

Interview with a senior manager at a quantitative hedge fund

- SPEAKER1 00:08 OK, so just to commence, could you just start by just sort of basically sort of explaining a bit about your background, what your role has been in the investment industry?
- SPEAKER2 00:17 So, I started working in investment banks in the mid-80s in research and then trading. I set up a hedge fund. In the early 2000s, there was a systematic fund that was mainly at least called Systematic Fund. And I was the co-founder and the sort of you know, I was responsible for research and trading, and I wasn't really the most techie guy there. So, some of the technical decisions would be made by other people's decisions
- SPEAKER1 00:57 And what asset classes?
- SPEAKER2 01:01 pretty much everything, predominantly equities. But we did do a lot of futures. We did the futures as well, futures and commodities and stuff.
- SPEAKER1 01:10 And I mean, how would you describe the firm's goals? What was it trying to achieve?
- SPEAKER2 01:16 What we're trying to make money. We were trying to deliver a good risk adjusted returns, market neutral, risk adjusted returns for our investors predominantly.
- SPEAKER1 01:30 And since you've in the market, I mean, in your view, how have markets changed in terms of electrification towards the types before? I mean, I've worked in the investment industry myself, and when I started off in the brokerage floor was very much a lot of human interaction. How do you think that the types of things that you're doing have changed?
- SPEAKER2 01:56 The dynamic sort of things we did with it would have been almost impossible before because, you know, you just couldn't have done enough trades. You know, when I first started, it was all manual, it was all telephone, and gradually it sorts of became automated. I remember when I was doing program trades in the early 90s when I was a client of [REDACTED]. And it's actually, you know, we would give them, you know, arrange a sort of a portfolio of orders to do. And I assume they were doing something clever. But then when I visited them in New York, you know, I saw some little bits of paper and they put something positive and said, hey, that's the guys executing your orders. And this is in the mid-90s. So, I was quite surprised by that because I seemed a bit more sophisticated by then. But by the time you know, by the time we set up [REDACTED] or even before that, the people would have. You know, boxes on the desks that they could do, you know, they could do, you know, even the most unsophisticated person could do a bunch of them, or you could put a bunch of orders in automatically in a spreadsheet or something. But, you know, obviously the game, you know, pretty rapidly moved on to, you know, that there that people running their own algorithms. And, you

know, you could you know, the sort of business that we all ultimately ended up doing, the impossible and, you know, the fixed protocols with the....

SPEAKER1 03:31 Regulation is always trying to sort of catch up with what the industry is doing, as always, being the case. And how much of a challenge you think artificial intelligence and development more sort of more self-calibration, reinforcement learning of that type of stuff. Do you see that as being something which your firm which was involved in?

SPEAKER2 03:59 It sort of depends on what you mean by artificial intelligence by some people's definitions, the sorts of algos that we were using, all sorts of models that we were using were, you know, those very rules driven. There wasn't a lot of human intervention, no human intervention into a lot of people that say I. But it's not really what I mean by I, you know. Did our models learn, you mean? Well, not really. You know, we might have sort of mental models sitting on top of it, you know, whereby, you know, models are doing well, might get a different allocation. We had rules to sort of recalibrate them and reprivatize them, but we didn't really do. I in the sense today I guys talk about A.I. Now, we had one or two AI projects which frankly didn't succeed very well. You know, and I personally am just a touch sceptical about the use of the instruments. I mean, I think there are areas in which it probably is useful when you've got you know, but I think there are challenges to, you know, to AI and interments. I mean, the three most obvious things are, you know, you've got pretty low in most things you try and do in finance. You've got pretty low signal to noise ratio. And that's challenging for an AI environment, for any AI model. You've got non stationality. You've got a limited number of data points unless you're using very, very high frequency data. So, you know, I work great when you've got a huge amount of data to learn from. You've got good signal to noise ratio. And, you know, you know, the model doesn't change very rapidly. And, you know, sort of none of those things really hold up in Internet. And so, to the extent that I works in finance, I would have thought it worked at very high frequency levels and, you know, on sort of, you know, mass market making kind of things. But, you know, I'm sort of not the guy to ask. And it could just be that I'm old and, you know, I've never really used AI you know, you tend to get people coming out of university with particular expertise, particular skill sets who are determined to make the stuff that they're good at work in in finance. And you tend also to get old guys like me a bit sceptical about it, required a lot of persuading that it's going to work. And probably the truth is somewhere in between the two.

