Transcript of Conversation with Sophia Johnson (Program for Economic Research, Columbia University), Adam Rej (Capital Fund Management), and David Thesmer (MIT Sloan)

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Sophia Johnson:
So why do systematic systemic asset managers hire economists? For more on this we're delighted to welcome Adam Rej of Capital Fund Management and David Thesmer the Franco Modigliani Professor of Financial Economics at the MIT Sloan School of Management and also a Research Associate at the National Bureau of Economic Research.

Our first speaker, Adam Rej, is Executive Direction at Capital Fund Management, a global asset management company based in Paris with offices in New York City, London, Tokyo, and Sydney. CFM manages a large set of quantitative strategies which trade liquid instruments across global markets, including futures, equities, bonds options, foreign exchange, and various derivatives. Dr. Rej joined CFM in 2014 and focuses on systematic systemic global macro research. He completed his Ph.D. at the Max Planck Institute for Gravitational Physics in Potsdam and held a postdoctoral position at Imperial College London and also at the Institute for Advanced Study in Princeton. Adam, thank you so much for being with us.

One of the biggest questions for wealthy investors and fund managers attending the World Economic Forum at Davos this year was: Where do we put our money? Now, we invite you here today to talk not so much about how to invest, though that information may be helpful for some, but rather how to explore how economists can help investors to answer this question. Can we begin for a while talking a little bit about the skills economists apply to systematic asset managers, the types of questions economists are currently working on, and the areas of research that have emerged in relation to this problem?

Adam Rej:
Sure, so let me start sharing…. Can you now see my slides?

Lauren Close:
Yes, it's perfect.

Adam:
Great! Well, hello everyone. David and I are very happy to be here with you today and to share some insights into why do systematic asset managers need Ph.D. economists? As you already know, David is an economist and I am an investment strategist working for CFM – Capital Fund Management, and [I am] a quantitative asset manager and a hedge fund. So I prepared a couple of slides to help to kick off the Q&A session. So, let's get started. So, asset managers engage in trading and investing, and the distinction between the two is somewhat blurry. I think one thing that people would agree upon is that trading is faster and investing happens at shorter time scales among asset managers. There is a subclass of- there's a subclass subgroup of hedge funds that typically engage more in trading than investing. Because of regulations, hedge funds have more appetite for risk and they're more keen to leverage up to put on short positions to enter a more exotic derivative contracts or to expose themselves to risky market directions. Now, there are different investment

approaches and, the classic one is the discretionary one where the, the funds- the portfolio's positioning follows the portfolio manager's perceived value and opportunity. And it is of course informed by in-depth market research. On the other side, there is the quantitative approach which relies on number and data crunching, so you essentially go through data sets and you look for patterns in data with the expectations- with the hope that these patterns will repeat themselves in the future. Then there is a continental approach which tries to blend the two. Now, trading and investing may happen at different times. It happens at different time scales and different time scales require different skill sets, so on one side of the spectrum we have high frequency traders where the holding periods range anywhere from milliseconds to hours and, this type of short-term trading requires ultra-fast execution advantage. People study the order book dynamics, etc., so this short-term trading- this activity attracts typically attracts people with more tactical skills. Then there is the midterm training and investing daily to monthly holding periods and this is where I would say the most of quant and non-quant hedge funds belong to. There's a plethora of strategies that people follow that fall into this- within that holding period bucket ranging from arbitrary strategies, behavioral effects, corporate actions, global macro, and then finally there is the long-term investing withholding periods from months to years. This is really more investing than trading, and again, there's a range of strategies that that people employ at those time scales, like value investing or harvesting risk premiums or slow trend following.

So where do economists fit in? I think it should be clear that it's the mid-term to long-term categories that, economists are better suited to - oh sorry, so what value do economists add? So, Ph.D. economists have in-depth knowledge of the of the most recent research and research areas but also [are] aware of the - how the field evolved and the history of the, how the history of the ideas in the field. And they also stay abreast of the ideas floated in academia and related fields of research and that's very precious. Economists are very- they have very good data analytics skills, they are experienced in handling new data sets and they are well aware of pitfalls and caveats that may come with those data sets, like look ahead bias or point of time. And they're very well versed in statistics and statistical modeling. And, in particular, they have experience in modeling economic variables, so they're aware how people typically think about different economic variables and about modeling those. The investment approach determines the job profile, so at quant shops, economists, they typically disseminate the newest economic, the newest research in economics and finance, and they help the investment team to turn that into algorithms or what to monetize, the newest research. They help the investment team to interpret the practice. A strategy may overall work well, but it might be periods when it doesn't work so well. So the economist can help the team to understand to employ their economic knowledge to help to understand why this is the case and they also help the team to avoid overfitting by using their intuition or proposing robustness stats. And then for discretionary asset managers, the job profit is slightly different, so economists typically stay abreast of the newest macro news and macro releases and forecasts. They might develop models of their own to forecast different economic variables. They articulate the logic and discuss the logic behind different investment strategies with portfolio managers, but also with clients. There's some client-facing roles too.

