

Learning outcomes: 1. Performance drivers that impact returns 2. How to manage counter party risk 3. The options in and advantages of fixed income derivatives PRESENTER: Investments can be plagued with jargon, and understanding them can be as tricky as understanding the drivers behind them and the market conditions which impact them. In this Akademia module, we'll look closer at some of these subjects, such as high yield floaters and fixed income derivatives, in the context of the ongoing uncertain investment environment, with some of M&G Investments and leading experts. But first, let's take a look at what we're going to be covering over the course of this module. Well, we'll start with currency markets and explain the performance drivers that impact returns. Look at absolute purchasing power parity and how it works in practice. Explore the impacts on currency performance and what drives currency moves. We'll then move on to short duration high yield, high yield floaters and senior loans, and examine the difference between these three markets. Interest swaps and its application to fund management. How interest rate swaps fit into fixed income derivatives. We'll examine the cost of hedging, look at interest rate parity and how it works in practice. What are asset-backed securities and why invest in them. And finally we'll look at the nature, structure, risk and return of futures. But first, we go to investment specialist Pierre Chartres to explore what drives currency moves. PIERRE CHARTRES: Many investors are reluctant to invest in currency markets because they feel that the returns provided by currencies are too unpredictable. Yet currencies are influenced by the very same performance drivers that affect many other financial assets: valuations, fundamentals and investor flows. In this video, we will take a high level view at these major forces that explain returns in the currency markets. The most well-known valuation method for currencies is probably absolute purchasing parity, also known as the law of one price. This theory argues that the prices of the same products in different countries should be equal when they're measured in a common currency. A lighthearted yet famous example of absolute PPP is The Economist's Big Mac Index, which compares the prices of a Big Mac sandwich all across the globe. Depending on how expensive or cheap a Big Mac is across the world, one can infer whether a currency is currently cheap or expensive. A more dynamic version of the absolute PPP theory is the relative PPP theory. Relative PPP states that for the law of one price to hold currency exchange rates should move in lockstep with inflation rates. So, for example, if inflation is 3% in country A and 0% in country B, country A's exchange rate should fall by 3% over the course of one year to satisfy the law of one price. Assuming both currencies were at fair value at the start of the period and exchange rates did not move during the year, according to relative PPP, currency A will be overvalued by 3% relative to currency B. An extension of the relative PPP valuation model is a currency's real effective exchange rate. Like relative PPP the REER adjusts a currency's value for inflation differentials between currencies. But while the PPP measure compares one currency to another currency, REERs compare a currency's value to a basket of other currencies by considering the entire bilateral relative PPPs between the country and its trading partners weighted by the respective trade shares of each partner. PPP and REERs are often used as the fundamental building blocks for more complicated multifactor currency valuation models. For example Deutsche Bank published a model which starts from a currency's real effective exchange rates and then proceeds to make other fundamental adjustments to take into account changes in a country's terms of trade, GDP per capita, and also how exposed a country's economy is to the global economy. The model then ranks the currencies from the most overvalued to the most undervalued as the chart shows. Fundamental factors can also have a significant impact on currency performance. These are for example economic growth and inflation, political and economic conditions, trade and current account balances, public debt, terms of trade, money supply and of course monetary policy decisions. Some currencies are also quite sensitive to specific factors. For example, currencies like the South African rand, the Australian dollar and the Canadian dollar are known as commodity currencies, as they're closely related to fluctuations in energy and commodity prices. Currencies like the Swiss franc and the Japanese yen are known as safe haven currencies and

