MODULE 2 UNIT 1
Hedge funds

IN COLLABORATION WITH getsmarter™

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Learning outcomes:

LO1: Review the principles of systematic trading within hedge funds.

LO2: Identify the characteristics of hedge funds and their history.

LO3: Identify which types of investors tend to invest in hedge funds.

1. Introduction

Within the investment industry, there are numerous types of funds, such as investment trusts, unit trusts, and hedge funds. Systematic trading is widely used in the hedge fund industry, and it is a core concept within this programme. Hedge funds can be hard to define, but there are certain characteristics that are common among them, that are covered later in the lesson. Hedge funds are considered an integral part of the investment space.

This lesson looks at systematic trading, the key characteristics of hedge funds, their history, key risk considerations, terminology associated with them, and the makeup of their typical investors. You will then look at different risk considerations for hedge funds and briefly indicate how these can be handled. The next section defines systematic trading and provides a short outline of its history.

2. Systematic trading

Systematic trading refers to the application of a predefined trading strategy to the process of buying and selling financial securities. This process can be developed using an array of analysis techniques, such as technical or fundamental analysis.

A key part of the methodology is backtesting it on historical data. Simply put, once you have developed a set of rules, you follow this same set of rules for every trade, and do not change the method for each individual trade without altering the rules. In discretionary trading, you can change your decision on a trade-by-trade basis; you don't have to follow the same rules each time. In systematic trading, the rules that you follow are updated to take into account various economic situations, but the entire system would be updated, and, from that point, you would apply the same updated method to each trade. Systematic trading takes the intuition and the emotion out of trading. Therefore, more discipline is required. In many cases, a systematic trading strategy is also simply referred to as a trading system.

The systematic approach to trading has been around since before the widespread use of computerised systems. By the 1920s, trading systems were already in place. People made use of manual calculations based on charts and data. Traders might have had their weekly data posted to them or might have collected it from the exchange in person.

Testing the trade systems was extremely time-consuming and costly, as it was done on hand-drawn charts. Some systematic traders would make use of graphs drawn on glass and place these over recent market action to gauge the predictive power of their models (Ruggiero, 2014).

Systematic traders operate in a similar way to climatologists, who use past weather patterns to predict future trends. Climatologists look at years when weather patterns are congruent with the coming season's conditions, and extrapolate to make future predictions (Klocek, 2004). Many of these early systems were highly complex and difficult to use – significant work went into simplifying these systems in order to make them more accessible. Much of this work was done in the 1970s, and one of the products of this was the Turtle system that you learnt about in the enrichment activity in this unit.

Not all systematic trading systems were as successful as the Turtle approach, or even successful at all. A core aspect that affected their success is that these trading systems ultimately relied on human implementation. While the rules themselves can be absolute, the people administering them – whether through error, fear, or greed – can deviate from the rules. This can cause significant alteration from the predefined rules and ultimately lead to the failure of the trading system. This is not to say that deviating from the rules is the only reason why these old systems failed, nor does it mean that all trading systems work; some are flawed, and can simply lose money on their own. These issues – coupled with the fact that some people sold fake trading systems – led to a strong negative perception of trading system vendors (Ruggiero, 2014).

Something was missing. Early developers did not properly incorporate backtesting or optimisation. While this is not surprising – considering that old systems were developed by hand and the optimisation calculations would have taken far too long to perform – backtesting (covered further in Module 3) is an essential step for ensuring a trading system's effectivity. With the advent of computerised systems, it was possible to try millions of different combinations of rules and parameters, and traders were able to backtest and optimise their systems. By using statistical testing, traders are now able to ensure that the success of models is not based on chance, but rather the result of the rules that define the trading system.

Institutional investors, such as hedge funds, often need to trade large amounts of stock. In order to do this without impacting the price, they break the transaction down into many smaller trades that can be executed using algorithmic trading (a computerised form of systematic trading system).

Note:

At this point in the lesson, you have the opportunity to engage with a practice quiz to test your understanding of the content. Access this lesson on the Online Campus to engage with this quiz.

