What are Futures?

By Money Week

TIM BENNETT: So in this video, we're going to take a look at the futures market. Basically the derivatives market, as it's called, is made up of these things-- futures, options and covered warrants-- which I do in another video-- and swaps, which I've also done in another video. Once you've got the hang of those three groups of products, you basically have all the planks required to understand derivatives.

So what are futures talked about in the context of commodities, indices, shares, and bonds. So let's start with the basic principles using a commodities-based example. And I'm going to use this example to illustrate all the key features. Bear with me if I use a little bit of artistic license in terms of the way the example works.

OK. So let's set up an example of somebody who would use, first of all, something called a forward contract because a future is just an exchange-traded forward contract, and forward contracts are very straightforward to understand. Most producers, most manufacturers, have a use for something in the forward market. And the reason is they worry about price, and this is a way basically to take out price-risk.

OK, so let's see how it would work. So imagine I've got, let's say, a couple of slightly undernourished-looking chaps here. One is a producer and the other is a manufacturer. Now producers have a worry about prices. Normally it's that prices will fall.

If you're mining and producing a commodity, for example, wondering about what you'll eventually sell it for, you worry about falling prices. Whereas people who manufacture using commodities, such as aluminum, which we use in a moment, tend to be more worried about prices rising. They need to buy ahead.

If you're Audi, for example, making cars out of the stuff, you need to be buying ahead for production in six months or a year's time. And your worry is, What happens if the price spikes in the meantime? Do I just chance it and wait six months and see what I end up paying? Or should I do something about it?

So here's an example of how a simple forward contract will enable both parties to take away their respective concerns. So a forward contract would simply be the producer saying to the manufacturer, Well look, I'll tell you what. Why don't we just say that I agree to sell-- excuse my spidery writing-- one ton of aluminum-- I'll just call it A-L-- one ton of aluminum when you need it in three month's time? And we'll fix a price of, say, $2,500 per ton.

All right, so that's a bit spidery, but it says, I agree to sell one ton of aluminum, A-L, in three months at $2,500. Then the manufacturer thinks, Great, that locks in my buying price. The producer's thinking, Great, that locks in my selling price. Contract's done.

Two people involved-- one is a buyer, one is a seller, OK? And basically someone's going to win, someone's going to lose in the sense that in three month's time, the market price of aluminum might be less than $2,500. Who knows? Have the London Metals Exchange, for example.

If it's less, than the buyer is going to wish they hadn't signed this contract. If it's more, than the seller is going to wish they hadn't signed the contract, but that's life. At least with this contract in place, both of them know how much the aluminum is going to be priced at when they come to deliver and take could delivery of it in three month's time.

So at the end of three months, all that happens very simply is this. In order for the contract to be honored, as you'd expect, the producer sends one ton of aluminum-- that is a picture of a truck, by the way-- one ton of aluminum to the manufacturer, and $2,500 goes the other way. End of story.

That's a forward contract and useful to both parties. Now in this scenario, both parties are hedging their exposure to aluminum prices by locking in an agreed price three months ahead of when the aluminum is actually going to be ready for delivery. OK, so let's take that a stage further.

Let's take that further on and say, right, go back to the beginning. So we've still got a producer and a manufacturer, let's say. We've still got contract number 1, and let's say that when this contract is signed back at the start of the 3--month period the market price of aluminum is $2,500.

So the market price is the price they've agreed three months down the line. Now you might say that's slightly unrealistic in practice, but let's go with it with the example. So contract is signed, the manufacturer thinking, Great, I know I can buy aluminum in three month's time. $2,500-- that's pretty similar today's market price.

OK, one month passes. All right, so that's the start of the example, that's now. Let's say one month later, one m later. All right, the market price has changed, so the market price of aluminum is now $3,000 a ton at the London Metals Exchange or wherever you're getting price from, OK?

All right, one month into this contract, we have a winner and a loser already. The manufacturer is thinking, Brilliant, this contract means I can buy aluminum for $2,500. The market price has already risen to $3,000. I'm only one month into this contract so over.

And the seller is thinking, Damn, I really wish I hadn't agreed to sell for $2,500 when the market price is $3,000. If I could sell now, I could make more money. So imagine this scenario. The producer puts a phone call in to the manufacturer and says, I'd quite like out of that contract. It's got two months to run-- I'd quite like out of it.

Now the manufacturer might just say, Tough. It's a contract. You are going to deliver 1 ton of aluminum to me in two months time now, and it's going to be at that price. OK, or the manufacturer might say, Do you know what? I'm prepared to do a deal here.

So the producer is worried that if the price keeps on rising, this contract gets worse and worse and worse. It loses more and more money. The manufacturer might be thinking, This is just a price spike. OK, that is not going to last. I see the price dipping in the next couple of months quite sharply, so actually I'm happy to be out of this contract too.