So I hope I've already driven the message home that economists- they can they contribute to, they can contribute to asset management quite a lot and on many different levels. However, obviously, the role -the investment world is different than academia, so some questions that are of academic

interest might be of little practical relevance for practitioners and sometimes there's really no time to dig deeply, and decisions need to be taken fast. It's a very useful skill to have to be able to explain complex phenomena with, simple toy models or scenarios and assigning probabilities to those scenarios etc. Now, any pattern in the market is a net effect of multiple forces and as an economist, you might easily identify some of those, and you might be aware of some of those, but sometimes, the markets surprise people and might be forced at work that you that you didn't expect to be there. So, it's important to keep an open mind and be on the lookout for the unknown. And then the behavioral patterns may be confusing when I - what I mean by behavioral patterns, I mean how market participants behave- so it's okay to have a prior, it's okay to think the market, will the market do this, the market should do this, but you need to be ready to let go of this prior if the market proves you wrong. So, flexibility and pragmatism is critical. I think I'll stop here.

Sophia:
Thanks so much, Adam. That was very insightful. Our second speaker is David Thesmer, the Franco Modigliani Professor of Financial Economics at the MIT Sloan School of Management and Research Associate at NBER. Professor Thesmer's research has been published widely in leading academic journals and focuses on behavioral economics, corporate finance, and asset management. He is currently a senior research advisor at Capital Fund Management. Professor Thesmer, thank you so much for being with us today. Now in the wake of the COVID-19 pandemic, the financial and legal system will need a great deal of help in terms of moving beyond the financial distress in the business sector. Some firms, as you wrote in your recent paper sizing up corporate restructuring in the COVID crisis, will be able to survive while others will face bankruptcy and thus need to be liquidated or reorganized. I wonder what the role of economists will likely be. The surviving firms that will need to be downsized or acquired- how can we tell objectively whether those managers or asset managers are doing a good job and what will be the role of economists in this space?

David Thesmer:
It's a broader question. So essentially, there is a- so, we have worked together on the slides that Adam presented and I think we share, kind of, the same views on this. I mean, it's kind of Adam presented, but it was really a co-production. I don't know that I'm gonna- I mean, I'm very happy to discuss, everything that's, kind of, being an economist and an asset manager and a quantitative asset manager because this is what I do with Adam and his team. I mean, I'm happy to discuss restructuring of U.S. corporations and European corporations, for that matter, but that's - it looks a little bit different from, from the core topic of this discussion, so maybe if students. What I suggest is this - so maybe if students are asking questions about- the opportunities for economics and restructuring, which I don't see that there are many, I think, but perhaps in asset management somehow. But if students are asking questions, maybe I can jump in and, and answer some of those questions. But otherwise, I think I would prefer to leave the floor to students into questions.

Sophia:
Sure, that sounds good. So we'll certainly open the floor up to questions. Students, you can certainly unmute yourselves or you can type your question in the chat box.

David:
Yeah, I can answer questions on the chat box too. Adam and I. They can be to Adam, to be honest, I mean, he's the guy in charge.

Sophia:
So I don't hear any questions… Sorry, Adam?

Adam:
Yeah, I wanted to say that, while we're waiting for the questions to come in, we want to say that we collaborate with David a lot on a wide range of projects. And, it's so that- just to give you a sense of the, day-to-day work- so, like recently, well, I cannot share obviously the details because of confidentiality but, I have come up with a strategy that I found a bit unorthodox and, we spent a lot of time discussing it with David. approaching from different angles and David's help was really useful so that I could, validate what I, what I was working on. Which, as I said, was pretty much unorthodox that it kind of makes sense and so, in general, I feel that economists play a very useful role in asset management and, yeah, I mean it's a great career opportunity.

Sophia:
Sure.

