HEDGENORDIC RT

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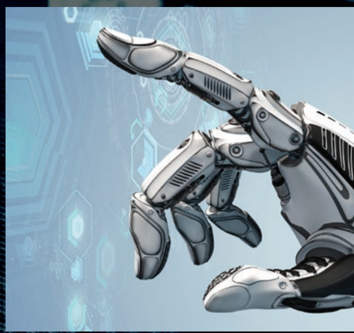
PARTICIPANTS:
Lynx, Aspect, Winton, DUNN, Efficient, AP1, AltoCumulus, RPM, IPM,Movestic, SMN, Estlander & Partners

Technology
How technology is shaping the Industry



Big Questions
Performance, Fees, Trend following, Does size matter?

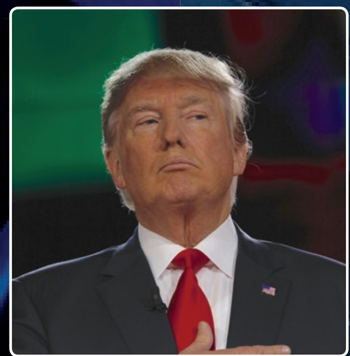
Managed Futures and Systematic Macro

Topics Discussed:

Big vs. Small - The role of AuM

Fee Pressure

Artificial Intelligence



Trump and Brexit: Non Events

"There have been good asset flows for CTAs even though performance has been disapointing."

Editor´s Note:

2016 proved to be an eventful year. Starting with a bang, worries over China as the driving engine of global growth translated into sharply falling equity markets globally during the first two months of the year. Risk assets, however, staged a massive comeback, and by June losses were largely recovered. Then came the next scare: the UK surprisingly voted to leave the European Union. "Brexit" again spurred short-term sharp declines in equity markets and sent the British pound to multi-year low levels against major currencies.

Again, markets recovered strongly from their low points and within the course of a month, equity market losses were more than recovered. Then it was time for the U.S. elections. Following the unexpected win for Donald Trump, the underlying strength of global equity markets was put to the test, but these again proved to be highly resilient. An initial negative reaction following the election result turned into rising prices of risk assets within hours and equity markets ended the year on a positive note.

For CTAs and quant macro strategies, the year was marked by its ups and downs. Generally, the strategy group benefited from the above mentioned external market shocks but rising bond yields in the second half of the year weighed on performance. The Barclay BTOP50 Index, which comprises some of the largest investable managed futures programs in the world, ended the year close to 5 percent down, which follows on a negative 2015 where the index lost approximately 1 percent.

Investor appetite for these strategies showed no signs of abating, however. In an environment where hedge fund assets overall were marked by outflows (USD 83 billion was withdrawn from the industry as of November, according to eVestment), Managed Futures added USD 15 billion to bring total industry assets to a new record high, according to data from BarclayHedge.

In order to shed some more light on the recent development of the CTA industry, HedgeNordic gathered industry experts, CTAs/quant macro managers and Nordic allocators to a roundtable session in Stockholm on December 15, 2016. The unique blend of world leading quant strategy hedge fund managers and prominent Nordic institutional allocators provided for a fruitful discussion spanning a wide range of subjects including recent industry performance (or lack thereof), technological advances and its impact on CTA strategies, trends seen among investors, the fee pressures put on hedge fund strategies and CTAs, and the outlook for the strategy in an environment of zero or negative interest rates.

Enjoy reading our unique insights from leading hedge fund industry experts.

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Contact Details and Short Bio

The Round Table Discussion took place in
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Martin Estlander is founding partner of Finnish-based CTA Estlander & Partners. Mr. Estlander founded the firm in 1991 and today act as chairman of the board. Estlander & Partners manages USD 356 million across its two main programs Freedom and Alpha Trend and in separate managed accounts.

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SStefan is CEO of IPM. Prior, Stefan spent 9 years with the Brummer Group, first as PM at Nektar, then as a founding partner of Archipel Asset Management. Previously he held positions at AMF Pension and Quantal Asset Management and Quantal International and as economist at Sveriges Riksbank.
Based in Stockholm, IPM is a systematic investment manager recognized for its multi-asset macro strategy and its smart beta equity strategy.

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Ludvig Jarl is an Investment Manager at AltoCumulus, the asset management entity of the Axel Johnson Group. Since 2010, Mr. Jarl heads the fixed income and hedge fund Investments within AltoCumulus.

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Stockholm based, Lynx manages appr. USD 6 billion in a diversified managed futures programmes. Lynx employs over 70 people, most engaged in the development of new quantitative strategies and models.

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Niels is MD of DUNN Capital (Europe). His passion for Managed Futures dates back to 1990, He spent 11 years in London working for some of the world's leading CTAs, such as Chesapeake as well as co-founding Beach Capital Management, which he ran as CEO for a number of years. DUNN was founded in 1974 by William A. Dunn. Over the past forty-two years the firm's composite track record has achieved a net compound annual rate of return of over 17%. No other CTA achieved such a high composite rate of return over such an extended period of time.

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Helen Idenstedt is an analyst with the First Swedish National Pension Fund overseeing the fund´s hedge funds investments which to a significant extent holds CTA exposure. Mrs. Idenstedt has been involved in the financial industry for over 10 years including head of product management at CTA-specialist RPM, Risk & Portfolio Management.

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Henrik joined Winton in 2013 as business development manager for the Netherlands and Nordics. Prior Henrik was responsible for sales of multi-asset risk management solutions at MSCI / RiskMetrics Group. Winton was founded by David Harding in 1997 with the belief that the scientific method offers the best approach to investing. Winton manages over $30billion of assets for many of the world's largest pension funds, sovereign wealth funds, banks and fund platforms.

ROUND TABLE DISCUSSION

MANAGED FUTURES AND SYSTEMATIC MACRO STRATEGIES

MODERATED BY: JONATHAN FURELID, EDITOR AND HEDGEFUND ANALYST AT HEDGENORDIC – STOCKHOLM, DECEMBER 15 2016

Jonathan Furelid: To start off, let us begin by trying to define today's CTA, what it is and what it is not. Looking from an outside perspective, it seems like the strategy has evolved from being classic trend-following to becoming a more multi-faceted systematic trading approach. Starting with the allocators, how do you define and divide the strategy in your portfolios?

Chad Martinson: CTA is just a regulatory designation. At Efficient Capital we define the industry and managers that we would classify as CTA's by the instruments traded, rather than the style or strategy. We break up the portfolio into two distinct groups: Trend-following managers and diversifiers. Trend-following managers, as we all know, identify trends, in a number of different fashions, using their proprietary techniques. Diversifiers trade strategies that are different from long-term trends, capitalizing on a number of unique return drivers.

