

# THE INVESTMENT INDUSTRY

*Dr. Adrian Bell*

5 September 2007

## Part 1

Thank you very much. So just to explain once again I'm Adrian Bell from the ICMA Centre where I am a Director of Teaching and Learning. And at the ICMA Centre, we teach finance, and we've got a Bachelors in Finance as well as a suite of Masters in Finance, which I hope a lot of you will be coming on this year. We are the reason why there is a lot of building work, have you seen the building work? - the big drill, yeah that's our fault, sorry. So we're having an extension built this year as well. We are funding it from the ICMA ourselves. The talk today is about, as Colin said, about the findings of a project we did in 2004 to '05, on the wool market. It sounds very boring I know, the wool market. But the wool market in medieval England - so the wool market a very long time ago, when there wasn't electricity. I know you are all worried about electricity, it sounds like. Well they didn't have electricity, they managed, OK. So at the time before electricity, time before we think people did much at all. Why do we look at these sort of things? Why do we look at the history of finance is, as Colin said, I'm trying to look for times in the past when we can find sophistication that we don't really think about our forbears having, OK? We might think that everyone in the past was a little bit stupid, didn't do a lot. Well actually when we look more closely, we can see that actually they used very sophisticated financial instrument as I'll describe today.

I've given you some pre-reading, which you've hopefully read, which is a short article, which was produced by a Journal called 'Professional Investor'. I'll start the talk today by taking about modern financial instruments called 'forward contracts' and something else, a modern financial instrument called 'futures contracts'. Now people get very there are misconceptions about these two contracts where people think they are the same thing. Well they are very different. A forward contract and a futures contract they sound like they are something to do with, you know, ahead in the future, but they are very different. So, I will start by talking about what we today mean when we use the term 'forward' or we use the term, 'future', then I'll talk about what we can find in the past that looks like what we've got today. The reason why I am describing what forwards and futures are is that when historians talk about these things in the past, they do often call them futures, they don't really care about this mixing up of terms. But in the financial world today, we have two very different contracts, a forward contract and a futures contract, and so we shouldn't get these confused.

OK. So that's the pre-reading, and just to show off a little bit more, we've got a book coming out end of October about the whole of the project called 'The English Wool Market from 1230 to 1327' and that's by Cambridge University Press, only fifty pounds, so it's only very cheap, I'm sure you will all be the book shop there pre-ordering. I think they're only printing about five copies, that's one for me, my mom and dad, etc. but if you get an order in quick, you will be able to get

one. You'll see a nice picture of a sheep being molested on the front cover. So, why I am interested in the history of finance? As Colin said I am actually a historian I'm not a finance academic, even though I work in the ICMA Centre, but don't tell anyone I work with in case they find out, it's a secret between me and you. So, you probably know more about finance than me, but the reason I'm talking to you today is because if we gave you a lecture on very hard finance, you know, half of you wouldn't know what the person is talking about, and the other half would know probably more. So I'm somewhere in the middle. I'm going to talk a bit about finance but mainly about some historical stuff. Interestingly, a lot of economists today think that history is a load of old rubbish. This very famous economist, J.K. Galbraith, an American economist came out and said there can be very few fields of human endeavour in which history counts for so little, as in the world of finance. Well, he is much more prestigious than I am, so I can't, you know, dispute that he said that, but in sense I'm trying to show today the perhaps what he means is not quite what I mean. In a sense what he's trying to say is that people say 'history repeats itself'. So you can predict the future by looking at what's happened in the past. What he is trying to say is for finance, for financial markets, we can't predict the future by looking at the past. So, he is saying we couldn't have predicted the *techbubble*, we couldn't have predicted the crash in the 90's in the housing market in the U.K. We don't know when the next housing crash is going to be, because history is no good for us. Financial markets act on their own out of history somehow randomly yes, so that we can't judge what they do. I think he is quite wrong, I think we can see patterns. I look to see what's happening and that is what economists do, I mean economists are just historians anyway, I don't know if anyone's an economist here, I don't want to offend anyone. But they are just modern historians rather than looking at the more longer picture.