SPEAKER1 06:34 And it wasn't really the case, I suppose, from the progression from sort of more voice product markets to electronic markets?

SPEAKER2 06:43 You find a lot of old guys who were sceptical of the sort of stuff that I did and gradually win them over by having good performance. I mean, I'm not aware of any funds having, you know, knock out performance from me. I mean, it maybe they are, and they keep quiet about it, but I don't see any billion-dollar funds

which run solely on I you know, so when that happens, I would admit that I was wrong and that I am indeed a dinosaur. Until that happens, I'll see is a possibly a useful tool, but not something which is transformative in finance. It is usually transformative in other areas.

SPEAKER1 07:24 The flash crash in 2010 caused a sort of moral panic in some places. I mean, Germany was one of the first countries to introduce a sort of high frequency trading law. And what came out of that was the sort of emphasis on pretty robust design, deployment and calibration processes around algorithms in the people that I've interviewed so far, I've seen quite a range of different responses. What would you all sort of process look like? I mean, how much involvement as a sort of senior person would you have had in that process?

SPEAKER2 08:01 I certainly talk to the people who did you know, I mean I mean, my input would be high level. I would have said something like, can we not design a bunch of screens here that if something really bizarre happens, we stand out of the market, just don't we don't execute if you get an end sigma event, because it may just mean that our model isn't working. Well, I'm just trying to think about this, actually. Because the answer is, I was involved and I'm struggling to not remember exactly what to say about it. I mean, it was a very singular event. I was actually on holiday. I mean, you know, another interesting example of it, I mean, that was a sort of a crash at a micro level. You might ask me, maybe you're going to go and ask me about the crash. No, no, I don't actually. Well, I'm not sort of with a technological crash, but it was an existential threat to people who did what we did, where we made, you know, where it was like an incident or event where N was like hundreds. And basically, everything we did went wrong because people were deleveraging people like us with deleveraging their positions and is an example of what people tend to do in that in that the circumstances initially saying, well, this is just a bad day. The next time you think this is about the next little bit later, you think it's a bad day, but an opportunity. And then you think, oh, my God, I had no idea what's going on here. You know, I'm throwing good money after bad. I'm catching a falling knife, et cetera, et cetera. I need to stand out of the market and liquidate my positions. Just wait until things settle down until it gets back to a sort of paradigm that I do understand. So, I mean, I think that's how people tend to regard, you know, in sigma events. You know, you know, initially you bravely think this is an opportunity. Then you think this is something you know; the question is how you program that. Then you think this is off the charts. Terrible. You know and my models don't work in this sort of environment or they're not programmed to even imagine that it's possible. And then you think, well, you know, I might get seriously hurt if I continue to behave normally in this environment. So, what did we do about the flash crash? Honestly? Ten years ago, 12 years ago, I don't actually remember how we responded to that sorry, not very helpful, is it? I may come to me. We keep talking.

SPEAKER1 10:46 Well, the US regulators, they sought, and they obtain the extradition of this hound of Hounslow.

SPEAKER2 10:55 Yeah I read the book.

SPEAKER1 10:57 I'm sure you did. And one of the things which the UK regulator, the UK regulator in 2015 rebranded itself as the Financial Conduct Authority from the Financial Services Authority. And they're saying that the reason for that is because they put in conduct risk at the front and centre of what they are about and. They look to the sound of Hounslow, and again, stemming from that, there's been rough things that have come from that. What's your view about?

