

***Interview with an algorithmic trading expert***

- SPEAKER1 00:01 So hopefully this will work so. So just to just to start, I mean, could you just sort of describe sort of what your background is, what you do and your sort of interaction with the world of algorithms, basically?
- SPEAKER2 00:18 Yes, certainly. Yep, so when I started again, my sort of career and not mostly in the in the in the south side, so and I see sort of a Japanese commercial banks and they were very interested in the I think the great derivatives market. I mean, we're talking back in 1986, we said before that time I really started looking at, you know, the growth of the futures and the interest rate swap market and the liquidity characteristics around that. And I think we touched upon before about price formation. So that's basically been my sort of core competence in terms of how prices actually perform in the sort of new markets in terms of derivative markets. And that's been across the effect markets and the markets, big involvement in affects over the years that has been extended partially into commodities and a fair amount in terms of securities and a lot of work with big corporate clients. Want to move more to German banks in terms of looking at this hedging flow that flows that were associated with big transactions. So, again, the sort of big corpus, your big supranational, when they were doing capital markets operations, the associate derivatives transactions that went with that. So that's basically my core competence over the past few years. They get up at [REDACTED] and I did actually across asset structuring, and I did a lot of internal market making that as well in terms of making prices internally for derivative instruments. And then, of course, the consultancy where I've been for the past seven years and again looking at again all the work in the big of European and global banks and looking at market abuse lately. And actually my experience of how prices form in our markets falling and the market abuses that surround that against the focus on the effects and the effects , consent orders that were issued to most of the banks around it between 2010 and 2014 and the actual obligations that they've been doing since 2015 onwards , really even up to quite recently , reductions have been continuing . And that the backlash.
- SPEAKER1 03:02 Yeah, yeah. Yeah. And so since you've sort of come into the markets and obviously you've been involved in for a very long time , how have you seen sort of the introduction of the gradual sort of introduction of algorithms sort of change , you know , market structures and the way in which participants and the people who work for them sort of behave ?
- SPEAKER2 03:28 Yeah, well, certainly, I mean, with that, there was an apparent increase of technology we started and again, they were called out and it was the first sort of generation of technology I encountered was basically auto hedging. That was the first sort of, you know, sort of states that we saw where basically we would design, again, execution strategies to hatch and find the best price and liquidity in our hedging markets. So initially, the auto hedging then turned

more into less about hedging, but more about general order to the wider client. The service side of things, so, you know, and again, really the big liquidity started to move really when we got through the initial stages. This is where the derivatives were a bit more regulated and more in the interest as well. We have big volume increases in derivatives. So that's when we started seeing bigger volumes on exchanges and the sort of hedging volumes as well. And that's where we saw algos really sort of increase in own increase in volume and value in terms of their actual market value of transactions that were put through automated hedging or algorithmic hedging.

SPEAKER1 05:05 And so, I mean, mean obviously recently, the last sort of few years since 2018, when MiFID II went live. MiFID II made probably the first serious stab on a uniform basis in Europe to actually regulate algorithm's format. I mean, obviously there was some guidance issued by ESMA before that but didn't have the status of regulation. And in MiFID II, they sort of make a distinction between sort of three different types of algorithms is the order route, which, you know, is lightly regulated, you know, basically not regulated at all. Then you have this sort of execution enhancement tools which are sort of trying to reduce errors that enhance the trading experience. And then you've got those sorts of more sort of investment decision making algorithms, which obviously a lot more sophisticated in terms of the FICC market products. What do you think most where do you think most market participants are at in the sort of intermediary space in terms of deployment of those various different types of algorithms? Because obviously in equities, you've got some very big market makers who are, you know, they're very told up and they're using a lot of investment decision making type algorithms. Where do you see the fic market sitting with that within?

SPEAKER2 06:32 Yeah, I mean, the decision-making site we I've actually seen in the industry semi-autonomous, you know, that that the algorithm actually assembles all the information for execution. But there is a still a human intervention point. Yeah, so I have actually yet to I have actually seen more of a sort of plan for the debt, for the investment side of that strategy. There's actually been a little bit more of a sort of human factor intervention that. I mean, I've seen it, I've seen it particularly not directly, but through conversations I've had with industry practitioners, that that when we've had some of the short selling activities going on. Yeah. That it's not it's one step up from. And yet because of, you know, the big part of the consumers kill switch is. Yeah. You know, in terms of intervening in terms of, you know, if there were any disorderly markets, but on the investment side, I've seen the sort of industry sort of more towards actually printing and not using Kill switch as a last resort, but actually more of a sort of more human intervention early on. OK, to the likes of bumping up against short selling rules that we've seen and certainly some stocks and also at the recent experiences that we had with credit and small trading side of the market,

SPEAKER1 08:19 are you being you seeing would you say that I mean, because one of the things I've been doing is looking at sort of comparable highly regulated industries or technologies. And obviously there's been a lot of sorts of media coverage of what Google has been doing in the States with respect to things like driverless cars. And obviously they're given a come on, get me to the airport in the quickest way possible. And there are obviously multiple ways of doing that. And one of the ways of doing that could be that you take a shortcut, but in process, you run somebody over. And so, Google and Google have been sort of working on code where they sort of almost design in ethics and the and the algorithms are almost learning to make ethical decisions. And you could make this argument about whose ethics are you using, which is a controversial point yourself. Exactly. Is there is there any real movement to that in the trading space or is that sort of is it is the preference towards that human intervention still? Where do you think?

