

The Derivative by RCM Alternatives

Yep, She's Opening Up Option Eyes with NOPE It's Lily

Jeff Malec 0:40

Hi, everyone, as an intro to our guest today, I'm going to paraphrase from a recent blog post of hers. "In this weird niche of the internet called fintwit, you see an interesting confluence of people across the spectrum. Ambitious youngsters, talented researchers, complete charlatans, legendary investors, powerful hedge fund managers, regular day traders and low information investors. What's fascinating about the internet is it ends up fairly merittech...meritocratic. We'll have to ask her how to say that meritocratic...up into a point regardless of origin, if you produce quality, you will get noticed. So that was from her blog post. And that's, you will get noticed is how we ended up noticing one of these ambitious youngsters. NOPE, it's Lily are more formally Lilly Francus is here on the pod where we've had those powerful hedge fund managers in their hundreds of millions. So, meritocracy, indeed. So welcome, Lily.

Lily Francus 3:12

Thank you glad to be here.

Jeff Malec 3:14

So let's get into exactly what you're doing out there to be catching so many eyeballs. So you're, but you're currently a PhD student?

Lily Francus 3:28

I'm currently doing mathematics at San Diego.

Jeff Malec 3:31

University of San Diego, I thought you were up in Cupertino, or both.

Lily Francus 3:37

I used to work in the tech industry for a couple years. And then I decided go to school.

Jeff Malec 3:51

And so now you're down in San Diego though.

Lily Francus 3:55

Yeah, right now I'm in San Diego

Jeff Malec 4:07

And so, software so you're up in Cupertino. Tina, what you worked at where LinkedIn and Stripe?

Lily Francus 4:14

Yeah, I started full stack development for a couple years. Once I graduated from college, this was like, five years ago, sending "check in series" through as we like to call it. And that was kind of one of my first actual exploits and defiance, not only through my previous employer. And then I transitioned to working on the finance side - I was working on developing the risk pools by doing equity grants, for instance, from Microsoft and other employers. That was a good way to pay for the software.

Jeff Malec 4:55

And so working full stack there was tell us what that means for us that aren't coders.

Lily Francus 5:02

So, for computer science or software engineers in general, you're really divided into a couple of different spheres. Some people couldn't do everything. So they tend to be like developing the infrastructure, tools. Natural API is what I'm talking about moving your data scientists, which is what I went back to school, or we used programming tools to understand patterns in data. And also, this is a journey to machine learning. And those are infrastructure developers who didn't really specialize.

Jeff Malec 6:02

So, did you do anything cool at those two or it was just entry level kind of stuff.

Lily Francus 6:10

I would say, there were some interesting experiences. But I ended up deciding to go back to school because I really was passionate about actually producing startups. And basically, I was pretty passionate about technology. So I can bring things, either software or data to develop better therapies to help people actually currently in person.

Jeff Malec 6:58

And so the PhD Tell me what those things are. So bioinformatics and systems biology.

Lily Francus 7:06

Yeah, so PhD, it's a long process actually was starting last year, which not a super opportune time to pick up. By essentially, it's really focused on using software and pure science to understand about logical problems. So one of my interests in my research in my field, was for Austin's work, where my brother had autism spectrum disorders. So Eric, something that I'm passionate about creating better tools and better therapies for children especially with autism.

Jeff Malec 7:50

So, does that tie in with like, where you weren't any of the coursework or any of your talks around the virus? And the of that, is that kind of bioinformatics? Or no,

Lily Francus 8:02

It is, yeah, actually, I love that I was previously I was actually did some research from COVID-19. And when I was applying for grad school, this was late 2019, then, you know, you get to a point where you're doing interviews, and COVID started being a thing. When I was doing my graduate interviews with different universities in February, March COVID, started spreading to Italy. And I remember talking to my mom, and I was like, This is going really bad. I think a lot of people in the states really underestimated like, you know, a higher reproductive number of viruses. And for the reports in China, and the reports in Italy it was pretty clear by mid=February that things were getting about to get really bad. I remember that I actually, my roommate at the time was laughing at me, because she was like, Why are you stocking up on food And I'm like, you're gonna see in a couple months. Why.... So it was seen first there, and then of course in the market.

Jeff Malec 9:13

Yeah. And to me, it was all about like, people, just a basic lack of understanding of arithmetic growth versus geometric growth, right? People like what there's only 40 cases in the US. I'm like, well, yeah, it'll be 80. Tomorrow, and 160 the day after that.

Lily Francus 9:28

Yeah, I mean, it was pretty a clear by April, I'd say that there was just no way it was going to be under control. I mean, I remember reading some reports that I don't know if these digital currencies I haven't

kept up with the Coronavirus science papers as maybe I did it earlier. But they were estimating a reproductive rate of like 6, which for people who are not in biology- sphere/epidemiology, that essentially means that for every person who gets sick expect that person to infect six people. This really is a pretty rare and rapid growing virus. The only one that's kind of similar is measles we have a vaccine for, now we have a COVID vaccine; but at the time, it was pretty clear that once started spreading in the US that nothing would have done much.