When we create our portfolios, we want to have balance, because we want to capitalize on both the trend, the crisis alpha, and the momentum factor; but then, hopefully, provide enough diversification to have positive returns when the market environment is not favorable to trend. CTAs are very broad in their approaches, and it is hard to classify and categorize the whole industry in a single group.

30 years ago, most strategies were grounded in trend-following, but in the last 15 years, there have been many diversifying strategies coming to the market. Perhaps not large managers with assets in the billions, but there have always been a number of distinct niche managers trading futures and FX instruments.

> "We would classify CTA's by the instruments traded, rather than the style or strategy."

Helen Idenstedt: I would say that trend-following has changed quite a lot since I started in this industry over ten years ago. These days, banks are offering trend and risk premia strategies where you get exposure to the momentum component at low cost. At the same time there are more diversified and complex products offered by CTAs.

The CTAs have more competition nowadays from the banks and also from standalone firms offering trend-following products. I guess it's brought a wider spectrum of the strategy from low-cost to more sophisticated, but also a higher degree of competition among the solution providers.

Ludvig Jarl: We see each asset class in our portfolio as they have a purpose. Therefore, we do not want to have too much diversification in each asset class. Within CTAs we try to stick to the pure trend-following part, we don't want to blend it out too much.

Per Ivarsson: The underlying markets obviously have to be futures and FX, but we also tend to focus on whether strategies are divergent or convergent. CTAs should be dominated by the fact that they make money as markets move up or down rather than sideways. As you had proposed with your question, the newer generation of trend-following managers coming up usually have an element of diversified strategies already included. We classify them as trend-followers in the portfolio but tend to call them hybrid trend-followers.

The interesting thing, and I think we'll come to that, is what the more established larger managers are now offering. They have added so much in terms of diversifying strategies in their models that they are now offering low cost or stripped down versions of the trend models. It's an interesting move that the newer ones tend to have a smaller amount of diversifying strategies than the big names.

Jonathan Furelid: Martin, you have seen strategies evolve over time and been in this industry for a long time. How are strategies different today then compared to 20 years ago?

Martin Estlander: Much was already said here in the sense that the diversifying components have evolved into many programs. Back in the old days, it was pretty straightforward, trend-following. It is interesting, the point that Per made, that we are actually seeing a reverse trend now in that the fund managers, including us, have decided to bring out pure trend-following programs, as investors ask for it. There are also program components provided as separate-diversifying components to trend following. Customization is certainly the trend that we are seeing today.

Jonathan Furelid: Are there any models that you still use that were used, say 20 years ago?

Martin Estlander: Yes. We have in particular one program (Alpha Trend) which has been very stable over the years, many of the original themes are still there, maybe not implemented exactly the same way, but we still consider it to be pretty similar to what it was a long time ago.

Niels Kaastrup-Larsen: At DUNN we are maybe a little bit different in the sense that we have stayed true to trend-following. As Martin said, in the old days when you looked at managers, if you knew what John Henry was doing for the month you would pretty much know what everyone else was going to be doing in terms of performance. That has certainly changed. Investors probably still look at CTAs

as somewhat trend-following as a backbone, but the return dispersion between managers is quite high now. Clearly, people are doing different things. Maybe there are fewer people doing pure strategies. That makes it harder for the investor when they buy your strategy for a particular purpose, as Ludvig was referring to. If the managers start changing and branching out, then the communication between client and manager becomes increasingly important, in order to make sure that the program is in line with the purpose stated by the client from a portfolio perspective.

Trend following is our space. We want to be best of breed in that area. We continue to find good opportunities, but we have to evolve as a manager in order to be able to perform well in periods where maybe there are fewer trends around.

Chris Reeve: The biggest change in the industry is the way it is being viewed from outside. Lots of people around this table spent many years evangelizing the benefits of trend-following for a portfolio, and what I think changed in the last two or three years is that everyone has accepted that. Perhaps 10 years ago, it was a bit of a less familiar thing for a lot of institutional investors. What impact has that had? As soon as trend following is accepted as a risk factor I want in my portfolio, then, immediately investors change how they want to access it. They don't want to pay high fees to access it and they want to access it through purer products.

Henrik Grunditz: I don't want to un-invite myself from next year's CTA roundtable, but our founder David Harding is very open about Winton aspiring to be much more than a CTA. Trend-following is still a big part of what we do and it still certainly works within the portfolio. The way we see our flagship strategy is as a long term risk-reducer and diversifier in an institutional portfolio of equities and bonds and other alternative investments. Deciding what mix of strategies will get us there, we think that that is part of what clients pay us fees for. Deciding whether that's 60% trend-following and 40% something else, or a different mix of strategies, that's something we want to bring as value to our clients. We have moved towards being a diversified quant multi-strategy manager rather than being a pure CTA. Now, that being said, some clients come to us with specific requirements, such as wanting a futures-only strategy, and we can accommodate that provided the overall portfolio is robust. What we've stayed away from, however, is carving up what we do and selling the individual parts, as our strategies are designed to complement each other.

Filip Borgeström: A lot of good things have been said. Trend following is at the core of what we do at Lynx today but you have to utilize newer and hopefully better techniques to capture that phenomenon. As everyone talked about, with a number of newer strategies being added to most CTAs, I think transparency is extremely important for clients. The willingness to talk about what you do and go into depth explaining what type of drivers one is trying to capture and how that fits into the client portfolios is standard procedure.

Jonathan Furelid: While we are touching on the subject of CTA versus quant macro, we have one odd animal in this room, and that is Stefan from IPM. Could you describe in short what you are doing and doing differently from the CTAs in this room.

Stefan Nydahl: In many ways, we're doing quite the opposite of some of the people around the table. Most of the risk we're taking is relatively based, so our positions are relative. We focus on fundamentals, but tend to be put into the managed futures box together with CTAs since we trade mainly futures. In terms of strategy, however, I would claim we provide a very attractive diversification to CTAs as we have basically zero correlation with trend following, and our strategies are non-momentum at their very core. We have a very different focus and continue to work on that.

Gernot Heitzinger: On our side, we really took the position to stay fully in the traditional trend-following camp which is maybe more similar to what Niels is doing with DUNN and what Ludvig is seeking. We have invested a lot in broadening our diversification. If you look at the different results of pure trend-followers, there is still a lot of dispersion. For us it was very, very important to keep the skew of a trend-follower in our performance pattern.

Currently we are researching a new product, where we just look at very exotic markets; however, we will remain trend-following. We don't believe that there is anything much different in this environment than there has been over the last 20 years.

Jonathan Furelid: I want to take a quick look back at this year's performance and what you have seen in markets and why the strategies generally have not performed. What are the experiences made from this year? Why have CTAs not performed as well as expected?

