

Interview with trade surveillance expert #2

- SPEAKER1 00:05 Should come up. OK. Yeah. So, just to start off, just to explain how it works. First off, just to confirm you've received and read and signed the participant information sheet, correct?
- SPEAKER2 00:23 Yes.
- SPEAKER1 00:24 And. This interview is being recorded for transcription purposes and at all times, I will try to ensure the anonymity of the response is given. And basically, the interview has sort of four parts, but I'll try and just work for them sequentially. There's the first part is about the background to your firm, you know, what it does and what kind of strategies it employs for different things. The second part is about emerging conduct risks in the context of what the firm does in the context of the fixed income, currency and commodities markets, but particularly in relation to base metals activity on the London Metal Exchange. The third part is about machine-to-machine regulation or possibility of it. And then the last part is about initiatives to mitigate conduct risks and lessons learned. So just to start, what is your role in the investment firm?
- SPEAKER2 01:31 So, I am the head of central surveillance at an American firm based in London, and I run the team primarily focused on the U.K.
- SPEAKER1 01:41 How would you describe the investment sector or subsector?
- SPEAKER2 01:48 There's kind of two primary areas. One is around commodities, which are a lot of commodities, derivatives trading, accessing various exchanges on behalf of clients and also due to a recent acquisition. We also have a securities business which is kind of split into two one on the residual part of the organization, which is focused on servicing more professional clients. And the acquisition is more focused on retail clients focused primarily on the securities business. Although that retail business does also service retail clients looking at derivatives for other products outside of the securities that are set, for example, commodities, emissions trading indices, various other things as well.
- SPEAKER1 02:27 Okay, and how would you describe the investment firms' goals?
- SPEAKER2 02:31 So just to disclose, I've only recently joined the firm two months ago, so I'm still relatively new into the firm. The I would describe the goals of the company to try to service our clients as best we can across multiple jurisdictions , multiple products , and to do that in a way that is compliant and also hopefully profitable and to look around , especially in light of the recent acquisition that we've undertaken to look at the synergies between the two different types of business and

how we can look at potential cross-selling and or efficiencies within the administration of those two companies .

SPEAKER1 03:09 Okay. And to your knowledge, what types of algorithms does the firm employ? And if you can't, you don't know about the specifics, maybe other firms in the sector.

SPEAKER2 03:21 So, I haven't had an opportunity, as I say, relatively new to the firm to go down to specific algorithms and having a look at what we employ. So, I'm not best positioned at this time to answer that question. In respect of my current firm in previous firms, I've spent time working at both European and American investment banks, and I've seen how it goes working there in a whole variety of different spaces, either on a proprietary basis or for client access. And that's usually to access exchange with that high degree of latency easily or computer generated, algorithmically derived. I've seen it in a number of different guises, but as I say for this current firm, I haven't had a chance to look into that in any depth.

SPEAKER1 04:07 OK. And I mean, to the best of your knowledge, do you have an understanding of what sort of strategies the firm or its clients would employ?

SPEAKER2 04:18 My current firm? Yeah. No, not right now at this stage.

SPEAKER1 04:24 Okay. And are you aware of that being any sort of machine learning or artificial intelligence deployment in the company?

SPEAKER2 04:34 I'm not aware, but that's not to say it doesn't exist, as I say, just to get your head around some of the complexities of financial firms in 2021 as it takes a little bit of time. So, I haven't looked at that yet. So that doesn't say it doesn't exist. I just haven't come across it yet.

SPEAKER1 04:51 Okay. And in terms of design, deployment and recalibration processes, have you had any involvement in that in the current firm or in previous places you may have worked at?

SPEAKER2 05:06 Are you talking in respect specifically of algos? Correct? Yeah. No, I haven't. Okay. It's in my role as a compliance officer. So, the larger firms like Wait for the said that the current plan I work for is much smaller than previous institutions. I've worked for over 100000 plus. So, there's a much more delineation of responsibility, so whereas the compliance function, which I'm a part of, will have some kind of oversight or engagement in that that process that hasn't necessarily fallen on me where it's fallen on me in the past is looking. I know there were a lot of changes with the introduction of Medicare and MiFID two in terms of the latency, the speed at which and the honour, the surveillance obligations that you have as a result of that. I put very

simply, the more the faster and more complex your outcome is that the more control we used to have in your surveillance program. So, there's kind of a kind of sophistication element. The more sophisticated that trading is through the ACOs , the more sophisticated your response needs to be in terms of looking at the controls around , looking at microseconds in milliseconds and what's accessing one and then the specific risks that attach themselves to that in a surveillance space , which are primarily around those order based offences , like spoofing , for example . So, I've been involved looking at previous, as I say, around the controls that you have specifically around things like spoofing. But in terms of any set up or which clients can access that, I traditionally have not been involved in that.

SPEAKER1 06:40 OK and conduct risk. And what is your understanding as to what that means?