David:
Yeah, but please do ask questions, students, because this is why – I mean, this is supposed to be like, so it can be… Ah, very good, I see a question. Ok, what specific skills are useful that economists use in asset management? Is there a more of a focus on programming on the financial intuition?

So, I would say the ability to do both as an economist- so it's kind of, economists are able to understand and manipulate data and that's certainly a skill that would be needed in quantitative asset management at least. So, the ability, I mean the practice of manipulating data, sometimes new data sets and understanding, outliers being able to run simple statistical analysis- being able to attack the data set by asking, like, specific questions etc., all these are our qualities that physicists like Adam, actually, have, because they know how to do this with a lot of common sense. Economists also do, what they're bringing to the table is their knowledge of the economics literature, also their ability to basically ask questions that make sense from a viewpoint of economics. So, it requires a training that, economics Ph.D. typically have. So, it's both the programming and the financial intuition it's really - the ability of having both, at the same time in the same brain, in a sense.

So, yes, it's both really- it's really important to have both. I think what we do also, so it depends on the firm, so what we do is - Adam and also with the force in Paris, he's also like more, so not all not all firms are like this, but CFM is certainly a firm, like, this where there is a there is some value that is put on actual research and so an actual, not research, not R&D, but really like academic, more academic research, where we ask kind of broader questions like: is there such a thing as factor momentum or are analysts' forecasts overreacting or underreacting, or things like this that. Are more, that have clear spillovers onto the production of actual, trading strategies but at the same time that are like at a broader level. It can be formulated as academic questions and producing that kind of research is part of CFM's output. In several other films, for instance, one famous one is AQR but there are others, where historically, management tends to think that it's useful to try to think in an academic way because it's going to spill over into actual strategies and so basically that's what we collaborate on with Adam. We have those values projects that we're working on from trying to think about overfitting or an analysis of stock momentum or trying to think about the interaction between macro and micro forecast, for instance, which is, I mean, we have two goals at the same time. One

goal is to produce signals and quantitative strategies and the other goal is to try to think at a higher level and produce a product that would be sold quote-unquote to the academic community and that's also a lot of a lot of our interactions.

Sophia:
Awesome, thank you. We have a couple questions from student from the data science institute about machine learning and what this will mean for asset managers and economists?

David:
Yeah, it's a good question so Adam will have things to say. So machine learning is important. It's kind of part of the standard toolkit now of young economists. I think I think if you're still doing your Ph.D., you should take a machine learning class just to know a little bit about those techniques and how to manipulate them. Then, of course, machine learning is about predicting much more than anything else and economists are typically interested in causality, etc. So, when you do economic research machine learning is useful, because in a sense it's important, I mean, it's kind of, it's sometimes useful to predict stuff in particular - to build instruments, for instance, but in general for causal analysis it's not really machine learning that you need in asset management. However, I've seen the field change over the past decade or so. I would say a decade ago, machine learning people would be frowned upon, in a sense, in asset management by saying, people would say, oh, but the world of finance is very complicated. If we just throw a bunch of variables at a problem and let the machine look for it, we're not gonna find much because there's so much noise it's already. I mean, you need a very strong economic prior for each signal. Now it seems that, in fact, machine learnings are working a little bit better. Machine learning techniques- it'll be working a little bit better predicting returns and I think that has spilled over onto financial economics, like even profits, because, I mean, there's been a bunch of recent papers on that topic. It looks like machine learning techniques are able to find non-linearity that seem to be relevant and that, as economists, we don't understand. So, then there's gonna be a back and forth so it's gonna be like the prediction work is gonna come back to trying to change our thinking about true economic mechanisms. I think everything that's related also to text analysis is important in a way that we don't fully understand but the way information is processed on financial markets, for instance, is definitely gonna be - some of those questions have to be addressed by machine learning techniques, for instance.

Adam:
On my side I'd like to add that it's in the nature of the financial data that there's a lot of noise and not much signal so one has to be careful when applying machine learning techniques because, well, it's easy to find spurious relationships in the data. But, having said that, careful application of machine learning techniques can be very useful and actually can help reveal some previously unknown relationships between economic variables. So, machine learning has become widely used on the quant side of asset management those days, but as I said, you have to exercise caution and also always try to find an intuitive explanation for what you're seeing.

Sophia:
Excellent. We do have a couple of questions coming in. The first question: aside from COVID, how will the 2020 election affect the work of asset managers / hedge funds in the coming months and years?