Niels Kaastrup-Larsen: I am happy to start. I think the year has been a little bit unusual because there have been two big events that characterized the year, Brexit and the election in the US. I think most CTAs were on the right side of one and maybe on the wrong side of the other, and that obviously is important, but one calendar year doesn't mean a lot when you look at trend following. If you look at three years, five years, then our performance is within expectation, but clearly performance of an individual manager also depends on the risk allocation between sectors. Managers with a lot of commodity exposure might have had a more difficult time, others with shorter term models may have caught the reversal of fixed income a little bit better than the longer term managers such as ourselves. That is why investors should diversify even within the CTA space. There is not one CTA or one trend-follower that fits the bill.

Helen Idenstedt: In addition to the event risk that Niels mentions, I would also add the lack of volatility that we saw in July, August, September and October. In our portfolio, that was really tough for some short-term traders but also quite difficult for many trend-followers. The positive thing in our portfolio this year is that we were not exposed to commodities since we are not allowed to allocate to this sector, so we are actually up quite a bit in our CTA portfolio for the year.

Chad Martinson: We have talked about two events that dominated in 2016. In reality, those two events were really non-events. They were events that meant very little to the overall performance. Brexit was obviously one of these non-events, with massive moves over two to three days, but markets generally recovered over the next week. The US Presidential election was really just a four hour event and most markets recovered all of their losses by the end of the day. The big event occurred in January and February when China was down 20 plus percent and US equity markets entered correction territory. Everybody was talking about global growth concerns, and that's when CTAs really shined.

In 2016, it has been the non-event, I think, that has been the issue. If Brexit had actually been an event that had some follow-through in markets, performance would have been similar to the first quarter of the year for the industry. The other thing I would say about performance in 2016 is that there has been a lot of dispersion. We've seen more and more dispersion recently, and that's certainly true this year. There are trend-following managers that are doing quite well and other managers that are not. The commodity story is certainly a factor, but there are a number of different factors, different reasons why different managers are either doing well or struggling.

Jonathan Furelid: Any lessons learned from the year in terms of your allocations?

Chad Martinson: At Efficient, our allocations have remained very steady. We try to construct a robust portfolio that has appropriate exposures to different factors that have the ability to profit in a number of different market environments. Fortunately, this year we have had strong performers in the portfolio, and we're up 5- 6% on the year which perhaps isn't reflective of the universe at large, or at least the negative part of the universe.

Per Ivarsson: 2016 was one of the years where small differences in how you allocate between markets and the sizes you take can have a huge impact on your local returns. I think 2012 was one of those years as well, where the single largest explanatory factor for performance differences was your allocation to natural gas.

When we look back at that this year, I think you could find some factors that explain why some do better. Of course, there are always examples of poor performers when dispersion is perceived to be high, as was the case in 2016. On the other hand, when returns are hovering close to zero, the performance difference when someone is up or down 3 percent is perceived as higher compared to when everyone are going in the same direction.

Chris Reeve: I would tend to agree with that. It seems as though when we come towards the end of every year everyone says, "We've seen more dispersion this year than normal," but they actually haven't. In 2014, when dispersion was between 10% and 30%, that's still as massive as it is this year when the range goes from plus ten to minus ten.

Ludvig Jarl: I would like to add also from a portfolio perspective that CTAs have not disappointed at all this year. In the first two months of the year we were up, with the best manager advancing 35 percent while the worst one being up 5 percent and that was exactly what we needed in the portfolio at the time. When we look at it now, our equity portfolio is up 12 percent for the year while the hedge fund portfolio is flat, sounds like a pretty good deal since we were helped by the hedge funds in the beginning of the year.

Stefan Nydahl: Well, this is interesting because as Chad said, you could see Brexit and Trump as non-events. However, if you are focusing on fundamentals, as we do, both these events have been big catalysts pushing prices away from fundamentals. After Brexit, there were a lot of assumptions about all the terrible things will happen. Then during the summer, data started to come in on the positive side. It's still coming in very positively on the UK economy.

Now we see a convergence back from those pushed away prices. The same thing with Trump. There are a lot of assumptions in the market about what's going to happen, stimulus packages, etcetera, etcetera, but we don't know anything. For us there's not been a big event in one day, but it's been an interesting catalyst in this dispersion or divergence from fundamentals. We're still having a good year but we clearly see market developments from a slightly different perspective.

Per Ivarsson: I think that also highlights the difference between what you're doing and us. We have started talking in terms of mis-pricing and re-pricing. If we have a break from fundamentals, it can be perceived as a mis-pricing and something that will to come back, whereas CTA strategies make money when there's a re-pricing event. For example, let's say that a P/E-ratio of 12 is standard for a period, but suddenly maybe a P/E of 20 is the new standard for 10 years. If you tried to trade that as a mis-pricing that would soon go back to P/E 12, it would be very costly. We think of CTAs as being beneficiaries of such re-pricing events.

Stefan Nydahl: One important distinction there is that we compare markets to each other. Our main focus is one whether the US market is more attractive than the European countries or Japan, or vice versa for example.

Martin Estlander: Well, after these intriguing stories, I could come up with a boring quant perspective on the year 2016. The way we look at it, is try to to describe mathematically what actually drives the risk premia that we as trend-followers do extract. If you look at the price of being in the game, that is, to take on and hold positions, it is a function of the short-term volatility. The payout of the strategy again becomes a function of the long-term (i.e yearly) volatility. So the driver is the difference between the short and the long term volatility, and over time, the long term volatility is higher than the short term volatility, the relationship correlates highly with trend-following returns. Go back to the 50s, 40s, whatever, and you can see how this relationship of volatility timeframes is favorable in the long run.

Every once in awhile, you have a situation where that relationship is unfavorable. 2016 definitely was one of those years.

What we are now seeing looks interesting enough in that there seems to develop a certain dispersion between the policies of the different economic blocks. This may drive increasing long-term volatility. This certainly may mean attractive opportunities for trend followers. Also, hopefully the decades of falling inflation might finally be over. Higher inflation and thus, higher interest rates would be welcome as a driver of our performance. Hopefully we are seeing a door opening here.

Chad Martinson: Can I add one thing to what Martin said? I think a big theme will be the change of the direction of interest rates. A lot of people have been arguing that the lower returns we have seen in the last years is partially due to the fact that there is no interest or risk-free rate of return in the track records. If we start seeing interest rates going up again, some investors will just see the headline number and will say, "Oh, CTAs are doing better." It may seem that performance is better when in reality, it just seems better because of the return on cash being earned.

Gernot Heitzinger: I like the comparison with 2012. Volatility and average trend strength is quite similar to 2012, and I think there are not many lessons to be learned when there are no trends. It's very difficult if you are a trend-

follower to make money if there are no trends. Yes, if you have the right markets in your portfolio, you might be a little bit better or a little bit worse, but in the overall picture, there was nothing to really learn about that. I am with you that if the role of central banks changed, it might be easier in some sectors. For example, equities was one of the trickiest sectors this year, not because they had the corrections in January and February, but they had the correction and then they shoot up 10% on the back of central bank interventions. If that is getting back to normal it will definitely help to bring markets there where they should be, which should help CTAs.