SPEAKER2 09:24 I still think there's a lot of I mean, there's been a lot of concern to the industry about artificial intelligence and machine learning and there's been a lot of I think when people have actually tested that have, again, this is more industry chatter. Well, the experience. Yeah, that that the feedback is some of the more esoteric decision-making algorithms have been frowned upon in terms of industry practitioners and industry guidelines. I mean, the one good sounding board I think most people are looking for a beginning to is actually that the FICC Markets Standards Board. Yeah, yeah. I think they've actually done some publications, but they actually have been on the cutting edge of how far do you actually push A.I. and machine learning? Because a lot of those decisions you can't actually, because they're so complex, they're very difficult to track and to read before. Yeah. In other words, they don't they don't have a very clear audit trail.

SPEAKER1 10:40 Yeah.

SPEAKER2 10:41 Because some of them the use of fuzzy logic.

SPEAKER1 10:44 Yeah. Yeah. A similar to sort of surveillance systems, you know, and some of the especially around. I mean I've worked in the payment space, and you have to use a lot of fuzzy logic for sanctions tracking.

SPEAKER2 10:56 Yes, yeah, but the logic is just that it's very difficult to actually run through the gate design and effectiveness testing on it.

SPEAKER1 11:12 I mean, how sophisticated I mean, how sophisticated would you say, you know, in general that from what you've may have seen, firms are in terms of their sort of design, deployment and calibration processes, because obviously, again, if it too made a big point of this in 86 and yes. And, you know , from my personal experience of what I've seen in the sort of more sort of brokerage sector , often sort of banking and investment funds , but is that it's a real mixed bag and you have some firms that are quite advanced and then you

have others , which it's almost like they don't think they're going to get looked at . So, they really understand that. So, I mean, what where do you think the industry's out with that?

- SPEAKER2 12:01 You know, I mean, as you said, there's a huge variation if you said in investigations. And again, I've actually been involved with the consulting, with the SEC's annual reviews and a number of different of institutions. And that is very stark in terms of ah, different approaches. And again, to the FCA, given the variance and size and complexity of these operations, the ones the thing which I find is quite stark is that the three seem to be two things are coming up. Last year, six reviews at the moment. One is there's also the danger of toxic combination of algos. In other words, algos interacting with each other. Yeah. That's because the thing about it, if you've got a lot of complex liquidity seeking algos, that hasn't been much research done on how our guest possibly interacts.
- SPEAKER1 13:11 Yeah, so see, so again, like feedback loops or something, which is that that's obvious now.
- SPEAKER2 13:19 Yeah. I mean, you know what? If actually you get it, especially if you've got if you've got multiple different, different types of liquidity seeking algos operating at the same time in one particular market then nobody knows that sort of interaction loops that could happen with that. Yeah. And that done to
- SPEAKER1 13:45 say, OK, so is that something which you think the regulators, you know, they are that something does you think they're actively aware of and monitoring? Or is it something which. You know that, and it's still sort of I mean, you mentioned the FICC Market Standards Board, is it more something which the industry sort of just trying to find solutions to itself?
- SPEAKER2 14:07 I think they're trying to find a way at the moment. And I think this is this is going to be very important in terms of your research. This is very much something which is just coming to light, you know. And so , yeah , I mean , it's a very difficult one to turn to actually look at what they've actually done is become they've gone at it... and in the RTS 6, you have to do a conduct risk assessment . You've come across that.
- SPEAKER1 14:45 Well, actually, I mean, one of the big things I mean, this is the whole premise of this research is really about conduct risk.
- SPEAKER2 14:53 Yeah, exactly. Exactly. Yeah. Yeah. But I think that what they've done is it's the first in line between conduct and disorderly markets. Right at the only difference between conduct. So basically, you know, the if you've got, he if somebody exploiting a market with a with a price manipulation. Yet he said, well that's interesting that I've been through two ways that the solution could be accidental. In terms of an accidental outcome from an hour ago, which is

causing a disorderly market, or it could be a deliberate. Distortion of the market in terms of conduct. So, the difference between the two is intense.

SPEAKER1 15:46 Yeah, yeah, and I mean I mean, the whole thing about intent I find quite interesting because, you know, obviously, we've just had SMCR come in and, yes, SMCR creates these new sorts of certificated functions for the people that are involved in the design and deployment of algorithms. And yes, you know, one of the things I was wondering about is how does that play out as. Algorithms get more sophisticated and perhaps have more. Ability to calibrate themselves. I mean, where does this sort of reasonableness and reasonable faceup.

SPEAKER2 16:25 Exactly, exactly. Because yeah, because the yeah. I mean, as a as a sort of a market maker, myself and global manager myself in a contact world, even without algos, there's a very thin line in terms of information that you require to operate a flow book. If you're a market maker, then then you obviously want to see flow and, you know, and part of, you know, being a market maker is that you will see signs of prices and you will see sort of you will see volumes on that. But even in the market abuse world, there's a very sort of thin line about, well, hang on a minute. Is that effectively being you privy to material, non-public information by saying, quote. Yes, and that is an actual argument coming into our world, because everybody is promoting our goals in terms of wanting to get into the league tables, in terms of in terms of being a market leader, in terms of capturing a big market share of the client base. Yeah. But with that comes the going you know, the dangers in terms of you're seeing a lot of slow, then then you are bumping up against issues.

SPEAKER1 18:00 Do you think that those conductors should you think that those conductor issues are sort of old issues that have always been there and now they're just being mechanized in a different way? Or perhaps they're amplifying, you know, things which have always existed. But they're just now that given the scale of it and the speed of it, it creates a sort of an enhanced risk, but which is what you actually think there are new risks coming from this type of training.