tend to do well when there is a market downturn. Fundamental and valuation factors tend to be more long-term drivers of currency performance. In the short term, currencies are often more significantly affected by supply and demand and portfolio flows. For example, investors will tend to allocate capital to currencies with higher interest rates. The divergence of US dollar and euro interest rates was responsible for a large part of the dollar appreciation from 2014 to 2016. Other investor flows, such as foreign direct investments and portfolio and speculative flows, have historically also played a big part in currency movements. Overall, there are a multitude of indicators that can explain fluctuations in exchange rates and predicting these is indeed quite difficult. What has been shown is that more knowledge and understanding of market conditions and their implications for currency fluctuations can lead to more accurate predictions and potentially significant generation of alpha. PRESENTER: And, as Pierre said, more knowledge and understanding of market conditions is critical, and with that in mind we'll move on to examining high yield short duration floaters and senior loans with investment specialist Mario Eisenegger. MARIO EISENEGGER: Today, we're going to look at the difference between short duration high yield, high yield floaters and senior loans. First, we have to say that those three markets have a lot in common with each other and therefore an investment outcome that can look quite similar in certain times. All instruments do invest in non-investment grade names, companies that have a highly leveraged balance sheet. So there is more credit risk investors take on. But this is also compensated with a high yield coupon for the risk that comes with it. Also, all of the three markets give you to some extent a protection against rising rates or a selloff in yields. Now, what are the key differences? Let's look at FRNs versus short duration high yield first. Well, having a low level of interest rate sensitivity, short duration bonds are still exposed to some duration risk, normally between one and three years. FRNs on the other hand will always have an interest duration close to zero given the feature of a receipting coupon. The floating coupon means also that that in contrast to short duration strategies, FRNs can benefit from rising rates as the coupons will be adjusted should base rates change. In a normal environment, the FRN market has a slightly higher spread duration compared to the short duration high yield market because of the average lifetime of a floater which is a bit longer compared to short duration high yield strategies. An exception here is when the FRN market is call constrained, which does lower the spread duration, something we have seen for example in 2017. With the majority of bonds rated B, the overall credit rating of high yield FRNs will be a touch lower compared to the short duration high yield market. The biggest difference is, however, the expected recovery rate should the business face a restructuring. Two thirds of the FRN market is senior secured, while less than 20% of the bonds in the short duration high yield market can benefit from this advantage. When the British insurance company Towergate had to be restructured, the outcome for senior bonds was highly different. See what happened to the fixed bond which was senior but unsecured – here illustrated in the green line. This was a bond that could have found its way easily into a short duration high yield mandate. As you can see at the bond price, the recovery rate was much lower than for the senior secured FRN where credit risk set on top of the capital structure with an actual claim over the assets of this company. Now, let's compare FRNs with senior loans. Two strategies which look even more similar as both share the characteristics of a floating coupon as well as the focus on seniority. Senior secured FRNs are pari passu to loans, and both are treated equally in a default scenario. The big difference in favour of FRNs is overall liquidity, as those bonds are tradable on a daily basis where loans have uncertain settlement period. On top of that, the high yield FRN market offers better regional diversification and for a good balance between US and European issuers. Well, the loan market tends to be more US focused on the other hand. Loans have also some interesting features though. Something to mention is that loans usually have a LIBOR floor, something that is not always the case for FRNs. Also, over the long term you would expect a recovery rate for loans that is slightly higher compared to FRNs. Loans have a smaller investor base and therefore better mechanics to bring people to the table to cure an issue. In addition to that, loans have generally a