SPEAKER2 11:29 I thought a lot of stuff. I mean, clearly, he you know, he did stuff that was dodgy. But the idea that it was entirely him, I mean, there's a lot of this spoofing and stuff going on. And I think he was just the guy who got caught doing it, frankly, and he did it in particularly aggressive styles. But I think a lot of the stuff that, you know, we've never been high frequency traders, market makers. But, you know, I think a lot of the sort of stuff that does give me my suspicion and my belief is that a lot of the stuff that these guys do is on the edge. And, you know, it's seriously disadvantaged, advantageous to, you know, to the vast mass of people in the market. I mean, we could never work out a way of avoiding paying, you know, [rent] effectively to high frequency traders who buy, you know, either a legitimate or marginally legitimate use of the rules was always taking money from anyone who was you know even if we were providing liquidity, you know, we weren't providing liquidity, you know, even if we were sitting on the bid as opposed to lifting the offer, you know, we always ended up regretting the trades we did. And, you know, if we wanted to trade actively, we cross the spread. So, you know, you tell me how high frequency traders do that. I mean, I think there's a, you know, a chunk of, you know, of frontrunning and spoofing going on in those, you know, in those markets. And this guy just did it very aggressively. And, you know, as I recall, he'd actually gone to dinner when the whole thing broke, when the whole year when the crash actually happened, that he was accused of creating an environment or something where this was possible. I mean, I felt that he was he was a Brit that they could put pin it on, frankly. Do you think it's your impression reading the book?

SPEAKER1 13:19 Well, I mean, I've looked at. I mean, I haven't read the book, but I've read some of the legal case. Yeah. And I have to say, I'm very sceptical about the individual. I think there's a very sort of humanistic desire to place responsibility on a single person. Yeah, which is which is almost. I think for the public gallery, yeah, in America to hold us somewhat up and say this is the person responsible because it's simple for a regulator to understand and act in that manner, whereas to actually get within the weeds of what happened and maybe look at some of the sort of feedback loop type things that have going on. And that's probably a lot more complex for sort of legal minds to understand. And, you know, again, I

agree. I think because he's somebody who is in the U.K., it's a little bit like there's a book about the NatWest three. I don't know if you've read that one?

SPEAKER2 14:26 Now, [REDACTED] and those guys. No, no, I didn't. But again, I've read articles about them. Yeah.

SPEAKER1 14:32 Similar sort of thing where, you know, not in America. And so, it might be easier to get extradition. Of course, our government sometimes well, our authority sometimes struggles, I think, to defend British people being extradited there.

SPEAKER2 14:45 In Canada. Yes. This is the this is the way they entrap the Americans. I felt the same about Tom Hayes in the LIBOR thing, actually. I mean, they were clearly a lot of people doing this, and he was just the guy that they managed to pin. And, you know, so they, you know, no one else really gets punished to do. And he goes to jail for 14 years. You know, they just wanted to.

SPEAKER1 15:08 There's always one individual they like to hold up because actually I was involved with sort [REDACTED]. And I had to write a letter to the home secretary and stuff to try and help him.

SPEAKER2 15:27 So, were you at [REDACTED] at the time?

SPEAKER1 15:30 No, no. He's been in the UK for a long time but acquired citizenship stupidly for his from his perspective. But he we had a bad visit from a regulator. And one of the places that was, and I got promoted and then the CEO called me in and said, "what are we going to do to change the minds of our traders about how they do things, and I can think differently?" And I got speaking to somebody that I knew, and he knew about [REDACTED] and we brought him in to do a series of training sessions. And he just sort of sat there at the back and the other traders just sort of said, who is this guy you sort of recognize? And we still can't really picture him because I've been a few years after. Yeah. And then he starts speaking and then they all sort of the usual response you usually get in any compliance training assistant, everyone looking at their phones and whatnot. But that was a totally different experience for them. And I had similar feelings, although I don't believe [REDACTED] was innocent of what he did. He definitely did stupid things. And he admits that there was a tacit or in some cases possibly in a complete understanding, actually, of what he was doing and the people turning a blind eye to it.

SPEAKER2 16:56 Yeah, that is exactly what I thought as well. You know, and as long as it were to everyone, you know, everyone said, well, you know, maybe it's the way the game is played, et cetera. And yeah, I mean, you get that a lot in, you know, in finance. I mean, you know, it's a fine line between....you know, I mean, everyone knows that completely fabricating marks is wrong, but before you get to that stage, there's the aggressive marks and there are defensive marks, etc. I mean, when I when I worked it when I worked [REDACTED] in the in the early 90s under the chief executive wanted, you know, was not in favour of mark to market accounting. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]. But I mean, that was you know, that was sort of the way it worked when I got a new boss at the [REDACTED] was absolutely straight down the line, rather surprisingly, on mark to market accounting. And he regarded the accountants as his enemies when a guy from [REDACTED] joined to run the trading floor, you know, and he saw my PNL going up and down every day we fell. And, you know, I talked to the guy. He used to work. He used to work for [REDACTED], read this book and said, you know, "how the hell can you work for this guy?" You know, he's got no sense of risk, et cetera. He said, "well, we just need to move because it was all accrual accounting at our place", and nobody ever never knew the preannouncements.