3. Hedge funds

A hedge fund can be described as a “loosely regulated investment company that aims to generate absolute returns and charges incentive fees as well as management fees”. This is a very general description, and could describe certain funds that are not hedge funds as well. While there is no absolute all-encompassing definition, hedge funds are largely information-orientated funds that attempt to “hedge” away all possible sources of risk not part of the price-relevant information they are speculating on – they take positions that offset overall risk (Connor & Woo, 2004).

While not strictly the same, you can think of hedging as something of a safety net or an insurance policy. For example, if you purchase car insurance, you are hedging against the possibility of an accident or theft occurring. In financial markets, it is more complicated, involving the strategic use of financial instruments to counteract the risk of negative price movements.

There are some legal definitions that are useful to know when discussing hedge funds. The first is commodity pool operator (CPO). All hedge funds that trade in futures need to be registered as CPOs. The second is commodity trade adviser (CTA). A CTA can be an individual or an organisation that trades or offers advice on futures, commodity options, or swaps.

The primary characteristics of hedge funds are as follows:

- They are structured as limited partnerships or limited-liability corporations.
- They make extensive use of leveraging techniques.
- They make use of offshore registrations.
- They charge incentive (performance) fees.
- Their returns are uncorrelated to stocks or bonds and, as such, they are considered alternative investments.
- They are allowed to short.
- They often have lock-up periods.
- They are typically not required to publish their holdings, which decreases transparency around their activities.
- They are open only to “qualified investors”, which means that only investors who meet the criteria established by the fund are permitted to invest.

3.1 Hedge funds vs mutual funds

In the interest of further defining hedge funds, it can be useful to compare them to other types of funds, and note the key differences. Mutual funds are the first that are explored here.

The primary characteristics of mutual funds are as follows:

- They usually do not charge their investors incentive fees.
- They do not typically make use of leverage.
- They are transparent, meaning that they publish their holdings.
- They maintain a certain level of liquidity, making redemption possible at any time during market hours.

Both hedge funds and mutual funds are made up of groups of underlying financial securities. They both have a large number of securities available for them to invest in, and both offer investors significant diversification opportunities (BarclayHedge, n.d.).

Hedge funds are not subject to the same regulations as mutual funds. Depending on their size, some do not have to register with or submit public reports to the US Securities and Exchange Commission (SEC), a financial industry oversight entity (Securities and Exchange Commission, 2012).

Due to this difference in regulation, hedge funds can use a wider range of financial instruments than mutual funds. They use traditional investment devices, but they also make significant use of derivatives in order to implement sophisticated investments and strategies (BarclayHedge, n.d.). Derivatives are financial instruments whose values are based on underlying assets such as stocks or bonds. The primary forms of derivatives are options, futures, and swaps. They give investors the right to buy, sell, or trade the underlying asset for a specified amount at a future date (Financial Times, n.d.). These strategies are often highly leveraged, meaning debt has been used to finance them. The high degree of leverage, coupled with their complexity, means these strategies are subject to a high degree of risk.

For a mutual fund, the share price is calculated every day, and mutual funds are required to allow investors access to their funds at any stage. Hedge funds often have lock-in periods. This means that you cannot sell your shares in a hedge fund for a specified time, which typically makes hedge funds less liquid than mutual funds (Investment Company Institute [ICI], 2007).

The fee structure of hedge funds is unique in that, legally, there isn't a limit on the charges that a hedge fund manager can request from investors. Typically, they charge a fee based on the value of assets they are managing, as well as a performance fee based on returns. In contrast, fees are paid to mutual fund managers irrespective of their fund's performance (ICI, 2007).

3.2 Hedge funds vs private equity funds

Moving on from mutual funds, it is useful to contrast hedge funds with private equity funds (PEFs). The key difference between the two is that a hedge fund is focused on maximising short-term profit, and so invests in a wide range of relatively liquid securities; while a PEF focuses on long-term profit, investing directly in companies, and often locking in investors for 5–10 years.

The primary characteristics of PEFs are as follows:

- Their legal structures are the same as, or similar to, those of hedge funds.
- They charge incentive fees, but only when an investment is liquidated.
- They use leverage, as hedge funds do.
- They are correlated to the stock market.
- They offer even less liquidity than hedge funds.