SPEAKER2 18:30 Well, it's more to do with, again, if this is all about, I mean by definition, our have had to slot into the flow of world. Course, there's been obviously a transition through that. So, yes, the alcohol of effectively inhabiting a number of those old sort of market characteristics, but that when it comes into it in terms of, well, what I think is the premeditation of that is how do you actually programs allow your strategies? Are you actually trying to put it that finally, you know, yes. You want to produce the best execution for your clients, and you also want to get the most amount of volume. But does that also bring you into that market abuse space in terms of are you then using information that go by flow and by seeing price from a big tax cut, you have a preferential flow over other participant. And you can use that to gain advantage in terms of films, you know, you keep clients happy, you had a good marriage in itself. But

obviously that's a fine line between being a market maker and been dominant in the business and actually using that position to abuse the market for the right of standard.

SPEAKER1 20:08 Do you think do you think the approach that's there, in SMCR, do you think it's. Do you think it's sort of the right type of approach or is there sort of maybe a feeling I mean, obviously SMCR was shaped after the 2008 sort of events. Do you think do you think the world might have moved on since then? And actually, it's already sort of maybe out of date in some respects.

SPEAKER2 20:32 I think it's I think accountability at the business level is it's certainly more effective than just fining the entities. Yeah, I mean, I think the atmosphere is certainly, I think in terms of what we've seen a lot recently in the past two or three years, perhaps even longer than was as well. We've seen a lot of people brought in from..into first line who are controls people basically in order to actually build out a proper risk and control framework. Yeah. And to actually and with RTS 6 as well, which seen that combination where we're now people are again looking at not so much the...RTS 6 was brought in and under admitted to the focus was more about Kill switch in the single market in terms of algos not functioning. Yeah. But I think now what I is that you think that she said now that's sort of blending going on between August six and what is the intent behind it? You know, perhaps a mocking move. I mean, you're your kill switch and you have an algorithm malfunction where you have yet I mean, you have a blatant run away and go in then then that's a clear a clear kill switch instance going to stop the cycle. But people are still looking at the moment in terms of the flash crash and things like that in terms of the.... because you're thinking know, there's a thin line between a market and an algo being disorderly and an algo actually forcing a market enter into a sudden drop, go into a situation where dad or I mean there was I mean, the type of flash I think we saw that he was a 2019 I think it was. Yeah. So, and that was and that was basically due to two algos trying to hang themselves in the in the futures market, basically making markets in cash during action hours, which is quite fed and relying upon even better futures markets. And I think the futures market was closed for a certain period. Yeah. And that and that caused the algo to become a price taker rather than the price maker. That in turn run its position and realized that you couldn't hedge itself very well. Then it went to protect itself in a position that forced the market to cover its own positions to actually fix the market, you know, quiet, quite rapidly and quite extremely. So, you know, there's a big, big push now to say that we're moving more from the rockets, more into the into the conduct side. Yeah, that was that was the action there. By the bank itself, closing twice in the head of head of clients, is that the right thing to do?

SPEAKER1 24:07 So, it pre hedging almost like they would argue in our money. It's pre hedging.

SPEAKER2 24:13 Yeah , yeah , I mean , it was it was very , very complex case , and again , I was involved in the sort of periphery of it , but I think that's a very good case example , which I you know , I think I can tell you the example to have a chat about that at some point of time as well . But I think it really illustrates what the real-life situation now where there it's not just about me out there just malfunctioning is. It's programming itself to protect to protect the people of the of the bank.

SPEAKER1 24:45 Yeah, yeah. And that's almost an almost analogous to the to the Google car. Right. Because you've got you know, it's been given a task and I suppose it's the measure of how successful that task is different, depending on what angle you're looking at it from.

SPEAKER2 25:03 Well, choice is exactly that. I mean, if you have a choice in the Google car, it is a choice between killing the driver and killing and killing the best. Yeah, yeah. You know, there may be a choice where the car can go. And the outcome is you can save. Exactly. But kill the car or the car driver or the other way round the program. It always to protect it, give preferential treatment to the car driver.

SPEAKER1 25:35 I mean , one of the things which is sort of consistently talked about in some of the initiatives that it's published since 2008 , and I think one of them was the they did they put the paper out and sort of made it twenty eighteen about the algorithmic trading systems controls , but then followed up by I think that they did a joint work with the Bank of England on machine learning and they commented on some of the deployment that was in trading firms in that document as well . One of the things they've sort of been sort of talking about a lot is challenge and the ability of other functions in the business to challenge what may be front desk or if we even call it front desk anymore , you know , it are doing exactly how would you rate the ability of , say , senior management , compliance , internal audit ? I mean, looking from the outside as you as you often do, I mean, how do you rate those functions generally in their abilities to hold those profit-making functions to account?

SPEAKER2 26:43 Well, I think that the that the oversight functions are actually lagging behind. And I think that you can actually see that in 96, right. Because, you know, I think the regulators recognize from an early stage that that the 1960s is a very different structure to an audit structure. You know, after six years of self-assessment. And then and then the headline is a is a review of that self-assessment and then audit. Just a point on the on that sort of second line with you. Yes. I think it very much reinforces the regulatory viewpoint that it's only the business that and that really has a full understanding of what's going on. Yeah. Yet, you know, and despite the fact that that are and what they are doing, the assessment

SPEAKER1 27:44 and but it's curious, isn't it? Because I mean, Altius does mention about Kill switch, but the Kill switch is supposed to obviously reside away from the business. You know, I think in I mean, I had myself in my own career various sort of disagreements and exchanges with the risk function about where that would sit, whether they would sit in compliance or risk. But I think that the point is that I often made was, well, actually, I mean, it should really sit with us because we don't say in the life process, generally speaking. Yes. Yes. And, you know, so I mean. How do we how the firm's redress that , I mean , because there's always going to be a difficulty , I think if you've got a bright kid coming out of Imperial College or something and they've you know , they've done a PhD in quantum physics or whatever it is they've got , they're not really going to be attracted to come and work in a compliance department , are they ? So how do you how do you sort of level it up, I suppose?