SPEAKER1 18:35 Again, mean I've worked mainly for one hedge fund, but I mainly worked in the sort of brokerage sector, particularly FICC brokerage sector. Yeah, and I used to have a lot of complaints from traders and brokers coming to me and saying, "look at these algo funds and these algos. You know, these HFT firms, they're moving the market around and look at how quickly that's moved. And this is unfair. You know, this is a market abuse of that kind of stuff. And can you call the regulator and get them to do something?" And I was always sort of a bit sceptical about what they were saying. But do you think that these are the new developments, the move towards more automated and algorithmic trading sort of creates new sort of conduct risks, or do you think any conduct risks that were there before or just being modified, amplified? I mean, is that or in some cases is actually eliminating them? And because you're taking out human emotion, you're taking out maybe some of these things which people like [REDACTED] and some others were involved in. I mean, what do you think to that?

SPEAKER2 19:51 Well, I think out of a red herring. I mean, he was doing something quite different, wasn't he? But I mean, I think back to my days, you know, in OTC markets and there was any amount of market manipulation going on then. It's just that people were not you know, people didn't really focus on it. It may not even be illegal in those states, but online trading market called the Japanese warrant market, in which stocks were, you know, that the whole game was that people would manipulate stocks overnight and then these sort of highly leveraged options would trade in UK, US times or a lot of putting through trades, you know, increased volumes, stories, et cetera. And, you know, the clever people would sort of trade ahead of those stories and trade on these stories. Maybe they were doing the manipulation, maybe they weren't. And the dumb people were jerked around by the stories. And that's particularly extreme example. But I think the European market in which, you know, some of the you know, some of the best traders would, you know, I don't know, I didn't really trade Europe on the market, but certainly not, you know, not, you know, certainly clients, you know, these were quite aggressive people. I mean, do I think that high frequency trading is particularly manipulative? Well, I suspect that it really just institutionalizes and,

you know, things stuff that people were doing anyway. I mean, you know, it's a much more complicated game as all especially the types and stuff like I deeply understand this area. But, you know, I mean, the one thing I really, really feel about high frequency trading is it's just a terrible waste of resources, you know, with super clever people and know these very expensive computers and these dedicated lines and stuff. I mean, I knew I'd moved towards a system where you had periodic auctions each day in the old trading game was taken away. Then that would be a huge efficiency improvement to the system.

SPEAKER1 21:52 How would, in your fund business, how would you sort of compliance department stay on top and sort of understand...?

SPEAKER2 22:04 Yeah, that's a good question. I mean, obviously, they didn't you know, we would go to them. We as in the people writing the algorithms, which really wasn't me, but it was me nominally in charge of it or partly in charge of it and say, you know, this is what we're doing. This is how we're going to do it. Is this legitimate? You know, I've read a bit about this. You know, we've done this compliance course. This is what we're intending to do. You know, we'll put bids here and offers them we're not manipulating the market. We just wanting to trade if it comes towards us, et cetera. And, you know, I mean, the compliance people were as uncertain about what was allowed as. I mean, I can think of one or two examples when you go to them and say this is going to be okay shooting and that's all I need to say. It got to be all right, because otherwise you can trade. And, you know, so it was like some sort of iterative process really is you know, you went towards I mean, I you know, I think about it now. I mean, obviously, the compliance people didn't really understand, you know, they weren't able to look at the code or, you know, even, you know, didn't have much of a market background. So, I mean, I think it probably relied on the front office people to sort of run by them and explain to them how it works and flag any potential, you know, any potential issues. You know, in the same way that if you ever had a trade that you were concerned about, you could influence people and say, you know, I'm not a wall or whatever. I mean, there wasn't a lot of that going on in our firm. But, you know, just occasionally I'd go to the can't remember the examples now, but I'd occasionally have a conversation with them in, you know, these people writing the compliance departments that I mean, that that sort of policing system works, you know, works quite well. And I don't think a lot gets something done on environment. Not a lot. Not a lot would have got through because, you know, people are terrified about, you know, being on the wrong side of, you know, the compliance infraction was a security threatening event.