In this module's videos, you will hear industry experts introduce an array of topics relating to hedge funds and their nature.

3.3 The history of hedge funds

As mentioned by Professor Vulkan in his opening video in this unit, the first hedge fund was created in 1949 by the Australian investor and sociologist Alfred Winslow Jones. His idea was to maintain an approximately equal number of long and short positions, hedging his portfolio against the possibility of a market downturn or crash. His success was considerable. In the first five years, his fund outperformed the best mutual fund of the time, Fidelity Trend Fund, by 44% – even after the 20% incentive fee. After the first 10 years, he had outperformed the best mutual fund, Dreyfus Fund, by 87% after fees. The fund was structured to avoid having to adhere to the SEC regulations contained in the Investment Company Act of 1940. This gave the fund managers a large degree of freedom, allowing them to make use of a number of investment techniques and instruments, such as leveraging and shorting (Connor & Woo, 2004).

Jones considered himself to be skilled at stock selection, but poor at market timing. By having an equal number of long and short positions open, he placed himself in a market neutral position. In this way, his portfolio was largely uncorrelated with the market, and rewarded good stock selection (Connor & Woo, 2004).

By 1968, there were more than 200 hedge funds in existence. However, during the bull market of the late 1960s, the managers of these funds perceived their short positions (protection against market downswings) as a drain on capital, and many did not maintain these positions (Tremont Advisers and TASS Investment Research Ltd., 2002). The bear market of the early 1970s (as you can see in Figure 1) put many organisations out of business – this was largely due to them not maintaining these protective measures. Between 1968 and the end of 1970, the top 28 hedge funds lost 70% of their assets under

management (AUM). In 1971, only 30 hedge funds remained and, over the next decade, their popularity waned.

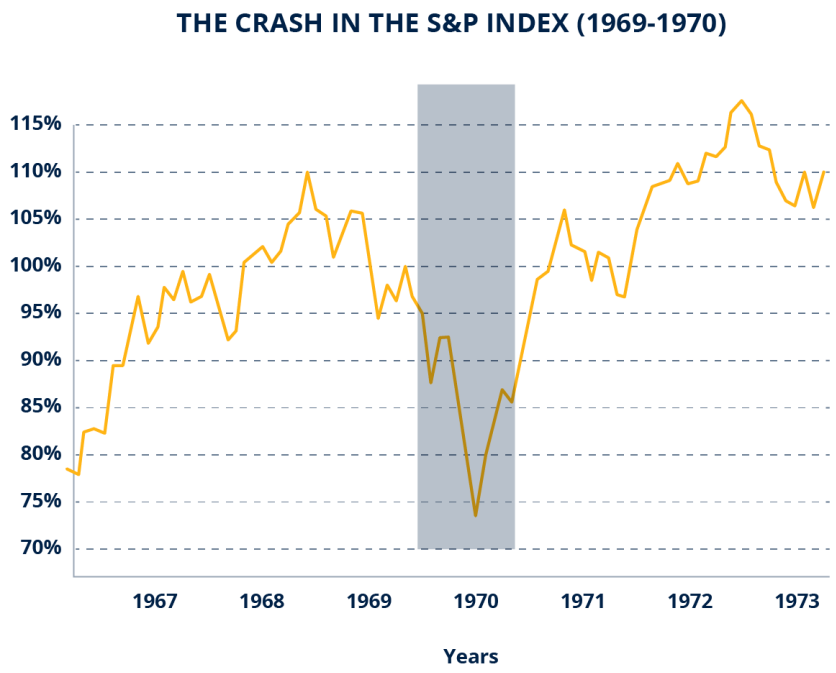

Figure 1: The crash of 1969–1970 in the S&P 500 Index. (Adapted from: Macrotrends, n.d.)

In the mid-1980s, hedge funds saw a resurgence of popularity, primarily attributed to Julian Robertson's Tiger Management hedge fund (and its offshore counterpart, the Jaguar Fund). The Tiger Investment Management hedge fund was a global fund that made leveraged investments in securities and currencies. It maintained an average annual return of 43% over six years and sparked a surge of copycat funds. Prior to the Tiger Management hedge fund, Robertson was an analyst at the American securities firm, Kidder Peabody. His boss was Robert Burch, Alfred Winslow Jones's son-in-law. Burch was a key backer of the Tiger Investment Management hedge fund at its inception.