better reporting frequency and do benefit as well of a maintenance covenant, which gives loan investors the active rights to renegotiate conditions should for example EBITA fall too much. In contrast to that bond investors only enjoy incurrence covenants which is a passive right to prevent the company from heavily releveraging. PRESENTER: Up next an investment director Laura Frost introduces interest rate swaps and how they can be used to hedge risk over any time period and how they compare to a physical bond. LAURA FROST: Hello and welcome to the derivative session. I'm going to cover interest rate swaps in this session. We'll look at the nature, structure, risk and return of the product, along with its application to fund management. Interest rate swaps are bilateral agreements to swap a fixed rate for a floating rate of interest on a notional amount. Swaps trade over the counter so can be tailored to specific needs. The fixed rate is based upon the swap rate: the cost of borrowing over a longer period of time for an institution of usually good credit quality. LIBOR quotes are available, but only up to 12 months. Swap rates represent the longer term proportion of that curve. Swap rates are available to borrowers making an assumption of their credit risk. So a AA+ rated company requiring an interest rate swap will pay more or less the quoted swap rate. A company further down the credit spectrum may pay an additional amount taking into account their own risk. Either way, both sides will agree the fixed rate and also the floating rate, usually LIBOR. Always consider LIBOR rates are quoted as annual figures so will need to be divided by the amount of payments over the year. Our example shows biannual payment and receipt. We always refer to swaps from the fixed leg perspective. So one would either pay fixed or receive fixed. So how are these useful to us? If we look at the fixed leg, we're receiving a fixed rate of $\frac{1}{2}$ of the 2.145% interest every six months, and paying a floating amount based upon six month LIBOR. If yields or LIBOR go up, we could end up paying out more than we gain. We would theoretically lose money on that payment. But consider a fixed rate bond. If yields rose the bond would also lose value. So the interest rate swap is only as sensitive to changes in yield as the fixed rate bond would be. Thus, swaps are fixed income derivatives. They behave in the same way as the physical bond when yields change, and you will also see have a duration. This is a five-year swap and we would expect a duration of around 4.7 years just like a five-year fixed bond. See the bottom right corner of the screen. The DVO1 is essentially the duration of this swap but in monetary terms. It takes the duration times the notional times one basis point. So for each movement in yield this swap will either make or lose \$4,725. A fixed payer swap and receiving floating would be like selling away a bond, getting rid of duration. Consider the dynamics of a fixed rate bond that gains coupons from a fund. It could also use some of these coupons to pay fixed, thus receiving a floating amount, in order to turn the fund into a floating rate vehicle. As yields increase, thus my floating amount received increases as the floating rate note, this can be used to reduce duration in a fund in whole or in part. The benefit of swaps are their flexibility to hedge risk over any notional amount or any time period. They do not require a huge outlay of cash, they're highly liquid and they are as easy to value as a physical bond. Of course we do take on counterparty risk when using swaps, which is a consideration. PRESENTER: And considering counterparty risk, let's move on to the cost of hedging with investment specialist Carlo Putti. CARLO PUTTI: The cost of hedging is one of the most discussed topics in financial markets today, and many refer to this of course as the difference in performance between buying an asset in a currency different from your base currency and buying that same asset but hedging the currency risk. For example, say last year a European investor decided to buy a fund denominated in dollars. He had two alternatives. First, he could have bought the fund unhedged; therefore adding a currency risk component on the top of the fund's performance. Second, he could have bought the fund hedged into euros and therefore not subject to euro/dollar fluctuations. If he went for the first option buying the fund unhedged, his performance would have been close to zero, as shown by the red line, the fund return at 6%. But he lost about 6% from the currency, given the dollar depreciated 6% versus the euro over the period. On the other hand, if he decided to buy the hedged share class - the blue line - his return would have been around 4%.