So, what the talk today is going to be about is that, how the modern financial industry investment uses these instrument called forwards and also this other instrument called futures. They use this technical term to hedge their positions. Lots of you have heard of hedge funds, I assume. There is a lot of news about hedge funds. Hedge funds control the global economy nowadays because they take what we call 'positions' they take for positions for what they think is going to happen in the economy. What these people do, they hedge their positions what's called 'hedge', just means they are protecting their investment by taking a forward or a future position. This helps them to manage their risk. So, they've got a portfolio, they want to manage that portfolio they will hedge their position by buying a futures or a forward contract, that's today. And what I would like to tell you about once I get on through the talk is that we can find evidence for these, what sound like very sophisticated financial instruments in the 13<sup>th</sup> century in England, so that's over 700 years ago. Medieval monks and Italian merchants were already aware of the ability to hedge their risk by using the same forward instrument we use today. I'm not saying one is linked to the other, there's not been a development at such, but what it does show us is that if we are very arrogant about today and say we are very modern we know about how to do these things, very sophisticated. They already knew about 700 years ago, you know it's no big deal. So it's a lesson for us.

## Part 2

So a 'forward', and a 'futures'. Now forward agreements and futures are very similar because what you are doing, you are buying something at some time in the future, but there is just a different name for the way you are doing it. So, you're going to pay now, but I don't want it now, I want it next year, OK? I want it a year after next, or I want it 5 years, 10 years, etc. etc. But there are differences between these two things that we'll go into now. So, a forward agreement is the simple version, so these are two different individuals who work on a forward agreement. So, someone who say wants some oil next year, they will go to an oil producer and say I will buy from you now, oil, but I don't want it until 6<sup>th</sup> of September 2008, and they will agree a price but they will pay that price next year on the delivery day, they will probably pay a deposit but they will pay the actual amount next year. And these are very popular in terms of currency transactions so there is a lot of this in currency transactions so your mortgage company, the Abbey National I don't know if many of you know down on the high street. You go in for a mortgage, and they'll sell you a mortgage at 6 and ½ %. But what they will have done is already agreed a forward agreement to buy money, but at say 4%, so they are selling you a 6 and ½ % mortgage and making 2 and ½ % because they have already bought an agreement at lower price, OK? This is how these forward contracts work. These are quite risky, and we'll find in the Wool Market, these were very risky because you are the one who is paying, the one who wants this stuff. The other people might not deliver. Yes, they may go bankrupt in the meant time, and you have no way of getting that product you need, and you've lost some money. But once it's been agreed, the forward agreement has been agreed, there is no way of getting out of it. So, if you don't deliver, you are going to be in court arguing about it later. OK, so that's the forward agreement.

When it gets more complicated in these futures contracts. Now there are exchanges where you can visit these futures markets, such as, if anyone has been to Chicago, there's the Chicago Metals Exchange, and also the Chicago Board of Trade, and in London there is the London's Metal Exchange. And you can actually go and you can watch these people trading futures; it's very exciting. So, there is an exchange. Now what we mean by an exchange is there is actually a place which exists where you can trade these contracts. With a forward agreement it is between two individuals. But with the futures it's on an exchange such as the London Stock Exchange, etc. that's an exchange for trading equities, then you're going to get exchanges, such as the London Metal Exchange for exchanging metals.

What I say there, the Exchange itself becomes a counter party, means that it is the central person in the act that's guaranteeing the contract. So if anything goes wrong in the contract, the exchange itself has to foot the bill, OK? The exchange is guaranteeing this contract's going to happen. And what I mean by there is no counter party risk, is there is no risk on this contract not being delivered because if any of the two parties default, the exchange has to make it good, OK? So that's a lot less risky than the forward contract, where it's just two individuals. Just to say how is that possible? Well they do standard amounts, so they do standard set amounts of each product and you can buy a standard set of amount. And you can buy things of future in commodity, see you can buy a commodity in metal, oil, but also food stuffs, so farmers can sell and buy wheat etc on these futures

markets. But you can also buy a financial product on a future as well, such as a stock and a bond and equity as well.

The funny thing about a futures contract or futures market is that nothing ever changes hands. These are just sort of theoretical things, and although you think I'm buying some oil or I'm buying some wheat for some time in the future, it's hardly ever exchanged. So the commodity itself stays put somewhere, but no one ever sees it. Why is that? Well the reason is that futures are really used for speculation, people think they know what's going to happen in the future and so they buy these contracts to speculate. So they hope the market is going to go up here, but they can see they can buy a future down here, so they purchase that future in hoping to make the difference when the time comes. And what they do when the time comes when the contract comes up, they buy the opposite, so if they've bought they will then sell, and make lots of money. So, there are ways of speculating in futures contracts. I just said they're hardly ever delivered, they can be delivered, you can demand, I want my wheat now, I want my oil, but they are hardly ever delivered.