SPEAKER1 24:08 The regulators spent a lot of time and money trying to introduce this new concept of Senior management and Certification Regime. And they've put a couple of sorts of new rules in there which previously didn't attract any sort of special status. But now they've sort of rolled up developers and people who were involved in deployment chain for as far as requiring certification. They sort of knowledge gap that exists between as opposed to port areas. And people were

actually involved in this sort of more technical development. I mean, how do you see. That being addressed, because it sort of it strikes me as being the Achilles heel of the whole thing, actually, and certainly in the FCA, I mean, I've talked to people there and they just say, "well, we just rely on the firms to sort of sort it out".

SPEAKER2 25:06 Yeah, well, I think they do. And the firms say, "well, this is all very well. But, you know, my compliance people are not the market experts". No matter what computer experts, you know,, at the very least reactive, you know, they might ask it. I mean, I think a lot depended on relied on the, you know, the compliance training and people coming in and saying we had to do this. We know that to do in the wall stream of questions like, really, sure we can't do this, or you know. And, you know, when after that, you know, when we have our periodic compliance training things, you know, occasionally there'd be a little bit of feedback. You know, we have something to say. What we're doing. This is not really okay. And, you know, we were not very aggressive, and we didn't really you know, I mean, this was never an existential thing for us because we were never trying to push the envelope. I mean, maybe we just weren't good enough at this stuff to do to even consider pushing the envelope. But, you know, I can't imagine how it would work is more a more aggressive place because I just don't think anyone. Anyone in the compliance area really has the knowledge and expertise to do it properly. And he is the front office which deceive would pull the wool over the eyes of compliance people, then, you know, I thought that until you actually see something in the market, then, you know, people sort of query your behaviour that I thought that you absolutely get away with, as I said, it genuinely wasn't our story. We just weren't sophisticated enough.

SPEAKER1 26:45 So, what could be a possible solution and maybe bring people over from I mean, in the brokerage area? I mean, a lot of the people we used to use in surveillance had been former trading people so they could see at least the patterns of the trading and sort of getting you to look at the I mean; you hunched over a screen, and you look at you choose a few securities, and you see where the bids were placed and where the offers were placed. And you say to him, "why is it doing this and why is it doing that? And why was that all the placed there at that time?"

SPEAKER2 27:02 I suppose that does work. I mean, it may require a particular set of skills from the compliance people to do it and, you know, that's quite an expensive commitment to, you know, to compliance. I mean, there's no secret the compliance makes sure they're not paid less now than traders are. But, you know, it's quite a...I mean, you would only be able to take a subset and, you know, I suppose it would be obvious what sort of pattern there was of the old, if you will, your bits, you moving under certain circumstances, how many cancellations you had ? That's one other thing. You can you know, you can look at some statistics for how many you know, how many different orders get placed in a microsecond and how often the orders get cancelled. And you can ask what the rationale is behind that,

because that's a lot of what you're I mean, if some guys are executing, then you might want to ask why.

SPEAKER1 28:21 I mean, what are the things that I've seen and actually has come up in a couple of the interviews that I've done with other people is this concept of maybe which is borrowed from sort of other highly regulated sectors or sectors which have deployed algorithmic type functionality. Take Google cars. The simple sort of form you can say, "get me to the airport in the quickest time possible" and like cuts corners and runs over people. How do you stop that from happening? And one of the things which has come up is this idea of almost embedding certain ethical rules or rules of conduct in the actual code, could you see that? Could you potentially see that as anything that might happen in the....?

SPEAKER2 29:08 You want to just amplify that? I mean, I'm not sure how you employ physical contact in code.

SPEAKER1 29:17 Yes. So, I think one of the things I've read about the Google car is if it I think it takes that information. I don't know if it's heat information or certain light information that it makes out what the shapes of, you know, the physical forms are things, and then that it sort of performs some calculations and then sort of says, OK, well, "if I can see something that looks like this, then, you know, effectively, I've got to try and avoid the vandals. I don't just want to put my foot on the accelerator and run these people over so I'm alive".

SPEAKER2 29:53 I understand that in my cause. I'm struggling to think how it's going to work in finance.

