Japan Earthquake: Wharton's Jean Lemaire on the Impact on Insurance

Knowledge@Wharton: We have an unusual opportunity today, which is that you have experienced a tsunami. Could you tell us just about your experiences during the Indian Ocean tsunami in 2004?

Jean Lemaire: I was a firsthand witness of the December 26, 2004 Indian Ocean tsunami. I was in Thailand, invited by a former doctoral student of mine to teach a small course and [I wanted to] finish up a couple of papers. I invited her to Phuket Island, for her first scuba diving experience. We felt the earthquake in the morning, but didn't think much about it. After that, it was just pure luck. It has no other words.

I was lucky that I selected a very quiet beach, for my student to have a better experience, and maybe due to its orientation or slope, the beach wasn't hit that much. I was lucky because I selected a Swiss facility, to provide the maximum security -- but these guys were so "un-Swiss" and were 30 minutes late picking me up. Had they been on time, like most Swiss people are supposed to be, I would have been in the ocean. Then we saw the water suddenly disappear. One minute the shoreline was right there. Two minutes later, it was like a quarter-mile back. And somebody in the group knew that's a sign of a tsunami. I didn't. Somebody in the group told us, "Run."

He gave us two very useful minutes of advanced notice. We believed him, since we felt the earthquake in the morning. And we started running. That's why the first and second waves just died at our feet, and we were out of [danger] for the third one, the big one that made all the damage. When we came back, we just couldn't believe it. Our car was two miles inland, totally destroyed. The beach was somewhat spared. I didn't see anyone there at that time. It was only afterwards that we learned about the casualties -- 280,000 deaths, still the largest natural disaster, in terms of the number of deaths. Pure luck. I have no other words for that. The story may have been very different otherwise.

Knowledge@Wharton: The news the last week out of Japan has just been absolutely chilling. It's very early to assess the situation in Japan. But is there any way of saying how large these events are for insurers, compared to other kinds of events? There are hurricanes, big fires, that sort of thing.

Lemaire: We don't know yet for this one. But obviously, it's going to be a major, major disaster, insurance-wise. Hurricane Katrina cost about $89 billion, and that is the largest recorded natural event ever for the insurance world. Otherwise, [the cost of] big hurricanes range between $10 billion and $50 billion. That is likely to be exceeded with this event. But how much exactly, we don't know yet.

Knowledge@Wharton: With events on that scale, do insurers typically have the assets to cover the losses? Or is it outside the realm of what they've planned for?

Lemaire: Insurance companies will build reserves. Insurance is processed to spread the cost of claims in time and space. Obviously, there will be good years and bad years. This is a bad year, and it's only March. They will have to spend most of the reserves that they have

built over the years. We can only hope that the hurricane season in the U.S. will not be too bad this year, because money is going to come out of the same insurance reinsurance pool.

Knowledge@Wharton: Was this a bad year before the earthquake in Japan? Or is that what has made it bad?

Lemaire: This is what made it bad. Obviously, this is going to increase $100 billion. The insurance industry as a whole is going to suffer. The reinsurance industry will be hit in a major way.

Knowledge@Wharton: Before we get to the reinsurance industry, I'm curious about the actuarial process in planning for these kinds of events. Most people have a rough understanding of how insurance companies calculate the odds of car accidents, and even deaths for life insurance policies. They have a lot of data to draw from, and you get statistically significant numbers fairly easily. But these major events are so rare. How does that process work?

Lemaire: It is a lot tougher, and all the more so because of climate change. What [insurers] do is take the data from the past, and extrapolate it in the future. Here, we can't do that. We have to work with fewer data points. We have models, but we need to be more creative in using climate models to try to forecast what is going to happen.

But this is much, much more difficult. Life insurance is so predictable. Number of houses that are going to burn down in the U.S., we know that. This is much, much harder work for us.

Knowledge@Wharton: In terms of climate change, I can imagine how that might affect the tsunami. It might affect sea levels, and that sort of thing. Not the earthquakes themselves, now. Or does it?

Lemaire: No, it doesn't.

Knowledge@Wharton: But it does affect, certainly, the level of flooding that you get. It seems to be affecting the severity of hurricanes. Is that right?

Lemaire: It will impact hurricanes, the level of flooding, certainly. And you have more assets next to beaches than you used to. It seems that the 1960s and 1970s were very quiet years in terms of hurricanes. But that's when people in Europe and the U.S. became rich and started building houses out on beaches. Hurricanes are more expensive these days because assets along the path of a hurricane are so much more expensive.

