Learning outcomes: 1. How risk-adjusted return is measured 2. Why risk-adjusted return is relevant today 3. How risk-adjusted return can be used in practice PRESENTER: The goal of most investors is to maximise returns, given a fixed level of risk, or minimise risk, giving a fixed level of desired returns, but there is a third approach and that's maximising risk-adjusted returns. But what exactly does that mean? In this Akademia module, we'll look closer at risk-adjusted returns with Julian Hince, Technical Development Director at M&G Investments. So let's take a look at what we're going to be covering over the course of this module. Well, we'll start with what is meant by risk-adjusted return and why have it. Why risk-adjusted returns are relevant today; how we measure risk-adjusted returns. We'll go over the capital pricing model and also look at standard deviation. We'll explore reducing risk through diversification and the issues this raises. We'll then go on to examine the limitations of risk-adjusted returns; how to identify funds with strong prospects for above average risk-adjusted returns. We'll look at what volatility adds to the mix. We'll discuss how to improve risk-adjusted return in established portfolios and finally we'll look at common mistakes made when it comes to risk-adjusted returns. But first when I sat down with Julian in a studio, I started by asking for a definition of risk-adjusted return. JULIAN HINCE: I think the title gives the sort of the answer to a degree. They are measures that are trying to explain and measure the amount of risk that an investor has taken on board, that we've asked them to take on board, for the amount of return that they've achieved. Now that return might be positive or negative but they are measures that help to adjust the risk. And that risk can be a number of different things, and we'll talk about that a bit later on, but it's simply saying have you achieved excess return for the amount of risk that we are asking you to take. PRESENTER: Well, it sounds like an obvious question, but how important are these, why have risk-adjusted returns? JULIAN HINCE: Well I think increasing important. One could argue there is an increasing spotlight on the investment industry. I think from an investor's, from a consumer's point of view, they want to know what are they getting for their money, and what risk-adjusted returns, especially in the active world of course can do is to help answer that to a degree. Now, there are some limitations behind that, but certainly for equity-based funds, for equity-active funds, if we can demonstrate that for the premium that we're asking investors to pay, that we are delivering excess rewards for risks taken, then I think they are likely to become increasingly important. PRESENTER: OK, but you've been training people on this subject for the past 15 years, so why this Akademia now, why are we talking about this now? JULIAN HINCE: Yes, that's a good question. I think you know the relevance of risk-adjusted returns is just as relevant today as it was 15 years ago, 20 years ago etc. They are what they are in terms of what they're trying to measure for that reward for the risk taken. And increasingly as the onus for financial responsibility lies with the individual, as consumers, clients, etc., they want to know what am I getting for what I'm paying for? You know, am I getting that added value? If you are responsible for instance for a fund selection, they can aid that process in terms of helping you filter out which funds have delivered against those risks that we're asking investors to take. There is an increased focus, as I said before, on regulation, on the growth in passive management, and therefore as an active management sector we need to be able to demonstrate to clients that we can add and we do add that additional return for risk that we're asking them to take on. PRESENTER: Well, this seems like a good opportunity to actually talk more about the mechanisms of risk-adjusted return, so earlier Julian came into the studio to do exactly that, so let's take a look. JULIAN HINCE: OK, so before we look at the individual risk-adjusted return measures, I think it's useful to take a step back. Because the formulas, the way that we calculate some of those risk-adjusted returns, use a couple of denominators, such as CAPM - the capital asset pricing model - and standard deviation. Again, to the bugbear of anybody that's done any investment exams before, but it's important that we have a reasonable understanding of what those two measures are trying to measure and the role that they play within those risk-adjusted returns, which you'll see a little bit later on. So, as you can see from the screen, the CAPM formula, something that will be familiar and bring back horrible nightmares