SPEAKER2 28:50 Yes, exactly, I mean, the way that I'm seeing guns approaching is in more like local view, this was an actual kill switch, right? In other words, they basically sort of the place trying to put some parameters on the floor while they're waiting for a meltdown to happen, that there's more that they that they basically could build more early diagnostic signals into the into the strategy

SPEAKER1 29:23 right

SPEAKER2 29:25 now. I mean, this is over. That's quite a lot with this execution as well. And, you know, in terms of the algos behaving in, you know, in a in a compliant way so that you have these little pieces that go off rather than a big stop, the whole the plug.

SPEAKER1 29:45 And they are they sort of are they things which are built into the algorithms own code or is it something which is done through the use of a different code or a different sort of system which monitors what they do?

SPEAKER2 29:59 It's a different system, basically, that it's again, more less is less. The now goes the other. It's been shut down and sources small, they're trying to take that now that they are performing not to their design specification. So, I think I think again. Yeah, yeah. So, what you usually find is, is that, is that the that the diagnostic fuses give us an idea of whether the algorithm is, you know, is it it's behaving within certain parameters. Yes. It's not it's not that is not pushing the market away from a mid price. You know, again, it's got some safeguards in case that they can't hack that they that they would push the market too far, too fast. Throttling's a good analogy in terms of that. They won't protect the bank to the to the to the extent where they'll cause a gap in the market

SPEAKER1 31:17 in terms of sort of I mean, I'm particularly looking at sort of thick markets and particularly interested in sort of I mean, I'm actually some sort of dividing from that. I'm looking particularly interesting sort of comparisons between foreign exchange, London Metal Exchange and Aknin and fixed income. And the reasons for that is obviously they've also got their own structures, which are

very different in your view. I mean, a lot has been written about securities market. I mean, the equities markets in particular, given things like the flash crash and, you know, a lot of the media attention that I got, where are we in terms of I mean, especially in London, where are we in terms of the levels of deployment of algorithms in the FICC markets and maybe in interest rates or the sort of bonds and things in particular?

SPEAKER2 32:12 I mean I mean that that usually get a deployed, you know, ah, I mean, the bigger market players, you know, I mean they, they mean in terms of electronic trading, I mean even in some of the more illiquid ones, they, they deploy algorithms quite extensively. You know, our averages I think are definitely. Yes, and definitely seen as the primary execution point, and, in some ways, that scene also in the securities markets. As ways of getting around also the this is sort of an insider trading and wall crossing problems that you have as well.

SPEAKER1 33:04 So, they're actually solving conduct like that in some respects that that were existing before as well, [REDACTED], and maybe creating some new ones. Maybe they're actually. Yes.

SPEAKER2 33:15 Yeah, I think I mean, that's how they're being sold. I mean, there still are some situations where you do need people who, you know, you would still need the high touch side of things in terms of, you know, getting some idea of market appetite or, you know, certainly supporting, you know, hedging for a bigger sort of security transaction went on the corporate.

SPEAKER1 33:41 I mean, one of the things which is being certainly the last sort of five years has been quite prevalent and then there's been a lot of people sort of getting into this is this whole idea of behavioural economics, behavioural science. And there's been a couple of books, one that's actually just been issued recently, one by it may have come across him, a guy called Dr Roger Miles. And if you've come across him.

SPEAKER2 34:07 No know he's been useful.

SPEAKER1 34:11 Yeah, he's recently released his second book. The first book was Conduct Risk Management. And the second book is on Culture Audit. It's called and I've recently sort of bought it myself and I haven't read much of it yet, but I've sort of gotten the general gist of it. You know, these people are very much focused on the human element, the human risk that that exists in firms. You know, the emotion, you know, that used to be on the trading desk and how that creates, you know, potential conduct risks, even sort of things like. What happens when somebody is trading on a full stomach versus when they are, you know, yeah, yeah, these types of things and sleep deprivation and stuff like this. How do you I mean, do you think that that in this sort of changing world, as we're moving towards maybe a different kind of front office, do you think that kind of approach has any real longevity or. Is that really not long for this world and

algorithms are actually going to solve some of the conduct issues from some of which existed from some of those things?

SPEAKER2 35:27 Yeah, but I think that that I think algorithms have been, I think a little bit I think the pendulum swung too far towards our goal. Right. Yet at the moment, and I mean, people want especially with the benefits and the new values, I mean, yes, it's seen as a panacea for new venues and liquidity. But I think it works. And what I mean, if I use an analogy, I mean I mean, perhaps the best industry to actually look at this is actually the aerospace or airline industry. Yeah, yeah. Yeah. You know, I mean, in terms of you know, are there's still a role for a pilot. Yeah, yeah. Yeah. If you imagine that, that when you come to get automation and algorithms know the most sophisticated algorithms are the ones that you fly in finding flight systems and particularly auto land and get procedures like that. And but, you know, I think that's where you should look for the trends, because there still is a an important human element in terms of picking out more the sort of overall factors with algorithms are very good at that and obviously generating outputs from the data that they're given, but you've got no real idea of the breadth of data that they're receiving. There may be a sort of not narrow focus, but there may be missing elements of decision making that a human will perhaps incorporate that they wouldn't. Yeah. Yep, so, you know, this is a and I think a role for the human side to actually pull together that that more that sort of bigger picture and sort of those sort of a combination of events that are pretty trippy over.

SPEAKER1 37:49 It's very interesting, actually, because, I mean, my father is a pilot himself and was. Oh, okay. Yeah, he was in the Air Force as well many years ago. And, you know, I've often spoken to him about drones and things like that. And, you know, does he foresee a sort of future where the Royal Air Force no longer, you know, because it's incredibly expensive to train the pilot and obviously it won't get shot down. And, you know, if all that training and all that kit is lost forever, you know, pilotless drone, I mean, I see lots of adverts in the Air Force for pilotless drone pilots who you sort of just sit in a tent somewhere. And, you know, it is interesting because, again, you know, in the fog of war or you have to make split second decisions and some of them can be better than others, I suppose, because you've got that human being that has that emotional element and that can lead to atrocities, obviously, in some cases. But then equally instinctively, you might be thinking, well, actually, that building over there could be a school and it could be being used as a human shield for military hardware or something. So, therefore.