Now the other reason, the sensible reason for having a futures is to protect companies from risk, so if I was a car manufacture and I know I want to build so many cars next year. I want to be sure the price of metal isn't going to go through the roof. So, I might buy myself a futures contract in aluminium, that's going to last me a year, that means I know how much I will have to pay for that aluminium. At the end of the year, I don't want the aluminium because I've got it, but I will then close the position by selling it. So it's a way of protecting yourself. On the alternate, if I'm producing a commodity myself, I want to be sure that I'm going to get a good price for it in the market, so if I'm a oil producer I could buy oil, sell sorry oil, on a future's contract at a certain price, and at the end of the year, if I've already sold my oil at a better price, I just close the contract and make a profit or a small loss.

OK, so these are a technique of hedging risk, OK? That's what a futures contract is. So futures contracts are very different to what we talked about just few minutes ago which was the forward contract. Now as I said when these wool contracts - we will talk about - the wool market in England in the Middle Ages - we are going back in time now - we are going away from the modern to the past. People talk about these as futures but what we will show today is they are clearly not futures there is no exchange for these wool forwards, they are purely individual contracts between a supplier a grower, and a merchant who is buying the materials, so therefore we would classify these as a forward contract, OK, because they clearly meet those criteria for being described as a forward contract.

### **Part 3**

So the wool market in the UK, in the middle ages was very important to England because it was called the 'jewel of the realm'. By this, they meant it was the most important thing in England, was the wool market during the Middle Ages. It produced so much money from export, that it basically financed England's wars, most importantly, because that was what most money was spent on, and also you know interior structure and all sorts of things like this. It's still important today, the Wool Market. You might think it's a bit irrelevant but the Lord Chancellor

actually sits on a wool sack, I don't mean it's the Lord Chancellor any more, but the Lord Chancellor did sit on the wool sack in the House of Lords. It's basically a big cushion, filled up of wool and as the Lord Chancellor of England to show his authority sits on the wool. This is the, what we call an anachronism, so it's something that is not relevant today, but it's relevant historically. So, today why is he sitting on wool, it means nothing to us. The reason is because wool is so important to the development of the English economy, is that, that's where he sits. Today, they even use in the woolsack, what they do to make it more exciting, they have wool from all over the Commonwealth, so they have wool from Australia, New Zealand, etc. and they make it more symbolic, sort of commonwealth feeling thing, instead. Must be a bit itchy, woollen cushion for him to sit on all day. But he's got to wear a wig and things so it's hard. So, that's what I am saying he is now a symbol of unity, a symbol of the Commonwealth now, before it was a symbol of his power.

Just to make a comment - England actually exported in these years about 45,000 sacks a year, you might think that's not very much. But a sack was 26 stones. Do any of you know what a stone is? It's about 165 kilos so that's about 2 and half me. So a sack was about, maybe I'm a bit lighter, three time of me. So, 26 stone sack of wool, it was an absolutely massive thing. Don't know how they lifted them, they didn't have cranes they must have had a mule or something to lift them. So, this is a massive amount of wool. And they actually played with the market in wool, and they would sometimes stop delivering wool to the market in Europe just to bring economic difficulties. So a lot of the trade was with Flanders in Belgium. Because they were being annoyed with the people in Belgium, they would stop the trade and it would bring great hardship to the people there who didn't get the wool.

We have lots of sources for this, you wonder where we are getting all the information for this, but we've got contracts which tell us about this supply of wool, which survive mainly from English monasteries, so that's religious English Christian monasteries, mainly to Italian merchants, but it can also be other nationalities, also German, French, Spanish involved in this trade, as well as English as well. And some of them last for up to twenty years. Some of them are agreeing a forward delivery of wool for up to twenty years in advance. And the interesting thing about the contracts, the unique thing about them is they pay in advance. So the monasteries actually got the money at the start of the contract. Even if the contract has got twenty years to run, you think that is quite a good deal for monasteries.