for others of you, or what does it actually, what does it mean? What's it trying to measure? What's it trying to tell us? Well in simple terms what the CAPM measure is trying to explain is what's the expected return of a particular security or indeed a portfolio, but in relation to its sensitivity relative to the market – remember another way of measuring sensitivity, a term that will become familiar to you throughout this video, is beta, and beta helps us to understand how sensitive a particular security or portfolio is relative to the marketplace. So CAPM says based on that single factor - it's also known as a single factor model - what is the expected return? And why is that important? Well it's important because, of course, our raison d'être as an active management industry is to achieve, where possible, excess returns over and above that expected market return. And if we don't know what the expected market return is, then how can we determine if we're providing value or not to investors. Now, secondly, I want to look at standard deviation. Now, again, the standard deviation is a very familiar concept. It's a familiar concept because when we talk to investors about volatility, it's measured through standard deviation; in other words, as you can see here from the slide, the classic bell-shaped return. So in other words what is the normal distribution of returns from a particular investment? And I think we have to take normal, not necessarily with a pinch of salt but put that in inverted commas if you like, because one of the key limitations of standard deviation is this whole concept that returns are normal. So it's important that we understand that what we're saying is risk-adjusted returns use elements of CAPM and standard deviation, but in their own way they have certain limitations as well. So as long as you're aware of those limitations then I think it helps you to perhaps achieve a better outcome for investors. So you're no doubt aware that there are a number of risk-adjusted return measures available to you, and I thought we'd start perhaps, not necessarily alphabetically but that just happens to be the way it's turned out, with alpha. Perhaps the most commonly referred to risk-adjusted return and perhaps the one we think we know the best. And it's often referred to as the measure that helps us understand what value-add an active manager is having. In fact what alpha really is doing is measuring the returns, either the excess returns or otherwise, relative to the expected market return. And remember we spoke a little bit about what the expected market return was and how we calculate that through the capital asset pricing model (CAPM) a little bit earlier. So CAPM then tells us what the expected market return is relative to the sensitivity - remember the beta of a security - and then any excess return outside of that can be attributable to the active management process. Now that active management process again can be a number of things. It can be measured via stock selection or market timing, for instance, and that helps us achieve that positive alpha. I think it's also important at this juncture just to say that when you're looking at risk-adjusted returns, what in effect you're really looking for is anything above zero. So in other words anything that is positive, any positive risk-adjusted returns are telling you that your investors have been rewarded for the risk that you and we have asked them to take. So the alpha then is the excess hopefully return relative to the expected market return and is often annualised. So for instance if you have an alpha of 3, it will tell you over that period of time, the last 12 months, you've had 3% excess return relative to the expected market return, and that after all is what we are asking clients to pay for, that excess return due to the processes in place and the skillset that we employ through active management. So, staying with the alphabetical theme then, let's move on to beta. I've already mentioned beta a couple of times but just a quick recap remember that beta is simply a measure of a securities or a fund's, a portfolio's sensitivity relative to a benchmark. Now, the benchmark, the market itself, has a sensitivity of 1, that's a standardised measure of sensitivity. So in other words a market itself, let's say the FTSE All Share Index, cannot be more or less sensitive than itself, to itself, but of course individual components of the FTSE All Share can be. So for instance utility stocks, typically, would have a lower beta, lower sensitivity relative to the market, and likewise like the mining stocks for instance would have a higher beta, a higher sensitivity. And it helps to explain the variants of returns of those particular securities or indeed your portfolio relative to the market, how much of it is in relation to that beta the

market moves. Now, if you want pure beta, then of course what we're really referring to is buying the index. Buying a tracker fund for instance would give you a very close beta to the marketplace. Let's move on then to the Sharpe ratio, and the Sharpe ratio is designed to help us understand how much excess return for the amount of risk taken, and it's measured typically by what we refer to as a unit of risk, how much excess return or otherwise an investor has received for the amount of risk taken. Now that risk taken within the Sharpe ratio relates to what we call the risk-free rate of return, which technically, and probably a lot of you will think there is no such thing as a risk free rate of return, but technically we measure the risk-free rate of return as 91-day or a three-month treasury bill, so lending the UK government money for three months typically gives us our risk-free benchmark. So that enables us from a risk-adjusted perspective to understand how much excess return for each unit of that risk we have achieved. And again what you're looking for, from a portfolio, from a fund, from a mutual fund, is excess; in other words any positive number, any positive Sharpe says my investor has been frankly better off for the amount of risk on a risk-adjusted basis investing in that portfolio than for instance cash, money or, you know, lending the UK government money for the last three months – in a roundabout way, that's pretty much what it's saying. And then we're going to move on to the