SPEAKER2 06:49 So, this this is a very broad topic. It can mean a lot of different things to different people. To me, conduct risk can come in a number of different areas. So, it is primarily looking at what the firm and or its clients are doing in respect of the rest of the market and what negative impact that that could have. So if you're looking at algos, for example, that there can be specific risks where because of the way that you can program them when you get some kind of momentum going that can be exasperated by various algo trading in the market and cause more of an issue leading to things like the flash crash for sterling, which happened a few years ago. But the risk, excuse me, of course, and potential securities product could be that you've got a specific set of circumstances. The market's up ticking or down. Taking one particular way out goes trade on the back of that and exasperate it in a way that then becomes an unnatural development of the market and can lead to a much bigger impact on potential price discovery than was perhaps intended. Where gut doesn't have an underlying economic reason is just watching trade on some of these tiny anomalies that there are in the market. So that's the kind of risk area that are so focused and looked at in that respect.

SPEAKER1 08:10 Okay. Do you have any sort of grasp of the of the firm's conduct risk framework at present?

SPEAKER2 08:18 Not specifically. I know we have various committees in place to look at overall market conduct issues. How specifically they are related back to individual business units. I've not been involved because I've not done a review of this. I have not looked at this or come into an existing framework. And so, and specifically around the surveillance space, which I am responsible for, which is part of our overall market conduct controls. So, and it's very difficult to me to say, look, here's the specific

mapping around it, but I'm fully aware that we've got various committees, various policies, various training has been unscheduled to be undertaken, and there is various control initiative, which I run one of those. And of course, the one that I run in the surveillance program is the one that I'm most familiar with.

SPEAKER1 09:08 Okay. And what would you say? I mean, earlier you talked about the firm being involved in commodities in particular. Yeah. And I mean, you might be aware at the moment of this discussion paper that's been published by the LME about the future of the of the of the exchange and how maybe it could be that the rim closes or maybe the margin methodology has changed and there are incentivization towards electronic trading for a changing fee structure and things? Yeah, with that in all of that in mind, what would you say, the firms or maybe even more general than that, either the perception is about conduct risk associated with algorithmic trading and in this sector, because in equities, obviously it's very it's been quite well publicized. It's quite an old thing, flash crash, everything else. But to your knowledge, what's the sort of level of understanding and perception of risk in commodities?

SPEAKER2 10:13 I don't have any specific my background is not a commodity, heavily commodity focused, so I don't have anything specific. But what I would suggest is the commodities market is very different market from other markets. It's not a retail market. You don't get retail participants. They all tend to be professionals that are in some way trading firms or some in some way shape or form. Kind of what you might call users, AI or producers is perhaps a better term producers and users of those underlying commodities, and they're using financial products to hedge their risks. Therefore, in terms of the trading volumes, I anticipate they would be low and there's more scope for algos to have an impact. Now, the way that a lot of those producers and users are engaging in the market is to try and look at our underlying business model. Perhaps they're a farm producer, whole wheat, for example, and they're obviously looking at weather conditions. Supply and demand. Anything that might impact the underlying price of that commodity and want to hedge that risk. That's fundamentally different from any trading houses that may just be doing this on a speculative basis on the basis of a financial product. So, I think there's an almost an inherent conflict between those two different types of uses of the market where one would quite happily, I'm sure, engage in using algo in order to see bearings, which is ultimately to make money against the other group, which are not seeking to make money they're seeking to. It's almost incidental to their primary piece of business, which is, for example, a wheat producer. Therefore, is this positive or negative?

It's very difficult the kinds which angle your you're coming from. I know there's issues around whether there's an increase in liquidity as a result of algo coming in. Personally, I'm not convinced around that, but I've not looked at them specifically in respect of commodities. So, it's now kind of be the thoughts that I would have around it. But as I say, commodities are not historically been my area of expertise

SPEAKER1 12:17 In terms of the types of algorithms that firms deploy..... And you mentioned before, that could be proprietary, a sort of client servicing so algorithm. Where do you think, you know, we are at present in terms of the likely levels of self-calibration of those algorithms? And what I mean by that is, you know, traditionally a lot of algorithms. I think maybe to begin with, they were designed by a human being, maybe recalibrated by a human being. They changed. The goal was ever so often. But now you're sort of seeing more and more machine learning coming in. And the FCA and Bank of England put out a report out about this. I think about a year ago. How far do you think the industry is down the line in terms of maybe moving towards more sort of self-calibrating reinforcement learning type? Deployments, instead of the traditional sort of I program it and sort of check it again every so often.