Although this is about 2% lower than the actual return on the fund - the orange line. So what is this difference in performance, in this case 2%, that exists between differential classes and why does this difference exist? Let's start by answering the first question: what is this difference in performance? This difference in performance that many refer to as the cost of hedging is made up of different components. But the two most important ones are the transaction cost, the cost of trading the instrument used for the hedging, and the implied rate differential. The cost of trading the instruments depends on the instruments you use, but it generally doesn't have a big impact. To give an idea of the impact this caused as on a one-year performance, it's typically lower than 0.1%. What can really have a significant impact on performance is the implied interest rate differential. This is basically the difference in interest rates between two currencies, as implied by the market. Why this has an impact on our performance, why the European investor has to pay around 2% to hedge a dollar asset, the simple answer is to avoid arbitrage opportunities. But let's try to understand better how it works with an example. Let's take again our European investor. He has €100 to invest. He can invest them either in Europe where rates are at 5% or in the US where interest rates are at 10%. Both investments would be risk free so eventually he would borrow money in euros at 5% and lend money in the US at 10%, guaranteeing himself a profit of 5%. That would be great and would be an arbitrage opportunity, but the market will not let him do it and will let him pay the difference through the hedging in the forward market. Let's see how it works in practice. Say, our European investor decides to buy €100 of a European risk-free asset yielding 5% - option A - in one year's time his investment would be worth €105. Now, let's suppose he decides to buy the asset in dollars - the option B. First, he converts his €100 into dollars. Given the current spot trade his money would be worth \$150. After one year, this \$150 would be worth \$165, given rates in the US are at 10%. Now, he just needs to convert this money back into euros. If he could convert the money back into euros using the previous spot rate, his investment would be worth €110. That would be great given it will be €5 more than what he would have got with option A. But this would be an arbitrage opportunity and as I said the market will not let him do it. So when he converts his money back into euros, he will do it at the forward rate that is considering the interest rate differential, and therefore he will end up with €105, same as option A – no free lunch! So, in conclusion, the cost of hedging is actually just a cost of trading the instrument that as I said is generally very low. What can really have an impact on your performance is the implied interest rate differential. The impact will increase as the difference in rates between the two countries increases. So if you want to get a sense of this impact, you just need to look at the difference in rates that there is between the two countries, bearing in mind that this difference can change over time.

PRESENTER: Liquidity is also a concern of many investors. We'll now go back to Laura Frost to explore securitisation and asset-backed securities and why invest in them.

LAURA FROST: Hello and welcome to our session on securitisation and ABS. Securitisation is the process of pooling and repackaging illiquid cash producing assets into more liquid asset-backed bonds. Take a simple pool of commercial or residential mortgages. The structure pools all the mortgages and all the payments together to make a new asset. Together in one payment pool this bond becomes a bond in itself. The vehicle may contain mortgages of varying quality. This ring-fenced entity is then split into different risk-based tranches for investors. A class A tranche would be the most secure and paid back first. The bottom tranche would be the first to be hit by losses should the vehicle suffer any defaults. Yields on the class A tranche would be lower than the tranches below, reflecting the relatively safer place to be invested. As you can see, principal and income flow down the scale, whilst the capital losses flow up. The riskiest bonds paying the highest coupons are the bottom of the scale. There are many types of securitised assets, usually referred to as ABS, indicating an asset backs the investment, thus offers someone a security to an investor, and there are actual assets to call on in the event of default. Some structures are just bonds secured on assets the company owns. These tend to look like conventional bonds. An example might be a toll bridge or a road. The assets being the tolls paid as

people use the bridge or the road. Securitisation is a little different whereby a set of illiquid assets are through financial engineering transformed into a tradable security or bond; the most common examples being residential mortgages. Other types might be a collection of credit card receivables or auto loans. As you can see there is all sort of collateral behind this type of investment. Now we understand the assets, let's have a look at why we would invest in this. So why invest in asset-backed securities, especially after the great financial crisis left such ring-fenced investments with such a tarnished reputation. Firstly, we have to mention the improved standards of underwriting in this asset class now. Secondly, attractive spreads. The floating nature of ABS offers an alternative to traditional fixed rate issuance. It is beneficial in times of rising rates. Thirdly, there is huge diversification in terms of collateral types and jurisdictions in the ABS universe. We must mention lastly liquidity. We acknowledge that this is a smaller market than that of the conventional investment grade corporate bond. However, as these are generally amortising securities, investors will receive their principals sooner than in a similar maturity bond. Let's look at an example. This is Gemgarto. It is a securitised pool of non-conforming mortgages. That