Hedge funds were becoming sought after by those with knowledge of them, due to their profitability, but, at the same time, they were disliked for their perceived destabilising impact on global financial markets (in contrast to this, hedge funds remained relatively unknown to the general public). In 1992, billionaire investor George Soros was touted as "the man who broke the Bank of England" after his Quantum fund made more than US$1 billion by shorting the pound sterling (GBP) (Schaefer, 2015).

Further reading:

Soros's bet against the currency had a massive impact on the GBP.

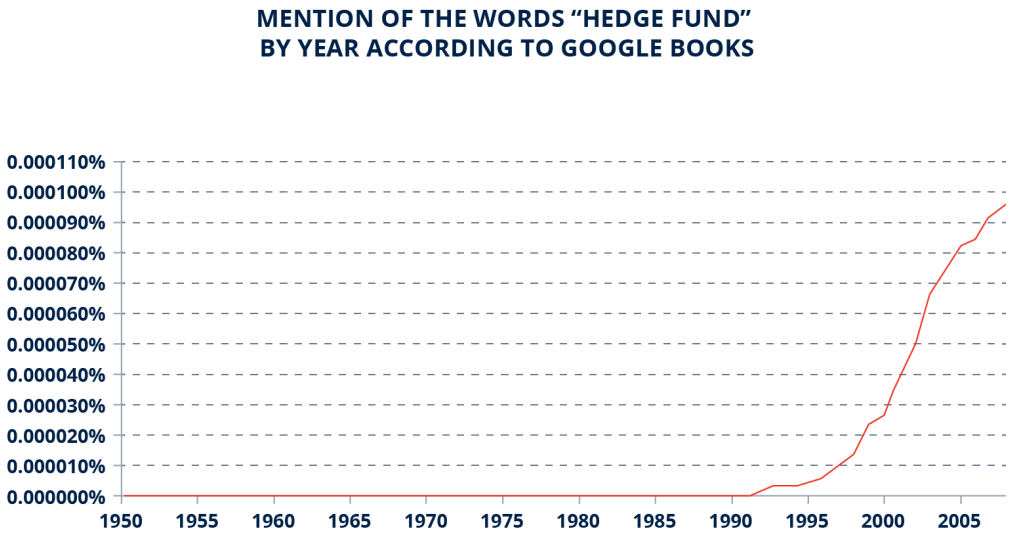

Figure 2: Use of the term "hedge fund" over time. (Adapted from: Google Books, n.d.)

It was only in the 1990s that the term "hedge fund" began to enter popular speech (see Figure 2). It grew exponentially for a period (1995–2005), and then began to taper off. This graph is an interesting proxy for public interest in hedge funds. When was the first time you heard of hedge funds?

There have been some notable failures of large hedge funds over time. In 1994, John Meriwether created Long-Term Capital Management (LTCM), along with Bob Merton, Myron Scholes (part creator of the Black-Scholes formula), and David Mullins. Together, they raised US$1.25 billion, the largest start-up amount ever obtained for a hedge fund at that time.

However, in 1998, the positions held by LTCM resulted in huge losses for the firm. It is suggested that the Russian bond default in August 1998 caught them completely off guard. The losses they experienced per strategy were as follows:

- Emerging markets −US$430 million
- Directional trades −US$371 million
- Equity pairs −US$286 million
- Yield-curve arbitrage −US$215 million
- Stocks −US$203 million
- High-yield arbitrage −US$100 million
- Swaps −US$1.6 billion

- Equity volatility −US$1.3 billion

(Rimkus, 2016)

Further reading:

A fundamental misalignment between volatility and risk, combined with other factors, led to the collapse of LTCM.

By 2006, hedge funds had more than US$1.5 trillion in assets and, by the end of 2020, that figure stood at around US$3.6 trillion (Statista, 2021). With minimal regulation requirements compared to other funds, and thus the freedom to make use of a wide array of financial instruments, they remain a source of contention, profit, and for some, financial ruin.