Per Ivarsson: One lesson learned is that you have to be very long term as an investor and as a manager. You are really have to believe in what you do and understand the processes. If you understand what you're doing, and if your investors understand what type of environment you're in and what to expect before they allocate, you don't have that much to worry about. For us, it's just keeping a focus on the long-term work.

Jonathan Furelid: There have been good asset flows for CTAs in 2015 and 2016, even though performance has been, generally speaking, disappointing. From what I see, it seems like the big names are getting bigger. What are your views on investor demand, who are interested in the strategy, for what reasons, is demand picking up overall?

Henrik Grunditz: This year we've had both substantial inflows and outflows which has been the pattern over the last few years. In all, we are pretty much flat in terms of flows. There is an industry trend towards trying to break up certain hedge fund strategies into constituent parts, with some fairly large institutions aiming to access these strategies more cheaply. We've seen some of that among pension funds in North America in particular. You've probably seen the stories of some institutions throwing out their hedge fund allocation altogether. In some cases, we have been victims of that even if individually our returns have been respectable.

On the positive side, the low interest rate environment creates a strong global demand for any strategy that demonstrates a decent yield and adds diversification. This no doubt contributed to some significant inflows from sovereign wealth funds and pension funds. It's been a mixed bag, I have to say. One of the benefits of our size is that we can spend quite a lot of time with our investors, helping them to understand the properties of our strategy. Even if you have a Sharpe Ratio of 1 which is something we'd be very happy with over the long term, then you're still going to be down on average one in every six years. That's entirely normal. Performance last year was disappointing but that shouldn't be a grave concern to those who understand the strategy. We're sticking to our knitting and encourage our investors to stay with us for the long term so that they can get the benefit of what that strategy should deliver over five, ten years.

Niels Kaastrup-Larsen: On our side, we've seen very strong inflows both in the US and in Europe. I think there are a couple reasons for that. Clearly, performance plays a role. We've been fortunate enough to deliver strong returns in the last few years. It is also about costs. A lot of investors are now looking for lower cost structures and at DUNN we have a unique approach to fees. We've never charged a management fee for 42 years. That helps when you have a Total Expense Ratio budget for example, and that certainly has been a driver as well. At the end of the day, investors are looking for absolute net returns after fees and your returns have to be proportionate to some extent to the fees you charge.

Martin Estlander: I'm not sure about those inflows. If you take out Bridgewater as a CTA, which many agree one should, and now from what we are hearing from Henrik, we can take out Winton as well (*laughs*) from the CTA assets, then asset levels are about where they were in 2011. So there have not been that great inflows, unfortunately.

Obviously, there is turnover in assets, and one driver is certainly the fee levels, as has been mentioned. I guess we all see some clients go, some clients come. The unfortunate thing is of course that those that come, at least right

now, seem to be paying much less fees than those who are leaving, that is, investors look for more flat, low fee programs with less bells and whistles.

Jonathan Furelid: When you say customization, what do you mean by that?

Martin Estlander: Basically, really asking the client exactly what they need and how we can deliver what they need and then try to find a suitable solution. For instance, the possibility to alter the allocations according to client needs is something that some investors seem to appreciate, as they have different hedging needs for different asset classes.

Clearly, as was said here earlier today, investors seem to understand more and more, not just that CTAs have provided attractive diversification in the past but also that long-term, the correlation between trend following and equities should remain zero, simply because the return drivers of equities and trend following are completely different and clearly identifiable.

Jonathan Furelid: For Filip and Stefan, I know that you have seen inflows from the US. Obviously something is happening in the US that you benefit from. Is that because you had an active marketing strategy going to the US or is it the format of the products?

Filip Borgeström: We have never been a very offensive player in terms just of growing assets, but we have always been trying to listen to what people are looking for and where there is interest. We started speaking with US based clients, six, seven, eight years back, and we have been registered with CFTC, and one development has been that we see more of the classical institutional players coming into the space. The corporate pensions, state pensions, and the US based consultants have picked up interest for what they call mitigating strategies or diversifying types of strategies where CTAs and to some extent macro is playing important role. We see some outflow from certain types of clients but pretty good inflows from large institutions with very substantial mandates. In number of clients we probably decreased a little bit whereas assets under management has grown.

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Stefan Nydahl: I have to agree with Filip on the focus on diversification among investors because that is something that we have in common, we provide diversification to the traditional asset classes. These days it's not necessarily that an investor is coming to us in search of a systematic macro manager, which is our small niche, but rather that they look for uncorrelated returns. That's really the key driver. I think that's what we see in flows to hedge funds in general as well.

Jonathan Furelid: Chad, you being on the ground in the US, what do you see on your side of the Atlantic?

Chad Martinson: Someone mentioned the a-word earlier today, "alpha". If we were sitting around talking ten to fifteen years ago, everybody would have said, "We are all alpha all the time." We would have said, "The momentum factor, Beta, what's that?" Of course, the emergence of momentum as an accepted source of return or risk factor has drawn institutional investors. It is now something that people understand. They also want to access it as cheaply as possible, so there's been a lot of growth in the mechanical providers, the carve-outs from some of the large managers. That is driving the interest that we are seeing from investors as they look to harness momentum as cheaply and efficiently as possible. Those types of strategies are in vogue right now.

Jonathan Furelid: Johan, on the retail side, what do you see regarding CTA allocations? Is interest picking up, or is it just following the performance more or less?

Johan Tjeder: Interest usually follows performance. From the retail perspective, this more of a black box than it is to us in this round. When you don't really understand the drivers in the same way, the only measure you can rely on really is performance, and that's what people do. In his space, unfortunately, I would like to see more educational efforts. But to not sound as we're extremely sophisticated and the retail investor is simple I'd say that this goes for us as well; it's just the time lag is longer for better or worse. We evaluate process more and give it a higher weight but it doesn't mean we are blind to performance. As somebody wise said; it's good to have a strategy but also to now and then keep an eye on the result.

Jonathan Furelid: We touched on the big getting bigger, and the question if there's a concentration issue and how much that plays into performance of CTAs has been around for a while. RPM have created a portfolio with these smaller names because they feel that there is a concentration issue.

Per Ivarsson: The asset concentration is ever increasing, and I read earlier this year that the number of new startups in the first half of 2016 was 40% less than 2015. There is a lot of headwind setting up a CTA today. The regulatory hurdle is quite high when setting up a new business. It also seems increasingly difficult for newly established managers to find seed money compared to how it was three to five years ago.

I think it is important that we have inflow of new blood and fresh talent, but also that talent within those larger organizations are able to realize new ideas. Some of the ideas will work, some of them won't work but they need to be tested and not all be weeded out in streamlined research processes in massively large organisations.

