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International Faculty Profile

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Elke Weber is the Jerome A. Chazen Professor of International Business. Much of her academic work focuses on risk. In this interview, Professor Weber talks about how honeybees subscribe to the capital asset pricing model, how politicians use uncertainty and what proverbs can tell us about international differences in risk appetite.

Your work is at the intersection of psychology and economics and business. Did you start with psychology and move into business, or the other way around?

I started from psychology. I was a PhD student in psychology at Harvard at a time of important psychological breakthroughs in the study of decision making. [Daniel] Kahneman and [Amos] Tversky, who subsequently won the Nobel Prize in Economics for their work on prospect theory, were publishing and talking about their research on how people actually make decisions. I was excited about their work, but I was wondering to what extent the ideas were being used in the real world. And so I went over to the business school at Harvard and started working with professors there. Subsequently, my experience led to the establishment of a joint program between psychology, sociology and the business school. So in a way, my crossing of two areas—behavioral economics and the psychology of decision making—was one of the early steps for the subsequent cooperation between the two fields.

How did you get interested in the idea that people's risk perception changes with respect to culture?

One of the large effects in social psychology is called the fundamental attribution error. It refers to the fact that any given behavior often has situational determinants and personality determinants. You do certain things because you are smart or conscientious or because you are reliable, but also because of certain situational constraints or opportunities. In trying to explain why somebody does something—why your secretary is late, for example—we tend to attribute too much to the personality. And that is the fundamental attribution error.

I began to wonder whether or not we as a discipline in economics were committing the fundamental attribution error with respect to explaining risk taking. The only variable that we had in economic models was risk attitude: is someone risk-averse or not. So what I started thinking was, "If it is not just attitudinal, what else could it be?" And the other part of the answer could be situational. So the question is, what are some of the situational determinants that might differ across cultures? And one answer was that it might be the perception of riskiness.

This idea of cultural differences in risk taking relates to your "cushion hypothesis." Can you talk about how you developed that concept?

Along with a colleague at the University of Chicago, we devised some investment scenarios where we gave graduate students in Chicago and Shanghai money to invest in a number of instruments that varied in terms of risk and return. And what we found was that the Chinese were closer to being risk-neutral than the Americans. The obvious expected utility explanation was that they were less risk-averse. But then we thought maybe it is not attitude towards risk as such—whether they find it less averse than Americans—but how they think of the risk and how they conceive of riskiness. So we asked them to rate the riskiness of the instruments and found that by and large the Chinese actually perceived the risks to be smaller.

So then we said, "Why would that be?" And we came up with this cultural explanation: Chinese oftentimes have strong social networks. If something bad happens, their father-in-law, their brother or their close business associate will step in and help them. So in some sense they have catastrophic risk insurance, a safety net, so we called it the cushion hypothesis.

What are some ways that you tested the cushion hypothesis?

If it is true that it is the implicit risk insurance that you have as part of your social network, then the size of the social network should matter. So we measured social networks and it turned out that that was a perfect mediator of the cultural differences in risk taking. There were some Americans with larger social networks and some Chinese with smaller networks, but by and large the Chinese had the larger social networks. So if you included the size of the social network as a mediator, then the cultural differences disappeared.

The second way in which we tested it was to look at the currency that was at risk. If it is money, then it is transferable. I can give you some of my money, but I cannot do that for health or grades, as examples. So we also gave Chinese and Americans some of these other risky choices where the unit was not transferable, and there was no difference in their risk taking.

You once looked at novels to compare risk-taking attitudes across cultures, what I'm sure many have called a "novel" approach. Was that a continuation of this line of work?

Yes, we tried to measure how long-standing these cultural differences in risk taking were. If it is a long-standing cultural variable, then it shouldn't just be in the investment decisions made in our experiment in 1998, but there should be some deposit of these cultural differences in something that we call cultural products, like nursery rhymes, proverbs and novels. In one instance, we studied proverbs across cultures and actually found evidence for these cultural differences that we posited. We found greater concern about social risk in those cultures where social networks and relationship maintenance play a large role. We also found differences in the advice given as a result of having this implicit risk insurance.

What is your favorite risk-related proverb?

You know, one proverb that shows up in almost every culture has to do with one bird in the hand as opposed to two birds in the bush, and that is probably the one that had the most cultural universality.

Does the corollary of the cushion hypothesis hold with respect to the reward?

Yes. Essentially, you reduce the variance in both directions. You have a lower downside, but you also have a lower upside.

I understand that some of your insights into risk perception were derived from honeybees. What did you learn from those bees?

It is interesting how serendipity often plays a role in scientific ideas. A brother of a friend of mine was doing a postdoc in entomology at Ohio State when I was there. We had lunch together, and he told me about a series of bee experiments.

First, the bees learned—through experience—about the riskiness of two different environments: Blue flowers had a low likelihood of having large deposits of nectar, and red flowers had a higher likelihood of smaller deposits of nectar, so that both flowers had the same expected value of nectar. Then the bees are strapped into tiny harnesses that allow them to go to only one of the two flowers, and that is the measure of risk taking within the population.

Basically, they were trying to find evidence of the biological equivalent of the capital asset pricing model, where return is expected value (in terms of amount of nectar or calories) and risk is variance. Initially the data were a mess. But then, instead of using the variance, he used the coefficient of variation — the standard deviation standardized for the expected value, so relative risk or variability per unit of return. And if you plugged in the data, the resulting linear relationship was beautiful.

And I thought about this for a long time. There are lots of instances in which our measures of variability depend on where we are on the scale. You find in psychophysics, where you are asked to distinguish changes in volume when listening to a tone and your sensitivity depends on the initial volume, that at lower volumes you are more sensitive. Or you can think about people's willingness to drive across town for price differences, a $100 price difference for example. If it is for a $150 calculator, $100 makes a big difference, and people will drive a long way. If it is on a $10,000 big-screen TV, $100 is a rounding error. And if it is on a $1 million house, then it is ridiculous; people don't even think about doing anything for it. So it seemed to me that people would often show great sensitivity, not with respect to variance, but with respect to the coefficient of variation, the standard deviation divided by where you are on the scale.

So we gathered previous studies and tried to see if using this measure would improve the results. And while it was a little bit better, there was still more we wanted to explain.

Could you describe the work of the centers that you are involved in?

There are a couple of centers that I direct or codirect. One is the Center for Decision Sciences, and that has existed for six years or so. It was an effort to coordinate the research on decision making across different schools here at Columbia. We developed a number of ways for these researchers to get to know one another. And that has been quite successful. The theme is building bridges between different departments, schools and researchers on campus.

The other is the Center for Research on Environmental Decisions. It deals with helping people to adapt to climate change. And given what we know about the discounting of distant events—people are not concerned about their pensions, and that is something that is much more tangible than climate change—our center is trying to help people become more mindful and more foresighted in their responses to distant risky situations.

A lot of political discussions invoke notions of risk, and climate change is certainly one of them.

The issue of strategic use of uncertainty is something that you see on both sides of the political spectrum. People who are incredibly averse to uncertainty about some physical or technological predictions, like climate change, say, "We really can't act on this, because we don't have certainty within a reasonable bound of error to make policy decisions on." But in other domains they don't have any problem with uncertainty. So the same group that doesn't like uncertainty in the case of climate change thinks nothing about locating nuclear waste materials in Yucca Mountain. Whereas the more liberal end of the spectrum thinks nothing about uncertainty with respect to climate change but thinks a lot about it in the context of Yucca Mountain.