SPEAKER2 39:00 Exactly. Exactly. Yeah. I mean, I have to say, this is a perspective, I think, because I tell you before my main reason why I got into a graduate program was I actually went through college on a scholarship. Right.

SPEAKER1 39:14 Right. Okay.

- SPEAKER2 39:16 And I actually yeah, I actually went on to actually get my manager out into a commercial pilot's license. Right. So I think that there are some I mean , from my insights there and the discussion with the father actually spot on , the analogies in industry are directly applicable , as you said , you know , there that there are , as you said , when you're especially with civil aviation , where you've got multidimensional factors . You know, he said, you know, you've got not just the actual mission itself, but you've got to take care of. And as you said, you know, other sort of, you know, overlay factors, as you said, you know, in terms of proximity of either hostile or hostages, you know, you know, it's an overall picture that's still very important.
- SPEAKER1 40:14 Do you think do you think the financial industry. Do you think is there much cross pollination in terms of looking at approaches that may have been taken in other highly regulated industries, because actually one of the things which brought Roger Miles in his books and is there's another guy called, and Hunts and he runs a firm called Human Risk. And he's got a website where you can actually see what he does. And he actually does a lot of stuff for the airline industry. And he's trying to bring together the airline industry and the financial industry in terms of managing behaviour risk.
- SPEAKER2 40:51 Yes. And I think that is definitely the two and I think that that's a huge population crossover point. And, you know, at that and I think there is certainly a need to use the airlines and that's sort of that sort of learning experience. And I think there's a lot to be learned in the financial industry from that.
- SPEAKER1 41:19 Is that being there enough? Do you think? I mean, have you seen much I mean, you mentioned thick market standards board. I mean, also FCA and other regulators. I mean, do you think it is your sense that there is. Much sort of looking at what other industries are doing or are we still sort of in our infancy with that?
- SPEAKER2 41:39 Still in the infancy, I think I mean, I think it's good that the in terms of I mean, the both the airline and the space industry went through a I mean, you can imagine that that that the authorities, you know, before they certify an auto landing system. That all the coding that goes into that has to be obviously properly audited and checked and you have to triple or quadruple redundancy on that. Yes, I think that we're starting to see some of that come into the Internet, into the financial industry in terms of how we have country views. And because especially with these autistics, we should bring in more than full contact in terms of we're starting to see now that that's the codings are done through peer reviews. So that's I mean, it's to get away from the conflict between first and second line. But you often find right or good practice in one very good American institution where you actually saw that the coproduced in the equities people were being killed by the attacks and the other way round.

SPEAKER1 42:51 Right. So, there's sort of like a sort of like a collegiate approach or try to learn from sort of what is worked well in different asset classes and stuff like that or.

SPEAKER2 43:03 Yes. But equally in terms of making sure that they've avoided pitfalls and encoding. So, yeah, I mean, yes. I mean, there's still there's still a conflict there because they're still arguing, you know, a coding which, you know, again, it's like everything is there. When you when these banks loans books, there's a very, very thin line between exploitation and being able to own and perform a business that is has sustainable revenue.

SPEAKER1 43:47 How do you think...?

SPEAKER2 43:51 Yes, I mean, it's going to go ahead. I'm saying that's a way to get. When, when, when that's where the biggest conflict there is, you know, as it seems as if you have as a as an owner of a business, you have to justify your you know, your shareholders, that you have a sustainable business. Sustainable revenue. Yeah. But at what point is that sustainable revenue? I mean, that's always a danger that you've always got to prove that between providing a service. And possibly been seen as and which is the positive side of that. But obviously there's the downside of it is that is that so is being exploited or not?

SPEAKER1 44:46 Yes, and I mean, one of the things which I mean, on the exploitation point, I mean, one of the things that the again, the regulators have been very keen on in recent years to try and steer conduct into a certain direction is remuneration. And certainly, in the wholesale brokerage sector, you know, we've received Dear CEO letters sort of saying, you know, you need to strip out some of these old practices like eat what you kill and all that kind of stuff, that I'm really not. I'm not. Do you think that that ability to incentivize conduct? Does that do that change with the involvement of algorithmic trading, because I suppose the European Union I mean, they've been looking at the concept of agency with certain algorithmic actors and certainly those that deploy AI and they're actually being thinking about legally recognizing some of them as agents. And yeah, and to me, that creates an interesting dynamic if they start to do that, because again, going back to the war analogy, some people have said, well, you know, Northrop Grumman is not responsible for how somebody uses that kit. It's the commander who decides how it is deployed ultimately. But then the commander might say, well, actually, you know, the kit didn't perform as expected. It went off course. So how do you how do you sort of incentivize is it even possible in a world of increasing? I involvement, algorithmic involvement or not, is that.

SPEAKER2 46:35 Yeah, I mean, it's again, I mean, this is why I think we're seeing a lot of these attacks and its sympathy because, as you said, you know, you are bumping up against, you know, ethical conduct. But I think we're where I think one of the key things is that I think where the focus point is now is that there is also is putting the again, the thing which can reduce the I think you made the point

earlier that it's that it's not so much the it's the coders yeah, I mean, nowadays they're not even called traders anymore. They're called strategy designers. Yeah. And ah, yeah, yeah, so, yeah, I think it's really come back soon to how they how they built the actual structures in the coding behind the game. You know, in terms of the I think when it comes back to it is a is a very clear reality in terms of what the purpose of that algorithm is. Again, these refuses to demonstrate that it's not going outside of those parameters.

