

BEYOND THE NUMBERS

Ardea Investment Management head of research Laura Ryan has spent the past two decades using quantitative research to investors' advantage. Now she's also using it to the advantage of the planet. **Cassandra Baldini** writes.

Over the last 23 years, Laura Ryan has led the development of innovative solutions in quantitative analytics for financial institutions.

The published academic currently heads up Ardea Investment Management's research team while balancing an adjunct role as an associate professor at University of Technology Sydney.

And if that didn't take up too much of her time, with a fierce focus on improving things – be it data sets or the world generally – she is currently undertaking a second Ph.D. and spends whatever free time she does have on her personal sustainability project called The Impossible House.

Turning the impossible into possible is a familiar trend in Ryan's life; looking back she recalls it all began with a few words of wisdom.

Canberra earns the nickname 'bush capital' from its sweeping mountain ranges and native landscape. The federal city nestled perfectly between Sydney and Melbourne offers unique insight into the nation's history – past and present.

It is Ryan's upbringing here that encouraged her to forge a future in finance.

"When I was at school there was a math teacher that even the naughty kids liked, he made everyone feel good about the subject even if they weren't good at it," she recalls.

"He told me, 'The world is your oyster if you like math'.

"And I felt pretty good about that because I loved it."

Connecting love to passion and morphing math into finance, Ryan graduated from the Australian National University with an honours in actuarial studies and began her career at Mercer.

"I realised after a year, I wanted more meat on my math. I wanted to get my hands dirty and code, so that's when I did my master's in quantitative finance at UTS," she explains.

"From there I got a quant role at Commonwealth Bank and ended up managing the team; a few years later I decided it was time to take the next step and do a Ph.D."

Ryan returned to the Australian National University where she worked as a statistics lecturer alongside her Ph.D. in bootstrap methods, subset vector autoregression and model uncertainty.

"It was there that I got really stuck into the whole research side of things and now having spent time in both academia and industry, I can see two sides of the coin," she says.

"Within industry, everything needs to be done yesterday and on the other side within academia, you have to dot every I and cross every T."

Ryan now sits somewhere in the middle and explains that keeping a foot in both worlds remains an asset to her research.

"There are a lot of economies of scale because the things that I have learnt through my colleagues at UTS and my colleagues at ANU and the work that I am now doing with my Ph.D. is all directly applicable to what we do at Ardea. And so we turn that research into useful applications for our clients as well," she explains.

"I can collaborate with academics and do credible research, which is an extremely unique position to be in."

This is due to a clause in her contract with Ardea that prohibits the fund manager from interfering with or influencing the research she undertakes with her academic colleagues.

"It's something [Ardea] chief executive Steve Clout is quite proud of because the research we are publishing is genuinely independent, you know that it's rigorous and not just about us trying to flog our products," she explains.

"For example, myself and some UTS academics just submitted a paper on how climate change impacts government bond yields and we're directly using that research in our ESG integration engagement policy at Ardea. It's helping us to develop scenario tests for different climate change outcomes."

Her second Ph.D. - model uncertainty in machine learning and statistics - will help strengthen the research around model risk.

"One example is correlation, it is the backbone for everything and what everyone looks at when they're wondering whether bonds and equities are diversifying each other, even this simple model I think we misuse," she says.

"We make all of these assumptions about linearity and stationarity and independence and almost all of the time they don't hold properly. I don't think we appreciate how incorrect our models can be. If you tweak the data input, if you tweak the type of model, you can get completely different answers and as a cohort, I don't think we know that."

"I want to write a lot of papers to highlight how model uncertainty might not be being accounted for and then demonstrate that we need to be thinking about this a little bit more."

In line with her ongoing research, Ryan says it's environmental change that should be the financial sector's biggest pursuit.

"I would love to see the green bond market further develop. At the moment we have a relative value strategy that only operates in government bonds; currently there are limited options to invest in the green bond space, and we want that to change," she explains.

Tackling climate change across all fronts is also a goal.

"In our industry, we have so much power to change and influence things, there's so much money in superannuation, insurance and private wealth and we know money can do good things and influence change," she says.

"There's been a massive shift in attitude towards the environment even from a year ago when it might still have been seen as fluffy."

Leading by example,



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Laura Ryan

Ryan recently started her own, personally-funded sustainability project.

"It's called the impossible house so I am trying to convert a very small house in the middle of Newtown, into a completely off-the-grid, sustainable house," she says.

The project got its name from the fact that going off-grid takes quite a bit of space – something that's rather lacking in Sydney.

"I only have 104 square meters to work with. This means that harvesting water and sunlight is difficult and the building needs to be designed efficiently to be able to source the water and electricity that I need," Ryan says.

One aspect that seems to excite everyone, she laughs, is the sewerage system.

"To give an example I'm installing an incinerating toilet. It does exactly what you think. It catches everything on fire and then after a week, you empty out the ash into the bin or the garden," she explains.

The aim is to finish The Impossible House by February 2023.

Ryan spends every spare moment working on the house and has even created a website which offers a step-by-step guide, answers to commonly asked questions and cost projections that others interested in going off-grid can use as a guide.

"I figured if I could come up with a blueprint for other people then it's easily copied," she says.

"Just doing something helps to prevent the feeling that you don't have any control over the climate crisis." **FS**