Why do they still exist? Well they exist because there was legal difficulties, they were disputes, there were court cases. So, none of these contracts actually exist as a contract because it's all been destroyed, all of that information. But what we do have, we have a very detailed court system, legal system in the U.K. right back to medieval times. What we find is that these are then enrolled on our legal documents as evidence in these court trials. And we can actually go in and we can actually look at these contracts in the national archives at Kew in London today. I don't know if that's come out very well, it's not very bright. This is what they look like. So, this whole thing, from here, from the point up there down to here is one of these wool contacts that has been enrolled on what's called the Rules of the Exchequer in Kew. So, this is a legal document, and a merchant has come in to Kew and is enrolled, his contract on these Rolls. They are called

'enrol' because they are actually rolled up. They are actually very long documents, perhaps as long as this table, and they roll them up like that. So, when you look at them, you have actually got to enrol the document, right along like this, and then you've got to roll it back again and get the next page. So, they are very long documents, say about this thick and that long, and there are two for every year - they are called the Memoranda Rolls - and there are two for every year in the U.K. right from when time began, and they record very much legal cases. And they are enrolled in what's called The Exchequer.

Now the Exchequer, you know today, there is a Chancellor of the Exchequer, he's the chap who looks after the budget and all of the money. For the Exchequer existed then as well, and it is the financial side of government. It's called The Exchequer because when they were counting their money they would count it on a checked board, so they knew where they were, a bit like in chess. You know you've got a chess board like this, with squares, like that. So it's a check, a check-board, so that's why they called it the Exchequer because when they counted their money, they used the check board to count it, to that's why it's called the Exchequer.

So what the merchants would do, and why we know about these contracts is they would want to commercially, sorry they had a commercial debt and they would want to register it. They would want to know in the future - I mean we talked about 'forwards' and 'futures' - in a few years time if a monastery turned around and said 'well I never made a deal with you, what contract?' They could say well actually two years ago, I went to the Exchequer in London at Parliament and I made a record of the contract that we made into. Then when there was a court case a clerk would then go along unroll the rolls, find it and say 'yes' there is a contract here dated on this date you both signed to, therefore please deliver the wool, you know that you are arguing about. But there's also lots of cases come up because these dispute do happen, so some of these contracts exist because they are just there, just there to protect the interests of the merchants but some - there's long cases with them arguing about who owes who what, and you get those as well all them, enrolled as well on these rolls, OK? And you can just about see on the edge, where you can see all the pages lined up, so there's loads and loads of pages you can see of this Roll.

#### **Part 4**

So what is this forward contract? It's a contract to buy a quantity of wool for a date in the future but they had agreed a price now and they would also pay in advance. But they are not just that. They'd also talk about what sort of quality they wanted in the wool. They'd also talk about the quantity of wool they wanted. And they'd also even talk about 'dressing' the wool. By what we mean they had a special man they brought in who would have a special comb and he would look after the wool and make sure it was all well presented. They'd also say where they wanted that wool delivered. Which port we want that wool delivered to on which day. So they are very complicated and very precise documents.

This is another one, but this time, this one is what is called an indenture. Now some of you may have come across that word 'indenture', and it means sort of, today, it means 'contract' an indenture. You know you could be an indentured -

you can get an indenture to mean a contract. Why they are called indentures is an interesting thing, that is why I have shown you it, it is because of the jagged line on the top, so the line up here. What that did – you wrote the contract twice and then you cut it in half so you could match the two contracts back together to show they were true contracts. You can see the little bits of writing that they have cut through, so they would be an exact match. Now why they are called indentures is because they said they looked like teeth. Like dentures, we call dentures, dentures are false teeth in England, but denture means teeth. So they said they looked like teeth, so that's why these are indentures, and that's another indenture from the contract.

This is a translation of that contract I won't make you read it but I have got some details here. It is all in Latin by the way; we have to be able to read Latin to study the medieval world. A lot of people say it is a dead language but obviously it isn't because you need it to read these medieval documents. You are not learning Latin here I suppose? No OK. So the explanation – this one is a contract made in 1242 and it's a one year contract, it's only a one year forward contract. It says it is buying all of the wool of your house for the following year, and it's two English merchants who have bought this, despite their names one being from Toulouse. Adam is from Shoreditch, a nice London name, and they say how much they are going to pay for each sort of wool. We want your good wool, which is a specific grade, and we will pay 15 marks per sack and medium wool we want 10 marks per sack. Now just look at the bottom. A mark is actually a unit in the medieval world, which was 13 shillings and four pence. So a 'd' means pence as in dinari, it's a silver penny, a dinari. Those old enough, Colin probably remembers, they had this currency until about 1971, I think or something. I am too young, I can't remember. I only remember modern currencies; I can't remember pounds, shilling and pence. I was calling it 'p' once and I got told off, it's pounds, shilling and pence. So there was 12 pennies to a shilling, 240 pennies to a pound, 20 shillings to a pound. I think that's right but I don't know because I can't remember but Colin will confirm that later. He's probably still got some old coins to show us.