Henrik Grunditz: Given our size, capacity is a topic that comes up in many of our meetings with investors. We have written quite a lot on this topic, and overall we're not particularly concerned about the size of the CTA industry as a whole, or necessarily Winton within it. Recently we estimated there are probably 300 trillion Dollars in financial assets globally. Maybe three trillion in hedge funds, CTAs are probably 300 billion, give or take, and we're probably 10% of that, if you define us as a CTA. So in the grand scheme of things, we're not particularly big. We concentrate our trading in the most liquid fixed income, currency, commodity, and equity markets, paying close attention to liquidity. It is roughly 100 markets in total and we think that offers ample opportunity for good returns and diversification. We are constrained in some smaller markets, so even if we were to discover the secret to trading lean hog futures, we wouldn't be able to allocate a large amount of risk to it. There are limitations, but we can still trade 100 future markets and over 1000 stocks in meaningful size.

On the flip side, there are advantages that come with size. Per mentioned some of them. I think the biggest advantage is the ability to pursue more ambitious long-term research on a very, very large scale, and our bet is that that's going to pay off long term. We think that probably the more popular and accessible trading strategies, such as trend following, won't be as profitable in the future as they were in the 1990s or early 2000s. In response, our research is aimed at less well studied and perhaps harder to capture return signals. For instance, we've just concluded a project in equities that has taken a large team of people three years just to gather the data. This wouldn't have been possible if we were a much smaller manager.

Jonathan Furelid: Is the size of a fund something that you consider when selecting managers, Helen?

Helen Idenstedt: Of course it's something that we consider. I agree with both Per and Henrik. There are pros and cons with being small and big, and for us, perhaps the advantages tilt would be to go with small managers. It could benefit fee negotiations or it could be the fact that the smaller managers could actually trade some markets that larger managers are not able to trade. Perhaps also the chance of getting access to future stars early. There are some strategies that are difficult to access, but if you are getting in early, that's a way to get access to these strategies.

Being with the big ones, they are perhaps better at customizing the products to fit our needs. I also agree with the benefits of having the capability of investing a lot in research. That is something that could generate value over time, and with all the changes we see with new technologies and developments happening really fast, if you are a Winton for example, you are perhaps better equipped to generate value on these changing themes.

Jonathan Furelid: Ludvig, is size something that you consider when you allocate?

Ludvig Jarl: Somewhat. We try to keep a focus more on different styles of trend-followers. We have one big name, and the other ones are quite small, trying to capture something different. We have a good portfolio base, not too diversified because we don't want lose the effect from CTAs when we need it.

Martin Estlander: Not being a 30 billion fund, I obviously have to argue for the other side, as Henrik pointed out, all managers are seeing the same overall liquidity in the markets. The risk contribution one can get from a particular market is a function of assets in a program and how big a portion of the overall liquidity a manager is willing to hold on his books. Hence, smaller manager can get larger contribution from less liquid markets than larger managers.

Now, if you divide up markets in a bucket of smaller markets and a bucket of larger markets, and you compare the relative performance between these buckets historically, you can see that which bucket performs better it is very cyclical. This has been the case over the last 60, 70 years. The last two years have been very pro the most liquid markets and not so good for the smaller markets. This has favored larger managers with more allocation to the bucket of liquidity wise larger instruments. There are people that argue that this will change. We can only speculate, but there is an argument to believe that this cyclicality might prevail also in the future and will again turn back into the favor of the smaller markets. Perhaps the ultra easy monetary policy has been a driver for this cycle?

Niels Kaastrup-Larsen: I'd like to add to what Martin said. I think if we're looking objectively at it, it is very hard to find evidence that very big firms produce better returns. I don't see that, but I do agree that they might give investors something else, especially if you're a big pension fund and you have a "career risk", definitely choose a big firm. That makes sense, but I don't think necessarily there's a performance argument to be had. You could ask, "Are the managers becoming greedy and just letting themselves grow, lower their volatility to manage more money, collect more fees?"

Maybe investors are to blame, at least partly, by always wanting to have the big names and thereby driving all the assets in that direction. I think it's a bit of both. I agree with what Martin said, that having the smaller markets in the the portfolio is very valuable long-term. I believe each market should have the same return opportunity, and after having had a good run for the big liquid financial markets in recent years, maybe there's a case that smaller markets will add value more in the next few years.

Gernot Heitzinger: We see it as an advantage to be small. We can trade 300 markets giving a similar risk budget to each market considering correlations of course.

Jonathan Furelid: Lynx have grown quite a bit in a short time period. How does that play into your strategy?

Filip Borgeström: We always have a good eye on the capacity of our program, of course, and run continuous simulations on that. So far we've felt extremely comfortable growing the firm, and it's allowed us to invest in a lot of new talent in terms of people into e.g. the research team, buying new types of data, infrastructure, and all of that. If we look at what we have today, compared to five years ago, it's a huge leap in terms of improving our capabilities of managing money. For us, it's been a great advantage growing, but at the same time of course you have to focus on your underlying strategy, making sure that you don't have to tweak that. We've been focusing a lot on topics like our reaction speed or holding period.

Regarding markets, there is of course a basic diversification if you take 10 instruments and increase it to 20 - you increase your diversification quite a bit. Same thing if you go from 20 to 50. Once you have 50 contracts the marginal positive effect of adding further markets starts to fade off. I think a lot of investors running portfolios of managers know that as well. For us, we don't see it as big deal not being able to trade 300 markets equally weighted. We still think we get plenty of diversification and get access to a lot of return drivers. We have been managing around USD 6bn for a while and that has allowed us to make a lot of investments and do things that we weren't able to do ten years ago.

Chris Reeve: I think it's important to be big enough because, yes, the barriers to entry have come down from the technology perspective, but one key barrier that is important is the execution. You need to be big enough to be able to invest in the execution technology and algorithms in order to be able to manage the size of money in what is a more concentrated industry. Without the ability to execute efficiently and cheaply, you're going to be struggling.

That is actually my concern about a lot of the newer entrants to the space, be it banks selling trend-following products or newcomers from other areas moving into the trend-following space. If they're not getting the execution right, these players are going to see performance issues as their assets grow. I think some of them are actually quite open about that. As assets grow to two, four, six billion, they would expect to see a form of degradation whereas I think the more established CTAs around the table today have worked very hard to invest in execution and portfolio diversification to make sure that that doesn't happen. I think we're very comfortable with our size at the moment. We're very clear if we were getting to the point where we were starting to see our execution algorithms degrade, we would close the program rather than continuing to accept more assets and accept that performance degradation for our investors.

Johan Tjeder: I know there is disagreement on the benefits of size among a lot of brilliant people. Without being rude, I can note that there's a correlation between the size of a firm and the opinion of the pros and cons of size around the table. As an outsider, it's difficult to have very strong opinion if it's good or bad. There is probably a sweet spot of performance. I can't judge it, and I think there are a lot of external factors that decide how far we can go. In my former job I traded Swedish equity options, people asked us, "Well, how much can you trade?" To be honest, I would say, "We can't give an exact answer on that question." That's partly because there are external factors that you don't control.