Jeff Malec 10:23

I got my first shot. So, I'm scheduled for my second. How about you

Lily Francus 10:28

I got every shot in February. And it was nice because I worked in new lab that was kind of affiliated COVID. So I thought the Pfizer shot, really wasn't a big deal. I tried to share my experience on Twitter a bit. But you know, I mean, hopefully, this will be it. Hopefully, we'll get back to normal.

Jeff Malec 10:49

I don't know though. I'm kind of enjoying the home office here. But yeah, hopefully people stop dying. And so, what's with the what's your new Twitter handle? Or not your handle, but your name, vaccine pirate?

Lily Francus 11:04

Yeah so it's interesting. We're actually incorporating your business to run research stuff that we're doing.....and...you know, other stuff in the future. And one of the questions that they asked me when I was incorporating this was are you a vaccine distributor. And I was very confused about a vaccine distributor would use like a business.com. But I thought it was hilarious. Maybe maybe at this point, you know, we're in the wrong industry. Maybe we should get into selling vaccines and giving it to people because I'm sure we'll have pretty good margins.

Jeff Malec 11:37

Yeah, definitely. Vaccine pirate.

So all this cool work, all this cool stuff; and then you decided to launch NOPE. How did that all go down? Like, just going to the movies or reading a book or something wasn't enough.

Lily Francus 12:01

I mean, so the story with NOPE was that I started trading actively, right around the market crash. My background is in business and computer design. So I knew more than the average bear about the market. But most of my knowledge kind of extended to this is how you price like a basic bond, this is what the market should do what the market should do, or I don't know discounted cash flows are something completely, completely irrelevant for today's market. And basically, what happened was that actually with Robin Hood, just like everybody else, you know, Robin Hood was free, everybody knew Robin Hood I previously tried Robing Hood years ago, didn't really stick with it. I made three options trades. And May/June/April, everything was up. So, you could just buy pulls and make money, and you're like, Oh, my god genius. I remember in May, I went from \$6,000. I think I started with to about 20,000 by the end is a month. And I'm like, this is so easy. And of course you know, GME, and the market went volatile gain. I know a lot of people who were overleveraged and completely wiped themselves out.. I'm basically when the volatility started, my first reaction was like, Oh, shit, this is not as easy as I thought it was. So my second reaction was I'm a quantitative person, let me start analyzing this. Because you know, the best way to treat would be what if I could figure out the system – that 's what my PHD is in. Well, I won't have to worry about it. And one thing that if you're not familiar with PHD programs, it's not high paying versus you know, working in tech. So I was like, this could be some money on the side while I do my studies.

Jeff Malec 14:05

Yeah. Let me stop you for a second. I'm just always curious. So how did how did you find out about RobinHood? And how did you want to start trading? Like was it? Did you in high school do trading contests or were you? Or is this more like nefarious, and they're getting into every corner of the young people and getting into colleges and being like, you need to trade?

Lily Francus 14:27

I mean, so what I guess.. I have no previous work in Robinhood survival tree, but I was pretty active on Reddit for a couple years. So I knew of the option trading market. I didn't really actively trade I mostly just enjoyed the memes of people losing money. But that I've never pictured my friend Monica. I was like, we should just start trading like this. I mean, she loves to gamble. But no for me, honestly, I'm not. I do not like risk and when I take risk I have to be confident about what I do. because one of the things that's been interesting is more like not the market, the less that I want to spend money on options.

Jeff Malec 15:17

Right, the more you know, it's a rigged game, so to speak. But so right when I'm in college, it was like, Okay, are we gonna play beer pong at 2pm or 4pm? But so in your undergrad where people like, okay, where what are you doing? Do you have your Robinhoo daccount? Which stocks? Are you looking at? Where did you go to undergrad?

Lily Francus 15:36

for undergrad, I went to University of Southern California, which right now from all the scandals that I do. So undergrad business at UCS, I graduated in 2015. So, the market is hot. There's like, a nice this when I started LinkedIn, which was part of Microsoft. I read everything. That's when I first actively started investing. But my investments were primarily my 401k and Microsoft share, which I talk about a lot on Twitter. But it was interesting, because it was kind of completely different than what normal, you know, markup is and what you're supposed to diversify was supposed to... I don't know put it all in IBV or whatever is the lowest engagement right now. And at Microsoft, I got in when it started, Master tech will run for 2016 to 2020. And I jumped at the bottom, like, I had coworkers were selling it and I'm just like, there's never a good time to sell like it just keeps going.

Jeff Malec 16:50

Yeah, like what are you doing?

Jeff Malec 16:52

I've got friends working Microsoft, and they get the stock options right at 10% discount to the current nav. So that's just a money printing machine as long as it's going up as well. Anyway, I buried the lead there, but was just interested in like, how do they how did all these people get to Robin Hood? Especially young people? Like how do they all decide? Right? So, you're saying it wasn't the normal path? It wasn't the normal thing, but it seems more and more like it is the normal thing like everyone's trading.