Further reading:

Explore what experts believe to be the future of the hedge fund industry, along with industry trends that are predicted for 2022 and beyond.

Hedge funds were originally focused on employing hedging techniques, but now the term "hedge fund" speaks more to the status of the investment partnership than whether the fund actually employs hedging techniques (although most do, to some extent). The next section expands on the different strategies hedge funds use in practice.

Note:

At this point in the lesson, you have the opportunity to engage with a practice quiz to test your understanding of the content. Access this lesson on the Online Campus to engage with this quiz.

4. Hedge fund strategies

Now that you have a better understanding of what hedge funds are and how they compare to other funds, this interactive infographic introduces you to various primary strategies used to make trading decisions. As you engage with the interactive infographic, reflect on how these strategies might be used in practice.

Interactive infographic 1: Classifying hedge fund strategies.

Note:

At this point in the lesson, you have the opportunity to engage with a practice quiz to test your understanding of the content. Access this lesson on the Online Campus to engage with this quiz.

5. Hedge fund investors

Hedge funds can be seen as the natural evolution of traditional investing, since they require the use of specialised knowledge by individual investors to receive maximum return-risk trade-offs (Mirabile, 2013). The various hedge fund strategies discussed in the previous section offer risk and return possibilities not offered by other traditional investments such as stocks and bonds.

There are two types of investors in hedge funds: individual and institutional investors. Individual investors gained interest in hedge funds in the early 1990s, due to increased public attention and rumours of consistent positive performance of hedge fund managers' portfolios. Individual investors sought out hedge fund managers discretely, as these funds operated secretly and were not advertised publicly. These investors would be high-net-worth individuals (HNWIs) – the general public would have been unable to invest in these funds. Because of rising interest, hedge funds grew rapidly, both in AUM and the number of funds between 1994 and 2007 (Mirabile, 2013).

Institutional investors consist of private and public pension funds, sovereign wealth funds, insurance companies, banks, and other institutions that own considerable pools of capital. In relation to pension funds, hedge funds indirectly manage most of middle-income people's wealth (Corporate Finance Institute, n.d.a.). These investors only took an interest in hedge funds at a later stage of the industry's life cycle, due to their lower-risk approach to investing capital. Importantly, institutional investors expect "strong controls, effective risk management, solid business models, and institutional infrastructure in addition to a hedge fund generating high-quality returns" (Mirabile, 2013).

Hedge funds, as opposed to traditional investments, offer a means for investor objectives and managerial interests to be aligned through co-investing. Furthermore, hedge fund managers receive compensation in the form of incentive fees, but only if the fund is profitable. Similarly, they earn no fee until previous losses have been recaptured. This incentive structure serves to ensure that the hedge funds act in the interests of investors, thus serving as a safeguard against agency costs (Capital Management Services Group, n.d.; Mirabile, 2013).

Over the life cycle of hedge funds, the investor demographic has moved away from HNWIs towards institutions, although recent strong performance may be enticing HNWIs back. HNWIs are individuals with substantial liquidity (around 1 million in liquid assets) and net worth. After a net worth of over 5 million, though, they are considered very HNWIs. They usually have a considerable understanding of the risk and illiquidity of hedge funds (Corporate Finance Institute, n.d.b.; Mirabile, 2013). HNWIs usually invest in hedge funds through a private bank or financial adviser, and do so for the benefit of absolute returns, low correlation, and protecting capital.

5.1 Reasons for investing in hedge funds

The predominant reasons why both institutional and individual investors are attracted to hedge funds are as follows:

- Investors want to diversify portfolio risk by adding hedge funds as an additional asset class that is different from traditional asset classes (Mirabile, 2013).
- Theoretical and empirical research justifies that including hedge funds in a traditional portfolio can reduce the portfolio volatility (i.e. lower the variation in portfolio returns), as well as produce higher risk-adjusted returns (Mirabile, 2013).
- The numerous hedge fund strategies offer risk and return possibilities not offered by traditional stock and bond investments, and can therefore offer downside protection.

- Investors gain exposure to various financial markets and products that are otherwise not readily accessible to traditional investors.