SPEAKER2 13:12 I think that's definitely the way things are going in terms of it almost feels like in some instances a number of financial firms are actually tech firms that just happened to be working in the financial space. I think that's where a lot of, especially some of the most specialized or larger parts of investment institutions are going. So, this is very much where I understand things. Things are not human. Intervention is becoming less and less and less. Again, whether that's a positive thing or a negative thing is open to discussion. It kind of makes sense is the logical next rational step. I've not seen that paper from the Bank of England and the FCA in terms of what they may be proposing or what they're looking at. But in terms of the firms, you can understand why they would do that in terms of trying to improve the on the effectiveness of what they're doing. I remember reading somewhere a long time ago in respect to one of the I think it was a U.S. high yield fund or something. It was it was describing it as picking up nickels in front of a steamroller, i.e. every individual nickel you pick up doesn't make you much money, but there's an awful lot of them to pick up. But the steamroller was always there, and it can absolutely walk you out. I think there's an analogy here in terms of the algo. Is this the tiny movements that they can operate on can make lots of very, very small amounts of money. And of course, the latency with which they do that can quickly add up to very profitable trading activity. But the downside risk of that is if it goes wrong, it can go spectacularly wrong. And I

think that's probably where the Bank of England, this area is focusing their attention on terms of what is the systemic risk across the market. If such a thing were to happen, especially when they're all following each other, it can exacerbate, again, as I say, a particular trend one way or another, a positively or negatively or a whole down, whatever it might be. And a lot of market disruption. So, I testified that it's where a lot of firms are going trying to automate this. But again, I question whether that would be a positive thing, necessarily.

SPEAKER1 15:16 And do you think it's foreseeable when you think that firms might look to reduce headcount or is it more of a case of. So, look, it like during the sort of industrial revolution where, you know, somebody originally tilled the fields by hand and then suddenly a machine came along and did it for them and they ended up being the driver of their machine rather than working in the fields themselves. I mean, do you think this is going to result in sort of labour transfer rather than labour extinction? Or maybe it's actually we're talking about reductions in numbers of people involved?

SPEAKER2 15:54 I think it's absolutely about trying to reduce headcount. If you look at what people have been peddled in this industry traditionally, especially in those frontline trading functions, that very expensive. So, I think this is one of a number of ways that firms are looking at their overall cost base and how they deal with that. It's also, of course, the profitability element of it. And as I say, moving us as an industry more to attack industries. So, if you think about the number of I.T. type, experience and grants and things that you may be employing compared to 20 25 years ago, I think there's a big sea change. So, it's not necessarily it's automatically a headcount reduction. I think that's almost a byproduct. But it's also changing the underlying makeup of the employees at financial services firms make it much more tech heavy and less kind of traditional mathematics and trading driven, but not mathematics necessarily, but certainly trader driven. So you do have small teams at the same time, though, I think that that's a trend in some ways that's being almost reinforced by changes in the regulatory environment around ring fencing, specifically of large firms have moved out of the area of prop trading, specifically because the change in the regulatory environment in relation to prop trading in particular has just changed the game. And what kind of assets you need to put aside against that kind of activity and how you need to ring fence it from other types of activity? So, I think there's a difference there between, for example, the large investment banks, which are largely mid-cap prop trading and smaller hedge fund type proprietary trading activity, where this is a much bigger factor in terms of their overall business makeup.

SPEAKER1 17:41 And is your sense that maybe the sort of traditional broker firms or investment firms that are non-bank and non-sort of prop shop type companies is your sense that they are really what, you know, prepared for this change in a sort of gearing up for it may be upscaling in certain areas or more important, do you think? Or is it being it more of a case of sort of wait, and see?

SPEAKER2 18:10 I think this is different kind of client base when you look at some of the brokerage firms, get some of the investment bank, the investment banks tend to be, that's trying to do everything for everybody everywhere, and most brokers don't necessarily tend to do that. They tend to be small or niche, focus on particular jurisdictions or particular sectors of the financial space and therefore the kind of is a difference in terms of their client relationships you offer as a broker, you're not trading off your balance sheet because by and large, you don't have a particularly big one setting compared to the banks. So, you're approaching this in a very, very different way, and it's about that connectivity that you can offer to an underlying firm. So, yeah, I think there's a difference between what kind of firm and what kind of client relationship you have. But does that mean brokers are going to get squeezed out between them? I don't think so, because I think they provide other types of services and other type of relationships for that underlying client, which are a different, a different kind. I think to the ones that the big banks are going after.

SPEAKER1 19:16 What's your thoughts about this transition, maybe towards a less labour-intensive environment in terms of trading, saying that's a positive thing or a negative thing for conduct risk or....

SPEAKER2 19:37 I think the conduct raises, if I was, I used to work as a regulator and I would almost be agnostic as opposed to that, whether its machine driven or whether it's person you've got other types of beast that you don't check with machine learning. You got kind of a fat finger type error. You don't tend to get that kind of risk in this kind of automated environment, but you switch that to other risks, as I say, around putting momentum around particular movements that may cause issues themselves. So, you kind of change one set of risks for another. So, I'd be kind of agnostic as to whether there's more or less market conduct risk. I think it's just kind of different and you look at it in a different way, i.e. what kind of stops or checks or balances have you programmed into that anger? Is there ever a human override when it hit certain criteria in terms of the overall employment issue? I mean, this has been an issue since the long. I mean, everybody's always had the thought that the new technology will always, in the end, reduce the amount of overall employment. But actually, if you look back over economic history of the past three 400 years is the complete opposite.

