the effect that, should the party with the unrealised loss default, the party with the unrealised gain could seize the variation margin and restore its position.

When variation or initial margin requirements increase, clearing houses ask for additional margins to be paid to restore the required margin levels (margin calls).

Accounting

CFI accounting can be complex. Depending on the specific features of a given CFI, the most basic accounting classification (eg, whether an item is a liability or an equity) could vary significantly. For example, a preferred stock could be classified as a liability, a mezzanine equity or a permanent equity item on the balance sheet, depending on:

- whether the instrument contains conversion or redemption options;
- whether the redemption is mandatory;
- who can initiate the redemption options; and

- whether the redemption is for a fixed amount of cash or a known number of shares.

By default, the International Financial Reporting Standards require derivatives to be accounted for at fair value on the balance sheet, with any changes in the fair value recognised through profit or loss. Depending on whether hedge accounting is applicable, derivatives could be accounted as a fair value hedge, a cash flow hedge or a net investment hedge, with the changes in the fair value of a derivative recognised in other comprehensive income.

There are further accounting considerations – such as whether certain instruments are construed as assets or liabilities, or contingent assets or liabilities – that should be kept in mind. Assets or liabilities would be recognised on the balance sheet, while contingent assets or liabilities would be kept off the balance sheet.

WHERE DO CFI-RELATED DISPUTES ARISE?

In light of the wide range of incidents observed in the market and the disputes we have worked on, some common ways in which investing in CFIs may go wrong and where disputes may arise are detailed below.

How Investments In CFIs Go Wrong

More often than not, disputes arise when larger than expected losses arise or lower than expected gains are realised. Typically, CFIs go wrong when an unexpected adverse market event leads to a larger than expected drop in the value of an investment. A CFI's performance can be impacted by a wide array of events, including:

- macroeconomic events, such as:
    - in 1998, the Russian financial crisis;
    - in the early 2000s, the dot-com bubble;
    - in 2008, the global financial crisis;
    - post-global financial crisis, the Greek sovereign debt restructuring;
    - the August 2015 stock market sell-off;
    - Brexit;
    - the covid-19 pandemic; and
    - in 2022, Russia's invasion of Ukraine;
- issuer-specific events, such as:
    - mergers;
    - acquisitions;
    - liquidations;
    - bankruptcies;
    - compulsory redemptions;
    - expropriations; and
    - short squeezes; and
- otherwise extreme economic circumstances, such as:

- sharp changes in central banks' interest rates;
- extreme market volatility;
- correlation in market prices across usually uncorrelated variables;
- negative interest rates;
- negative commodity prices;
- sharp foreign exchange movements;
- sharp increases in credit spreads;
- increases in inflation; and
- unexpected changes in other economic indicators.

Large market price movements can lead to margin calls, and failures to meet such calls could lead to forced early terminations. Closing large positions in stressed market conditions could further adversely impact market prices, leading to larger margin calls and potentially spreading the risk to other market participants, which may even threaten the viability of the clearing house and its members. Some examples are detailed below.

Long-Term Capital Management

Long-Term Capital Management (LTCM), a hedge fund founded in 1994, lost approximately US$4.6 billion in its collapse in 1998. LTCM had used sophisticated mathematical models and employed a high level of leverage in its trading strategy. In 1998, LTCM suffered significant losses when the Russian government defaulted on its debt, triggering a global financial crisis. As LTCM's losses mounted, it was forced to liquidate its positions to raise cash to meet margin calls, which put further downward pressure on the markets. LTCM's situation posed a risk to the stability of the financial markets such that the Federal Reserve Bank of New York intervened and orchestrated a bailout for LTCM, which involved a consortium of banks and other financial institutions providing a US$3.6 billion rescue package to the fund. The LTCM collapse is considered a key event in the history of modern finance that helped to shape the regulatory and risk management practices of the industry.[3]