Knowledge@Wharton: I remember seeing many maps of that during Katrina. Most people around the world live in coastal areas. Is that right?

Lemaire: It is so, especially in Asian countries. Their livelihoods depend on that. For us, it's beach houses; for them, they need to be close to the beach.

Knowledge@Wharton: The other element is that you have to assess not only the risk of an event occurring, but also the cost. I assume that that is a moving target. Is that right?

Lemaire: It is really moving all the time. We know about the cost of the assets that are in the likely path of a hurricane. We know the percentage of people, who buy earthquake or hurricane insurance. But we cannot really predict the exact path of a hurricane. And a 10-mile difference can make an enormous difference in terms of insurance losses.

Knowledge@Wharton: I'm curious about incentives in the insurance industry for making these judgments on the most logical and sensible basis. Are there incentives not to do that? There must be profit drivers saying, "We've got to sell insurance in these coastal regions because that's where people are. We'll have to take our chances that the hurricane hits 10 miles up the coast and not here." Do you think there's a certain business pressure that undermines good planning in this area?

Lemaire: Insurance is about taking chances. Insurance companies are in the business of selling policies, not in the business of denying policies. So, they have to take what's good and what's bad. They are trying to balance their portfolio. If they have too many houses along the likely path of a hurricane, they are going to try to get rid of some of them through reinsurance contracts. They are going to enter into risk-sharing agreements with other insurance companies. We try to have the risks as independent as possible, so that one event will not affect too many of our risks. In a way, we try to swap Japanese houses with California houses, hoping that a disaster won't affect both of them [simultaneously].

It is diversification. Try not to have too many policies concentrated in a given village or area.

Knowledge@Wharton: You've mentioned the reinsurance industry. It's a word many of us have heard, and many of us don't quite get. Could you explain what reinsurance is?

Lemaire: It is insurance, but one step further. An event like this is mostly going to be paid for by Japanese insurance companies. But they are going to suffer. They may not have the ability to pay for it. Fortunately, insurance works. Reinsurance works. And I'm sure the Japanese companies are linked to European and American reinsurance companies, through hundreds of contracts. Essentially, pretty much everybody in the affluent world is going to pay for some of it. Yes, we are going to pay a little bit more, even American citizens, on their homeowners' policies next year. We are going to pay for a little bit of that, helping Japanese insurance companies and the Japanese economy at a moment where they badly need it. These are huge contracts. Hundreds of them. And they span the whole world. I'm sure that hundreds, if not thousands of insurance companies are going to end up paying for this.

Knowledge@Wharton: When I think back to a few years ago to the financial crisis, one of the issues we talked and wrote about a lot here at Knowledge@Wharton was that there had been a sense that many products were being used to make it easier to transfer risk so individuals, institutions and investors who were most willing and able to bear risk were able to get it through modern contracts and derivatives. Then, when the crisis struck, there was somewhat of a sense of thinking, "Maybe this is a process that allows contagion to spread more rapidly." Is there any sense that the insurance industry is spreading danger further than it should through these kinds of things?

Lemaire: I'm not too concerned. It's a good thing that all of us are going to pay for this. Japanese companies, even though they're pretty large, probably can't pay for all of this.

That's why it's good that we are spreading the risk in space and over time. We are going to pay for it this year, but also in the future. A risk is that the insurance capacity is going to be reduced, in the sense that it may become much more difficult to pay for the next [disaster], if it occurs soon. But we really hope that the next one doesn't come any time soon so new reserves can be built up.

Knowledge@Wharton: We have the basic insurance company that we're familiar with, the companies that we deal with on our individual policies. Then we have the reinsurers we've just been discussing. I take it that the reinsurers operate pretty much on a global basis. Do the ordinary insurance companies do that as well?

Lemaire: Some of them do. Some insurance companies have their own reinsurance network. But it isn't as global. And they don't have as much expertise as the professional reinsurance companies in Switzerland, Germany and England do. So, yes, insurance companies do it a little bit, but probably not for hurricane risks. They will exchange risks for life insurance. If they have a life insured for $50 million, they are not going to keep it all. They are going to co-insure it with other insurance companies, or they are going to keep the first $5 million and reinsure it. But typically they do that for the common policies that we know.