SPEAKER1 47:47 Can you see could you foresee a situation where; you know, certain algorithms are almost looked at separately by a regulator to and possibly that there are consequences for them independently of the trading functions in the coding functions? Because, I mean, again, another analogy is I remember as a kid there was a moral panic over dangerous dogs than if you remember that. But there was in the early 90s, there was a lot of panic about a certain breed of dog which were dangerous for children and all sorts of stuff.

SPEAKER2 48:25 And yes, yes, yes, yes.

SPEAKER1 48:27 And there was an act of parliament passed in the early 90s. It was one of the few acts of parliament which required, I think the parliament acts to be used, which allows the House of Commons to effectively overrule the House of Lords. You know, it's not needed to be used that often, but it is occasionally used for constitutionally controversial topics. And there was a feeling that this Dangerous Dog Act was poorly rushed through parliament and that it didn't really think about, in some cases, the sort of some of the differences between, you know, how the dog acts on its own initiative and how it's reared by its owner. And, yes, I can almost sort of see an analogy here. And do you think that a regulator would have a sort of almost conceive of. Regulations which would. Almost, I mean, you punish our rhythm separately from the young, maybe order its destruction or something like this.

SPEAKER2 49:34 Yeah, no, no. I mean, that that's a very good, very good point. I mean, there is a temptation, I think, I mean, what you have to remember is, is that it's a high stakes game because the one thing which you see in the U.K. is again and the whole thing is built up. You remember all the way back. It's called the Fair and Effective Market Review. Yeah, yeah. That that basically is, you know, I think was very, very healthy. But I mean, that was the Bank of England initiative, I think. And I think and they really hold those principles very, very close in terms of get on yet again. It comes back to that sort of get are the markets fair. And I think that the if certain players overstepped the mark in terms of being of being, you know, of exploitation, of fairness, I think that could prompt a sort of knee jerk reaction. Yeah, yes, but I so, you know, I think that the regulator will be happy in a way, I think the regulators try to get some sort of feel for what is yet again, that's a balance between what is a sustainable income flow and exploitation, you know, because at the end of the day, it's like any like

instrument option . Trading is not a good analogy that people will I mean, if you can option pricing before in terms of implied volatility.

SPEAKER1 51:24 Well, you know, I'm for me I'm familiar with the with all of the I mean, from an obviously from a compliance person's viewpoint. I mean, I've been doing the investment advice sort of diploma and have been looking at all the different options, strategies and stuff that you can use. I am, yes.

SPEAKER2 51:39 Yeah, yeah. But I think it's a very good, very good example there. But that implied volatility is, is there's a consensus that that that that the market forms itself. Yeah. Yeah, you know, and, you know, we played politics for ages until you have an event who suddenly realizes that is not actually be the right balance level. And also, you have a big adjustment and a big blow up. Normally, you know, it's an option valuation. I think you could see it in terms of the industries gravitating to a certain level of where returns are tolerated. Yeah. Yeah. Yeah, I mean I mean, obviously, everybody wants to compete and, you know, but I think there's the regular thing to focus on people will compete to be better, but will they all sort of eventually to a level where they can get a sustainable income stream? Which is can be justified as being fair.

SPEAKER1 52:54 Yeah, yeah.

SPEAKER2 52:56 I mean, I think that's where the big to what I think is trying to get some sort of feel for what returns have been made outside the industry, you know, and it's that a fair trade off in terms of the actual liquidity and service. Again, it comes back to sort of service that I think is the as a compliance person. It's that always that balance in terms of, you know, these are businesses and, you know, and this needs to be looked at more holistically in terms of those are the returns that they're making and the way that they make those returns. Are they justified in the service that they offer? Yeah.

SPEAKER1 53:34 I certainly I mean, there was a feeling in where I was, you know, where I've been working, you know, recently that some of the legislative things that were coming out of Brussels were. Almost going too far and over almost in some areas, almost trying to look for a zero-risk environment which doesn't exist.

SPEAKER2 53:56 Exactly, exactly. Exactly. Yeah, exactly. And I think that's always going to be the sort of balance that you have that that you could regulate something to get to the extent where it may argue that in some instances, yes, it may strangle it entirely and there may be justifiable reasons why it is strangled entirely. But if it does provide an economic service and people are willing to pay a price for that, then that's the balance that needs to be made as well. So, there's a lot of the same, I think, when there's always a balance between exploitation and service provision.

SPEAKER1 54:42 Do you think the I mean; how do you think the UK has got that balance? I mean. In terms of, you know, the effectiveness of its regulation, but also an

understanding that actually, you know, these are money making businesses mean would also in context of Brexit. I mean, is there can you see with artier sex? I mean, I can remember struggling with it myself. And there's obviously this review at the moment of wholesale markets. Can you see that the UK might decide to go into a different direction to try and almost create make itself the Silicon Valley of Europe? I mean, we've got all the universities, you know, we've got all of a lot of the tech development and innovation is sort of in Europe is happening in London. And you see us it is taking a different direction now from the last year, six or not.

SPEAKER2 55:39 And I think that that's the artist that I think the idea that I actually see a lot, the artists, I think it's one of the more sensible outcomes. I mean, I think it gives a very good review of the life cycle. Go to different places that you look at in terms of the implementation of pre deployment, post deployment, and I think it's a very good checklist in terms of, you know, looking at the.... I think they've got the regulation right in terms of the control framework. But I think where the legal struggle in terms of Europe and the UK a little bit is probably ahead of its time. I mean, yes, they preferred to do site visits that she was set with people. They actually understand how they actually work. Which I think is very healthy in terms of they try to not only look at the actual risk controls, they work in it as an isolated operation, but looking in the context how it's used.