Lily Francus 17:21

Well, it's interesting. I mean, I was [] work here was kind of propelled me through in 2018, which definitely made a difference. A lot of people joined the markets around the time, you know, everybody was trading Bitcoin for instance, even before 2020s massive bull run on Bitcoin. So I wouldn't say it was like something completely divorced from what people were already thinking. Also, a lot of people had money in the stock market. And in 2020, most of them have made money. So people not only bought at the bottom, and a lot of people made a lot of money by buying at the bottom, but they also were like, Well, now, maybe, maybe from home I should just start trading. And what's interesting is on the market, mostly rewarded that. So in 2020, it was a multiple period of time very easy to make a lot of money.

Jeff Malec 18:24

Right and yeah still rewarding it to a to a degree.

Lily Francus 18:31

I would say a bit less since the stock bubble and somewhere in 2021, but it's definitely it's very difficult to be a you know, methodological investor 2020.

Jeff Malec 18:47

Okay. So you start your investing your friend Monica is gambling, but you're both doing similar things. And so you say, hey, I need to get a little more analytical on this. And I create NOPE. So, explain to us what NOPE is and quick summary quick elevator pitch on what NOPE is.

Lily Francus 19:08

Okay NOPE essentially is a way to measure the notional impact of options hedging on underlying liquidity. And this would make sense, I could definitely go into more like depth. But that is...

Jeff Malec 19:23

Yeah, we will dive in. And our listeners will know more than the average bear to quote to quote yourself. So let's start with how does it differ from GEX from squeeze metrics and the kind of those things that are getting put out there?

Lily Francus 19:41

So it's interesting, GEX and Nope actually have a really significant correlation. There's a lot of I'm actually exploring some stuff right now with, for instance, monthly operation or operations assumption cycle, and how it impacts you know, for instance, NOPE in this case. For GEX, it's more a measure of like net gamma exposure, they tend to have a fairly similar meanings when you apply the end of days. So, an elevated anything, for instance tends to imply that tomorrow I might have realized volatility, similar to GEX. The difference I would say is one NOPE is an intraday metric. So, in fairly normal times, it tends to be pretty successful at you know, targeting intraday tops and bottoms on various indices. Especially ones that rolling river for instance. And two it has some interesting corollaries with like the direction of market. GEX by itself is more measure this realized volatility. So when GEX is high, for instance, the market is on the move So it seems a lot this week, the market basically isn't in range, pretty much most of the day, even to the right, the massive explosion as well like .5% up. For NOPE, what's interesting is that there's realized volatility actually can move forward in the same day. So, if NOPE is up 50. That usually implies that realize volatility, let's say 60 minutes forward, is going to decline. Similarly, if NOPE is -50. So similar to I guess, you'd say negative gamma. It tends to be related to increased realized volatility. And I guess, you know, the number one differential between the two is that NOPE seems to be one of our major use cases for using it for these intraday reversals on SPY, for instance, where GEX by

definition is, you know, open interest, so it doesn't, it's not necessarily something that you can really want to find intraday.

Jeff Malec 22:03

Yeah. But so that, so it's net options pricing effect, what does it stand for? Again, net option pricing?

Lily Francus 22:10

Yeah, net option pricing effect. So essentially, what it's measuring is, you have all the options that are traded Today, you're looking at free options that were trading today, what was their Delta? So, you look not only at the time of the transaction but you can adjust it forward. [unknown] . And what that basically does for you is you can understand at least partially what that market maker who is going to push those options would need to buy or sell in order to stay Delta neutral. In reality, it is what it means. I mean, you know, sure, listeners know, crossing the spread, they, their market makers are often short, they're often short personal calls, for instance, on the indices, they can have other options, but it kind of gives you this nice new metric, that you can kind of start analysis on.

Jeff Malec 23:22

And so it seems, but if you're using it mainly as a mean reversion tool, so it's kind of like can identify when they're out of pattern, so to speak, of like they need to do this hedging this hedging, then they run out of need to hedge, which is right when the market might revert.

Lily Francus 23:39

Yeah, at least my hypothesis is what happens when this signals a reversal, essentially, is that when this metric is elevated, the primary method of the market moving, you know, as the day goes along, is really, really just a hedging mechanism. So if you think about it let's say, hedging [] options. So on the indices, for instance, I'm a market maker, I, let's say to keep it simple I'm short a call. So if I'm short a call on on that index. Assuming that, I don't know you can have some options, or maybe you know what, keep it really simple. You're going to buy shares. And when you buy shares, this pushes the price up. Similarly, when another person then, you know, buys another call option, then that marker maker needs to hedge as well. And they need to buy more shares. And what happens is that that

Jeff Malec 26:03

Yeah, it seems interesting to me, it kind of seems counter to, to gamma, right? Like that it's running out of steam, instead of you'd think gamma is like, no, it's going to accelerate into it in the new prices, because they have to hedge evermore, evermore.