David:
That's a hard one to predict - how the market is going to be? There is, I don't think it will affect the job of asset managers in in any way, actually.

The election or COVID? So that's a bit of a complicated - I don't, I can't see that question…

Sophia:
Right, it came to me privately. It said aside from COVID, how will the 2020 election affect the work of asset managers and hedge funds in the coming months?

David:
I don't think it will. I don't think it will.

Sophia:
Adam?

David:
You're muted.

Adam:
Yes, I'm unmuted now. Yes, well, we're waiting for - so far the markets were, I'd say, relatively quiet and we're waiting what's going to happen next. That's all I want to say on the subject.

Sophia:
Good. The second- another question, then. Discretionary managers seem to be able to move forward looking while quant managers seem to seem more backward-looking. Can you give specific examples of where macro variables can be used by quant to position and portfolio in evolving environments like we're seeing today?

Adam:
Ok, David you go ahead.

David:
No, go ahead go ahead.

Adam:
I just want to just wanted to jump in. It is true that quants are more backward looking and while discretionary managers are more forward-looking, however, quants are in the business of forecasting. It's just that they look more backwards to make predictions. So that has advantages and disadvantages and the disadvantage is that, indeed, you might be missing something that is brewing, right? On the other hand, the advantage is that you stick to certain trading rules and you're very consistent. And sometimes, when the fundamentals say buy and you would, a discretionary manager may hesitate because of the current market condition, but your algorithm will tell you buy. This consistency may actually may be very beneficial because it takes out the human factor from decision-making. Those decisions are taken by computers and so there's there are less emotions in the game.

David?

David:
Yeah, no, that's what I wanted to say. I think what I can add is that there is although all - I mean, there is, though, a human factor in there, which is - and that's interesting - because it's an internal question that keeps coming back, which is the decision to put a machine in place, and the decision to unplug a machine is always - there's always a human even if the machine is trading. There's always a human that decides to switch it on or off or to allocate the machine more money or less money. And then there are lots of various philosophies among quant some [inadible] say: okay, I would want to unplug the machines as soon as they stop working. Some other quants are more relaxed and they say: okay, that's precisely what's great about quantitative investment. It's that you have to let the machine in place and so there's always the tension between under- and over-reacting to news that even in contact. So, what I mean is subjective judgment- human judgment is still there even if you're making a quantitative investment, right?

Adam:
So, in a sense, that's the third approach that I briefly mentioned in my slides, the quantum-end tool where you essentially use quantitative methods to, well, to back up your investment decisions. But you let yourself the liberty, the freedom, to override what the machines are telling you and use a bit of gut feeling about what the market's going to do in the in the near future.

David:
So even if you are-

Adam:
Yes, David, go ahead.

David:
Even if you're a hardcore quantitative person, you won't let your machine run with a fixed dollar volatility forever. At some point, you will - I mean, so, sure, but it's true, but contaminant has the has the subjective layer. I mean, there's a there's a – so, for instance, some stuff I'm working on these days like about predicting profits, so, it's not with CFM - so I am at liberty to talk about it, but that's if you're trying to predict profits of firms you can use lots of machine learning techniques to try to use as many variables as you can to basically print profits, but you can combine those objective variables with subjective variables which is like analyst forecasts. And basically, of course, you're improving on the analyst by using the machine and you're improving on the machine by using analysis. There's some kind of complementarity that comes from the fact that very simply analysts are biased. They can be noisy in their expectations, but at the same time they have some access to some information that the machine doesn't and so basically combining the two - that's kind of where the quantity is going combining the two. It's, kind of, where probably lots of the value added even in quantitative asset management can be, yes, but you have to do it in a disciplined way. So that's what is tricky, a little bit.

Adam:
Some investors, they really, with quantitative methods, you develop your models and you have set, fixed trading rules. And of course, that is important to know, like, to know to expect which way the market will be going. But that's not how we make investment decisions because the investment decisions are based on the back-tested investment strategies that that you have put in production

and, the clients, sometimes, they like to ask those questions: so, where do you think the market's going next, and those type of questions. They're, I guess, in a way more easily answered by the discretionary managers, which really focus on what they think the market will be doing next, rather than the quants which more, as I said, they stick with a very fixed trading rules that have been back-tested for decades, and in some cases, it's a furrow and an algorithm.

Sophia:
Thank you. The next question: Do economists at CFM have internal models that are definitely publishable in top journals like Econometrica or JPE but are too useful to be made public?