- Hedge funds offer a means, through co-investment, for alignment between the objectives of investors and the interests of fund managers.

Even though hedge funds are a relatively new industry that continues to grow and change, HNWI and institutional investors remain optimistic that hedge funds, in combination with traditional investments, can provide a means to achieve target portfolio returns.

Note:

At this point in the lesson, you have the opportunity to engage with a practice quiz to test your understanding of the content. Access this lesson on the Online Campus to engage with this quiz.

6. Hedge fund risk management

As you learnt in the previous section, hedge funds are often associated with significant rewards. In this section, you will learn about the associated risks. Think about where this risk originates from, and which areas may be managed. Different strategies are exposed to different sources and levels of risk, and assessing this risk can aid you in deciding what type of hedge fund is appropriate for you to invest in.

Risk is an extremely complex subject in the context of trading strategies, and it needs to be understood by those wishing to participate in the industry. This is especially important for those engaged in algorithmic trading. Think about it: these are automated systems, they can operate without human input. If there is a fundamental problem, it may not be picked up for a long period of time.

When considering the different types of risk faced by hedge funds, there are many aspects that must be considered. This programme will focus on the primary considerations that an investor should keep in mind when assessing a fund for potential investment, since these are the top priorities.

6.1 Investment risk

The main question a potential investor may want answered is: “How risky are hedge funds as an investment in comparison to other investments?” In the medium to short term, they appear to be less risky than the stock market and marginally less risky than the bond market.

6.2 Market risk

Market risk is the risk that a hedge fund will lose value as a result of unfavourable movements in the market. Hedge funds are exposed to many forms of market risk, including the following:

- Interest rate risk
- Currency risk
- Equity market risk
- Option risk: delta, gamma, theta, vega
- Commodity market risk
- Credit risk
- Algorithmic risk

These forms of risk are expanded on in the sections that follow.

6.2.1 Interest rate risk

Interest rate risk is the risk of the investment portfolio's value being altered due to changes in the interest rate. You can think of it as the level of sensitivity the portfolio has to interest rate fluctuations.

For fixed-income securities, the maturity of the security, as well as the security's coupon rate, act as major determinants of interest rate sensitivity – long-term, low-coupon bonds are more sensitive to interest rate fluctuations than short-term, high-coupon bonds. To measure a single fixed-income security's sensitivity to the interest rate, you calculate the duration of a security by calculating a weighted average of times until receipt of the bond's future cash flows. In other words, duration captures how long it takes for the price of the bond to be repaid by its internal cash flow.

It is important to remember that there is an inverse relationship between the price of the fixed-income security and the interest rate. If you own a fixed-income security offering a 4% interest rate (i.e. a 4% yield) and the market interest rate increases, then your 4% yield is offering a below market return – it is no longer as attractive, and its price suffers accordingly.

6.2.2 Currency risk

Currency or foreign exchange (FX) risk is a measure of a portfolio's sensitivity to changes in foreign exchange rates. FX risk falls into three categories of exposure: translation exposure, transaction exposure, and economic exposure.

1. **Translation exposure:** This exposure is also known as accounting exposure, and is the difference between your assets and liabilities denominated in foreign currency: for example, a UK hedge fund could own shares in a US company whose value in GBP will fluctuate based on the USD/GBP exchange rate. In the same way, the company could have loans denominated in USD and its value would fluctuate with the exchange rate as well.

2. **Transaction exposure:** This exposure refers to the uncertainty surrounding the exchange rate. Think of a UK hedge fund expecting a sizable payment in USD in a year. The risk to which they are exposed is that the value of the USD will fall, resulting in a decrease in value of the payment.

3. **Economic exposure:** This exposure refers to how the value of the company could change with fluctuations in the real value of the currency they are denominated in. Consider that if a company's value is derived from the net present value of future cash flows, the economic exposure is how these cash flows value is altered by changes in the exchange rate

6.2.3 Equity market risk

Equity market risk describes the risk associated with holding equity in any particular investment, such as stocks. Stocks are significantly more difficult to hedge than bonds since they are exposed to types of risk that only impact that stock or a small number of companies' stocks. This is known as specific risk.