Amaranth Advisor LLC

In 2006, Amaranth Advisor LLC built up exceptionally large positions in the crude oil futures market. For example, Amaranth held up to 81 per cent of NYMEX futures' open interest in the December 2007 contracts, 60 per cent of the open interest in all NYMEX natural gas futures contracts in 2010 and 40 per cent of the open interest in NYMEX 's 2006 winter contracts. When market prices moved against Amaranth's positions, the margin requirement reached up to US$3 billion, forcing Amaranth to liquidate its positions at discounted prices, which incurred further losses. As market prices further deteriorated, Amaranth eventually suspended trading and entered liquidation on 1 October 2006. It was estimated that Amaranth's investors lost US$6.5 billion in its collapse.[4]

Einar Aas

In 2018, Einar Aas, a Norwegian power market trader, failed to meet margin calls from Nasdaq Clearing AB in Sweden and defaulted on its large positions in Nordic power spreads. The position was so big in relation to the market's liquidity that liquidating the defaulted positions exhausted the margins provided by the trader and further caused a €114 million

loss, including €7 million borne by Nasdaq Clearing AB and €107 million in contributions from clearing members.[5]

Common Grounds For Claims

While many disputes have multiple grounds for claims, there are a few common themes in disputes arising from CFIs, as set out below.

Close-outs

Disputes in early termination (ie, close-outs) of derivatives or repurchase agreements can often arise from challenges regarding whether the close-out amounts calculated by the non-defaulting party were in adherence to the governing master agreements and, more specifically, whether they were:

- commercially reasonable;
- using an industry-accepted methodology; and
- based on supportable and reasonable data and assumptions.

Suitability, Mis-selling

Disputes regarding suitability or mis-selling are brought by individuals or corporates against financial institutions. They are often rooted in whether the investment recommendation or advice (or hedging advice, in the case of interest rate hedging products) was suitable for the investor based on an adequate assessment of the investor's investment objectives, risk profile, financial position and level of investment experience. In addition, whether the risks associated with the CFIs were duly disclosed and accurately explained without omission or misrepresentation is often challenged.

Misrepresentation

Disputes about whether investment managers adequately informed their client or clients about the economics and risks associated with the CFIs that they recommended to the client or clients often arise. In particular, the client or clients may argue that the complex risks embedded in CFIs and the circumstances in which such risks might materialise were not explained to them.

Mismanagement, Negligence

Mismanagement and negligence disputes concern whether investment managers have adequate systems and controls in place to monitor the risks associated with CFI investments properly. They also assess whether investment managers demonstrated due care and skill as well as if they made investment decisions that complied with relevant investment limits and mandates.

Accounting Fraud

Under certain conditions, the economic substance of a CFI could be interpreted as a combination of other more vanilla instruments. The accounting of derivatives and vanilla financial instruments are significantly different. By decomposing the features of a CFI into various, more vanilla instruments, an institution may be able to manipulate the CFI's accounting treatment and present a very different view of its financial position and performance, which could mislead shareholders and consequently cause them to suffer losses.

Such accounting differences have led to high-profile instances of litigation. For example, in a case against Banca Monte dei Paschi di Siena (an Italian bank), the prosecutor alleged that the bank (with assistance from other banks, including Deutsch Bank and Nomura) used derivatives in several structured transactions and manipulated the accounting of these transactions to conceal losses in previous investments. Several executives and employees of the three banks were sentenced to prison before being acquitted at appeal.[6]

Liquidation, Insolvency

Disputes often arise in liquidations of portfolios (or a part of the portfolio; for example, to satisfy margin calls) or insolvency proceedings regarding the significant uncertainties in the valuation of CFIs, which could lead to gaping differences in the amount that creditors can recover.

Disputes could also arise from whether CFIs were appropriately managed with regard to risk, transferred or closed out, leading to arguments about whether the management action or inaction was responsible for the insolvency.

Another area in liquidation that is often subject to dispute is that of best execution. Regulated investment firms have a fundamental responsibility to act in the best interests of their clients and secure the best results possible on their behalf. In a liquidation scenario, which often follows stressed and volatile market conditions, liquidating a client's position requires careful execution as well as robust documentation to evidence best execution both before and after the fact.

Rogue Trading, Market Manipulation

Derivatives have seen a significant increase in regulation and governance since the 2008 global financial crisis. However, they still lack the same level of reporting obligations and transparency as more traditional financial instruments. The use of derivatives, if not properly accounted for and monitored, can potentially lead to the concealment of risks exceeding limits or even unauthorised trades.