SPEAKER1 56:57 Yeah.

SPEAKER2 57:00 But, you know, I think it's you know you know, I think they have a sort of watered-down sense of the sensible approach, but I think there's a place for both, I think, as opposed to just making sure you've got the right mechanics in place. I think the extent is then coming back to that point that how it operates in terms of are you on the verge of exploitation versus expendable income? You know, I think that the incentives are quite sensible approach to that.

SPEAKER1 57:34 Do you think they've got the right do you think that because I think there's always going to be a bit of a difficulty, right, with some of these cutting edges, especially more cutting-edge firms in terms of talent. Do you think they've got. I mean, there's always going to be a power imbalance, I suppose, but do you think the FCA and other regulators. Able to meet the challenge of the intellectual challenge that some of these may be more out there, businesses present or

SPEAKER2 58:07 you know what I mean? I mean, yeah, I mean I mean I mean, the mainstay of any sort of organization is the customer complaints. You know, I'm going to go with that. That's the way you look. Early warning sign of you know, of things going awry in terms of, you know, any more sort of esoteric measures. I think that, again, I think that that's something which is difficult for regulators as it is for anybody, because, you know, you're coming back to quite a lot of basically

esoteric measures for that. Yes, I mean, I think but where we're I think the real testing ground will be, I think you can make this will be the crypto currencies.

- SPEAKER1 59:01 Yeah. I mean, that's there's going to be I think with that, there's going to be well, I suppose the Chinese have made their position clear in the summer. How they see it. I mean, actually, at the university that I'm at, we actually have a cryptocurrency sort of research conference, which I think it's one of the first one of the first in the world, I think. And they say that at the moment there's a big black hole in the regulatory research, that there's basically nothing being done on it.
- SPEAKER2 59:39 Yeah, no, exactly, but I think that that's where the cutting edge will come, I think that's why I think that the that that that will be you, that that's effectively I think cryptocurrency will be eventually the Formula One racing arena. Right. And then you'll have and then you have that sort of trickle-down technology into other markets.
- SPEAKER1 59:59 Interesting and interesting. I mean, sometime some people were saying a meter from that cryptocurrency to almost I mean, at the moment almost viewed, not so much as a currency, but almost like a behaving like a commodity.
- SPEAKER2 01:00:13 Yes, exactly. Exactly. But I think in terms of I think it's that will be quite sort of interesting model to follow in terms of I think there's likely to be worrying about themselves in terms of, you know, how do you actually grapple with that and then what are the wider implications of that? And then again, I'm happy to continue to chat with me with your research project. And I think you have to reach that point in time. But I think we could also keep in touch in terms of industry development.
- SPEAKER1 01:00:44 No, definitely. Definitely. I mean I mean; I'm nearly come to the end of this particular all the points I wanted to get through. But I'm actually going to set up my own consulting business.
- SPEAKER2 01:00:55 Um. Oh, excellent. Excellent.
- SPEAKER1 01:00:58 Yeah. From September onwards, I mean, I'm on my gardening leave at the moment, but, you know, I'm going to try and you know, I focus on I mean, I mean, this this sort of stuff, all the regulatory stuff, I sort of a bit of a geek on a lot of this stuff. So, I tend to read a hell of a lot of stuff. And there is a lot of material. I mean, certainly if you were, you know, for your own work that you do, if you if you're ever interested in, you know, whether I've got something on it and if I mean so yeah, no, definitely.
- SPEAKER2 01:01:36 Definitely. I mean I; I would definitely grow some links with the with the FICC Standards Board. I mean they; I think are the I think you would find some very

good tie ups there. Yeah. I mean I think that when you have you had any way to connect with them at all.

SPEAKER1 01:01:55 So, I actually so this is a guy I know I know a guy that actually contributed to the some of that work because they did some work almost sort of emulating what the FX Global Code had been trying to achieve. And yes, there was a guy who is the CEO of one of the companies I used to work for who's sort of on there. And I did contact them as part of this project. Actually, I contacted a number of industry associations, [REDACTED] I contacted what was the other one? I contacted the [REDACTED] yes. Yes. And also, the [REDACTED] for the for the investment funds. And I've had very little traction actually from them , which I was quite surprised at because I sort of said to them , look , you know , once I get to the interesting phase where I'm actually writing up my research and hopefully getting it published in some journals, obviously I'll be willing to come back to you and maybe do a presentation, you know, maybe, you know, for the benefit of your members or whatever to say, you know, what have I learned ? You know, what are the kind of insights and some of the suggestions and nothing. Absolutely nothing, I mean, nothing, nothing, I find absolutely nothing, absolutely nothing from the [REDACTED] they tried to help. They've got a couple of working groups which look at electronic trading and they say that they put it on one of the agendas for the sort of monthly discussions they have, and they want no one came back.

SPEAKER2 01:03:38 I think. I think I mean, just to jump in. Have you actually had you actually interacted with the [REDACTED] themselves?

SPEAKER1 01:03:46 I have. So, there's a few people I've spoken to that actually are in the right place. And there's one guy there who I actually interviewed recently who's been very, very good. And he's he worked on the algorithmic program that he's like one of the key people. So, they

SPEAKER2 01:04:04 say,

SPEAKER1 01:04:05 yes, yes, yeah, yeah, yeah. He was very helpful. He's been very he was very good. And there's a couple of others there as well in that orbit who've agreed to help. But I think the challenge with this is, I think there's always that suspicion, you know, that I'm off to something proprietary, maybe I'm after people to dish the dirt on their companies or maybe other companies. I'm not, as you can see from

SPEAKER2 01:04:39 this

SPEAKER1 01:04:40 conversation. And actually, I would like to think that, you know, anything. I mean, certainly in all the interviews, I see all the twenty sixth interview. And there's nothing in any of the interviews. I mean , I've got a real antenna, obviously, for stuff which is potentially dodgy or dangerous , you know, obviously for my job and nothing has come up in any of the interviews, which I

would consider to be in that category because it was probably even stop the interview if I was if I'm honest with you. Yes. Because it puts me in an awkward position as well.