Lily Francus 26:18

Well, so the thing about let's take the example of short gamma. So, gamma doesn't occur very often on the indices, at least, theoretically, and observationally, I'd say. When it does, that tends to lead to increased realized volatility. So you can see this widening gap, for instance, is negative. But when market makers are long gamma, actually the reverse competence, so when you're long gamma, let's say you sold a marketing or call option, and they're going to hedge it now by selling shares. And when they do that, they're actually going to depress realized volatility. So, if we're in let's say, this long gamma regime, it tends to be more mean reversionary, because if the index starts rolling, you're gonna see that the hedging aspect of it is actually pushing it back down.

Jeff Malec 27:14

Yeah. That's interesting. And just to reiterate, you learned all this since March of 2020.

Lily Francus 27:22

Yeah, I just really liked it.

Jeff Malec 27:25

That's crazy to me.

And then so tell me that you've kind of spun out these products out of here, right? So, there's no chart. There's like, what what, what can people use? Do you charge them for it? What does that all look like?

Lily Francus 27:45

So if the NOPE I mean, I have a whitepaper on it, when I can go into the office, I released this, I would say November. No chart, we're actually developing signals on top of that, because we've seen for instance, I've actually talked about this recently on Twitter, that when you're at certain points of the monthly options expiration cycle, then the maximum outlook NOPE can move, for instance, intraday trends to increase. So, when you're up next week, which are actually currently and then it's not necessarily a good idea, especially to use the short signals, because the maximum NOPE that can be achieved intraday tends to increase dramatically. So perhaps normally we see a reverser around 30 or 40. Now we can see it like 70 to 80 or 90. So we actually, you know, overlay other or I guess features for determining when one should enter or exit that tends to improve like overnight. Because one of the biggest issues when we reversion strategies, if they tend to have what's called a negative skew. So

although they have a pretty high win rate by themselves, they tend to be a lot of money when they lose, yeah, with small wins just do not cover it.

Jeff Malec 29:04

Which is my issue with kind of, like all these gags and all of this, it works until it doesn't, right. So, it's like a great indicator. It's a great tool until there's a phase shift, and you totally blow through those levels and you get into a new regime. How do you think about that?

Lily Francus 29:23

Yeah, so it's, I mean, it's something that when you're dealing with especially intraday, let's say, market dynamics, you have to be very cautious. I mean, one of the, one of the biggest problems with let's say, mean reversion by itself, is it's very difficult to tell when to try to combat with a mean reversion trade, you know, there are optimal levels, you can do stochastic calculus for, for instance, to figure out where to put your exits or entrances. But in general, I mean, even in our data set, you perform worse with literally any stop loss. So, the issue with that is, how do you know when it's not going to revert? That's why, you know, in those cases, you need to look at other market dynamics because, you know, NOPE index, for instance, or just one factor, you know, we saw this a couple of weeks ago, when Archegos, it was like, if I remember was like a Friday, and you just saw spike tear down, you saw my column and discovered you tear down. There's no model that would have prepared you for that. I mean, it was literally just Credit Suisse. And you know, Morgan, Stanley, and Goldman trying to front run on each other to spell object into blocks of even chairs. I never saw like a rip, basically, any day because they were unwinding shorts. And in those cases, you know, you cannot model your way out of it.

Jeff Malec 30:49

And to that point, is it do you run it just on index options or it's on individual names as well.

Lily Francus 30:58

So, we haven't really looked up on individual names, my understanding is that the shape of like the distribution of liquidity, so when you look at SPY, for instance, if you look at the position of orders around the spot, it tends to be approximately normal, I mean, not really normal, but always normal enough. So, because of that, that's one of the reasons like price tends to reverse when, let's say all the available liquidity in one direction has just been absorbed. But what you see on Tesla, for instance, the shape of liquidity is different. You know, as you see today, there are certain stocks that when you buy, it triggers more limit orders above the spot price. So instead of people saying, Okay is too expensive, I'm not going to you know, when to remove my order, I'm not going to put more, they're chasing momentum. So in most cases, my hunch is that NOPE, and other metrics actually have more of a tendency to predict it to continue to go up versus for to look their reverse direction.

Jeff Malec 32:06

And then have you run it on other like on NASDAQ, or Russell or DAX, and things of that nature?

Lily Francus 32:13

So we currently run it on to QQQ which I guess, is NASDAQ. And it worked pretty well. I mean, it tends to work better for us for intraday research on the indices that have a tendency to mean revert in the first place. That said, you know, we haven't done as much analysis, I mean, QQQ tend to be more volatile, for instance, then SPY. So theoretically, it should work. It's, I guess, less useful. I mean, one of the reasons historically, but I ran it on SPY, I guess NASDAQ as well, too, is because it tends to be more predictive of the whole market. So, while let's say QQQ may be rallying, because tech is on fire, potentially the market itself could be going down. And what's interesting about when you use it on SPX, or SPY, as I talk on Twitter very often, you can predict multiple things, you can actually predict currencies to some degree, you can predict stocks that have a pretty high beta to SPY so it has to be a lot more useful for actually, when you're trying to predict the market direction.