And absent the current pandemic, if you looked at the UK, you know, 12 months, two years ago, employment was higher than it's ever been, both in absolute terms and as a percentage of the overall workforce. And therefore, what? There might be some short-term disruption. I think in the longer term, the economy as a whole wouldn't necessarily be negatively impacted by this because there's no evidence, as I say, from economic history over a very, very long period that that is ever the case in the medium to long term. So, yes there might be a slight change in the overall employment level of a particular financial institution looking at the economy as a whole. I don't think there'd be a massive impact.

SPEAKER1 21:29 And does your firm do anything in particular to sort of. Keep track of developments specifically in relationships of algorithmic trading and maybe associated conduct risk through the sort of through what you've seen or is it more sort of ad hoc or is that is there nothing at all? I mean, what sort of what's your impression?

SPEAKER2 21:50 So, within the compliance function we have regular, it's kind of a fundamental part of our responsibility in our role that we would look at ongoing developments coming out from not just the regulator in our home state, but globally, as well as to see what may be impacting the firm's activities going forward. I mean, it's a fundamental part of what we do so that there is that and I'm sure the business of doing the same in terms of looking at anything specifically, perhaps less on the regulatory side because they would delegate to some degree that to the compliance function. But on the market side of the tech that's available, for example. So, across the firm, yes, I'm sure there are. It would be difficult for me to spell out what those specifically are. As they say, I'm relatively new into the firm and I haven't seen operating. But that's exactly how I imagined it working. As I say, the business would focus on this kind of business. Then tech solutions and the compliance function partnership would look at the regulatory, the global regulatory framework and any issues that might change and prevent or change opportunities that may arise as a result of risk appetite in in the key jurisdictions from governments and regulators.

SPEAKER1 23:06 Okay. And are you aware of any sort of conduct risk type incidents involving algorithms in the last few years relating to this sector or not?

SPEAKER2 23:19 Not specifically the only one that still comes to mind that mentioned already is the kind of the flash crash, which, as the name suggests, it was both happened and was done very, very quickly. And that does seem to have had a large amount of algorithmic involvement in the causes and indeed perhaps the solution to that as well. So, it was almost self-correcting in a way, specifically around the commodity

space. I'm not. That's not to say that there aren't any. It's just, as I say, I'm relatively new into the commodity space, so I don't know as well as I know other areas.

SPEAKER1 23:52 Okay. And what are your thoughts about the possibility of machine to machine conduct? So again, regulation recently, I mean, looking at method to make it two is very much focusing on the designers and the people around the sort of management of this sort of algorithmic deployment processes and things like this, but what do you think? How do you think the sort of more prevalence of self-calibrating machines, some machines that may depart from the of the original code of that design, and because they're able to reprogram themselves as a result of data that they're taking in, it could be data from social media, could be data from, you know, trading venues or whatever. And then they sort of recalibrate their own trading strategy. What? Implications, do you think that that could have for conduct risks and the responsibilities of people in the firm?

SPEAKER2 25:00 Well, it depends exactly how you implement it. It's not an absolute one way or the other. So, I've touched on already what kind of triggers or override stops there can be programmed into a system? Excuse me. So, a certain amount of machine learning? Yes, fine. But if it triggers over a particular threshold, whatever you want to find that on in terms of a percentage of a particular market, a cash threshold, a volume threshold, whatever it might be from a market conduct point of view, I would anticipate and expect that you would have some kind of stock or override in them in terms of just rather than it being just a complete laissez faire and can go to the nth degree in terms of any changes or execution that it makes as a result of machine learning. So, I think it's ultimately you need a hybrid model between completely unadulterated freedom for that order to learn, develop, evolve and being able to check it. The issue that always concerns me around this is whilst a machine will look at things almost in a pre-programmed, rational view, markets by their very nature are irrational. And once you can program and I'll go to take account all benefit of that. That lack of rationality within a market. There comes a time when potentially it could be doing the opposite to what you wanted to do just because things come along like a pandemic, which you can't really program into an don't go to say this is a pandemic, this is what's going to happen. Or you can look at these historic reactions to things like this and that the current pandemic is a very good example. It just isn't the historic data that you can program in. So, it's learning as it goes along with there's another pandemic hit in 25 years is characteristics will be entirely different. Maybe in this instance, like in 1918, it will focus on the young rather than the old, as it as is the current situation. So, it would

make me very nervous if there are zero checks. And it also makes me very nervous to think that they could just evolve without any verification or any kind of check around how they may create issues that aren't necessarily there just by a coordination of different organs from different firms or working in the same way looking for those same anonymous. There's only so many of those nickels under the under the state model to go around. And if everything's crazy and I'll go to work in exactly the same way to look at it, all of a sudden, they'll cease to work. And the consequences of that might be quite unfortunate in terms of what happens in the market.

SPEAKER1 27:52 Can you foresee any issues with the concept of agency regulation? And certainly, on risk as typically focused very much on the human being? I mean, look at SMCR trying to ascribe responsibility and potential consequences for human beings. But could you foresee any circumstances where there could be an issue because the algorithm is developed and self-calibrated itself so much that actually it becomes something which the original designer or owners of it did not really expect? And so therefore, you know, they argue that they, you know, they're not effectively responsible or it's not the consequences of what it did, but not reasonably foreseeable for them. And so. You know that they argue that they're not liable for it or that they try to argue that they even if they were held liable for it, it wouldn't necessarily change the conduct of the actual machine itself. And can you see any issues like that developing?