Obviously he's not going to say that, but that's what he's thinking. So let's Imagine that both sides went out of contract early. What would need to happen if this is a futures market?

And here's the answer-- you can't rip up contracts. They're binding between these two parties. But you can do something-- technical word coming up-- called novation, which is where you simply replace one contract with another.

So let's see how that would work and the end effect of it. So one month in, this is what happens. Same two parties involved, but a second contract is drawn up. And this time, the manufacturer says, All right, here's the deal I'm prepared to do with you. I agree-- manufacturer talking now-- to sell you 1 ton of aluminum in two months time-- because the original contract's only got two months left to run-- OK, at-- well, let's set the new market price-- so $3,000.

All right, so the manufacturer says, I'm prepared to setup a second contract, OK, to run alongside the first one. And the producer thinks about it. He says, All right.

Now this process of setting up a second contract that almost cancels the first one is known in the futures market at novation, but who cares? What's the effect of it? OK, we roll forward.

So three months later, what's going to happen? All right, that's from the start of the example. All right, so we go to the end the example.

Well, OK, this is the beauty of what we're going to call the futures market in a moment. Here is the painful way of sorting this out, OK? And this, when you think about it, is not a sensible way to do it, but you could. You could take each contract separately.

So contract number 1 requires the producer to sell a ton of aluminum to the manufacturer at a price of $2,500-- let's leave that one to one side. So the producer thinks, Right, OK. I've either got to have a ton of aluminum on-site ready to go or, worse, I've got to go and find a ton of aluminum so that I can deliver it to the manufacturer.

So let's take the second scenario where the producer thinks, Oh, damn. Yes, I've got a contract. Right, I'd better find a ton of aluminum so I can sell it and honor this contract. Otherwise I'll get sued.

So the producer goes into the market, and let's say the market price hasn't changed in the last couple of months and is still $3,000. So the producer goes, find a ton of aluminum for $3,000, delivers it under this contract for $2,500, OK, and that honors contract number 1. So effectively, there's now a ton of aluminum sitting over here. And the producer is already $500 down, having paid $3,000 to get the ton of aluminum and then $2,500 has only come in from delivering it.

So now the second contract kicks in, so the manufacturer turns the same ton of aluminum straight round and delivers it back to the producer for $3,000, honoring that contract. And the producer thinks, well, I have 1 ton of aluminum, and sells it for $3,000, the market price, OK? So that is one way of sorting out these two contracts, but frankly why would you bother?

Could you not just put them both in the bin to start with and have the producer pay $500 to the manufacturer? If neither party was actually interested in physical delivery of aluminum, they could use these two contracts as a way of hedging price changes in aluminum. And all that would happen is the producer, having locked in to sell at $2,500 and buy back at $3,000, has effectively lost $500 when these contracts expire and the manufacturer has made $500.

Now you might say, Well actually these two parties might have an interest in selling and buying aluminum-- it's unrealistic. But I could change these into trader 1 and trader 2. OK, they could set up the first contract-- no intention of ever delivering aluminum, and then set up a second contract when the price changes-- still no intention of delivering or receiving aluminum.

Put both contracts in the bin. Trader 1 pays trader 2 $500. Job done. That would be called gambling on the price of aluminum, and that's the basis of futures markets.

Contracts, which can be in theory bought and sold by anybody in the market-- don't have to be manufactures and producers-- allow through this process of novation I've described, basically anybody in theory to gamble on the price of something like a commodity. In this case $500 won by trader B, lost by trader A, OK?

Now to finish off this little video, just to illustrate, if that works-- because that was a bit of a mess-- if it works for two people the market, could it work for three? And here's the beauty of futures markets is that when you set up a contract, you don't have to cancel it with the same person. And if that sounds a bit weird, bear with me on this one because what I'm going to do is just introduce three players into my market.

Let's see how that would work. Now a bit of artistic license here-- rather than having to write down buy, I'm just going to use l for long, OK? L for long and s for short, or selling. And that will just simplify the amount of stuff I have to write on the screen, but imagine you've got three players in the market. A, B, and C, just to illustrate how a futures market could take those principles one step further, all right?

And that's write-in a price for an asset traded on the open market. So let's have a market price on day 1 of something nice and simple-- just $10. It doesn't really matter what the asset is. It could be a commodity for argument's sake, OK?

Here's what happens-- these are now three traders in a futures market. None of them want to take delivery of the asset, OK? So here's how it could work-- A thinks, I want to bet on the price of this asset rising, so what I'm going to do is setup a contract to buy it, called a long position, at $10.