Jeff Malec 33:24

And when you say...have you given any thought to like, turning it I'm not sure how to ask this question, but like turning into a machine learning? Right, it seems like a lot of the things you're saying are like that machine learning would do, like, Hey, we're running this, we're throwing in all the option data, all the S&P data, and then we're getting outputs of signals on currencies, right. That's thing that machine learning people are doing in the market.

Lily Francus 33:50

Yeah, so I'm not personally sold on machine learning here, I feel that the noise, or signal to noise ratio, in general for financial data, and machine learning tends to make it unsuitable for a lot of problems. That said, we are editing models using [], for instance, for multiple different features. So we are, you know, looking to production. And part of, you know, that process is, the signals that we show on our positions.

Jeff Malec 34:26

And then you keep saying we're doing this, we're doing that, Who's we?

Lily Francus 34:30

So we're actually to have like seven people displaying, which is fairly large. I mean, there's Sean who for instance, runs the website renew. He's actually the main engineering architect of the website. I mostly work on, let's say, the quantitative research part of it. Then a couple of others are also working, or we're currently working on production using our intraday and our energy models.

Jeff Malec 34:56

Okay, and but this is all pro-bono, like you're doing it For fun for education as a resume, like, what's the end goal?

Lily Francus 35:04

No, I mean, we're hoping I mean, we had a bot trading our intraday model, which got like 54% return last month, but not as good so far this month, just these markets been weird. So, we're hoping to productionize everything we're legitimately incorporated.

Jeff Malec 35:24

Got it. And then well that will you cease your PhD? Are you still got to get that?

Lily Francus 35:30

My job is to continue my PhD. I mean, I'm really hoping to actually like explore analogous phenomenon invalid, because these terms that say, hey, in five years is a long...

Jeff Malec 35:46

Maybe there's little market makers in our body that are like gamma hedging, or, you know, the diseases and stuff. And we have to, can figure that out. I like it. And so is this, that's what Salient Capital is?

Lily Francus 36:02

Yeah so Salient right now is kind of this umbrella term that, you know, a lot of these projects are working with some others on, you know, using social data. This interesting feature of market shocks, I've talked a bit about him on Twitter with basically like, an analogous version of like, you know, the normal cap m model to understand how people are reading about influencers, you know, trying to draw audiences on social media. So, hoping maybe to be a good thing for cryptocurrency.

Jeff Malec 36:40

So, help social media people get more info, identify influencers, or there's the financial aspect of like how of trade?

Lily Francus 36:50

Yeah, so there's a financial aspect on this. So my hunch is that, you know, a lot of cases, you see these changes and activity on Twitter, for example, that tend to be predictive of market moves.

Jeff Malec 37:06

There's been a few of those that have tried and failed. So, I wish you the best of success on that. I was gonna say so to me, and you've got these a few headwinds for yourself, which I'm just curious how you view those. So, one, being you're a millennial, you're young, like, so are you getting any pushback from people you talk to him, like, you've only done this a few months, you don't know what you're talking about? Call me back, when you've been at it for three years, or when you've worked at Goldman or something like that.

Lily Francus 37:36

There's really I would say, two groups of people that I've encountered one you know really supportive people on Twitter, primarily, also, through my writing, using my blog got a lot of traction, especially during the Gamestop debacle. I would say the other group, you know, might think I'm overstepping my boundaries. And I probably am to some degree with a lot of my research and what I talk about. I definitely do not think I know everything. I mean, there's so a lot a lot that I am still learning and I'm trying to, you know, fine tune my models. But I'm also just really passionate about research and was passionate about talking to people. I guess, like, significantly passionate about this as others. So, either, you know, seven-footer, I'm often wrong. But if you're not wrong, you're not trying like, yeah

Jeff Malec 38:38

And I think, you know, I think it is a generational thing of the, your willingness to just put it out there even if you're wrong, right. Like, I see that with some other younger people, and they just ask questions on Twitter. I'm like, why would you ask that everyone knows now that you don't know that, but it's just this kind of feeling of like, "No, I want to know the answer. I don't care if they know now that I didn't know that."

Lily Francus 38:58

Yeah, I mean, I'm kind of, I actually talk on Twitter, a little bit about how Twitter and YouTube some pedagogical tool because or I think someone corrected me there's an adult version pedagogic. I don't remember what it's called. But essentially, you get, especially if you have a good audience, and you ask

questions, give a pretty strong feedback loop. So, one of the things I did early on was asked a lot of questions, I still do pretty frequently, but maybe not to the same degree because I know more now than I did when I started. But you get answers quickly, you get to talk to people that you never would talk to normally. And if you say something, and you're wrong, someone will correct you.