So, then, a mark was a unit, it's 13 shillings and 4 pence. They dealt in marks for some reason, we don't really know why they dealt in marks. I think it might be something to do with it being like a Euro. You know today we have got the Euro, it may have been an early form of Euro, it meant something to the medieval people. They understood in Italy and France what a mark was quite easily, and that's why they used it. It seems like an odd sum doesn't it, 13 shillings and 4 pence. As I said earlier the sack was about 26 stones at 14 pounds to the stone. Which is again as I said 165 kilogrammes. Now the payment itself was in advance, so they would get the money in two halves, 60 at the beginning, 60 at the end and then the remainder on the delivery of the wool. So that's what a standard contract looked like, that's how it was structured.

Who got involved in these contracts? Well in England it is monastic producers mainly as you can see. When I say lay producer I mean a non-monastic person, so a person like you and me. As a lay producer, a layman, someone who is not involved in the Church. Monastic producers you can see, there's got 113 contracts for over 4,000 sacks of wool whereas the lay producers have got a lot of contracts, 100 contracts but very little wool in comparison to the mass producers. Then these are different houses, different religious houses that were around in

England in the Middle Ages. So the Cistercians were the big major wool producers but we also get producers in the Augustinians, Benedictines etc. Even the Knights Templar, those who have watched Dan Brown's films and books will have come across the Knights Templar, yes? Come across those - Tom Hanks etc. So the Knights Templar were even involved in this so it must have had something to do with the Holy Grail etc.

Now the Cistercians, interestingly enough, why did they get into this market, they didn't get into it through choice. They got into it because they were late in the game. In England all the best land went to the Augustinians because they were early, they were early monks and they got all the best land. When the Cistercians came about the king did not have any good land left so he gave them all the rubbish land or what we call the marginal land. Marginal meaning hilly. You know you can't grow crops on. The Cistercians thought to themselves what can we do with this? I know, sheep love marginal land, so they invested in sheep and funnily enough they became the richest monastic house in England due to an accident as they got all the rubbish land. So they couldn't grow crops but they thought we can grow wool. So the Cistercians were the biggest growers in England.

Now what did they do with all their money? Well they built, I don't know whether you can see that again, but they built these huge monasteries. This one is Fountains Abbey in Yorkshire, and you can visit it today if you want to, you see some people there. It is not my picture, or my holiday snaps. But these are massive buildings, these really are big, they really are a wonder of the world. How did they build these buildings, but that's another lecture. But these are massive buildings and they survive all over England, so there's lots of broken down monasteries all over England when you go and visit. But this is a Cistercian House in Fountains in Yorkshire, and this is what they did with all the money, this is why they wanted the money. They wanted the money so they could build big monasteries for the glory of God. To bring awe to the people around and to demonstrate as I say, the glory of God on Earth.

That's why they wanted the money in advance, so they could build these big things. They were cash poor as we say. They were very much asset rich, they had all this wool but they had no money, so that's why they wanted the money. They were cash poor, asset rich and they wanted their cash now so that's why they sold their wool in the future. Does anyone know why these monasteries are all broken down? No? In other countries we've still got monasteries haven't we? We've got France etc. In England we don't have them, they are all smashed to pieces like this and it's all because of Henry VIII because he wanted to get married again. But I won't go into that. He fell out with the pope, the pope would not let him marry again and so he decided to leave the pope, leave the Catholic Church and make his own church, the Church of England. Then he destroyed all the monasteries in the 1500's. So that's why they are all destroyed and not together like they are in other parts of the world.