David:
That's interesting. So, I don't - that's an interesting one. So, the answer, the short answer is no. But the longer answer is sometimes. In particular, in execution, you have complicated models to basically deal with the high frequency regularities of markets and there, it's more like engineers. So it's machines that are complicated and some of them can get published in financial engineering journals or even in finance journals but what people are- folks are interested in at Econometrica or JPE would be more like - is it the case that, I mean, it's more broader economic questions that asset managers are not so much interested in. Like, is authority good in organizations or is it a good idea to pay a policeman based on the number of criminals that they arrest? So it's much broader than what people do in the industry so I don't think, I mean, I've never met any model [that] was publishable in a top econ journal, but I've met people using models that could be published in in finance journals, like more applied in a sense. But even there are not that many. I've seen, however, a lot of research applied research, such as the one that we conduct with Adam, that is published in in top finance journals. Even, I mean, Jean-Philippe Boucher and I have a paper on these two in the Journal of Finance but they're more like - they're not about what specifically CFM does on a day-to-day basis, they're more about broader principles that are of interest. It's not the same product in a sense, that's the way you have to think about it, like, when you produce research that's relevant to generate alpha and profits for investors. It's not the same product as something that is interesting for academics who are interested in broad mechanisms, stuff that they can teach in the classroom etc. It's not the same product so that's why it's a hard question to- I mean it's impossible to say yes to that question.

Adam:
So if I may jump in for a second? So I wanted to add that actually CFM is one of the few asset managers that publishes a lot of research. If I'm permitted to advertise, but you can go to www.cfm.fr and you can find a lot of academic publications there. Of course there is part of the findings, part of the research we publish but there is the more confidential part that we keep to ourselves. I mean, in the end, we are in the business of delivering returns to our investors.

Sophia:
Thank you. Second question – no, go ahead David.

David:
Yes, so it's published in in good academic outlets but the top econ outlets that Sergiy was mentioning were actually – ok, there used to be back in the 70s - it used to be that financial engineering was really part of financial… It was part of economics, so, it was Merton [inaudible] etc.,

so during those days you could publish in those top outlets, financial engineering papers. Nowadays, less so, I would say. So, that's the thing that's where - because financial engineering is not considered as part of economics anymore. Well, it used to be in the 70s for some reason, so absolutely, but still, I mean, it doesn't mean it's not interesting. It's very applied, that's all.

Adam:

Yeah, exactly. The research - we're mostly focused on the applied research.

David:
Yeah, but it's very- so, okay, so, there, I mean, there seems to be an implicit ranking, also, of what is interesting and what is not. I think, I asset management and quantitative asset management is probably a segment of the real of the professional world where people who have an intellectual brand are actually going to be the happiest because this is - I mean, people are really true intellectuals they are really, I mean, they're really in to make money for their investors, of course, but they like to spend time thinking about new problems in a systematic way etcetera. So that's kind of a - I mean it's very nice work environment to be in. I have to say each time I go to CFM's offices, which I'm not allowed to do anymore since the recent development in health, in the health world, but it's always it's always a huge boost to actually, even to creativity, but also to actually it's very nice to discuss all these new ideas that are out there and sometimes it gives rise to papers. But in a way, that is a bit independent from actually producing CFM-relevant research.

Sophia:
This is helpful, this is really good. It's really good to sort of have your undivided attention for our students, so we're really happy with you expanding upon these points. We have a question from Tess Shih: Discretionary managers seem to be able to be more forward-looking – okay, so I think that already have answered this.

David:
Yes, we have.

Sophia:
Aditi has another question: Do you have any recommendations on literature or books for those who are early in their career and considering a future in asset management? I think this is really about how do you figure out how to turn poorly-performing businesses into star companies. Maybe something that can guide them in terms of just some general reading.

Adam:
David is a university professor so I let him answer and take this one.

David:
Yeah can you repeat that, Sophia? Sorry, I was…

Sophia:
That's okay. Do you have any recommendations on literature or books for those who are early in their career and considering this pathway of working in quantitative asset management?

David:
Of working in quantitative asset management?

Sophia:
Correct.

David:
Yeah, so that's so it's a good question. So I think I would read, in fact, just to have a sense of how - what it is to work there. I would read the popular books, I think, that are like good reporting of how it works in there. Michael Lewis, for instance, so there are a few Michael Lewis books that are on competitive investing. I think I would read also another book that's on the failure of ITCM – "When Genius Failed", I think that's called. That's the story of the ITCM crowd and how it fell, but he was a quantitative and early quantitative investor, so that's what I would read just to get a feel of how it is - what it is to be like on a day-to-day basis working for these companies.