Now it takes two people to make a contract, so B thinks the price of this commodity is going to fall, and he's quite happy to take the other side of that contract with player A. So this is what I mean by not writing out the full contracts again. Essentially, l in summary says, I agree to buy the asset in three month's time for $10.

I'll summarize that as long, $10. B has agree to sell the asset in three month's time for $10. So like my aluminum example just with shortened jargon, OK? Now day 2-- remember these are speculators now, rather than producers and sellers.

Day 2, the price in the open market goes up is $12. OK, A is thinking, Great, this is looking good. I've basically agreed to buy the asset for $10, and the market price is already $12. So if I pick up the phone and demand the asset for $10, I'm already in theory $2 up.

S-- it looks like B is thinking, I've agreed to sell for $10. Already the price is $12. Damn.

A bit like my aluminum producer in the last example, OK? So let's see what happens next. A thinks, Do you know what? This is a futures market. I'd like to take out my $2 profit. I don't want to wait. I'd like to take out my $2 profit now.

The way that works is A sells the contract at the new price of $12. Now B might be thinking, I don't want to play. I don't want to close my position and realize a loss, so I'm not interested-- a bit like in the last example. If they manufacturer on this side of the board just said, I'm not interested in doing the second stage. We're going to leave the first contract open.

But this is the advantage of the market. In walks trader C and says, Yes, I'm prepared to take a gamble on the price of this asset. I think, actually, it's going to keep rising. So I will buy the other side of A's contract for a price of $12.

Now this effectively leaves two players in the market. A has closed out. By being long and short-- the same commodity just at two different prices-- A has effectively closed any commitment to buy or sell the asset. OK, that leaves B betting on prices falling and C betting on prices rising.

And let's do one more day. Day 3, the price rises to $14 for the same asset. So this is the market price of the asset these people are gambling on. Now at this point B and C decide to close out their positions, neither of them wanting to actually take or make delivery of the asset.

How would that work? B, having sold a contract, would need to buy it back at the new price of $14. And C, having bought a contract originally, would need to sell it at the new price of $14. OK, this is just to illustrate how a futures market could work, in principle, with three players in it.

And what was the overall result? First of all, the asset in question has not been bought and sold by anybody. This is all gambling, OK? All of them have closed out open positions.

You can't do that by being long twice or short twice. You need to be long and short. In other words you need to buy and sell, OK?

So A is sitting on a profit-- long $10, short $12, buying something at $10, closing a contract at $12-- or $2. B, unfortunately, having committed to sell his asset at $10 and being forced to buy the contract back to avoid delivery at $14, is down $4. And C has agreed to buy at $12 got out of that commitment by selling a contract at the new price of $14, so that's a profit of $2.

So here's my point, I guess. Basically everyone's closed out their positions. Minus 4 plus 2 plus 2 is 0, so it all adds up if you like. No aluminum, copper, gold, silver, or whatever you like has changed hands between any of these people.

All they've done is use the futures market, organized by an exchange, to take a punt on prices. And there's been two winners and one loser-- one big loser as it happens-- and that's how markets work. If it works for three people, it will work 2,000 provided there is always somebody in the market prepared to take the opposite view to you.

And normally in markets, that's the case. All right, so to recap-- futures are based on forwards. Forwards are commonly used by producers and manufacturers in the real world to fix the price at which they take delivery or make delivery of an asset, OK?

Those principles can be taken on a step further and converted into tradeable futures contracts. The advantage of futures contracts being you don't have to move any assets around, whatever those assets might be in order to speculate on the price of them changing. And that introduces the idea that as many people as you like can be involved in a futures market.

And that also introduces the idea that the volume and value of contracts traded on something like, say, copper can far exceed the amount of copper that's physically on the planet. Because if this works for three people with no copper or aluminum or gold moving around the market, then presumably it could work for 10 million people doing the same thing. And finally, a word of caution.

Were you, as a professional trader, to leave a futures contract open by mistake-- it has been known to happen. In the early American Midwest, the early days of futures trading, there was one muppet at a bank who left open a commitment to buy 20,000 head of cattle. The day arrived-- he hadn't entered into the opposite contract that would have closed out the position, so he got a phone call from what's called a clearinghouse saying, Where would you like your 20,000 head of cattle?

OK, now clearly you can't drive them up Wall Street. That makes sense? And by the way, you don't just buy the head, you get the whole beast. So that particular bank had to write a big check so that they could find somewhere-- a ranch and cattle hand to put 20,000 head of cattle delivered under a futures contract they had forgotten to close out. So what I'm saying is, on a futures market-- just like the forwards example I gave you-- you can, if you want to, enter into contracts where you physically end up buying or selling a commodity, but it's perfectly possible to use them for purely speculative purposes as well.