- SPEAKER2 01:05:13 Yeah, exactly. Exactly.
- SPEAKER1 01:05:15 So, but I do think that for people that don't know you. Especially people that don't know you. It is a real challenge to get anybody to talk and particularly people on the quanti side of things. And besides, I think, you know, where I don't have too much of a footprint is incredibly difficult to get anybody to bite.
- SPEAKER2 01:05:38 Well, I think one of the other things, I think you'll find that they are, again, very technically gifted, but that they will but they will get only set in in that in terms of just pure coding. You know, again, it comes back to, you know, the airline industry that a code of will, will, will only ever assume that that that they'll make assumptions that it only be whether or there'll be no turbulence. Yeah.
- SPEAKER1 01:06:17 Yeah. And that's and that that is I mean, when you're doing the research and you have to sort of define what your questions are, and you have to sort of set out what your approach is going to be in. My approach has been in fact I mean, some people have a hypothesis that's not what I'm doing. So, I'm not doing quantitative. You know, my approach is very much being pragmatic because it has to be because we're the elite interviews when you're interviewing people who are short on time, high on maybe risk, if they think that, you know, something will be disclosed that will put them in danger or something or whatever, then you know that you have to be pragmatic and you have to sort of any leads that come up, you have to explore them and just see what comes out of it and hope that it snowballs. And maybe you get, you know, a couple of other participants, because once that person's been through the process, they will say to their other contacts, well, actually, maybe it's not too bad. You know, there's nothing really to worry about or whatever. And I there's a guy up in Edinburgh University called his name's Donald, but Professor Donald McKenzie. And he's written several pieces on how algorithms are changing the dynamics in trading in firms in terms of how people interact with each other. So not just how. You know, the algorithm interacts with the market, how the algorithm is changing relationships within companies, power relationships within companies.
- SPEAKER2 01:07:47 Exactly, exactly, now, exactly, I mean, there's so many yet again, because it is a connectivity that are coming is expanding its level of connectivity. But in terms of connectivity, in terms of both getting to the participants, I would actually think markets that would go just to say that you've actually been speaking to regulators, you might be a bit more receptive than
- SPEAKER1 01:08:20 I might call them, actually, and just sort of see if, you know, because I've tried because I tried to set out with because a lot of the time, if I call somebody, they say put it in an email for me and explain, you know, what

the parameters are and how you're trying to , you know , what you're trying to do . But I so I've...I will call them and just see if there's any sort of if that gets any traction, but this [REDACTED], he's done a few pieces where he's interviewed like 60 or 70 people and one for one set of papers. And a lot of them were from more sort of prop type and HFT type firms. And I just said to him, I said, how does he do it? Because he has no network in, you know, finance in the same way because he hasn't worked in the markets. And I just said, how the hell did you manage to do that? Because obviously it's incredibly difficult. I mean, from I've tried things like on LinkedIn to advertise on LinkedIn and specialist groups on algo trading and quantitative trading and stuff. No one bites. No one bites. I did the algorithmic trading program that Oxford University offer. They've got like a short eight-week type thing. And the main reason why I did it was I thought, well, maybe I can scrape a few participants from this because there's a few guys that I've worked for man group and stuff.

SPEAKER2 01:09:49 Yes.

SPEAKER1 01:09:50 Again, one guy sort of agreed to participate, but he is very, very difficult to pin down. Very, very difficult to pin down. And one of the other guys who when he used to be at Southampton University as well, who I thought, yeah, you know, there's a university, you know, maybe he wants to help out the university or whatever he said, you know, not interested. So, yeah, it's a battle is a battle

SPEAKER2 01:10:18 because he said it's on an anonymous level.

SPEAKER1 01:10:21 Yeah, yeah, yeah. And, you know, and you have to it's almost like a journalist with their sources, you know, my sister's a journalist for one of the big newspapers. And, you know, there's a special code that they have to go for, you know, with their sources and stuff for certain things. And, you know, this is no different, really. And actually, the university requires that for all. I think it's pretty much the same for all doctors, certainly doctoral students, its Russell Group universities, that they have to guarantee anonymity to their participants.

SPEAKER2 01:10:56 Very well. I can give you sort of

SPEAKER1 01:11:04 yeah, it's been very good, very useful, very helpful and hopefully, you know, for your own I mean, just out of interest. Out of curiosity, what made you switch into there was a guy I used to know at [REDACTED], actually. His name is he was on the set of trading sort of side of things. He moved, I don't know, I think he's left that he's moved on to something else. But what motivated you to switch to that side of the world?

SPEAKER2 01:11:34 Basically , the senior managers regime basically are not only entitled to worry about, but I do think that that was quite I mean, especially if in some of the roles that I used to have in terms of having very, very broad you know, I used to be a structure , of course , and structure, you know, of course , across asset

classes . Yes, and basically go, especially if you're an international bank where you've got banks, you know, scattered around the world. You know, it's you know, you obviously got a very, very compliant area, but there's always that danger that despite your best efforts, that something may happen somewhere on the periphery of things and then also new in the spotlight.

SPEAKER1 01:12:27 Yeah, yeah, yeah. It's not it's not pleasant.

SPEAKER2 01:12:31 Oh, yeah. Yeah, I know. I mean, and again, it didn't have to be you. It could be you know; you have the responsibility of a supervisor. So, it may not even be your fault that. Are in professionalism. I mean, it could be somebody who's.