Then afterwards, in terms of articles and papers, I would read what CFM produces what HUF produces. Also, AQR is producing a lot of papers also that are like easy reads for academics because they're kind of written by academics, very often. So, CFM is more, like it's more physicists turned into finance. AQR is more like financial economists like myself, just to have a feel of the kind of questions they're asking themselves. You can read also - what I like also is the blog of Cliff Asness. So Cliff Asness used to have a blog where he's written like a lot about his - so his company has not been doing that well over the past a few years or past year, let's say, and he's been a very candid way he's asking himself like a lot of questions about what it is to be a quant, where should I unplug these one of the unplugging questions I was talking about. Emmanuel Derman also who is a professor at Columbia, I think, a financial engineering professor at Columbia, and a historic quant also has a book which I've never read which is called "My Life as a Quant" that I think would provide you with a with a good view of what it is to be to be there. So yeah, in terms of current research I think AQR and CFM will give you a good a good sense of what kind of research people and what kind of topics people are thinking about. And in a fairly structured way kind of, in a fairly deep way, and the popular books to get a feel of how it works what it is to be there on a day-to-day basis.

Sophia:
Thank you. Fernando has a question: "I would like to know if at the end of the day CFM strategies are totally based on the analysis of the financial data by the machines, or is this, or strategies combined with economic views?

David:
Strategies combined with economic views, but I mean, you can have a strategy that works in the past and you can say: oh, it works in the past, but it will not work in the future for this reason. I mean, there's the decision to put, as they said, the strategy in production. And it's, of course, based on data, etc. It has to make sense, I think, so where we're losing sight a little bit of that - I mean, where managers can lose sight a little bit of that is when they put in place machine learning strategies because then they don't quite know exactly what works and what doesn't. And that's popular in the in the profession these days. But in general, there's always an economic reason for which - because

Adam:
The question is more whether we do any discretionary trading and the short answer is no. We, all our strategies are quantitative and based on quantitative analysis, employing all the possible tools of

econometrics etc., but they are all back tested. Very requisite for it for a strategy to go in production and there's no discretion [inaudible].

David:
There's no [inaudible] decision to bet against the corporate bond market for several billions of dollars so that that is not done at CFM, at least not to my knowledge! Maybe?

Adam:
No.

Sophia:
Tess Shih has another question: "If economic macro variables come out less frequently (quarterly versus daily) how can quant hedge funds react quickly and capture rotations like the vaccine trade of this week?"

David:
There are variables that you get that are at higher frequency. I think where there is a lot of [inaudible], probably more than what is currently done, at CFM or elsewhere is everything that's related to text analysis, because there you have like a continuous flow of text on markets and always people are chatting, and lots of chatter, that's super high frequency like it's at the second, really. So there is a lot of [inaudible] and then there are lots of other indicators that come in that could be that high frequency, yes of course. Yes, Adam.

Adam:
No, I just wanted to add that there are - what we see is that markets they exhibit patterns at different time scales. So, you might want to have strategies which are relatively slow - would look at the fundamentals and then they won't be able to capture, like very short-term developments in the market. But, you cover this side this part by having strategies that are simply faster and that look at variables that had - that come out with a much higher frequency. And typically, it makes sense to kind of overlay strategies of different frequency because it gives you more diversification and you're capturing, you're riding the short-term trend but you also look at the fundamentals at longer time scales and that's very useful.

Sophia:
Good. We have another question – sorry, Leonardo, go ahead.

Leonardo:
Hi, yes. So I was just wondering like why do we see a lot of asset managers with an MBA background rather than economists or more people who have the technical ability to get in that area, right? So I know, Professor, that's more – he said – he mentioned Bill Asness, right? We see, like, a lot of asset managers who just have an MBA background, right?

David:
I mean, you have the two populations really, so that's what makes things interesting. You have like the investor the - so that's what Adam said at the very beginning of the presentation, the quants are a segment of the investing world but it's not the only one. And then you have like more qualitative managers that base their investment decisions on intuitions. They're trying to capture, in a sense, the non-stationarities in the world so - a little bit the vaccine rotation that happened – the test that was

mentioned. I mean qualitative managers try to anticipate on those trends etcetera for which it's hard to back test in a sense. So in the ecosystem of finance, basically there's room for everybody, I think that's kind of the idea. I mean, no one has a definitive edge on over the other simply because constraints have to be quants have to have some history to back test their strategy well while qualitative managers are able to anticipate trends but they have no - I mean they're much less disciplined. So everybody will co-exist, yes.