information ratio. Now, I like to refer to this as a sort of the granddaddy of them all, and the danger with risk-adjusted returns is that you use maybe just one or two in isolation and it's probably a good idea to look at them in the round, because what the information ratio is doing is two things. One, it is a measure of the risk-adjusted return in relation to the benchmark, and that's really important, given the increased popularity for instance of benchmark funds, and two, it's a measure of a fund manager's consistency. Because again it's not enough to deliver positive risk-adjusted returns on an ad hoc basis; ideally, if you are for instance responsible for fund selection, then of course what you're looking for ideally is a degree of consistency, and the information ratio can help us measure that. So, as I said, what's doing is measuring on a risk-adjusted basis the performance, either excess or otherwise, of a portfolio relative to the benchmark. Now, of course, a benchmark is only useful as a measure if in fact an investor can invest in that benchmark. So is it investable? Is there a product, a vehicle that would allow an investor to invest in it? Then perhaps you could argue it's a true comparison. But with the increasing spotlight on our industry both from an active management alpha generation perspective and of course the increase in passive funds, our job as active managers then is to deliver to investors those positive risk-adjusted returns, whether they be alpha, Sharpe and whether they be the information ratio. So, finally, I'd like to draw your attention to this final slide. Now, it may not look that much at first glance but it's incredibly important because it really paints the picture that what investment management ultimately is is a combination of art and science. Our job and your job when you're constructing a portfolio is to maximise the rewards for the risk taken. That's why we've been talking about risk-adjusted returns. And finally I want to just give you this example as food for thought. What this is showing you, this data is showing you, is what impact does adding a stock such as AB Ltd have, with a high beta - remember a beta of above 1 indicates a higher level of sensitivity relative to the marketplace - what impact is that likely to have at portfolio level? So I think we're very good at, in terms of research around individual security and individual funds, but of course the other part of that jigsaw puzzle is to understand when we bring it all together at aggregate level what impact that's likely to have. So this gives us a very brief example of that. So adding a highly sensitive company like AB Ltd, and remember that could quite easily be substituted for a fund, what impact is that likely to have at a risk level at portfolio level? And you'll see here that quite surprisingly it actually has a negative impact; in other words the risk of the portfolio is reduced. And that is quite simply because of the lack of correlation. You can see here correlation of negative 0.67 of AB Ltd relative to the existing securities in the portfolio. Now remember that might well be a mutual fund. What impact am I going to have at portfolio level by adding this particular fund in? And likewise if I'm looking to remove that fund and substitute it for another fund or

alter the weightings, what impact is that likely to have in relation to its sensitivity? Now I'm only using this one measure here. We've mentioned beta earlier on so I just want to focus on that for now. And then below that, the data is showing you the position of the portfolio prior and post adding AB Ltd, and you'll see here that prior, the beta of the portfolio indeed was still below 1. Remember what we're trying to achieve: maximising rewards for the amount of risk taken. The less risk we can expose to investors and protect them on the downsides and provide with those excess returns, the better. So at aggregate level we've got a fund of a beta of less than 1 and even with the addition of AB Ltd, with a high beta, you can still see that it's below 1. That's the real art of investment management. And that boils down to that lack of correlation. So, again, when you're selecting funds for a portfolio, just remember to measure at aggregate level that level of correlation, understanding the beta. It might give you some feel for how that might perform, especially if some of that beta data is relatively short term and the market conditions are fairly similar, how that might perform going forward. PRESENTER: Julian, certainly a lot of variables there. Why have so many risk-adjusted return measures? JULIAN HINCE: Because, you know, the simple truth is there are a lot of different types of risks that we're asking investors to take on board. There might be the risk of the market as a whole, the risk of an individual security, the risk of not being invested in something like cash or an equivalent benchmark. So we need to be able to measure all of those. And it's one of the limitations for instance with risk-adjusted returns is not in them in their absolute form but in terms of when people just use one or two of them in isolation, and that can then of course skew the picture. We need to treat them holistically. PRESENTER: So how can these measures be used in practice then? JULIAN HINCE: The risk-adjusted returns have a number of uses, I think, whether it be a client or a fund selector, ourselves. If we start with the fund selection process, what they can do of course is act as terrific filters. So if you're looking to isolate or look in with a particular