SPEAKER2 29:04 Yes, absolutely. I first became compliance officer 20 years ago, and in that time, I've spoken to a lot of traders, and I found it very difficult. Even though most of them have to seek regulatory examiners in order to get a license to be a trader, to actually get them to understand and appreciate what those regulations are and how they impact them. And that's traders who have sat exams if you're talking about white people. And to my knowledge, there aren't regulation, sorry registration or licensing requirements for that kind of I.T. type function in my program. This is going to be even harder for them to understand the overall aims of a regulatory environment, especially one in the UK, where it's more principle driven and less rule driven, said that yes, does make me nervous. If someone's been sat down and said what your aim is to make money, your target is X million off you go rather than to think about, OK, what are the consequences of that activity? So, for example, it's not specifically I don't go, but I remember an instance in Canada, and I can't remember the individual or the company. Maybe that's not such a bad thing, but a particular trader for hedge fund put trades on against natural gas. Hurricane Katrina happened, natural gas futures went crazy, made huge amount of

money, I think got 25-million-dollar bonus that year. Put the same trade on the following year. No Hurricane Katrina lost huge amounts of money for the firm. So, there's not this kind of an impact in terms of the futures market, which ultimately impacted the underlying price that people were paying for their gas to heat their homes and cook their food. To me, it is a huge moral and ethical element to individuals or small groups of individuals being able to have an impact in the market to such a degree that the cost of heating the people or the cost of a being able to cook your food goes up. I find that morally reprehensible when somebody can get such a large amount of money for a consequence that has such an impact on everyday people's lives. I think the exact same risk exists in this kind of space and that was specific on natural gas, but you can see a number of different other areas that could potentially come. So yes, I think there's a huge individual conduct risk around a misalignment between what a particular program of an algo is originally setting and as charged to set that algo to and any subsequent changes that evolve as a result of machine learning in the algo and a broader stakeholder impact across a broader section of society. So, I think there's a huge element that is this really not properly being addressed in the regulatory environment because I don't think the financial regulators you see your FINRA, your SECs, your FCAs of the world has really been challenged in looking at that. They've just got a more general consumer protection element, which is more focused on individuals losing money on financial products rather than the cost of their heating going up because some of playing around with some algo that has a negative impact on the gas market. So yes, I think this these huge underlying issues, and I'm not sure what the resolution to that is, but that worries me

SPEAKER1 32:19 is one potential solution sort of designed in ethics and. I think in other industries there's been moves to sort of temper. I taught applications by having some sort of design in ethics. Are you aware of any sort of initiatives like that in even your farm or the wider markets? And if so, what do they look like?

SPEAKER2 32:45 I'm not aware of any specifically known, but I think one of the things we haven't discussed now, which I think is very relevant, is if you're looking at algos, what is actually the benefit other than making money for a particular firm to society at large, given the very nature of the activity that our guys are engaged in? It's not a long-term investment. This is not about matching a surplus element of capital to two investment areas or people to build new factories or develop new products or open up new markets or buy a house or whatever it might be. It's purely short-term speculative trading. And many countries have a bit of an issue with that type of activity. Many countries will ban

short selling, which is something that some algos may might be involved in, for example. And whether that they actually do, whether algos provide a benefit, wider benefit to society. Now I appreciate what the arguments are in terms of looking at liquidity and that being a broader liquidity because they exist. I'm not sure I'm convinced on that point because as I say, I think it's still a fundamental mismatch between a broader societal benefit and a desire for particular firms and or individuals just to make money, regardless of the consequences. So, there's this kind of a bigger picture, rather than just looking at the individual consequences of one how one firm's activities in respect of overall market conduct.

SPEAKER1 34:16 Okay. I mean, in the absence of having some sort of preventative ethical design and or something. What sort of detective surveillance tools, there's a firm like yours deploy today? And do you think that they are good enough to really capture potentially abusive or poor conduct by those algorithms?

SPEAKER2 34:41 So to answer your question, there's a number of the fundamental decision you have to make when you're looking at surveillance program is buy or build, i.e. do you build in-house a tool that you can use to undertake reviews against specific parameters that are set to look at particular abusive behaviours like spoofing, for example ? Or do you go and buy one off the shelf? Now there's advantages and disadvantages with both. If you build, you can tell it much more to your own needs. You can be much more responsive in terms of getting it changed. But you do introduce an element of key person risk if one of the key developers leaves and people tend to be on contracts rather than full time positions. Also, you may not have the relevant skills, the requisite skills insight inside their firm, especially smaller firms, in order to be able to do that. The downside of buying, of course, is again, in terms of trying to get something changed that can make your process more efficient at your firm, you've got to balance it against all the other customers. So, one thing you may want to change has to be balanced against the vendor and what they want to do to change up things for other clients. So, there's a prioritization process that might be a conflict there. So, there's no perfect solution, however, saying that whichever solution you do buy or engage, there's a number of different types of alert scenarios. And this this is this is an area that this this improved drastically in the past decade or so. You can create various different reports that can be calibrated to trigger on specific scenarios. Now, there's no rule book or golden source of what these should be. They almost need to be calibrated, not even just by thumb, but potentially by sector within the firm or product within the firm, and or even potentially by clients or different types of clients, i.e.

