



MODULE 3 UNIT 2

Video set Video 2 Transcript

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NIR VULKAN: Stefan Zohren, the theoretical physicist who you heard from in the Module 2, join us again in this video to discuss his experiences in working in finance as a scientist. He also shares his insights and his advice to those of you who might be considering in doing the same.

Could you tell us about your experience as a physicist working in quantitative finance?

STEFAN ZOHREN: I'm originally trained as a theoretical physicist, but later worked also in mathematics and machine learning. Moving into finance has been a great learning experience for me. Especially high-frequency firms are very much start-up-like – they're very hands-on, and you can very quickly gain responsibilities within your team. That has been very useful for me since I came from a background with more experience in academia. So I could easily leverage that experience and quickly gain responsibilities to a stage where I was actually in charge of a strategy we had.

Why do you think so many physicists are being hired in the city now?

STEFAN ZOHREN: So traditionally, mathematicians and physicists have always been hired as quants. What has changed a little bit in recent years is the increased amount of data-driven model, and I would claim that physicists in particular are especially suited for such data-driven modelling. That is to some extent because, in their course, they learn at the same time foundations of mathematics as well as modelling of real-life systems, as well as data analysis.

To give you an example, just think about a PhD student working at a particle collider such as CERN. Such a PhD student probably is looking on a day-to-day basis at very large, very noisy data sets, trying to find patterns in this data set. And at the same time, he's not looking for any random patterns, but he has very specific mathematical models describing those patterns. So such an analysis is not that much different from the analysis one does when working in quantitative finance, and this is why I think those candidates are very much suited for such roles.

Where do you think the gaps are between a university education in physics and mathematics and working in finance?

STEFAN ZOHREN: As I just mentioned, mathematical skills are important, but so is the ability to deal with large amounts of data, as well as to be able to program. And that are some of the gaps which are usually not taught in traditional courses at the university. So many of those candidates applying for jobs actually gain those skills in their research topics, as well as in other outside activities, such as internships. But we constantly see universities updating their curricula to incorporate more such programming exercises, as well as data analysis, as well as just more project work, where one actually gets hands-on experience to deal with data, and I think that is something very important to train a next generation of physicists.

In light of your previous answer, what general advice would you give to firms that are looking to hire scientists?

STEFAN ZOHREN: Physicists, or scientists in general, are working in a broad range of roles, ranging from say, programmers or software developers to quantitative researchers. I would say that people working more – for people working more on the research side, it is good to have research experience as proven through a research degree such as a PhD. Not only do we sometimes look for PhDs, but even publication records can be useful signs to see how people have been doing during their PhDs.

And there's a big difference between the type of projects people work on during their undergraduates which are usually very simple projects. They spend just a couple of hours, up to a day to solve, whereas a PhD student is usually able to work independently over a larger amount of time, and sometimes even able to learn new techniques independently along the way as needed, and that is something very useful for such firms.

Companies even go so far as to look for postdocs just as an additional qualification, to prove excellence in research. And postdocs are usually also a bit better in communication or potentially have supervised students. So they have better skills in terms of teamwork as well as supervision.

What advice would you give to someone thinking of investing in a fund employing a lot of physicists?

STEFAN ZOHREN: It's very hard to give general advice, but what I can say is that while mathematical skills are important, so is a certain amount of domain knowledge. And I think for any company you want to invest in, it is important that the people have complementary skills. So you don't want to have funds where everyone is a mathematician, but the mixture of people.

Another advice I can give is that, in recent years, there has been an increased focus on machine learning, and there has also been a lot of hype around deep learning. I think one advice I can give to investors is that, not to get carried away by those buzzwords, but to see that the business model is really well grounded.

Finally, let me say that financial data has a lot of special features which are different to other areas where data science is employed. So I would be careful when companies claim that they can easily transfer models obtained in other domain areas into the applications of finance.

NIR VULKAN: Did you understand all the concepts in this video? If you would like to review any of the questions, click on the corresponding button.