universe, a particular sector, for funds that have consistently delivered rewards for the risks taken. They are also used in part by some of the fund rating agencies. So if you're using a fund rating agency again as part of your due diligence process and they are using quantitative analysis, ask, find out, you know, what role do risk-adjusted returns play within those ratings, because some do and again some don't so it's important to understand that. They help ultimately of course, and I'm sort of repeating myself a little bit but ultimately they help to understand and answer perhaps the most important question, you know, am I being as an investor rewarded for the risk that you're asking me to take? So using, as I said before, just one in isolation is not right and you need to be using a selection of them because risk comes in various forms. So they really are the key usages. PRESENTER: And what a lot of people do is, of course, reducing risk through diversification. How does that fit in? Talk me through that. JULIAN HINCE: Well diversification is the mantra isn't it that as an industry we often refer to don't put all your eggs in one basket etc. And that's fine, but again it's about understanding what you can and can't diversify. We'll be taking about standard deviation for instance a little bit later and, you know, standard deviation, or total risk as one might refer to it, is effectively a component of two parts. One part is a risk that you can diversify, which is idiosyncratic risk, which is the risk of buying a particular sector, a particular stock, one particular fund, etc. Now, of course, you don't need to be an investment manager to understand that if you have exposure just to too few stocks, too few funds, you're taking on a degree of risk. So of course by diversification or through diversification you can help to dilute that. The element you can't however dilute is market risk. And that's been really brought to the force since the global financial crisis. There is an element of risk that there is nothing anybody, any investor can really do much about which is that market risk. And diversification doesn't help especially in periods of elevated levels of correlation. And those elevated levels of correlation in markets when markets when various asset classes begin to behave in the same way, typically manifest themselves when we have elevated levels of systemic risk, that market risk, that risk that you can't diversify out. And those conditions when they prevail tend to lead to a risk of that correlation. That then makes allocation more difficult. It

reduces the benefits of diversification, but the good news is, where we stand today, is that actually market levels of correlation, asset correlation, has fallen somewhat. As we begin to see a degree of divergence with regard to monetary policy, maybe fiscal policy etc. on a global basis, economies being sort of operating at slightly different paces now requires a different approach. So you're beginning to see that diversification come back. Correlation levels have fallen. So actually it's more the case now that that's the preferred market condition if you like for active managers. So actually those risk-adjusted returns play even more of an important role in these kind of market conditions. PRESENTER: And what's the limitations then of risk-adjusted returns, are they similar? JULIAN HINCE: Yes, there are limitations, I mean limitations to anything, and those limitations really manifest themselves around the component parts to some of the formulas. So when we looked at alpha, the Sharpe ratio, the information ratio, you might remember that there are elements that relate to measures such as standard deviation or the capital asset pricing model. If we take standard deviation as a good example of one of the limitations, standard deviation as a standalone measure is telling us under normal conditions, you know, what would the normal distribution of returns look like? What can we expect? What have we received? Now, of course, I said in that piece that, you know, what is normal? We need to question what is normal, because the truth is we've had a number of periods of abnormal returns that tend to skew that distribution model. So, some of the models, some of the portfolio construction models that are available in the marketplace cannot and don't take into account those skews. We refer to them as tail events, you know, the longer those tails they turn into what we call fat tails. So when you have a particular, for instance an issue within the financial sector which is pronounced and prolonged, that can really affect and skew those distributions. So the question then is how and does any portfolio construction process that I have in place take that into account or doesn't it? Because if it is not taken into account, that is one of the limitations, and then the question is well if it's not taking it into account, how long and how deep and how pronounced do I think that skewing of the distribution curve is, do I need to manually intervene etc. So there are some questions around that that really only are I think relevant because of those limitations around for instance the measure of standard deviation. PRESENTER: So this covers all asset classes? JULIAN HINCE: Predominantly risk-adjusted returns relate to equity-based portfolios, so very useful in that sense, but as I say with anything in life that you use it's important to understand the limitations as much as it is how to practically apply those. So certainly for equity-based portfolios these are good measures. PRESENTER: So then tell me how do you go about finding funds that have a strong or above average risk-adjusted return? JULIAN HINCE: Well the answer to that Jenny is I mean you could either do that yourself to a degree, and there's a lot of software help these days to enable you to use them, as I've said before, as filters. So you're using risk-adjusted returns to help you filter in your particular sector or universe of funds that you're looking for, because again ultimately what you're looking to do is select, identify those funds that have managed to consistently add value for risk taken. Secondly, understand who might be doing it for you. And again I've suggested that there are some rating agencies that do within their quantity of analysis use elements of risk-adjusted returns to help them come to their rating conclusions. So it's about, you know, either do it yourself, understand that somebody else is doing it, understand what they mean and how to apply them and what the limitations are. PRESENTER: And when it comes to assessing performance, what sort of timeframes are we looking at? JULIAN HINCE: Again, good question. Now typically you would expect to be using any of these measures over a minimum of 36 months' worth of data. But, again, here are some of the limitations. So risk-adjusted returns of course are telling you what has happened, where have we achieved returns or otherwise relative to the risk – it's all backward looking of course. The shorter the time period that you are using risk-adjusted returns over, it can give you an idea. As long as the market conditions are similar, the portfolio remit is the same, the approach is the same, etc. It might give you a feel of what you could expect given similar market conditions. Now, the longer you go back, of course those market conditions

may have changed, the fund remit may have changed, the approach, the management etc. and style may have changed. So it's great to go back as far as you can, as long as it continues to be relevant going forward. And again it's just simply about understanding that and making sure that you've got those caveats in place. PRESENTER: Well I suppose this is really where beta comes in so what sort of outside factors should you really be considering or would you have to factor in? JULIAN HINCE: Well, again, beta, as we've said before, is that measure of sensitivity, and I think beta tends to work quite well as a forecasting tool if the data is relatively short term. As long as those market conditions continue to prevail, it might give you an idea of what is likely to be driving the performance of your portfolio. If you've got a portfolio that has a relatively high beta or beta closer to the market, it might give you an idea. But as I said before if you go back too far it may no longer be relevant, so again importance to take into account. PRESENTER: And what about things like volatility, I mean how does that impact things? JULIAN HINCE: I think when we talk about risk we often just almost lazily assume that it refers to volatility. The regulator have been very clear to advise us, for instance, to suggest that actually you shouldn't be using volatility as a proxy for risk. Risk ultimately is the permanent loss of capital. That is what we're trying to avoid, that's what investors would really deem to be risk. And therefore I'd almost pose the question back to maybe suggest that volatility isn't risk. Of course, this ultimately comes down to timeframe. If investors have a long enough timeframe then maybe they can afford to ride out some of that volatility. It's not to be ignored but I think volatility as a standalone measure, as you know, is just simply measuring how something moves around. It's not risk in its own rights. Now, that's not to suggest that that may not be uncomfortable for an investor and for an investor for them maybe an element of risk they're not prepared to take, but I think we need to truly take a step back and understand the difference between volatility and risk. PRESENTER: So then what would you say really does affect risk and performance? JULIAN HINCE: It's a bit of a meaning of life question really: what affects risk and performance? Well, a number of things. It really depends on your definition of risk, whether you can measure and identify that risk. As I've said before, the ultimate aim is to be able to reduce the amount of risk that an investor is exposed to but maximise their returns at the same time. And those risks can be many things can't they? From anything from market risk to specific country risk to specific asset class risk, could be interest rate risk, you know, it could be risk that central banks don't perform in the way that the markets expect, that the world's largest economy doesn't continue to grow. It could be all sorts of things. So really the simple answer to that is of course through diversification and through frankly understand what those risk are and that making sure that you've tried to uncover as many of those known unknowns as you possibly can. And again the truth ultimately is there will always be something. The biggest risk in portfolio management would be the thing that you've least expected, the thing you didn't see coming, and there are some things that you simply can't cater for and can't factor in, but that to a degree is market risk. And we've said earlier on that actually you can't diversify market risk and there is nothing that you can do. And I suppose really from an investor's points of view is to ask themselves well what is the risk of not taking on board a degree of risk? Where