Jeff Malec 39:47

Immediately. You even when you're right, someone will correct you. And then my second one would be being a female in a male driven industry, unfortunately still, so how do you feel about that? No worries, attack it?

Lily Francus 40:05

I mean, I think for the most part, I've definitely encountered some people who think I'm disingenuous or people who think that I'm doing this for attention or people think that I may need credit when talking about more, because I'm young, or fairly new, or a female. But at the end of the day, my hope was produce results because it's awesome to be popular online. It doesn't pay any bills. And, you know, what I'm trying to do is get people to talk to, learn more, and work my model.

Jeff Malec

Work my models, I love it.

Jeff Malec 41:04

So you mentioned the liquidity, I saw that in your last newsletters. It seems more and more people are kind of complaining about and talking about the lack of liquidity in the s&p and E-mini futures. So what are you noticing they're kind of paraphrase what you put in the newsletter, if you would?

Lily Francus 41:23

So the interesting thing was, It was pretty obvious when we saw those massive tear downs and price that let's say we fell 1% and we 15 minutes, I guess you could argue and I'm basically we're kind of seeing that, like, for instance, today, we saw that the price went up pretty dramatically towards the end of the day. So this tends to be a more unstable state, you talked about the decrease in liquidity, the widening of bid ask spreads on E-mini futures, especially as you go up in size. I wouldn't say, you know, we're in the worst scenario that I've seen personally, in terms of liquidity. One of the, you know, Sterling indicators, I guess in this case for diminished liquidity is the NOPE, because when we're in this, you know, fairly illiquid state, it tends to move more dramatically based on pretty small price moves. So,

we're kind of seeing that again, I wouldn't tell everybody to rush into shorts yet. But, it's something that concerns a lot of people because we've seen this massive march higher, literally, what like 10% we're up since I would say like late March. And there's just no volume, people are just not trading. A lot of it is being driven primarily by this hedging of options.

Jeff Malec 43:04

And speak to it and you were saying in the paper, like you'll often see on more ..if it's illiquid usually means more volatile. But we're seeing illiquid equals less volatile. How do you square that? Or we just haven't seen the volatility yet.

Lily Francus 43:22

I go, I wouldn't say for instance, volume is a good proxy of liquidity in general. An example is that if you actually look at heavy volume days, on the s&p, those tend to be more volatile. So you kind of have this paradox where if you have like a very thinly traded ticker, let's say, I don't know, trades, 10,000 shares per day. Chances are the price is gonna be pretty volatile. But, you know, on a heavily traded ticker, like Apple or like SPY, for instance, in general, days when low volume can be very, you know, calm So, I think that a lot of the diminishing liquidities are pretty well under the surface. You know, we did see, like I said an early for these tear downs of price, because the order book likely are actually checked by the order book was very thin. I mean, we saw a dramatic example of a very thin order book like GameStop when it was rallying, but the second hire went to women literally 30 minutes fell from 340 to like, \$190. So I'll be more concerned when I see that indicator for the general trend toward illiquidity if money much more gradual process and it's really difficult to say that, like it's gotten worse, for instance, in the last two weeks.

Jeff Malec 44:58

Yeah. Yeah, and our algo execution group keeps saying, well, you got to be careful that because even the order book doesn't necessarily mean liquidity, right? Because they're groups hiding their size and, and whatnot. So, I keep hounding them. I'm going to tell them and listen this and keep hounding them to come up with a metric; their own NOPE so we can see the true liquidity based on several measures, instead of just, most people are using the order book.

Lily Francus 45:27

I mean, this is an interesting thing. A lot of people concern NOPE as its either option metrics, the more true measure the actual workbook and the work itself. Because you know, when you're trying to reconstruct it, especially in real time, it's very difficult, except, you know, looking at, let's say, how much you actually try to really determine, you know, what is the true liquidity under the surface?

Jeff Malec 45:54

Right, right. And you see that in futures, especially right, if a market limit down, the options are still trading. So that's the ultimate definition of liquidity, right? Like I can't, literally can't transact in the futures, but I can go create a synthetic, long or short in the options.

Jeff Malec 46:16

And I forgot to ask back at Salient Capital. I feel like I'm saying an incredibly salient, salient or salient with a T?

Lily Francus 46:30

It's Salience. But I mean, it actually comes from these posts that I wrote in January, called turning salience, which kind of talks about the role of the Internet, and basically, these hype bubbles, and why it's much different than let's say, I don't know what we'll compare it to, let's say, the chat groups. And when I, and I'm just like, there's a completely different level of penetrance here.

Jeff Malec 46:53

And who is it? David Nadig, I don't know how to say his name, who had a good post on like, to your point, this is way different. Because GameStop, for example, you're getting, the more people that click on and look at GameStop, the more the social networks are going to serve up that content. So, it's like a self-fulfilling, right? It's not just 10 people are talking about on a chat room. It's like it's a cycle where the more people that click on it, the more it's going to get served up, which leads to more people clicking on it. And you kind of is that the premise, you were going with something along those lines?