Every stock has a beta, which is its level of risk compared to overall market risk. Beta is calculated as the covariance between the returns of the stock and the returns on a benchmark market portfolio, divided by the variance of that benchmark portfolio. If beta is equal to 1, the stock price moves with the market. If beta is greater than 1, the stock exhibits above-average sensitivity to movements in the market. For example, a stock with a beta of 1.15 is 15% more volatile than the market. If beta is less than 1, the stock exhibits below-average sensitivity to market movements. For example, a stock with a beta of 0.9 is 10% less volatile than the market. Investing in stocks with a beta larger than 1 is therefore considered an aggressive strategy, while investing in stocks with a beta smaller than 1 would be considered more defensive.

6.2.4 Option risk

While options can be used effectively as a means to reduce volatility within a portfolio, they also carry their own risks. To understand option risk, you must understand an option's delta. Delta is the change in the option's value relative to the underlying asset. So, if the option's underlying asset's value changes, what impact will this have on the option's value? You can think of the delta as representing your position in the underlying asset. If you have a delta of 50, it is the same as having 50 shares of the underlying asset. The risk here is the option's exposure to changes in the value of the underlying asset.

6.2.5 Commodity risk

Commodity risk is the exposure a company has to changes in commodity prices. For example, a chocolate manufacturer, such as Ferrero Rocher, is highly dependent on cocoa – if a drought caused a dramatic fall in the supply of cocoa beans, the price of cocoa would increase significantly, and Ferrero Rocher would see a significant fall in profits and production. This type of risk is most obvious for companies directly relying on commodities – car manufacturers relying on steel, confectionery companies relying on sugar – but can also affect companies interacting heavily with the commodity-reliant companies. Indeed, companies on the commodity-producing side also bear this risk. There is a wide range of

potential reasons for commodity prices to change: natural events, political action, regulatory changes, etc.

6.2.6 Credit risk

Credit risk is the uncertainty related to an entity's ability to meet its financial obligations. Entities can represent anything from governments to individuals, and the nature of the financial obligation can be anything from loans to option transactions. Therefore, hedge funds must use multiple methods of assessment when considering credit risk.

6.2.7 Algorithmic risk

Algorithmic trading has specific forms of risks attached to it. These risks are expanded on in Module 3 where you will hear from expert guest speakers on the topic. Two of the most common risks are:

- **Software security risk:** Given that algorithmic trading is facilitated by a computerised process, this process could be hacked and the protocols altered. The damage caused by such a hack could be immense.

- **Malfunction risk:** Once again, because algorithmic trading is based on a computerised process, there is always the risk that this process could act in an aberrant manner, with immense financial and reputational consequences.

Note:

At this point in the lesson, you have the opportunity to engage with a practice quiz to test your understanding of the content. Access this lesson on the Online Campus to engage with this quiz.

6.3 Risk control

Risk control is an important topic, as it helps you understand which investment is appropriate for you or your clients. Hedge funds, like other financial institutions, usually use value at risk (VaR) to manage their risk (Bisse, 2002). This section provides a very brief overview of VaR, given that the topic will be covered in greater detail in Module 3.

VaR has two primary features. The first is that it quantifies downside risk by looking at the quantile that represents the left tail of the distribution of profit and losses. This provides better information on possible losses than simple spread measures such as standard deviation. Its other feature is that it uses current investment positions as opposed to historical ones; a key aspect when positions change as frequently as they do for hedge funds. This creates a forward-looking measure of risk that aids in risk control (Jorion, 2007).

In addition to an overall VaR figure, hedge fund managers will normally have their risk quantified in terms of bond, stock index, and STIR futures equivalents for each of those dimensions. This allows them to quickly hedge out a given risk in case of an unforeseen event. For example, in case of an equity market sell-off, the manager of a hedge fund with

equity market exposure will know that they can neutralise the portfolio by simply selling a certain amount of stock index futures.

7. Conclusion

This lesson has covered how the hedge fund industry has evolved over time, how it differs from other typical investment funds, who invests in them and why, and what the important risk considerations are. Later in this module, you will hear from experts in the industry about what drives successful hedge funds and what to avoid when entering the industry.

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