SPEAKER1 29:59 Well, this is it. I mean, this is the question. I mean, I don't necessarily know, but I'm wondering whether we could get to that level. I mean, also, there's been something similar in the court system in America where I think people's parole reviews, or something have been reviewed using forms of sort of algorithmic forms. And some people have said they're unfair because the ethics that have been set are inherently biased by the people that have programmed them because like.

SPEAKER2 30:31 Yes, no, no, no. I'm familiar. I'm familiar with that with that work as well. But I'm just trying to think how that works in finance. I mean, are you saying that, you know, a certain number of cancellations, that percentage of cancellations is too high and that should be a hard limit? Or that if you don't trade, if you don't trade more than X percent of the time when you place an order that you're not serious about trading, I mean, that's the sort of thing I suppose that could be a limit. Incidentally, I just think coming back when I think of it to one of the things that we took away from the flash crash, you know, I mean, there are two possible things you might take away from it. I mean, one was that if things go haywire, you want to close your system down, which is sort of what a lot of high frequency traders did, which is why the bid offer spreads got so wide, you know, and, you know, as a sort of a taker of liquidity, you sort of felt the same. The

you know that maybe the system was screwy. You know, on the on the on the one hand, you feel the opportunity to buy at zero. It was not something to easily pass up. But, you know, the thing the real thing that's frightened people like us when you know, when that happens, when the aftermath of the flash crash was that arbitrarily some traders got wiped and some traders didn't get wiped out. So, let's imagine it's trading at 10. And do you buy it at one because it's a ridiculous offer around and then you sell it at seven and you think you've done a great trade, and it goes back to ten. Well, if they want to trade one, but they don't want to trade at seven instead of making six, you've lost three. So, you know, we didn't really want to get involved in that because, you know, we could have done a lot. We don't know what we did on the day this hours, but going forward, we were quick to say, yeah, we were quick to code it to say we don't want to be playing this game because the consequences are unpredictable, because once the authorities arbitrarily white certain trades, but not certain other trades, you know, you don't know which ones bought and which ones you and where.

SPEAKER1 32:47 You see what I mean?

SPEAKER2 32:50 Yeah, exactly. I've seen him and I think that's what a lot of high frequency traders did. And that's sort of why the whole liquidity vanished and why it was a bit of a shit show on the day.

SPEAKER1 32:57 Yeah, I've seen similar things actually to that in in the foreign exchange market, actually, where firms that I've worked for have been sort of in the middle. And it's kind of similar. You've got a client that's got some form of algorithm in order to you and then your bank busts on the other side. They just pull out because the I think actually a lot of it happened in the euro, Swiss depegging.

SPEAKER2 33:23 All right. Remember that. Yeah.

SPEAKER1 33:24 Yeah. And that actually put quite a few of those sorts of people like our power in ethics and stuff. I think that contributed to their demise quite quickly.

SPEAKER2 33:35 Well, there's nothing you can do that really, other than other than sort of stopping trading, you know, when it moves a certain amount. But how much is a certain amount and at what point do you pull? And it's difficult. And it's actually there's a lot of jeopardy and concern that they've got.

SPEAKER1 33:53 They've tried with these sort of circuit breakers to just try and Exchange-Traded business anyway, to try if it moves within a certain price parameter within a certain period of time, then it will sort of put a temporary stop on it for 50 min, but also.

SPEAKER2 34:15 We'll have more on the flash crash is not in, that's things I was actually wandering around Canada at the time and that's when I realized that it happened. It was OK because it was it was quite late in U.K. time.

SPEAKER1 34:28 I think that was a start, but I think it all happened so quickly. The other problem was as well back then is that sometimes and I've seen this happen before as well, some trading venues. They would be required to put these limits in various different limits in by regulation, but what they would do is put them in such wide parameters that they would have to be triggered because they were just paying lip service to it. Yeah. So, they weren't there. When it comes to crunch, not really effective, but I think in in certainly in Europe, they've tried to regulate that a lot more and impose more central control, sometimes a bit sceptical about that. Actually, the notion of central control, especially when things are changing all the time. And they've also tried to say to market well, to market makers, you know, if you want to be a market maker on this venue, then you've got to take risk effectively. You've got to stay in when liquidity is sporadic and things like this. Yeah. So obviously, it makes it more expensive for them to operate because they used to just get out. But we haven't had. Since MiFID, so that don't there haven't been any significant aberrations to test that. I don't think to really test how effective that's been.