those clients that are doing large or more volume of business against those that are doing smaller. And that's something the regulator certainly encouraged this more kind of tailored approach. So, you can create these specific alert scenarios looking for this type of risks, and it tends to be the more latency-based order offences, as I've referred to earlier. Our risk in respect of goes and I go, you're not worried about things like insider trading is just not the kind of risk that you would look for an outcome was going to be something like spoofing momentum ignition. We engaged those types of scenarios in in our program in terms of looking at our overall control framework that is a process needs to be regularly reviewed to ensure that that calibration is effective. It's never going to pick up 100 percent of instances. It would be very difficult to actually say what level of instances that it does pick up, and part of the difficulty specifically in this area is unlike something like insider dealing, where it's pretty black or white, your kind of insider trading or you're not. There's no real grey area in between that just about proving it with something like spoofing momentum, ignition, layering these types of water-based offenses. It can actually be very difficult to say if they are definitively that the underlying risk or they've had that negative impact that the regulatory framework is designed to avoid or eliminate. And I've been involved in discussions at previous firms around is this spoofing? Isn't it spoofing? Is this an issue? Isn't an issue? And it's not even so straightforward as to say there's one definition because you look at something in the market, so you look at somebody in the commodities market. So, you look at something and in a more traditional securities environment, and they're all very different because they trade in very, very different ways. And even within those, you can split down the different commodities or the different foreign exchange currency pairs or the different types of securities. So, it's very, very difficult thing to get right. Are they effective? They're a good start. I don't think that the whole solution to the issue, I'm not sure there is one simple solution that any firm can engage to try and deal with that. One of the better ways to do is to try and put it into the program so that it doesn't occur in the first instance. However, that's not foolproof either, given the way these are set up in terms of tech movements one way or the other and just the tiny amount of time that these things can execute. And we're talking I can never remember, which is milliseconds, images, microseconds, but we're talking the millionth of a second. Some of these things will execution and therefore you need to reconstruct in terms of looking at tiny, tiny periods of time to see if there's been an issue. So, we have a control framework. It's a vendor solution that we engage, not a build solution. We do have specific alerts calibrated to look at these specific risks. They're not 100 percent effective, they're

not foolproof. They're certainly subject to an ongoing programme of review to make sure that they are as effective as we can be, but they still, unlike the NGOs, still rely on a human coming to analyse any automated alert sound that calibration program that we have to make a determination if there's an issue. So, we still engage a human process around looking at those. And again, that's where something could potentially fall down because 10 different people could look at it and come up with 11 different solutions. So, it's not strictly foolproof in that respect. So, these do exist. I've seen them in other firms, but we gotten fines.

SPEAKER1 40:05 And do you think the market at some stage will move to? Is it likely the firm or market move towards a sort of more machine-to-machine surveillance where a sort of surveillance system is almost acting like an algorithmic trading system with machine learning and actually trying to do these things and identify these patterns itself?

SPEAKER2 40:29 I can't predict the future. So, it's difficult today, but it does seem a little bit of a contradiction to me. If you're getting a machine purely and solely to check up on another machine rather than just reducing that duplication and making sure that original machine is doing or rather not doing what it's not supposed to be. If that makes sense, so you almost submitted for the first time, introduce this concept of a real time surveillance. Looking at the real time impact of algos now that's very different from a traditional control and control environment and a compliance space. You're looking after the event, usually on a +1 basis. And I remember discussions with the firm I was at the time when as soon as anyone saw retail experience, the like, all of that mass surveillance that must be compliance to which my answer was no, my systems not configured to look at that. We look at patterns and exceptions after the event, not in real time. So that would be a fundamental change in the responsibility of a compliance function if that were to be a real time surveillance process as well. And therefore, push back to the business to say you need to look at the impact in real time. So, there's different responsibilities that are placed in terms of the European regulatory environment in terms of that real time against the after the event. But in terms of looking at machine to machine, it's I don't know if that could ever occur. But as I say, if that's going to occur, why not just have one machine that is programmed to stop that itself rather than another machine to check something, if that makes any sense?

SPEAKER1 42:06 And with sort of the surveillance being plus or over the and do you think I mean, what are the advantages of that? You know, ever a time

lag or doing it real time in China, identify this type of AI may possibly prevent this type of behaviour.