Tax Arbitrage

Derivatives have been widely involved in dividend arbitrage trading schemes (eg, cum-ex and cum-cum schemes) devised to minimise dividend withholding tax or even receive duplicate tax reclaims, which could constitute criminal activities. In cum-ex and cum-cum schemes,[7] multiple parties located in different tax regimes use combinations of buying, selling, borrowing and lending of underlying dividend-paying shares and derivatives with some timing differences around dividend payments to enable the involved parties to reclaim dividend withholding tax more than once (sometimes multiple times on one share).

Shareholder Dispute

CFIs such as warrants, redeemable preferred shares and structured share-based payments are often issued as part of capital structure reorganisations following M&A or restructuring operations. The uncertainties surrounding CFI valuations may lead to disputes regarding whether the parties are receiving appropriate compensation. For example, minority shareholders may dispute whether a certain class of redeemable preferred shareholders received undue enrichment due to the economic benefit associated with the preferred shares being greater than the capital that they have injected.

Other Misconduct

Disputes may also arise due to challenges to financial institutions' conduct surrounding other activities that had an indirect impact on certain transactions or instruments. For example, misconduct in a bank's submission for the calculation of the LIBOR benchmarks can lead to disputes about loans or hedging products that reference LIBOR benchmarks.

Obscured Risks – An Illustrative Example

The use of derivatives, if not properly monitored, can lead to risks exceeding limits being obscured.

For example, in March 2021, Archegos Capital Management, a US$10 billion family office, failed to meet margin calls from several US Wall Street investment banks acting as its prime brokers. In the ensuing days, the banks rushed to liquidate Archegos' positions. On 26 March 2021 alone, stocks worth approximately US$20 billion were sold at discounted prices, knocking about US$33 billion in value off the affected companies.[8] Once the dust settled, banks had lost over US$10 billion from Archegos' collapse, with Credit Suisse losing US$5.4 billion and Nomura US$2.9 billion.[9]

It later turned out that Archegos had borrowed aggressively from the investment banks to build up concentrated positions in the equity shares of several companies (estimated at US$50 billion), combining all positions with all prime brokers. Furthermore, many of Archegos' positions were built up through the use of total return swaps, which allowed Archegos to get exposure to share price movements without having to own the shares outright. Instead, the prime brokerage banks would have bought the shares and swapped returns based on the share price movements. More importantly, the use of swaps allowed Archegos to remain anonymous without having to disclose its significant interests in the publicly listed companies, even when Archegos was estimated to have had economic exposure to more than 10 per cent of several companies' shares.[10] It was possible that the use of swaps concealed the severity of the risk to which the prime brokers were exposed (ie, the investment banks may have been unaware of the true size of the positions that Archegos had built with other banks).[11]

Following these events, in December 2021, the US Securities and Exchange Commission proposed greater transparency rules that would compel investors to disclose swap positions.[12] Bill Hwang, founder of Archegos, was arrested by US authorities in April 2022 and charged with racketeering, fraud and market manipulation.[13] The Hong Kong Monetary Authority is developing a system to track concentrated exposure to shares as part of efforts to prevent an Archegos-style collapse.[14]

VALUATION CHALLENGES

Although CFIs are complex in nature, valuation practitioners have over the years developed methodologies and practices for reducing the uncertainties related to risk and value associated with CFIs. Here, we discuss key challenges often faced by valuers.

Reviewing The Documentation

Valuation errors are often rooted in an inadequate understanding of the terms of a transaction. Spending enough time and resources when reviewing the governing economic and legal terms of a derivatives transaction is an important first step. Details on transaction confirmations or term sheets matter, particularly for exotic transactions with esoteric pay-offs and economic conditions.

Replicating The Economic Profile

The economics of structured derivatives can often be replicated with a combination of more standard instruments. For example, structured notes involve a combination of a bond floor bearing the credit risk of the note's issuer and some derivatives. For major issuers, it is possible for a bond with a similar maturity and seniority as the structured note to be traded in the market, which could be used to benchmark the yield-to-maturity of the bond floor. Therefore, understanding whether a structured product can be fully decomposed into a combination of more standard products makes the modelling exercise easier, provided that the component parts have readily available markets. The banks who generally structure such products follow the same process to value or hedge the products.