means its mortgages haven't been approved by a computer system within a conventional high street bank. This could be good for reasons, such as irregular income from self-employment, any commission payments which require maybe a more manual underwriting process, which high street lenders tend to shield away from or have done post-crisis. You can see the weighted average life is just under two years and pays a floating rate of LIBOR plus 195 basis points. As you can see, the weighted average loan to value percentage has been reducing over the past few years and provides an indication that the mortgages are being paid back steadily and/or the properties have increased in value. Another metric to consider in this case is the case of delinquencies. Any delinquency greater than 90 days is significant. As you can see this rate is low showing collateral is performing well. Only ½% of mortgage payers in this portfolio have failed to pay over the past three months. Each ABS and underlying collateral will have different risks and considerations for a manager to assess. But largely speaking this highly specialised area of the fixed income market adds to overall fund diversification, as assets won't always behave in the same way as conventional bonds. So what are the key investor considerations for ABS? At the asset level, we need to think about quality of the collateral, the credit quality of the borrowers and the strength of the deal structure. The credit enhancement, the delinquency rate, loan to value and prepayment speed are some of the important factors to consider when investing in ABS. We would also consider the historical performance, the originators underwriting and the service providing. Given these intricacies and the vast universe of ABS, you can see why we require a specialist team of credit analysts and a specialist dealing team to transact. Not only in the right tranche of the right asset but at the right price. PRESENTER: And finally staying with Laura, let's take a look at futures and their advantages for investors. LAURA FROST: Hello and welcome to the derivative session. I'm going to cover futures in this session. We'll look at the nature, structure, risk and return of the product, along with its application to fund management. Futures are exchange traded contracts, allowing access to an underlying asset price and movements in this price without having to actually purchase the underlying physical. Let's take the FTSE 100 for instance. To save buying all the stocks individually in the index, the index future gives full access to those stocks in one convenient way through a futures contract. We can see in this slide the FTSE 100 index is priced at 7178. That is closely related to the price of the FTSE today. Futures all have delivery dates: traditionally March, June, Sep and Dec. Meaning we can use this particular contract to gain access to the price movement of the FTSE until it expires, in this example in December '17. The question is do we think the FTSE will be higher than 7178 by December or lower? We take a view of movements and the person we trade with will take the opposite view. Over time there will be a winner and a loser. At the time we decide to close the trade out, the profit or loss will be calculated by taking the price movement in ticks and multiplying the tick value, which we see as £10. We can close out the trade at any point in time. The exchange match us to a trader with the opposite

deal. We can go long or short this contract to reflect our view of the market at a fraction of the price than buying up all of the shares physically. All we require is the deposit. This amount is to be paid to the exchange - it's called initial margin. A long future express the view of prices increasing, whilst a short future would represent an investment view of falling prices. As with conventional assets the upside is unlimited, whilst the downside is limited to the price that you paid for the future, i.e. the market may fall down to zero. We see in this slide the underlying is now the 10-year German government bond, the bund. In the same way we can gain access to this market by either buying the actual physical bonds or by going long a bund future. Dynamics work in the same way as a physical bond. If yields increase, the price of the bond future will fall, and vice versa. Because of this relationship we use bond futures to gain or reduce duration in a fund. By going long a bond future, we're gaining duration in the same way as buying the physical bond. By going short the future, we are reducing duration, as the price will fall as the yield rises and thus being short we're making a profit on the contract as it decreases in value. It's much more cost effective to manage duration with futures than with physical bonds, as we only require an initial margin as a deposit. Meaning we can access the market quickly and execute our view in a matter of seconds rather than days. It is much easier to reflect a view of yields rising with futures than it is to go short cash bonds that you may own already. To reduce counterparty risk the exchange asks both parties to settle their trades on a daily basis. Assuming prices have moved over the course of the day, there will be a winner and a loser, and thus a payment is made from one to the other. This limits the risk the exchange takes from both parties. Although consider you were on the losing side for an awfully long time, futures can be quite cash intensive, as payments will be made each day until you become the winner of that trade. This daily movement of cash is referred to as variation margin. PRESENTER: Well a big thank you to all of our speakers today and for covering so much ground. And in order to consider the viewing of this video as structured learning you must complete the reflective statement to demonstrate what you've learned and its relevance to you. By the end of this session, you'll be able to understand and describe: performance drivers that impact returns; how to manage counterparty risk; and the options in and advantages of fixed income derivatives. Please complete the reflective statement to validate your CPD.