Adam:
I guess if I can chip in - asset managers and hedge funds, they like to hire people from different backgrounds like from different walks of life because they - different people bring different ways of thinking to the table. This is typically very useful when you're having discussions about an investment strategy, because you have different points of view.

Leonardo:
Thank you.

Sophia:
Thank you, thank you, Leonardo, for your question. We have another question from Kosra: "What do you think is the likelihood of researchers actually being able to find some usable theory of markets are new" - I hear someone laughing, I think it's David – "are new developments in asset management more likely to come from more advanced methods of finding patterns in data by statistics than a new theory?"

David:
I mean, the theory of market is - so that's exactly what Adam was saying at the end when he was discussing questions that are interesting for managers or questions that are interesting for me. For economics, they are not always the same. So a theory of market, I mean, I don't think managers try to have a theory of market it's always useful to have a framework, but it's kind of a theory of market is a bit too -

Adam:
I mean, I would love to have a unified theory for markets but -

David:
Oh, everybody would, but as intellectuals not as a practitioner

Adam:
I have to – I've learned to live without it.

David:
Yeah, but it's like a theory for politics or - it's hard to find theories in general, in particular in social science. It's true that some of the developments that we've seen at the beginning of the week, we were discussing it with Adam. There's a bit of a challenge to the efficient market theory, whenever United Airlines goes up by 30 percent in a single day because we discover a vaccine that we would have discovered anyway. How is it compatible with market efficiency? It's not quite clear so. You're always getting those questions that we're wondering about, but they are not really directly related to our to do to the day-to-day business of an asset manager.

Then there's the second part of the question which is a bit different. Which is on new developments in asset managers more likely to come from advanced methods in finding patterns - of finding patterns in data via statistics than a new theory. So it's very empirical, quant investment. So in a sense you have a broader theory in mind. So you think, I don't know, that by watching the number of cars on the parking lot you can predict the consumption, parking lots of supermarkets you can create consumptions better than the rest of the market and therefore predict, let's say, Amazon stock price, let's say something like that. That's an economic theory, but it's not a formal model of the economy. It's kind of a broad economic mechanism and then you're looking at whether the signal actually does those predict returns. So in a sense, the answer is combining data, finding patterns, but those patterns have to be have to be motivated, I think, at least when you're talking about slow-moving trades like the part of trades that Adam was mentioning, where economists would be more useful. Then you can apply more blind machine learning techniques to try to figure out the very high frequency patterns of the data but even there there's economics saying it's the dynamics of the other books, it's orders that are put there, it will generate patterns in prices etc., so even there, there's a little bit of economics. But it's never like a hardcore theory with lots of [inaudible].

Adam:
And if I may jump in, sorry again. Then, there is actually, I would say that, the likelihood I don't know, but the statistics definitely, the statistical approach is very useful and there's even a break - a strand of literature that tries – that became quite fashionable over the past decades, to disprove the efficient market hypothesis by actually proposing strategies that that they beat the market over long term, the so-called academic equity factors, for example. So yes ,the statistics can help to attack certain beliefs and certain theories, economic theories, and may help drive the new developments.

David:
It's a good point actually, that. It's what economists do, in a sense, they have theories they reject them with data etc., and so those though this data work is actually turned out to be useful in asset management, yes. Exactly, it's a bit of a French agenda, in a sense.

Adam:
Exactly, and it's a cool way of approaching things because - one hand you want to - your research suggests that maybe, say, efficient market hypothesis is invalid. But you, you're proposing your research through developing investment strategies that you show that beats the market and it's capitalizing on a certain, say, behavioral pattern that goes against the efficient market hypothesis.

David:
So, in fact, it's useful, to look for a grand theory of markets because by rejecting it you find stuff that turns out to be practically useful.

Adam:
So in a way, that the quant finance kind of transpired to say economics as a way of pushing – floating, at least, new ideas.

Sophia:
I can't believe we're almost out of time. We still have three questions to go. The first question is from Yotam: "Is there place for financial economists without a Ph.D. in quant funds? If so, how are they able to support the ongoing effort of the fund?"