Jonathan Furelid: We have touched on fees and fee pressures. You read almost every day of pension plans reviewing their hedge fund fees thinking that they are too high and redeeming from hedge funds. Is that something you see overall within the CTA space or in the macro quant space that fees are negotiated down from the allocator side, what are your views on fees and how do you negotiate fees in that context? Maybe we can start with Helen.

Helen Idenstedt: Fees are becoming an ever more important issue. We have a lot of pressure on the overall budget that we can spend on hedge funds, so of course it's an important issue for us to handle. The fee pressure started, I think, a little bit earlier within the CTA space and other hedge fund strategies are now starting to go towards this direction as well. It's getting more transparent, what the hedge fund returns are, and perhaps investors are getting more knowledgeable as well as to what we want to pay for. We don't want to pay alpha fees for beta products. Then also, we started this discussion with the variety of products offered within the trend following space. With these cheaper products now in the market, that has also of course

put pressure on fees. I have to think of how I am spending my money most wisely. If I can get access to momentum cheaper, I might be willing to do that and choose that, even if I sacrifice returns in order to be able to afford a different return stream that can add value to my portfolio.

Ludvig Jarl: We have managers with flat fees, and other ones doing 2 and 20, what we pay is a function of the role the strategies have in the portfolio. For strategies doing more exotic illiquid markets we typically get to pay a higher price compared to the pure beta plays, but we want to have the full range in our portfolio.

Gernot Heitzinger: Yes, fee pressure is definitely there and maybe that's one of the biggest threats for smaller managers because one asks: "is it possible to raise the much money that you can live from?". It's one of the advantages of having been there for 20 years and hopefully having made some money in the past but it's getting more difficult going forward.

Chad Martinson: We need to be more creative in terms of setting up the fee structures. Some newer managers struggle to live off of incentive fees because they need to pay their fixed costs. So one needs to be more creative, and I also think it might be more generous to pay some sort of management fee or steady revenue to the smaller managers whereas with the bigger names, they've got deeper pockets. Hopefully they could stand one or two years without the steady income from management fees. One has to understand the value that the managers provide and also what sort of income stream they might need when you negotiate the fees.

Another thing is that some of the programs that are stripped out or are core trend programs or replication strategies, whatever you call them, can play a very important role in a well-diversified portfolio, as we talked about here, but it's not some sort of cheap trend-following for the masses. These are rather for sophisticated investors taking a very active view on the portfolio who know what they're buying. It's good that we have fee pressure, that you're paying for what you're getting. That's important, but you should also understand what you're buying. The fact that it's cheap doesn't necessarily mean that it's as good as some more sophisticated groups.

Niels Kaastrup-Larsen: By not having ever charged a management fee, we don't have a lot of pressure in our fee discussions. I do think that investors appreciate the mindset change that it means when you don't have a management fee and consequently we are required to make money for clients first and foremost in order to make money for ourselves. I do believe it changes how we approach our research, how we think about it, and it forces us to maybe think a little bit outside the box in order to be able to continue to deliver strong absolute returns.

I would say that you don't have to cater for every single type of client. If you don't want to do business with someone because of their fees, you shouldn't. I have to say that in particular in recent years with low interest rate environment, I think people like the fact that we only get paid when they earn money, and I've never really come across someone who thinks that's unreasonable.

Filip Borgeström: It is natural, as an industry matures, that you have fee pressure and see fees coming down. Hedge funds have always had this historical approach of charging performance fees. It's actually good thing for both clients and managers to have that element because it puts us up on our toes. My concern about the future of this industry is that people more and more associate CTAs with simple trend beta product which eventually will underperform due to lack of research and development. Then people would get extremely disappointed with CTAs, although there are a lot of really good managers out there that are on the forefront of innovation.

Ludvig Jarl: There is a difference towards hedge funds and other parts of our portfolio. In private equity for instance, managers seem more open to reducing costs from day one. We can also agree to a performance fee as Niels said, but also, we can have a higher hurdle rate to start with. 6, 10%, sure. The management team in funds that we are in discussions with can also take mortgages on their house and put it up there so we're really aligned, but always when there are discussions with hedge funds, they will always say, "Well, we need to have these fees to have all the costs covered from day one." Therefore they argue they cannot go below for example 1% management fee flat.

THE CTA-INDUSTRY

Chris Reeve

"The biggest change in the industry is the way it is being viewed from outside. Lots of people around this table spent many years evangelizing the benefits of trend-following and what I think changed in the last two or three years is that everyone has accepted that."

Ludvig Jarl

"We see each asset class in our portfolio as they have a purpose. We do not want to have too much diversification in each asset class. Within CTAs we try to stick to the pure trend-following part, we don't want to blend it out too much."

DOES SIZE MATTER?

Helen Idenstedt

"Of course (size) is something that we consider. There are pros and cons with being small and big, and for us, perhaps the advantages tilt would be to go with small managers."

Gernot Heitzinger:

"We see it as advantage to be small. We can trade 300 markets giving a similar risk budget to each market considering correlations of course."

Niels Kaastrup Larsen

"I think if we're looking objectively at it, it is very hard to find evidence that very big firms produce better returns."

Johan Tjeder

"Without being rude, I can note that there's a correlation between the size of a firm and the opinion of the pros and cons of size."

TREND FOLLOWING

Martin Estlander

"Long-term, the correlation between trend following and equities should remain zero, simply because the return drivers of equities and trend following are completely different and clearly identifiable."

Filip Borgeström

"Trend following is at the core of what we do at Lynx today but you have to utilize newer and hopefully better techniques to capture that phenomenon."

Per Ivarsson

"The newer generation of trend-following managers coming up usually have an element of diversified strategies already included."

FEES

Stefan Nydahl

"If we're sophisticated enough to differentiate between what we call transient data or risk premia and what is actually alpha, then I think it will keep us even more on our toes."

Chad Martinson

"Efficient Capital sits in a unique place as we charge fees for building products, and we also negotiate fees with these managers. There are obviously fee pressures on both ends."

Henrik Grunditz

"Unless you're offering something extremely unique with consistently stellar performance, then the old 'two and twenty' model is pretty much finished."

Hedge funds often argue they will not be able to give any sort of discount rate at all because how are they going to survive then? When I start to discuss seed arrangements with my colleagues representing other asset classes, it is always very hard for the private equity team to understand how bad the alignment is with the hedge funds.