Lily Francus 47:27

Yeah. At this point, it's more that you see these influences devalue and it keeps going. They have massive impacts on the market, you know, maybe for many years and get away with not paying attention to social media on the market, I think if we did not have a significant influence, Robin in traffic. But we saw just as last year, so many different social media driven squeezes. That you know, I mean, famously, Melvin Capital reported, like a 50% loss, because in Q1 in January, all trade outs were completely destroyed.

Jeff Malec 48:10

Yeah. Which that's kind of the perfect example of like new school versus old school, right. And so I keep forgetting my question on Salience. So that's going to be managing money, you're going to be a, like, a hedge fund or investment advisor, what's the goal, then?

Lily Francus 48:30

That's kind of TBD. But I can't really talk publicly about that.

Jeff Malec 48:35

Okay. I like it. Come when you decide, let me know. And but it's not currently managing any people's money, it's just the signals currently, right.

Lily Francus 48:49

Yeah, let's see. We have to research companies right now. Just signals

Jeff Malec 48:51

Got it.

Jeff Malec 49:01

So what's next for Saliency after the NOPE after all, this what you what else do you have on the you mentioned the crypto. Do you want to dive into that a little bit?

Lily Francus 49:08

Yeah, it's a really interesting market. I mean, one of the things that's draws me into a lot is just there's not much aspiration at least publicly, on papers about the market microstructure of crypto. So, I recently had a question on Twitter. I was like, how do you even hedge a Bitcoin option? And surprisingly, it's just not very well known. I mean, theoretically, it's done pretty similar to let's say, you know, we know optional equities. But nobody really has a good understanding, at least publicly about the behavior. There's parties in the crypto, I guess marketplace. And there's a lot of persistent arbitrage opportunities, which kind of are related to the fact that this market is still pretty underdeveloped. And you know, there a lot of, I would say, there's a lot of authors out there. I mean, there's a lot of people that are pretty mortified of what's going on with the bubble. But it seems like a pointer into the future.

Jeff Malec 50:15

So wait, what was the bubble? What's the bubble with? With Bitcoin?

Lily Francus 50:19

Yeah, I mean, Bitcoin has gone up, what? 12 or 1100% since March 2020, which probably is unsustainable. But at the same time, you know, there's a lot of money sitting at this. Which, similarly, I know a lot of people have made a lot of money.

Jeff Malec 50:39

Yeah. And we talk to some groups that do actually do options on that, right. And the implied is like 80% 800%, some insane numbers, like, how do you even model normal options stuff when the vol is that?

Lily Francus 50:55

Exactly. I mean, I assume that cinderblock shells break down? How do you see those assets that could rock it up?

Jeff Malec 51:10

And this just popped in my head to ask you, like, have you entertained at all by going to work for a prop firm. So, like, in Chicago, there's tons of groups, I'm sure would hire you and say, Hey, here's right, here's some money work your model, you keep whatever half what you make.

Lily Francus 51:28

I started out just wanting to talk about stuff on Twitter, like, you know, any material aspiration what I was doing, or what I talked about. I'd definitely consider it. I mean, I'm still, you know, trying to I guess weigh my options, and also just develop more. Because one of the things I like most about the market is just, it's literally the greatest game. I mean, at the end of the day, it is this continuous game, where everybody, you know, it's competitive field, advocates, chamber advocate, you know, if you do not adopt continuously, you're just, eventually you're just being afraid. So, with that, you know, I've really just been focusing lately on making sure that the models I'm working on not only are pretty sound, but also start actually make money.

Jeff Malec 52:28

Right. You, you belong back in the 80s. In Chicago, because there was people from nowhere, just ambitious, they'd end up on the trading floor. Right, and whether they came up with a model or whether they just had tons of bravery and some stupidity, but right, they can come from nowhere and make a lot of money. Versus kind of, say, Chicago versus New York, like New York to get in. You had to

have more of a pedigree and have gone to the right schools and get the right internships to eventually make it to the trading rooms.

Lily Francus 53:00

Yeah, I guess it goes back to your quote of my blog post about you know, I would say fintwit where anyone market sell the game in a day. It's very product. If you're not good at what you're doing, you're just not going to last in the industry. So, I need to make sure, just like everybody else, that I'm on top of my game.

Jeff Malec 53:29

Cool we're gonna go to favorite so my first favorite the favorite San Diego restaurant.

Lily Francus 53:39

It's kind of a shame. You have actually lived here now six months, and I have not gone to a restaurant. Yeah, I've gotten take out. But in the Bay area, probably Paquets Pizzeria. But this pizzeria if you imagine really good.

Jeff Malec 54:21

Favorite gamma-type Twitter follow?

Lily Francus 54:31

That is a good question. I mean, there's some awesome people on Twitter, you know, some Cem Karsan, Kris Sidial all probably my favorite. Of Course Ben eifert doesn't really talk about the market too much. Probably my favorite overall just because he's so nice as Kris Abdelmessih.