## Part 5

So who was doing the counter parties, who were the people buying the wool? As I said there were English people, Flemish people, French, Germans but also people from Spain and Italy. But as you can see the majority are Italians, the Italians are always very much known in the medieval world as being at the forefront of financial sophistication. They are meant to have invented double entry bookkeeping for any accountants out there, so the Italians are very much the financially astute in the Middle Ages and they bought the bulk of the contracts. Actually most of them come through one company called the Riccardi, who were based in Lucca which is a small town today. If you ever go, a small very nice town in northern Italy where there were 79 contracts. Then Florence were the other big buyers who bought most of the contract. But other places as well bought contracts, and I have got a map there just in case any of you are geographically challenged like me. But mainly they are from northern Italy so, most of the buyers are from around here, this area. So Florence is about here, I think, anyone Italian? – am I about right? Yes, No, is that about right? It was spot on, yes? But there were also buyers from France, from Cahors which is down here as well as in Germany. Now obviously what is going to happen with the wool – do they want the wool delivering over here? It's going to take quite a long while – you are going to have to go all the way round there, or you are going to have to deliver it across the land. What they are actually doing is something even more sophisticated than that. They are actually buying the wool, but they don't want it delivered in Italy they want it delivered here in Flanders. What we call Flanders, in the medieval times because that is where all the wool producers are, the cloth producers, all the weavers live in Flanders. They are buying the wool there, these people here are buying the wool there to deliver here and then selling it OK? So they don't want it themselves, they want to sell it to these people here. So that was the market at the time.

So what about the context of these advanced contracts? Well it sounds a lot 3,000, I've put 3,650 and a half, I am being very precise over a whole period, but it is actually not a lot in terms of the amount of sacks being taken out of England in any one year was up to, as I say, 45,000 but in 1294 we know there is 25,000 sacks taken out in one year. We know that, there was 25,000 sacks in just one year because in that year Edward I confiscated all of the wool that was being bought that year in England. Now as a king he can do that, in those sort of times you could just do that sort of thing. I will tell you why it wasn't a good idea, but he could do that sort of thing. So in 1294 Edward I confiscated all the wool that had already been bought in England and he also took the money as well. So he's quite a deep thinking guy Edward I. So he not only said to the Italian merchants 'I want all your wool that you have already bought but I am not giving you the money back, and then he had the money as well, and then he sold the wool as well. So he made lots of money from this.

Now Edward I, don't know if you know Edward I but he's in 'Brave Heart' the film, anyone see Brave Heart with Mel Gibson? He's the guy, the old geezer, the old king who chucks someone out of the window because he doesn't like his influence on his son, so he chucks him out of the window, that's Edward I, that's the sort of chap he was. He could not have chucked that guy out of the window because Edward I was dead before that guy died in real life. In the film - don't worry you have got to suspend your disbelief in the film. So anyway Edward I

took all these contracts, this wool, and the interesting thing about this is it gives us a record in 1294 of exactly what was being bought in the country, and how much was being paid. So it is an interesting point in time for us which I will talk about later, because from this date in 1294 we can find out what wool was worth. Other than this we don't know, we don't know what was being paid for wool in England but in 1294 we do, because Edward I decided to confiscate all the wool. Because he was fighting, not only was he fighting the French, he was also fighting the Scottish and he was also fighting the Welsh. We were not a united kingdom back then, it was just about to happen but nearly, but he had to quell the Welsh, and the Scottish, and the French at the same time. He did a quite good job of it, but it took a lot of money.

As they say about the advance payment, I have said a little bit about 'why'. The monasteries wanted advance payments so they could build their big buildings and 75% of these contracts do actually pay in full. Why I am saying that Rievaulx is in a mess, this is another monastery in Yorkshire. It is in a mess because sometimes the monasteries got very greedy, and they'd sell all their wool for 10 years, and they'd take all the money and they would spend it building a nice big church. The next year they would think 'well I'm a bit skint this year I could do with some more money and so they would sell it again to somebody else, the same wool. So hereinafter two people would come along saying 'can I have the wool please' and they think well I can't give it to both of you, I will pretend I did not have a contract with you and that's what Rievaulx did. They actually sold it to more than one person, the same amount of wool and then the king had to go and sort them out for messing about with the merchants.

Remember the merchants, you might think the king treated them very badly in 1294, but he always liked to keep the merchants happy because they were lending him huge amounts of money, as well. So in 1294 he kicked them out but apart from that he generally wanted to keep them very happy because they were funding him, his life style quite heavily. So if they did have a dispute he would help the merchants get a resolution generally, and in this time he would help them to get their wool from Rievaulx.

Now the thing about these forward contracts, the thing I haven't really touched on until now is that perhaps they are not forward contracts. So now I am going to say what I have just said up till now - they are forward contracts, perhaps they are not forward contracts. Could they be something else - could they be actually just a loan? Why would I say that? Well in the medieval world you could not loan money for interest, it's called usury. It's illegal, you can't loan money. I can't lend money to someone in the medieval world and expect him to pay me back interest, it's illegal. So one way around this would be to say I want to borrow some money off somebody else, but instead of paying you back in money, I will pay you back in wool. I will pay you back in wool for the next 20 years. So what these could be, is still sophisticated but not 'forwards' in a sense, they are actually hidden loans. They are hidden loans, the interest is hidden in how much wool has been sent back to the merchants. So actually they are a disguised form of loan because nobody wanted it to look like they were paying interest for money.