Martin Estlander: I don't know the private equity space very well, but it seems like this might be an actual reason for the mentioned trend. The private equity funds raise new money to invest in completely new projects every time. They have their old funds that are untouched and are producing solid revenue. The hedge fund managers might have a legacy business, the profitability of which that they want to protect. If they start compromising the fees too much, they might have to go back to their old clients and renegotiate. When the industry matures, it's natural that this happens and if you want to serve your clients and serve them as well as possible, you have to listen to the clients' needs, and also have to deliver. If clients want straight, very plain solutions and pay very low fees, they should be able to get that. But it's obvious that they can't necessarily expect to get the same performance as in full fledged, more fee heavy programs.

If you deliver something very customized, it's very hard to have a performance fee only: If your client suddenly wants to change something in the customized portfolio, he may compromise the return potential (according to the manager) and hence compromise the potential for the manager to earn his incentive fee. Hence flat fee solutions are preferable for customized solutions that can be altered by the investors.

If you look at the index for CTA mutual funds where I understand that flat fee structures dominate, then these are underperforming the CTA industry by 300 basis points this year. It illustrates that there is a good reason for investors to pay fees for full programs.

Chad Martinson: Efficient Capital sits in a unique place because we charge fees for building products, and we also negotiate fees with these managers. There are obviously fee pressures on both ends. It is important to not get locked into something. There are fixed fee offerings. There are incentive only offerings. I think there are a number of ways to be creative with fees.

We've been on the cutting edge of fee creativity. Some of you know that we have put managers together to do netted products where managers share the risk and are only paid off the aggregate performance. We have focused on being responsive to investors that are looking to access

the space and want to do it as cost effectively as possible, helping them achieve their goals in some fashion. It is important for us all to realize that there's a changing landscape, and every investor has a different need, and is looking for something that's going to fit their specific mandate. Being responsive to that and helping them achieve their investment objective is paramount.

Henrik Grunditz: From my perspective, the market environment is such that unless you're offering something extremely unique with consistently stellar performance, then the old 'two and twenty' model is pretty much finished. I'm aware of a handful of hedge fund names, not necessarily CTAs, where performance is excellent, the funds are closed, and investors are queuing at the door. Those sort of managers may still charge 2 and 20, or more in some cases. On our core products the fees have been well below industry average since inception, so there hasn't really been a huge pushback on fees from investors. We have however chosen to walk away from a number of recent mandates where we perhaps felt the desired strategy was not robust and the fees were too low. Other managers seeking to grow AUM maybe picked up these mandates but also had to agree to lower their fees.

One of the justifications we hear for lower fee CTA products is this idea of trend-following being some sort of "alternative Beta". We don't dispute that trend following is no longer an industry secret in the way that perhaps it was in the 80s and 90s, but calling it a Beta is potentially misleading.

The term "Beta" is more often used to describe what you mainly get if you invest in a portfolio of say hundreds of US large cap stocks. These days you can get that type of Beta easily and cheaply through passive mandates, funds, ETFs, index futures etc. The choice of provider or instrument isn't hugely important. With so-called trend following Beta products, we've studied maybe two dozen of the most popular strategies and see around a 50% dispersion of results after 5 years.

Will the average investor have the ability to identify in advance which implementation of trend following will be the most successful in the future? We've been working on that for 20 years and it is still a difficult question. If they pick the best one by chance, then sure they're doing well relative to average CTA returns. On average however, our research shows that even after higher fees, in most cases investors would have been better off in a well managed CTA strategy than the average trend following "Beta" product. At the end of the day, net returns is what matters.

Stefan Nydahl: I agree with what Filip said and several others too, it is important to keep us on our toes. There will be fee pressure, but to me it this is not necessarily a bad thing. If we're sophisticated enough to differentiate between what we call transient data or risk premia and what is actually alpha, then I think it will keep us even more on our toes because it is up to us to prove our value added above that. That's something that we focus a lot on, to show that we're not a mix of exposures to basic risk premia products. We're actually offering something else. And as long as there are sophisticated investors like Helen, Ludvig, Johan and Chad, who can actually differentiate between what's what, then I think we're going to be in fairly good shape.

Jonathan Furelid: One last question that I had is linked to technological advances and how you incorporate those into your systems. You mentioned, Henrik, that you have opened up an office in Silicon Valley just to bring in some new talent and new technologies. There is a huge advance on the technology side. How is that playing into your strategies?

Henrik Grunditz: There are a number of technologies that have matured to the point where new opportunities are opening up for companies like Winton. One that springs to mind is cloud services becoming much more powerful and widely available. We traditionally used all our own infrastructure, but increasingly, we're looking at public cloud computing solutions. It's getting to the point where processing power and storage can be accessed on-demand at low cost. If you are a new investment manager entering the market, you can now get cheap access to the computational power that we would've had to pay millions of dollars for only a decade ago. That's exciting for us and exciting for other players as well.

There's also been a surge in new database technologies, where even just a few years ago, the landscape was mainly SQL based solutions that had been around for decades. Now, new database tools are emerging almost on a weekly basis, which is great for storing many of the new data sets we are creating for our research. We are increasingly dealing in unstructured data or data that can't easily fit in a traditional relational structure.

Another exciting development is the maturing of certain artificial intelligence techniques. Some of them have been around for a long time, but now the building blocks needed to use them are coming together. Database technology, inexpensive storage, computational power, and more understanding and development of some AI techniques is opening up new possibilities for investment managers.

We're trying to take advantage of all of those things. The motivation for the San Francisco office is partly to be able to hire some of the smartest people in the technology field that have converged in Silicon Valley. But it's also to be part of the technology startup scene that exists there. We've already made some investments in innovative startups in the fields that are relevant to Winton, and we're trying to connect with other VCs in the San Francisco area to widen our network.

Our investors expect Winton to be at the forefront of new technologies, and having a presence in this innovation hub is a way of accomplishing that. We want to access these kind of exciting companies early on whether they're providing a new technology or a new type of data.

Jonathan Furelid: These are people not coming from the financial industry?

Henrik Grunditz: They are people who have expertise in data science, in artificial intelligence but typically from outside of the finance world. What they have in common is that they get fired up by working on the problem of using science and cutting edge technology to make money in financial markets. They may have previously worked on using data to predict the next movie you want to watch or product you want to buy on Amazon, and now they want to translate these skills to making profits in financial markets.

Per Ivarsson: One interesting observation it is the fact that now in the recent year or so we have started to see the term machine learning again in marketing. Those words have been practically banned for some time. I recall at one point in time due diligence questionnaires had a section asking if the strategy employed machine learning techniques, and if you ticked the box "yes", you knew you would be sorted out. You don't see that section anymore, so I think these techniques are viewed in a more favorable light again. It is interesting because trading the markets is a moving target, it is not a problem you can solve once for all and say, "I'm done with it."

You need to look for new techniques and understand them even though you don't employ them. You also need to stay true to the divergent, directional or repricing strategy, whatever you call it.