SPEAKER2 35:56 Yeah, I guess that's right. There being yeah, I suppose it is the VIX crash, but that's not a derivative crash, really. And that was not something that was in the know. That's not really the same thing at all.

SPEAKER1 36:08 When did that one occur? Because the MIFID came in 3rd January.

SPEAKER2 36:12 Twenty, eighteen years before that. Actually, it was that I mean it wasn't really a crash in the in the sense that we're talking about.

SPEAKER1 36:22 I mean, just on that, do you think that there's been a number of initiatives and in the markets made from different groups, I mean, AFME, AIMA, FIA and the FICC markets down the boards, the ones that immediately spring to mind just trying. Help guide their membership towards better systems and controls and better oversight, really, over the processes which algorithms are deployed from various different perspectives. As somebody who's been a practitioner in the market, I mean, would you see? How preferable is it that a solution is found from the sort of bottom up from the firms themselves working together over sort of top-down intervention from the regulators?

SPEAKER2 37:15 You know, I mean, I just don't know, I mean, it depends on what sort of top-down regulation you're talking about. I mean, the sort of thing that would affect us would be, you know, these are the rules for, you know, for busting certain sorts of trades. But I mean, in terms of I mean, you know, what you have you're thinking of sort of particular conduct in here.

SPEAKER1 37:40 Yeah. So, MIFID II brought in quite a lot of controls around algorithmic trading. Some of which are pretty straightforward, but quite a number of them are controversial, so one of the things that it brought in that was quite controversial, certainly in our area, because regulators like to define things very broadly, to capture as many people as possible is they said you've got to have Real-Time

monitoring of some of your fellows, not from a traditional perspective, but in terms of where it could cause a risk of some sort of a crash or something like this, a risk event, which is not just solely to do with normal trading. So it could be that your algorithms malfunctioned, and it spewed off a load of orders to the market, which weren't intended. And therefore, it causes huge disruption in the market for a lot of other market participants that you've got something which is which can pick that up and then you can effectively, what they call it, colloquially, a kill switch. Yeah, somebody can switch it off in the department and call it what? People are quite nervous about that because they said, "well, if you do that, then that could have a lot of unintended consequences", of course, with other market participants as well as you might actually end up doing more damage than you might prevent in that case. It just depends on

SPEAKER2 39:01 on other things. I don't think this is a notion to have a kill switch or to have I mean, just describe the uses and you know, to be able to monitor what you're doing. It seems to me to be a pretty I mean, we certainly were able to do that. We certainly did have a kill switch. I mean, I don't really understand why you'd be in this business if you couldn't, you know, if you didn't at least have the capability of doing that in case something weird to happen or, you know, there was some unforeseen things happen to your algorithms. I mean, maybe it's just what we did compared to what other people do. But I would regard that as a pretty mild climate, frankly.

SPEAKER1 39:36 And do you think I mean; how do you think the industry might develop in light of Brexit? Because we I mean, the British where common law country and we have a certain bar, traditionally at least pragmatic, sort of more laissez faire approach to doing business. And certainly, a lot of the things that I've looked at which have come from the EU have been. A little bit more top-heavy, a bit more in some cases, I mean, obviously the UK played a big role in shaping those regulations, but in some cases quite sceptical of markets and how markets operate. Do you think that the UK might go in a different trajectory and in the sense of being a place where more and more companies like the one you establish might want to set up?

SPEAKER2 40:30 I guess I'll have to pass on that. I mean, yes, yes, really, you know, sort of bureaucracy coming from the EU and the heavy hand of the Fed and the, you know, the costs and the unnecessary regulation of it. How that how that applies to algorithms, I don't know. I mean, I would be surprised if the UK went its own way on algorithms. I mean, it's you know, there have been these widely publicised events. I don't think the regulators really understand it and they're frightened of it. I would have thought they were on the side of caution. You know, I don't think they're going to say, "hey, you know, you've got to you've got a rogue algo, the UK is the place you want to locate". That doesn't seem to be a winning strategy.

SPEAKER1 41:20 How much sort of collaboration is there in this type of firm that you have with maybe firms that are doing similar things to try and tackle sort of common issues that face the whole sort of subsector?