SPEAKER2 42:27 So, the advanced degree of time is it. If it's all going a bit Pete Tong, it's all going wrong, and things are really getting out of hand. You can turn it off. You can't do that on a compliance based as long because it's already happened. So, there is an advantage to doing that. Any negative impact in the market may have already occurred, but at least you can stop it from getting any worse if you're doing it effectively. That's kind of the benefit, the real time process. The converse to that, the benefit of your T plus one or you after the event surveillance program is it can put things in a proper context and look at patterns and themes across a broader space of time. As I say, there's a lot of grey area around things like this is very, very rarely black and white. This happened. This was wrong. We've got a market conduct issue and therefore you need to kind of look at the fullness of what was going on. So, take the FX markets, for example. Some of them are highly, highly liquid, some of the large currency pairs like cable. But if you've got a smaller, exotic currency pair, there's a lot less liquidity. The same activity can have a massively different impact in the exotic pair compared to the major pair. So the advantage of an after the bank compliance program is it can really put it in that context to look and see what was happening in the overall market at the time, whether there were any external events that may have come along. For example, an interest rate move or some other kind of announcement, maybe a declaration of war or a bomb or a terrorist incident or any kind of thing that you can really put something in the context of and say, Well, actually, once you add in that extra layer of information that maybe the algo wasn't looking like this, how does amalgam know there are bombs going off? It's just going to look at the respective price movements and any increase in the volume of news or Twitter discussions of a particular thing and react accordingly. So, I think there are benefits of looking at things in both respects, and I think that's why they brought in this additional real time element. I've not been involved in any of that real time stuff, but it would be interesting to see how it does contrast and what people do in respect of that. And again, the obligation on that depends on the latency and how fast your program in the algo to look at because I know in my previous firm that we did deliberately slow down some algo specifically, so they wouldn't be subject to some of the more onerous requirements on the myth there. So that's one way that they dealt with, trying to look at some of the increased requirements that came from that piece of legislation.

SPEAKER1 45:04 How would you rate the ability of regulators and financial market organizations, you know, like the LME? How do they maybe prevent

poor conduct from algorithmic or maybe machine learning type trading?

SPEAKER2 45:30 Regulators have their own surveillance controls program. We can look at these things and it can kind of be both, actually. If there is a real time issue that might come to our attention, yeah, maybe half an hour an hour later, but they can shut things down. They do have the power in order to be able to do that there. And then and they also have the T+1 benefit of transaction reporting to look at specific elements of activity in the market to try and identify if there are any market conduct issues that arose as a result of algorithmic trading, so they can look at that in terms of where they're at. I think the difficulty they need a very specific set of skills around it to really understand how this programming works. I worked at a regulated many years ago, and I'm not sure then. I'm not sure what it's like now, but I'm not sure then those skills would have existed within that organization. And you really need to be able to understand that from an I.T. tech developer point of view rather than from the kind of lawyer or economist or political scientist or whatever background they are recruiting some of that other supervisory and other control staff. So, I think they're at a disadvantage of being able to marry the two together to look at both the underlying tech and the kind of regulatory legal framework. So, I think it's a very difficult position for them to sit in and to be able to understand because it's humans that have got to try and understand that and get somebody who can understand in the level of depth you need. Both sides of that equation are very, very rare set of skills.

SPEAKER1 47:12 OK, OK. And regulators have been very keen recently to try and emphasize the use of incentives with regards to sort of human trading staff and front office people to make sure that they are aligned with to try and encourage good conduct. Do you think there's any way of incentivizing machines to behave properly in this context?

SPEAKER2 47:42 No question. No, it would be my I've not thought about this before, but you can't incentivize. I wouldn't have thought you could incentivize a machine because they're not there to make money. They don't. Well, in terms of their personal kinds, they don't have a personal tax. They're not physical people, of course. I don't think so, no. That's a very good question. It has to be kind of the people who are responsible because ultimately these developing these things is expensive. They're not cheap. And not only do you need to develop them, and I compete for the best talent that's around, there's a lot of competition for that kind of talent. You can develop these things. But at the other end, trying to get your system plugged into the exchange at the closest possible point to the exchange to reduce that latency and more that cost money, too. So, there's a definite cost element to

that. But I think overall there that those cost decisions and the allocation of resources to that occur a much higher level. And then you get back to a human who is making those calls and therefore can be incentivized one way or another to balance that in a particular way. So, I'm not sure regulators focusing on the compensation or remuneration elements around that can really restrict the activities. I'm not sure how you would do that.

SPEAKER1 49:08 What about deterring machines? I mean, given that they are taking on more and more autonomy from human intervention? Do you think there's any way of deterring them from?

SPEAKER2 49:22 I don't think it's necessarily a deterrent. It's more and I've touched on this already, it's more looking at what restrictions are no controls or stocks you have within that. So, if you if something's programmed to look for five ticks going down and then buy, at what point do you change that number of ticks if it's come down to five, they continue to buy? Or do they switch to sell and exacerbate the downward trend? You can put controls around those types of movement or sequences of those movements, after which the algo can either stop, withdraw changed direction, highlight an alert to human intervention. So, I don't think you can incentivize them in any way, shape or form, but I think you can program. I mean, I'm not it, but you can program certain criteria and to set up to either stop the algo executing in a particular way or strategy, if certain. Risk thresholds have been exceeded that is absolutely permit a permit to build within those algos. But of course, I think an individual still needs to have some kind of interaction and I'm not sure how much machine learning they would do for those stocks themselves.