Henrik Grunditz: It's interesting to think about what it will be like trying to explain these new technologies and techniques to investors. Our investors have a very broad range of experience with our strategy, and for some we develop presentation material to explain concepts like trend following or carry trades in basic terms. As an industry, we've lost some investors over the last few years who find that hedge funds are too complicated and intransparent. Explaining how we use these technological leaps and bringing investors along with you as complexity increases is going to be a challenge for us and many other managers. For instance how would we explain what a neural network is without being considered as a "black box" or confusing investors. We need to think about that.

Martin Estlander: Obviously, technology is very, very exciting and it opens up a lot of new possibilities. We have to admit that although we spent a lot of time and effort on fuzzy logic, neural networks and different kind of machine learning already many years ago, we've never implemented these strategies in our funds. It comes down to a bit of a philosophical issue that we struggled with, and that is that first of all, we all know that you have to deal with optimization, and these strategies are by design efficient optimization methods. One way of dealing with optimization is to fully understand what you're trying to model. In machine learning it might not be all that easy to fully understand what the model does and how it evolves and why.

Now, if you bring in a component that generates something which you don't necessarily follow why it does certain modifications, are you going to stay disciplined and fully trust in difficult patches? We all know what it means if you leave your disciplined path when times get rough. It can be detrimental.





Having said that, just yesterday we had the latest discussion regarding a new machine learning project, and it is intriguing but I'm not too convinced that we are there to implement it yet.

Chris Reeve: I agree with that philosophy. There are a lot of exciting technological advances at the moment, and there's a lot of chat about it and a lot of buzz, but also a lot of hype. We probably are five years away from widespread adoption of lots of techniques. I would separate it into two different categories, actually. Is the exciting new edge coming from the data or from the techniques used to analyze the data? There is a lot of new data becoming available, big data, unstructured data that's out there that people are trying to sell to us. We get approached regularly on it.

However, we've always been wary of strategies where the edge is just in the data because that edge will disappear more quickly as more people use the same data. Then, how do you analyze that data? It becomes a challenge as well in terms of how much do you trust the machines to do it for you versus understanding what they are doing? An appropriate blend of the two places is where I want to go: not just using these AI techniques for the sake of using them without understanding what they are doing - but using them in a judicious sense or well-understood manner that you can explain to your investors, rather than having to just say, "Just trust it or don't trust it."

Per Ivarsson: I agree on this issue but the first generations of machine learning systems were pretty much a black box and it was difficult to explain the rationale. However, why does that moving crossover system work? On some level it's as difficult as explaining a machine learning system.

Niels Kaastrup-Larsen: Actually it is not so much about why it works, rather your ability to explain it, exactly as Henrik pointed out. Can you imagine having to explain a neural network to people, when many still think of a simple trend following strategy as a "black-box"! More importantly, as Martin said before, when you are going through rough times, this is the time your clients have the most need for comfort and transparency. How on earth are you going to explain what the AI machine decided to do in terms of trades? You can't. I think maybe from DUNN's point of view, we may be one of the last managers to embrace these things even though we do look at them, but for us, traditional trend-following that are using rules that you can explain still works best.

Chad Martinson: The biggest challenge for investors looking at managers that utilize machine learning techniques for extracting a signal is in understanding how you construct a portfolio around them. It is difficult because it could be trend-following today and mean reverting tomorrow. I mean, what's it going to be? You have no idea what role it plays in the portfolio. Explaining it is hard enough, but then how do you use it?

You are required to have faith and view it as a black box and hope it makes money. If you invest into something that you don't understand and don't know the role it plays in your portfolio, it makes it very difficult to manage that investment. It is going to be extremely difficult to overcome the challenge of poor performance. Every strategy has poor performance from time to time, but if you understand it you can live through periods of challenging performance if it makes sense. For the machine learning techniques, I think sticking with the manager during times of challenging performance can be the biggest challenge.

Filip Borgeström: I don't want us focus too much on machine learning as such because from our perspective, machine learning is just one of many statistical tools that we have available. We try to use as many tools as we can get our hands on, find different people with different backgrounds and so forth. Talking about our experience on machine learning, briefly then, is that we hired our first guy with that type of background in 2009 and we've been trading machine learning models for about five, six years now. We have had a lot of different types of experiences, there's a little bit of an exaggeration of this black box type of fear.

You can actually understand those algorithms quite well if you guide them and use them in a sensible way. We've never believed that you can just throw in all sorts of data into a machine learning algorithm and think it can produce something that you can understand. But if you use certain types of algorithms that are more suitable and feed them inputs or features that in your experience says something about future price moves, then you can actually get something which is reasonably predictable and understandable, which for us at least, has made decent money.

Johan Tjeder: Traditionally, how do we learn new things? I mean, scientifically we find things out either through deduction, where we have some principles we think the world works by, or we do it through induction where we observe at the world and pretend we don't have any prejudice. We just look at data, and then we form principles drawn from

the observations. Machine learning seems like induction, so it doesn't work for me because I have some principles that I believe in, but it might work for other people. I think that is the way I would view it anyway. How will we find out how markets work? Do we have moral principles for what we believe in, or do we just observe and then form principles? I'm in the deduction camp.

Filip Borgeström: You can use induction to guide the machine learning algorithm and as such amplify your human knowledge about how the world works and how markets work. That's our position, at least.

Henrik Grunditz: One point which we haven't really talked about is that it is not necessarily that these techniques are going to be used for trading systems only, right? There are loads of applications for AI generally in producing interesting data. There are companies out there making a business out of this. They claim for instance to be able to use satellite images and AI techniques to calculate oil inventories. I think we all understand that oil inventories might tell you something about what's going to happen to the oil price, and investors would also understand the link. Another example could be using natural language processing on huge volumes of text related to companies. In these instances the complexity and the "AI" is in the creation of the data set, not necessarily in the trading system. We see lots of applications on the data side.

Stefan Nydahl: I'm definitely in the deduction camp. Everything we do is based on underlying economic ideas and then we go out and see how we can implement them. That's very much the driver behind our investment strategy. I like what Henrik said and Filip as well that if you start with a deduction approach, then you can use these techniques. A lot of times, it's proposed as something that finds new, exciting patterns, etcetera, etcetera, and then of course, all of us are systematic managers. We all know that the big advantage of those systematic approaches is that we can test things in the past on historical data, and the big curse is to over-fit. The more advanced we get in terms of finding patterns, the more prone we are to over-fitting. We have looped back to actually having an underlying idea of what we're going to look at. We all end up by brute force almost in the deduction camp if we're going to use these big advanced techniques.

Now, if you have an underlying economic framework and underlying economic ideas, of what variables should drive what markets, then you have something to work on. Whether it's Warren Buffet type valuation for equities or whether it's a belief in certain trade balance variables driving exchange rates these relationships are based on some underlying economic logic. If you believe in that logic, then you can go out and test it.

Jonathan Furelid: Great closing words! Thank you all very much for participating. I look forward to seeing you again next year.

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NordicInsights

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