Market Data

It is vital to investigate what market data was available at certain points in time and to test whether such data is reliable for a valuation exercise. Where valuations are performed retrospectively, it is crucial to consider only the information that was available at the time of the valuation.

Prevailing Market Conditions

Gaining knowledge on liquidity, trading restrictions, market suspensions, measures taken by market authorities, market announcements (eg, central bank decisions) and news or market updates provided to traders may provide context to a valuation. This is particularly important where there is a lack of market consensus or assumptions need to be made regarding market uncertainties at a particular point in time.

Choice Of Valuation Approach

It is critical to choose a valuation approach that is appropriate to and consistent with market standards and conditions at the time of the valuation. The nature of the instrument, its complexity and the availability of a market influence the valuation approach. Below, we outline five generic valuation approaches.

Quoted Price

This approach relies on a readily available market for an instrument. A readily available and observable market is one in which the quantity and traded price for the given instrument is available.

Mark-to-market

In this approach, the instrument may not be standard but on a readily available and observable market for standard instruments referencing the same underlying performance (ideally, where the quantity and traded price for the standard instrument is available) can be relied upon, and there is a recognised modelling approach to calibrate the price of the instrument in question to the more standard instruments.

Mark-to-model

This approach applies in cases where there is no readily available market for instruments referencing the same underlying performance but there is a recognised modelling approach available, indicative prices can be obtained or transactional information (including price and volumes) for proxies can be identified, or a combination thereof.

Specific

This approach applies in cases where there is no readily available market for instruments referencing the same underlying performance, there is no recognised modelling approach available and some risk factors cannot be modelled, but indicative prices can be obtained or transactional information (including price and volumes) for proxies can be identified, or both.

Theoretical

This approach applies when the instrument has unique characteristics, and there is no readily available market for instruments referencing the same underlying performance, there is no recognised modelling approach, some risk factors cannot be modelled, no indicative prices can be obtained and no proxy can be identified.

Fair Value Hierarchy

Accounting standards (eg, the International Financial Reporting Standards) categorise the inputs used in valuation techniques into three levels, giving the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities and the lowest priority for unobservable inputs. If a valuation involves inputs of different levels, the categorisation of the valuation is based on the lowest-level input that is significant to the valuation.

Level 1 valuation is considered the easiest and most reliable, while Level 3 is considered the hardest and least reliable. Level 1 inputs are (unadjusted) quoted prices in active markets for identical assets or liabilities. Level 2 inputs are observable but not included in Level 1 inputs; for example, quoted prices for similar assets in active markets, or quoted prices for identical or similar assets in markets that are not active. Level 3 inputs are unobservable inputs.

CFI valuations often do not fall into Level 1 due to a lack of active markets. In fact, valuing CFI will often involve one or more significant inputs that are unobservable, rendering the valuation a Level 3 valuation.

Model Validation

The valuation exercise can be very sensitive to calibration and modelling assumptions. Using closed-form mathematical solutions, where appropriate, will make the modelling exercise more stable and less computationally expensive relative to statistical methods (such as Monte Carlo simulations). Meanwhile, it is important to understand the limitations of closed-form solutions as they tend to be developed with specific assumptions or boundary conditions.

Where assumptions need to be made or bespoke models developed, it is important to test the consistency of the model output by stressing the inputs and assumptions. This is particularly relevant for the specific and theoretical valuation approaches as there may not be benchmark models available to validate the results.

CONCLUSION

Understanding the risks associated with, and value of, CFIs requires deep expertise. Market knowledge, industry expertise and quantitative modelling skills are key in assisting parties, courts or tribunals to navigate how the economic features of CFIs impact their risk and value in specific contexts and at specific points in time.

Endnotes

1 The use of CFIs at an early private equity stage in certain industries (eg, pharmaceuticals) adds a layer of complexity regarding their valuation due to the potential difficulty of identifying comparable companies or instruments. Back to section

2 Depending on when an option can be exercised, options come in different styles. For example, a US-style option can be exercised any time before and up to its maturity, a European-style option can be exercised only upon its maturity and a Bermudian-style option can be exercised at certain points in time before its maturity. Back to section

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