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Property and Probability

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Radley & Associates Ltd

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Many readers will have experienced the day their child returns from school saying*: "I hate statistics, why do we have to learn this silly stuff; it doesn't make any sense…"*

My daughter, in her first year of GCSE maths, had sat through what sounded like a tortuous attempt by her teacher to explain how predictions can be made with statistics. "Good luck teacher" was my first thought.

I have an admission to make here; I spend much of my time trying to explain to the Boards of banks and property companies why they need to think statistically or in other words measure risk – a not inconsiderable challenge given how we are taught statistics at school.

The parallels between my daughter's lesson and a recent board meeting are striking. Several of the executives railed against the idea that statistical analysis had any value for their business. Tempers raised as some felt their property expertise was being challenged by gobbledegook maths that was trying to second guess their ability to know what a building was worth.

My daughter's teacher had asked the class to imagine there was a room next door with 100 men aged between 20 and 25. He then asked them to guess the height of one individual whom they did not know called James – unsurprisingly no one got it right as fictitious James was 4'11".

The teacher then asked; *"can you guess how many of the men will be between 5'7" and 5'11" "*. By this time my daughter was staring out of the window being more interested in guessing the height of schoolboys walking down the road. The teacher meanwhile had drawn a bell curve on the board and was trying to explain that the average height of a UK male is 5' 9" and that about 60% of males are between 5'7" and 5'11". He turned to the class again and asked*: "now, do you know the answer to the two questions I asked earlier?"* One girl piped up and said James must be 5'9" and everyone must be between 5'7" and 5'11" (clearly not noticing that the teacher had already told them that James was 4'11" or that the sides of the bell curve went down to 4' and up to 7').

The teacher's correct but apparently unintelligible answer (as far as the kids were concerned) was that we can't guess James' height but we can predict that about 60 of the men will be between 5'7" and 5'11" and that there is about a 1/100 chance that someone will be 4'10" (but not necessarily James). My daughter's response was: *"What's the point in that – if you can't tell me James' height then why bother"*.

My daughter's lesson reminded me of a discussion I had with the Board of a major quoted property company. We were debating how to value and forecast the cash-flows of buildings in their portfolio and the finance director said:

"We pay expensive expert analysts to come up with the right answer. We do a vast amount of detailed analysis, taking every cost line into account, making judgements about the quality of our tenants, what rents will do over the next few years, how long units will be vacant for if we lose a

tenant, and from this we can make a very accurate calculation. We don't want distributions we want the right answer: the next five years of cash-flow will be £x and the building is worth £y and that's it. I just don't accept that we cannot get to an accurate assessment".

So I asked him how he knew each of the major assumptions his analysts were using were correct? His answer was that they paid top salaries to their analysts and they were the best in the industry. Ok, I said, but what about other factors such as economic growth, interest rates, inflation, money supply and bank lending – surely they can't be making accurate forecasts for each of these as well? My question to him was: why are you trying to guess the un-guessable? It's like trying to guess James' height. I suggested that perhaps they are looking at the problem in the wrong way.

Now, this is where it gets a bit complicated but stick with me because it's worth it. As an alternative to making a single guess for each of the assumptions made by his undoubtedly clever analysts they could take a 'distribution' of possible futures. And, since we know from historical analysis how these factors tend to move in unison then instead of making a single forecast they can generate multiple forecasts. Thus, rather than producing a single detailed but incorrect value for a building they can have a 'distribution' of possible cash-flows and values. This type of analysis gives the variability of the cash-flows and how high or low the value could be and what is the most likely value. Surely that is a more useful thing to know?

It is difficult to let go of the desire to get a single 'right' answer because intuition seems to tell us that is where we should aim. The seeking out of a single correct answer is, I would argue, an illusory quest. Indeed, the very process of calculating as if it were possible to fix all the variables so that a single answer can be given prevents us from being able to calculate what is possible (and valuable): that is a distribution of outcomes.

Posing questions as probabilities instead of asking for absolute answers generates a very different world view. The need for a 'correct answer' meets the accountant's requirements and is useful when looking at past performance. When it comes to the future and making decisions, looking at the probable ranges of values allows investors to make better judgements rather than agonising to achieve a single but wrong answer.

My daughter's theory, however, is that James is really 14 and had sneaked into the room of adults as a joke; this explains why he was so short. Not sure if the lesson on statistics was fully understood – her argument is that she was thinking laterally.

My lesson: don't try to argue with teenagers – but if you help with their maths homework you may learn something that gives a unique insight into your company's future.

Radley & Associates is an independent firm dedicated to the development of advanced simulation based analytics for the Commercial Real Estate industry. Our clients include leading banks, fund managers and REITS. We have deep expertise in property, simulation modelling, econometric analysis and risk.

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