SPEAKER2 41:36 None at my level. I mean, perhaps the compliance people, you know, talk. I mean, I know the CEOs talk, but I would have zero. I wouldn't I definitely wouldn't interact with anyone doing my job anywhere else.

SPEAKER1 41:51 Is that being that sort of intentional or is that because it just hasn't happened? Is it sort of a secret?

SPEAKER2 42:01 It probably it just hasn't happened, but I think people would be wary. You know, this is very much a feeling that this is you know, this is at the heart of your, you know, your separateness and your secret sauce and stuff. And people really wouldn't want to have it. I don't think I've ever had a conversation with anyone about the way that algorithms work. Mean we were up in Oxford, so we were a little bit off of the beaten, beaten path. But I don't think I ever had a conversation with anyone.

SPEAKER1 42:32 Are there any lessons that you can think of and maybe other highly regulated industries? I mean, quite a number of people, as I mentioned earlier, they've mentioned a few things. The airline industry, some of the medical, some of the stuff that's happening in medicine, which you think I mean, which have involved sort of. Algorithmic deployment that you think the financial industry could learn from and maybe help improve some of the sort of infrastructure systems and controls that we've got in the financial industry, or do you think that we're already the pioneers or very least the stuff that we do is sufficiently idiosyncratic?

SPEAKER2 43:08 I don't know. I'm not thought about that. You're making me realize how open, how atomistic I've been and not really seen the broader the broader sort of systemic picture here. But that's not something I've really thought about if I have any thoughts afterwards or send off an email. But I've got nothing to contribute to that. And I'm not being very helpful on this. I mean, I'm you know, I suspect I'm probably not the right guy for you to talk to.

SPEAKER1 43:42 Just a couple more questions before I finished jump in. How sort of surveillance did you develop your own? I mean, did a firm like yours about your own success to do that or did you buy in?

SPEAKER2 43:55 No, we've...

SPEAKER1 43:58 And that was because you were presumably you wanted something that was more accustomed to what you were doing specifically?

SPEAKER2 44:04 Well, my partner was a computer scientist and he you know, a lot of this stuff, I didn't actually have a vote. He was in the algorithms. I was more involved in the way the algorithms worked. He was probably more and more goal end systems architecture, but he was obsessive about doing everything we so he would not

have been up for buying anything. You know, if he had his way, he would have written a regression packages.

SPEAKER1 44:35 Finally, what would you all sort of what your sort of principle concerns for? The sector be I mean, what are the sort of imminent threats that you perceive to, you know, the sector going forward?

SPEAKER2 44:51 The sector, meaning, well...?

SPEAKER1 44:54 Where you are, I mean, where your firm would have sat and things, I mean, what would you have seen as the biggest challenges going forward?

SPEAKER2 45:01 Well, I think the systemic challenge, frankly, is one of the for me is you know, the importance of it, the way that HFT takes money and resources from everybody else and the efficiency losses to the system as a whole of that system. And that that does concern me. There was a paper actually by a guy in Chicago proposing the multiple auction rates, which is something I'd already thought of. And I think that's so much a better way to go for the system. But it won't happen because the vested interests, the fragmentation, liquidity, you know, has been done in the name of sort of competition and free markets and all the rest of it. But I think it's had a deleterious effect on financial markets in general. Far too many resources have been put into writing out stocks, in my opinion.

SPEAKER1 46:00 So, they so they sort of look at a change on the arms race.

SPEAKER2 46:02 Yes. It's just it is an arms race and it's you know; it has winners, and it has losers. But more, more, more to the point, it just has a huge cost to the society as a whole.

SPEAKER1 46:17 And that exchange where that Canadian chap, which was in that book and in The Flash Boys book bought the name of the exchange is now

SPEAKER2 46:29 Brad what's his name is the one that. Yes, yeah. I mean, I don't know whether that literally was the right thing to do. Brad something rather. What the hell's his name? I know. Yes. You know, I felt that sort of thing is a good thing. But, you know, why do we need a competitive market? Why don't we have you know you know, why don't we have multiple auctions? Why if I want liquidity, do I not just pass them up the orders? Put them in one place that seems to me is a public good liquidity. And that's the best way of providing it, in my opinion.

SPEAKER1 47:08 OK, well, that concludes the interview. So, I'm going to switch off the recording now, OK?