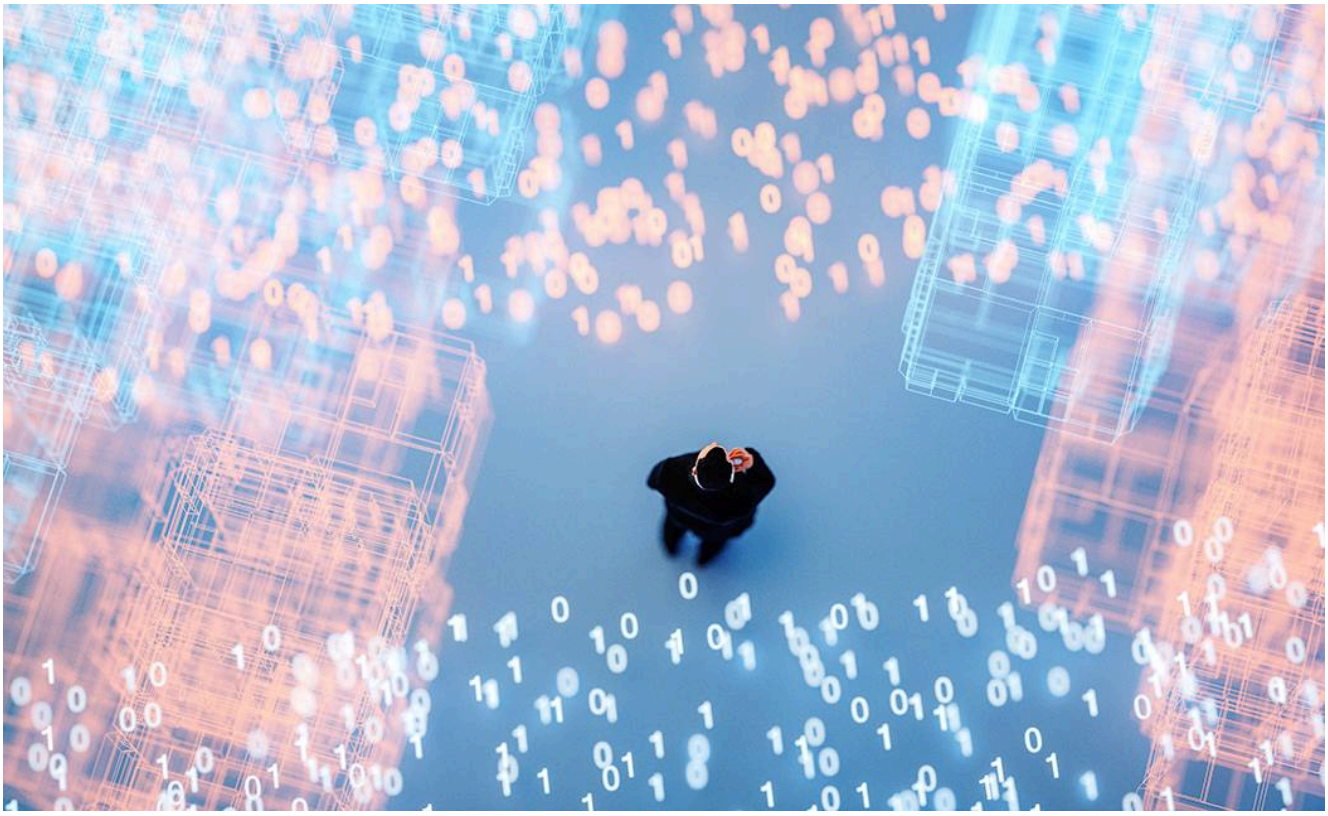
Pay attention to your dataset: on calculating risk premiums

Moving from theories of risk premiums to their managerial implications: IESE's Valentina Raponi breaks down her recent research on estimating and testing beta-pricing models into digestible bits.



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Professor Valentina Raponi sat down with IESE Insight to put her financial research paper, co-written with Cesare Robotti and Paolo Zaffaroni, into terms her grandmother (and we) could

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understand.

IESE Insight: Can you tell us about your recent research?

Valentina Raponi: My recent paper published in the "Review of Financial Studies" is about testing beta-pricing models, and in it, we try to estimate risk premia (or, premiums). Basically, the risk premium refers to the price of risk and it's one of the most important quantities not just in finance, but also in macroeconomics and corporate finance.

II: Why is this variable so important?

VR: Suppose that you observe several assets, with different returns. Naturally, if you want higher returns, you have to pay by taking on higher risk. This is what the risk premium measures: the excess returns which risky assets are expected to outperform risk-free assets. In this paper we focus on how we can measure these quantities with the data that's available. We look closely at the main assumptions that are made in order to estimate risk premia in the standard theory most often applied, so in the capital asset pricing model (CAPM) and in the Fama French three-factor and five-factor models.

What we find is that sometimes these assumptions can be quite restrictive. Some assumptions require you to have a very long time series available for analysis, while focusing on only a small number of portfolios, for example. Yet everyday there are thousands of stocks being traded, leaving you with a very large cross-sectional dimension, but perhaps only a short time-series. Sometimes we don't have data, and sometimes we're using factors that aren't available.

II: And how have you responded to this challenge?

VR: We derived a new methodology which allows us to estimate and make valid inferences regarding risk premia at any given point in time. We are also able to test to see if risk premia are significant or not in this new set-up, with a large cross section and short time series. This is our big contribution.

Another insight that could be interesting for managers is that we are able to estimate the risk premia in a time-varying setting. Let's say you have monthly data: we can estimate the risk premium at each point in time, so basically each month. The results of using our methodology, compared to the standard, can be very different.

For example, we documented a lot of time variation in the risk premia, while using standard

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methodology would imply that these risk premia are constant over time. In standard methodology, factors like liquidity, or HML/SMB [that is, high minus low, small minus big] are found to be significant in set pricing around 50% of the time, compared to 70% of the time with our model.

So it's quite theoretical, but there are real-world applications.

II: What would you say is your main takeaway?

VR: Our message is that it's important to really pay attention to the dataset you have, the one that's available for analysis. You can't just blindly apply the usual methods. You need to look first at what assumptions you need in order to consistently estimate what you want to estimate.

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