Knowledge@Wharton: One of the poster children of the financial crisis was AIG. But many of AIG's problems came from a trading unit in London, I believe, that really didn't have much to do with the insurance operation. Do you have any sense that insurers are taking risks that they shouldn't be taking? Or does it seem to you like a fairly well-run industry in general?

Lemaire: AIG's problems did not come from its insurance operations. Are we taking too many risks? Maybe, because of these pricing problems. Maybe we are tackling very difficult problems. Maybe we cannot model climate change or longevity risks perfectly. Maybe our models are not good enough to model contagion. Actuarial science, or probability theory, is very advanced when you deal with independent risks. When risks are dependent, it's a totally different game. Calculations are much more difficult. And what brought the financial crisis is a lack of appraisal of correlations between risks. This is a potential problem in insurance, but not as large, though.

Knowledge@Wharton: That these are dominos falling in ways that people have a hard time predicting is essentially what we're talking about.

Lemaire: We can't really predict everything. We cannot predict change, essentially.

Knowledge@Wharton: In engineering, they say most accidents are a result of a combination of unanticipated events. Is that a similar problem in insurance?

Lemaire: In the case of tsunamis or hurricanes, this is just a random event that can happen in a bunch of places. What is important is where it happens. The Indian tsunami was not that expensive, because it did not happen in Japan or in the U.S. We can't predict everything.

Knowledge@Wharton: In the United States, insurance is generally regulated at the state level, which some critics think makes it too vulcanized and broken up, with too many gaps. Do you have a view on that? Do you agree? What about globally?

Lemaire: In the U.S., it's regulated at the state level. It certainly makes it more expensive, because if you plan to develop a new policy, you've got to get it approved by 51 different regulators. This certainly makes launching a new product more expensive.

Knowledge@Wharton: What about the oversight of risks that may be building up in the system? Is there anyone watching that? Or is the new agency formed by the Dodd-Frank bill going to take care of that kind of problem?

Lemaire: Regulators in the U.S., insurance commissioners are supposed to have oversight over insurance companies. They are doing their best to try to control the risk, make sure that companies remain solvent and keep track of companies that are in trouble. They try to intervene if they find out that a company is in trouble. Again, it's moving target. And again, it's not so easy to find out.

Knowledge@Wharton: What is the potential for what we call systemic risks, like we saw with some of the big banks? Can the same thing exist in the insurance industry?

Lemaire: Possibly. Take longevity risk. If all of a sudden, people live longer – of course, we do build in some increases in mortality in our models -- but maybe some new medical improvement changes the whole game…. Assume there is a $100 test that will tell us pretty much when and how we are going to die. That could totally disrupt the insurance industry. Only some people will buy insurance. Some people won't. Unforeseen events could occur.

Knowledge@Wharton: Who is likely to be looking out and planning ahead for those kinds of events, aside from the industry itself? Are there any regulators on a national or global level that look for those kinds of systemic risks?

Lemaire: On a global level, I would say, yes. I would say the reinsurance companies, because they are so strong and powerful that they have people dealing with these risks. In a prior life, I was an actuary. I was working with Swiss Re, out of Belgium. They had three people working on Belgian risks only. I know that at Swiss Re, they hired a geneticist to study potential impact of genetic advances. Reinsurance companies have very advanced data.

Knowledge@Wharton: I assume this data is also affecting their pricing, and they're competing with one another.

Lemaire: They are competing with one another. However, the reinsurance market is highly concentrated. You don't have the same level of competition that you have in the regular insurance market. Also, there is a capacity problem, especially after an event like this one. The large companies will pretty much dictate prices. It's kind of a cycle. Sometimes customers have more to say about reinsurance prices. In the future, it's kind of likely that the large reinsurance companies will pretty much dictate prices.

Knowledge@Wharton: How many big reinsurers are there?

Lemaire: Maybe 10 insurance companies, mostly in Switzerland and Germany. There's Lloyd's of London, Bermuda and lots of off-shore reinsurance companies.

Knowledge@Wharton: The bottom line here is that you believe the insurance industry can absorb the cost of the events in Japan, but that all of us are going to pay a little bit more because of it.

Lemaire: They can absorb it. They have in the past for similar events. If there is another event like this one in a couple of months, then I don't know. Maybe in three to four years, when they have time to reconstitute reserves through reinsurance premiums all over the world, they'll be able to pay for it.

Knowledge@Wharton: It gives us just another reason to hope for a calm hurricane season.

Lemaire: Yes.