Jeff Malec 54:56

He's great. We're trying to get him on the pod eventually. But um he craves his privacy as well. No, those are all great ones. Favorite thing you were gonna call NOPE before you called it NOPE. Did he have some other choices?

Lily Francus 55:17

So, the first version we called SKEW because everything you know everything's skewed. And then we went for the option personal factor OPE, and then someone who was just chatting was talking about it why don't you just call it the net options pricing effect (NOPE) that's what I love it. Let's do it.

Jeff Malec 55:44

You think that's part of the success of it I feel like it's so it is catchy and it's like, Alright, if it was called something else 8264 model I might have skipped over the blog post, but NOPE, made me go to the next line.

Lily Francus 56:01

So it's been a double edged sword because I've had a lot of detractors working on it. We're just jokes like, oh, it doesn't work. NOPE. And I guess, you know, I'm very comedy driven in person. I'm, you know, I post a lot of jokes on Twitter, but I think it's more because I think it's funny, but actually, it's funny. Yeah. No, that's why whatever the model, I was referring to funny name. You know, it isn't necessarily because I'm trying to like get attention. It's more just like, of course, it's not these areas here.

Jeff Malec 56:44

We were just looking at it or some group in Brazil, I think that they call all their model their training models, like little robots like George and Adam. And all these little, they have little images, cartoon images for all of them. So I'm going to bury my section now. And like my 15 bad dad jokes about NOPE. I don't want to offend you. And favorite biotech. Something. I'll take every biotech company.

Lily Francus 57:20

I I'm trying to think, what do I mean? I've been getting some about Oxford data forums are people that Pacific bias and racism Oxford and for those of us that have trickle down talking to him, so even as like a first year student, for sequencing, like we know, a lot metaphor we know a lot. And it's like, I don't think that is a good sign for market penetration. It reaches the point where you have people actually learning how to use it. Yeah. So I would say last night, I just think it was such a cutting edge skill passes. But in general, my experiences were toxic in school, they tend to keep doing it for a while.

Jeff Malec 58:09

And is the biome from maddix, like CRISPR technology and that kind of thing. Okay, yeah, I was just, I was talking with the private equity manager who was like, I, he's like, I think in 30 years, like students are going to be, instead of learning how to code, they're like learning, right? They're going into Bioinformatics, like much more, much more than today, just good learning how to code and do what,

like, let's learn how to code the body and biological stuff versus the computerized code is going to basically start to take care of itself.

Lily Francus 58:40

I really, that's one of the worst things of like working, and research and stuff is learning about this stuff is you kind of get a lot of your aspiration, gosh, because once you realize what we're actually research, this person Sims or 3d printing organs or any kind of science fiction authors. You're not like, okay, it's been verified.

Lily Francus 59:08

It's like, way out.

Lily Francus 59:12

I mean, I wouldn't say like, what's their lifetimes way? I would not expect you're going to get to keep me printed for your next step.

Jeff Malec 59:22

Alright, what do we have first autonomous trucking in the United States or 3d printed kidney.

Lily Francus 59:29

I remember to talk about this because right now there's another AV company going for I feel like a lot of them are going to fade away because as lovely as like autonomous driving sounds. I'm not for instance, in that industry, I kind of understand it just from you know, surface level, but it really does not seem there.

Jeff Malec 59:53

Oh, it's coming. I'm a big believer there. That will happen

Lily Francus 59:58

in the next 10 years or so, but I'm Notice you don't see it for like 25 to 30 minutes,

Jeff Malec 1:00:03

run into one track will kill like one little girl and it'll get put on hold for 15 years. I'm not that we want that to happen. And then you can break my heart now because I have a feeling you're not a Star Wars fan, but favorite Star Wars character, which we ask all our guests.

Lily Francus 1:00:21

It's been a long time. I guess maybe you're

Jeff Malec 1:00:30

into Princess Leia. All right. Do you ever do like do the do for Halloween or anything?

Lily Francus 1:00:37

So that was actually an epic movie. Like, I think we went for children for the first six or seven years. But should always seek when our students just literally like search edition, the cheater case, it was like a dime chocolate or something. So just like once you get that feedback, and you feel like why are we doing this working?

Jeff Malec 1:01:09

Well, thanks. This has been fun. Tell everyone where they can find you on all the your links are all too confusing for me. It's like NOPE, that Lily dot medium that whatever, but give you have any, we'll put it in the show NOPEs as well. But give us the audio version of where they can find all your good stuff.

Lily Francus 1:01:27

Sure. So I use the best like most of us know, underscore, underscore live here at twitter. Then we'll also look at your phone, which is when reading the forecast was determined for content there. And finally, like no turnoff mom is like a official age or if you don't like the new model, if you want to check it out.

Jeff Malec 1:01:56

Feel free to look. Alright, we'll do thanks so much. We'll talk to you soon. Best of luck with everything. You've got a bright future ahead.

Lily Francus 1:02:20

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