are the substitutes? Where else would I invest my money? Would you consider cash to be a risk-free asset? Well with inflation rising and rates and yields remaining so low, the answer is cash could arguably be a fairly risky asset. There are some question marks over elements of the fixed income world. Certainly elements of the sovereign market don't look as attractive as they did before. So there's potentially risk there in an asset class that maybe some investments considered to be low risk. So I think again the risk sort of expanding that question, the risk is in a lack of education and a lack of understanding and I think the way that things have shifted, it poses the question, is not taking enough risk actually the biggest risk that investors are taking, given as I said where we are in terms of the rate, the yield cycle, in terms of the lack of, you know, the savings gap that we have, there's more sort of socioeconomic issues that we also face. PRESENTER: So now a question I think that a lot of our views will be wondering is how do you go

about improving risk-adjusted return in an established portfolio? JULIAN HINCE: Well, it's an ongoing ever-present process, and it's why financial planners will be conducting regular portfolio reviews, investment reviews etc. to ensure that that portfolio is in line with the client's attitude to risk, intolerance etc. And it's really broadly the same for, you know, within the investment management world as well, that constant monitoring of the risk budget to ensure that we are maximising again the amount of reward for the risk taken. And remember the example that we showed a little bit earlier on that where we were trying to combine the art and science of portfolio construction by adding securities to a portfolio that we believe could outperform a rising market, but at the same time at aggregate level ensuring that when we bring these various component parts in, the various securities into a portfolio, that overall we have say a beta of let's say less than 1, as we said in that example before, but with the ability still to outperform. But that's a constant process. That is not something that you can just return to periodically. PRESENTER: OK. So, bearing all of that in mind, are there any common mistakes people make? JULIAN HINCE: I don't know about common mistakes but the mistakes that I've come across would be, I don't know whether you'd count this as a mistake or not, perhaps a lack of true understanding of the various risk-adjusted returns that are available, how to apply them. And in that application an example I came across was, within a portfolio of construction investment management committee basis, the use of a piece of software which enabled the use of all risk-adjusted returns as a filter - and I talked about using them as filters earlier on - whereby all bar one were switched off from that filter because of a lack of understanding. You know, what do they mean? Well we don't understand so let's switch them off. Now, the reason that was problematic is because the portfolios that resulted, once we began to switch each of the other risk metrics on, the risk-adjusted returns on, the portfolios weren't behaving and didn't have the risk profiles that perhaps they originally thought. That was a stark example of how dangerous that could be, that lack of understanding, it goes back, the old adage, you know, a little bit of knowledge is dangerous. So just using one standalone and not using us because I don't understand them, anyway, is not an excuse. The biggest common "mistake" is just that lack of education. I mean when the industry as a whole tends to be introduced to risk-adjusted returns, it's theoretical. It's very much exam based. The truth is on a day-to-day practical basis you don't need to remember the formulas. You need to understand what they're trying to measure, what the limitations are, when to use them, where not to use them etc., rather than just the formula itself. I think one of the mistakes that we make is we sort of learn them parrot fashion, walk out of the exam hall, forget them, then what we need to do is begin to then learn how to use them. As my dad said when I passed my driving test - and I'm sure you know what I'm about to say - is now you can go and learn to drive. PRESENTER: Yes. So then just to re-cap over what we've said today is when should you use them and when shouldn't you use them, just a basic question to end on? JULIAN HINCE: I think if you are constructing portfolios and you have active funds within them, certainly funds within equity bias, then they can be a really useful tool. As I said before, if you're able to filter in particular against those measures that we've spoken about, if you're able to monitor them on an ongoing basis, I think they've extremely useful tools if you're having commercial conversations with clients, they want to know am I receiving what I'm paying for? I think they're extremely useful to understand if you're, for instance, using rating agencies to supplement what you're doing or if you're relying on rating agencies, are they using them, if so how are they using them, which ones are they using, which are they not using and why are they not using them. So questions there to ask as well. PRESENTER: Julian, thank you. JULIAN HINCE: Thank you. PRESENTER: Well, 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 how risk-adjusted return is measured, why risk-adjusted return is relevant today, and how risk-adjusted return can be used in practice. Please complete the reflective statement to validate your CPD.