SPEAKER1 50:43 What about potentially punishing machines? So, you could say, OK, what if this machine has recalibrated itself, but it's in doing so? It's fired off a load of the orders, which are disruptive to the market, you could say, well, what about FCA or the market coming in and ordering that they're all going to be destroyed? Or maybe or possibly saying that the algo has to cease trading for a couple of days until it's been recalibrated back again? What about sort of measures like that? Do you think there's any traction in that kind of approach?

SPEAKER2 51:26 I'm not sure about destruction. I think the market can mandate this. The regulator, I'm sure, probably could, whether they would or not, because ultimately there's a program element, so I wouldn't do anything needs destroying. It just needs to be writing, recoding whatever it might be in terms of it or potentially putting restrictions on. So, there's only a certain volume or financial limit. It can trade over a particular period, like a trading day, for example. So, I think certain

things like that can be put in. I think from a regulatory point of view, if you're going to allow a permit, algos, you kind of allow them and permit them. It doesn't make much sense to sort of say, oh, well, you know, only under certain circumstances can you do this. It's either a yes or no, because as I say, our guys can be configured around their latency to change according to what those regulations are and the higher the licensee, the more onerous the restrictions are around it. Or what are the regulations all around in terms of reporting a whole range of other things? So, I don't think that necessarily destroying something in terms of a regulator coming along and trying to turn one off. I think that's part of an overall control framework that the firm has, but you'd be looking at the outcome that it's having in the market if it's having a massively disruptive or abusive effect in the market. The firm, I think, has got a bigger issue and may wish to engage turning off temporarily its itself because however much money to the firm may be making from the outside. Ultimately, a regulator comes along and finds it three times as much as counterproductive from an economic point of view. So it's difficult equation , but I think it's in the firm engaging that algo's own interest to make sure that it's not being disruptive , that it's not coming to the attention of other market participants or regulators because it needs to be balanced against what money it may make and any other consequences it has in terms of tax or fines or whatever it might be coming in as well .

- SPEAKER1 53:41 OK. How would you gauge right, the level of industry sort of self-led initiatives or collaboration? So, levels to try and address some of these topics?
- SPEAKER2 53:59 I wouldn't be able to comment on that. I've not been involved in and I'm not aware of and not say that any don't exist, but that's not something I've been involved with at all.
- SPEAKER1 54:07 Okay. And what would you say? The level of reliance on third party vendors is in firms to, maybe to or to, you know, within this firm or in other firms to sort of try and mitigate the conduct risk associated with algorithms.
- SPEAKER2 54:25 Well, as I mentioned in terms of your surveillance program, most firms engage in vendor solution for the high risk. So that would be the only part that I'm aware of not being involved in.
- SPEAKER1 54:38 Okay. And what do you think? Are the metrics? Do you think it would be better for industry to find solutions first? Or do you think that really to any problems? Or do you think it's more something that should be driven from the top from legislators and regulators?

- SPEAKER2 54:56 I think it's a bit of both. It's this type of activity, broking and financial markets, investment banking. They tend to be the more put diplomatically forward-looking elements of capitalism, let's say more laissez faire elements. So, it's not necessarily in their own interest to restrict their profit-making activities. So, regulation has in this in financial services has tended to drive a lot of those changes. So, I think it's probably a little more incumbent on the regulator to make sure that they're on top of this. And I think part of the difficulty comes in regulators not unilaterally, acting multilaterally in terms of trying to make sure that there's consistent approach, at least across key Western markets, so that firms are adopting a kind of similar approach and in different countries because if you've got an alcohol price in one jurisdiction. Trading in a third. It makes it a lot simpler if the rules across those are similar in the way that example MiFID applies across all of the EU member states and still right now in the UK.
- SPEAKER1 56:09 OK, final couple of questions. Just in terms of lessons learned from incidents in the industry, are there any specific instances that you're aware of sort of in this sector which you think a firm like yours could learn from?
- SPEAKER2 56:29 Yeah, I've mentioned the flash crash. I think that's probably the most pertinent example of where there's been a massive issue that's very obvious and noticeable and had a big impact. So, I think there's definitely lessons to be learnt around. So, for any firm, not just the one I work for currently around, so issues that can be caused by or exasperated by algos and how they work.
- SPEAKER1 56:56 And finally, what would be your principal concerns for the future?
Type of activity,
- SPEAKER2 57:03 My principal concern is around, as I say, trying to link the. What our guys are there for and what they do with an underlying or broader societal benefit, if algo are just there to make money, that's not necessarily an issue in itself. But that's to the detriment of the broader community, for whatever reason. That's me on an ethical basis is a big issue that I don't think has really been addressed and I think will probably come to a head at some point in the future. How exactly? I don't know, but I don't think that's the last we've seen in terms of this, this space.
- SPEAKER1 57:44 OK, well, that's some, concludes the interview. And thanks very much for your time.