So they could also be a loan. But nevertheless they are a loan with a forward element to them because they are agreed to deliver these at certain times in the future. So how you price that loan, how you decide how much interest you want is also very complicated. So they must have sat down and said I want that much money but how much can I get back? How much is that wool worth? How much is it worth next year? How much is it worth the year after etc. etc? To be able to work out how much interest they were expecting for that loan.

## Part 6

So that's what I've said on this slide, I should have moved on a bit earlier, shouldn't I? But, nevertheless. So, what I was saying here is that they do have many of the characteristics of forward contracts as we described earlier. So, they agree today to deliver something next year or the year after, they agree the price, they agree the delivery day. They agree how much should be delivered and what quality; so very much they have got these forward elements to them. But in a forward contract, we don't get that massive payment upfront that we do in these wool contracts. The difference between these wool contracts in medieval times, and a forward contract now is this massive payment upfront, which the monasteries received. That makes us worry, that perhaps they are not just forward contracts these, they are not just about managing risk, and getting money early, they are also a way of disguising interest. So what we thought - it came about after we worried about this problem for a long time - is that they are both a loan and a forward agreement, but probably more of a loan. But a loan that we can probably find how much interest has been charged upon because we can then try and do some complicated finance stuff, to 'backward' what the interest is, OK, being paid. That's we are going to get onto the back of the complicated finance stuff, but I'm trying to do it very quickly, so no one understands, OK?

So, why did they want these forward agreements? Well the monasteries themselves, they want to know that they can sell their wool for the next ten years. And if they do it in one go, all much the better. They also want the money now because remember they wanted to build these big buildings not only that, they had to pay lots of tax, not only to the King also to the Pope, so they had to pay out lots of tax to the Pope and King. They'd also have a duty, monasteries in medieval England and medieval Europe, had a duty to care for travellers. So if you turned up at the monastery, you could knock on the door and say 'I want to stay here tonight', and they would have to feed you as well. They also looked after pilgrims and the sick as well.

Not only that, but if the King turned up, they would have to look after the King as well. They would have to look after the King quite well, they'd have to provide very nice meals, not just for him, but for all of his hundreds of followers as well. So, the King turning up in any one year, could be quite a big financial burden on a monastery. There is an interesting story, at Pipewell Abbey in the contract we looked at earlier, where the King then rode off with the best horse of the Abbot as well, and didn't return it, just because he could, because he was the King. So, abbeys needed their money.

Now what about the merchants? They wanted to have the best wool they could. And the wool in England at this time was the best wool in Europe, so the best wool available to them, and they wanted to get the best and a continuous supply of the best. They didn't want to come back every year and negotiate, they wanted to know for the next 10 years, I've got the best wool on tap. They also got a big discount by buying in this way, because by giving the monasteries the money in advance, they knew the monasteries would take less for the wool than they would selling it every day, you know on a 'spot' rate, what we call a 'spot' as in 'on the spot' every year in the market. If you went to the market any one year you would pay much more than buying all this wool in advance.

Now, it's difficult to know about what prices were being paid for wool at this time. One of the things we need to know when we look at trying to calculate the interest on these contracts is what the wool is actually worth in a particular year. And this graph just shows that pretty much wool prices were stable, there is no real inflation here, in medieval England like we have today. You can see that the wool prices fluctuate where we know them, but in general they are following a steady line, and the yellow line in the middle, they are following a steady line. So there's no real price fluctuations that we need to worry about.

This is where it gets complicated now and I will try and rush forward, so we've some time for questions. To value a forward contract, we need to know about various things, and it's called 'the cost of carry relations' that is just a complicated term for it, but this is how we value a forward. I'm always saying is - the price to pay today for a commodity, should be equal to the price, sorry, the price to pay if I want the commodity next year, the fair price is the price today, plus your cost for holding it for me for a whole year, OK? So that's the storage cost, or the convenience yield, and that's the formula. Where we've got the forward price, the current price, the interest rate and a time. These are all these letters mean. It looks complicated and I was very scared by formula, but it doesn't mean a lot other than those different things.