David:
I think they have a bit of a less of a strong training in asking- So what Ph.D. economists have compared to non-Ph.D. economists is that they have spent a few years trying to think by themselves about a lot of questions. Like, they've written a very big master thesis in a sense and so this habit of asking yourself questions gives you an edge when you're working with data and trying to think about new strategies in a given space etc.. It gives you a little bit more autonomy in research but that's not the only place where economists can be useful.

So economists can assist researchers, so they're having a Ph.D. is probably better it's I think even like if you want to be in research for a quant fund if you don't have a Ph.D., I think it's almost impossible. But economists can also help with clients, because clients are asking all the time economy questions. Oh, suddenly your machine doesn't work, so they can ask a simple question right? So to be like man it's going to be easy, oh you made a bet it didn't work out okay so there's no question. Okay so we withdraw funds and that's it. For a quant, it's always, you know those types of economic questions are always coming up. Or you are betting on that class of strategies and it turned out not to work or it turned out to work. Like dramatically, well why is that? And that's where economists can help a lot formulate a doctrine. Why do we have that strategy in the first place - why didn't it work this time versus, etc. It's also a narrative - to build a narrative that's critical sometimes with clients. Just to convince them that what you're doing, what you're doing in a sense.

Sophia:
Adam?

Adam:
No, I was just smiling. A little snarky.

Sophia:
We have two social media questions before we wrap up. The first social media question: "Some in the financial community say that ML has become a research tool. Can you speak about if and how you incorporate ML into your research process."

Adam:
I think I've already answered this question in part but again, I can answer it again. So, it's in the nature of financial data that there is a lot of noise and not that much signal. So you have to be very careful when you employ the machine learning techniques because it's easy to find spurious relationships. But having said that, yes, careful and prudent application of machine learning techniques can be very beneficial and actually can help you to identify patterns you might not have found otherwise. It is - ML techniques are commonplace on the quant side of the business right now and yes, we are employing machine learning techniques, but w're always very careful about making sure that we understand what the machine is really doing.

Sophia:
Excellent. David, do you want to add to that or can I just move on to the next question?

David:
What I want to add is that the interpretability of machine learning is actually ongoing. I mean it's ongoing research by machine learning specialism. It's not always easy to interpret, but it's really, I

mean that's really the [inaudible] everybody's looking for that and I'm sure we're gonna make progress. There's already some progress in that direction, but definitely important to be able to understand what we are doing, yes.

Sophia:
Nice. So I wonder if the second social media question is an extension of the first. Well, anyways, the question is: "Do you always start from some kind of theory and carefully design your features or, on the other hand, you feed your models with a huge number of features and exploit ML to make sense of the data?"

David:
I think the first the first is dominance, no?

Adam:
Exactly, and I was smiling again because that's often what happens to me when I speak to David. David reads so many academic articles and whenever we speak he has some - he's seen another article and there's a new idea around and then we start discussing and see whether it's related to the ideas that we already have in our portfolio or it's something genuinely new that we should be looking at. So, the short answer is, yes, we like to have a prior - we like to we start with a prior and then we work ourselves around that.

David:
That it's really the way it works, both in academic research and in applied research. You start with a prior and very often you end up very far from the prior, but it's kind of a - it's a discussion between the data and the prior and you update the prior. I mean it's very rare that the prior is really what you - but I mean that's the way it works for any kind of research.

Sophia:
Well, it is 12:01 PM. I can't believe the time went by that quickly. I wanted, on behalf of the Department of Economics and the Program for Economic Research thank you both for agreeing to meet with our students. They are eagerly marching towards graduation, certainly, but marching towards the job market, so this is conversation has been really very helpful and we very much appreciate your insights.

Thank you all again for participating in the PER Virtual Live Series. The discussion continues online at econ.columbia.edu/per and on Twitter and Facebook and LinkedIn. Join us on Wednesday, December 2nd for another discussion on the changing role of economics globally. Our business and finance thought leaders will be Li Jun Xian, Partner at Emigrant Bank Fine Art Finance, and also Drew Watson, Senior Vice President of Arts Services at Bank of America, and Cynthia Sachs from Athena Art Finance. On December 16th, we're going to have Miikka Rokkanen from Amazon and also some other amazing guests so please follow us on social media and watch out for our emails. I want to thank you all again, stay safe and we will talk to you soon. Thank you especially, David and Adam.

Adam:
Thank you all.

David:
Thanks to the students for sharing their questions, it was really interesting!

Sophia:

Bye bye.