Now we know all these things, we know what prices were being paid, we know how long it was before they had to deliver it; what we don't know is the current price, OK? We don't know what the spot price for wool was in England, it's not like now - where you can open a newspaper, and look at the spot price of any particular currency. So we don't know the spot price in England, and that was our big problem, how do we find out what wool was worth in any particular year - so this is the really complicated bit we had to do. What we had to find out was where would we get the price of the spot wool in England? This is where the Exchequer schedule, which we spoke about earlier, when Edward I stole all the wool from the merchants comes into play, because it detailed how much wool was worth in 1294. From 1294 we can work backwards and forwards to look at what the spot price of wool was in any particular year, by looking at other variables as well. So, this is how we worked out the spot price. We might think now I am going into the realms of imagination, but this is what we did. So, we started it at one point in time, in 1294, and from that we try to work out using time series analysis which is another econometric term, to try and find out what the price was in any particular year.

## Part 7

And this just goes on about how we did it, how we did the time series adjustment. So, time series is an econometric term for a process in econometrics like a statistical term, where we try to work out what the price was in any particular year, using an econometric technique. This is really where the finance methodology was used, OK?

I will just sum up now, I think I've got only two slides left. So, that's what we did, we worked out what the contracts, what the interest rates were. They seemed quite reasonable in the document I gave you as the pre-reading, it detailed the interest rate. We sort of worked out that the medium interest rate was around 20%, which seems quite reasonable for the Middle Ages, medieval times. We can find interest paid in other things that seem similar to that. So, in a sense, what we found was quite sensible.

But what there was with these wool contracts was lots of risks, what we call counterparty risks. So that's why at the start I talked about forward contracts. So, there's lots and lots of risks in these contracts, and really it's quite a good thing they were so risky because this is why we know so much about them. Because they were so risky they became legal cases, court cases, and that is where we've got evidence from so I'm going in a circle now. So it's a good thing that they were so risky, and that's why we found out so much about them. And as I said, on the abbot's side, the risk was they couldn't deliver because they sold it to more than one person, but the other problem was disease. There was a lot of disease in wool at this time. Sometimes they couldn't deliver just because they didn't have the stocks, all the stocks had died. And then they were in trouble, then they would be a court case about that.

On the merchant's side, there was lots of lots of risks. Because a monastery could default by selling to someone else, or the monastery could lose their stock of wool. Sometimes monasteries might even become bankrupt, much as a company might do today, and once a company is bankrupt, you can't get any money out of them. So, the risk to the merchants is very great. What I would say is surprising, is that you find the merchants entering into the same agreement with monasteries year after year after year after year, even if they do default. What it says to me is that the deal that the merchants were getting must have been so good, they were willing to take this risk year on year, OK. So they must have been getting a really good deal.

So, just to conclude what we demonstrated is that these contracts show, I think, that these forward and hidden loans show that a sophisticated financial instrument was used in Europe in medieval England, and medieval Europe as a whole, you know, these were cross border transactions. We are able to see a range of interest rates being paid, between 10% and 40%, but a medium rate of around 20%. When you find the really high interest rates of 40%, it is because a contract may have been previously defaulted upon, and the merchants really are getting more for their money. This may be a bit of a leap, but I will try to say because of what we found, and hopefully what I have shown today, is that in the Middle Ages, rather than thinking this is a feudal society, I don't know if you already know I'm not going to what feudal society is, but it's where someone provides services, and doesn't really get paid for it, you know they might get

some land or something else. A feudal society is what we are all taught at school existed in the Middle Ages, perhaps it wasn't a feudal society, perhaps there is a dynamic market economy at work in them, in medieval Europe which is totally different to what we are probably taught at school.

You know we are taught that we decided, we invented capitalism in the 20<sup>th</sup> Century, the 19-20<sup>th</sup> Century. We developed a market more recently, you know a dynamic market economy. But perhaps this has been going on forever, perhaps there has always been a market economy. The ideas about feudalism are as simple as they can, and just then that we also can show that they used modern technique to solve their cash flow problems, OK? So, what next? Colin was saying about half a million pounds, well I have just got some more money, Colin. Unfortunately only about £340,000 this time. We're going to look at credit finance in the Middle Ages, loans to the English Crown from 1272-1340. So what this is, is really loans to Edward I etc. that I was talking about earlier where he was actually borrowing lots of money, on credit, from Italian merchants. But that is going to take us another three years, so in three years time, we will be able to give you a talk on that.

Thank you very much.