ilLUminate Blog Transcript: Zach Zahcaria on Supply Chain Risks in the 3rd Quarter of 2026

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STEPHANIE VETO: 00:13 — Welcome to Illuminate, the podcast for Lehigh University's College of Business. I'm your host, Stephanie Vito. We're talking with Zach Zacharia about the Lehigh Business Supply Chain Risk Management Index Third Quarter Report. Zacharia is an Associate Professor of Supply Chain Management and Director of the Center for Supply Chain Research. Hi, Zach.

ZACH ZACHARIA: 00:36 — Hi, Stephanie. How are you?

VETO: 00:38 — Good. Well, I never thought supply chain would be this exciting [laughter] When we first--

ZACHARIA: 00:45 — Supply chain is exciting. It's really the underlying forces, what is going on in the economy, so of course. And being a supply chain professor, I really have to say that.

VETO: 00:58 — Well, last we talked was during the first quarter. Can you start by giving a brief overview of Q2?

ZACHARIA: 01:06 — Sure. Q2 was really the calm before the storm. Our overall index sat at 65.74. It's elevated, but fairly stable quarter to quarter. And the big story at that time was that cybersecurity and data risk was near the top. Economic risk was running high on inflation. But transportation was sitting in the middle of the pack around 71.8. What we didn't really see coming in quarter two is how fast a geopolitical shock could reorder that whole picture. And that's what happened in quarter three.

VETO: 01:38 — In quarter three? Yes. All right. And can we talk a little bit about how Q3 is looking?

ZACHARIA: 01:46 — Noticeably worse. And our overall index jumped from 65.7 to 69.34. Now that may not sound dramatic, but in this kind of a scale, it's not an arithmetic scale, where 50 means no change, a nearly four-point jump in a single quarter is a significant escalation. The driver was the US-Iran war and the blockade, the Strait of Hormuz. It sent fuel and diesel prices spiking and rippled straight into the transportation broader economy. So Q3 is a quarter where a single geopolitical event moved almost every category at once.

VETO: 02:25 — And six of the 10 risk categories rose overall, right?

ZACHARIA: 02:30 — That's right. Six of the 10 increased. And that's what pushed the average up to 69.34. And what stands out just isn't the six rows, but which ones rose and how far. So transportation went from 71.8 to 87.5. And the Economic Risk Index went from 74.07 to almost 84. When your two biggest movers are both tied to energy and fuel, that tells you that the disruption of this quarter wasn't spread randomly. They can be traced back to one common route.

VETO: 03:03 — You said that the report points to geopolitical events, specifically the war with Iran. Can you talk about how quickly international events can affect global supply chains?

ZACHARIA: 03:14	This quarter is almost like a textbook case. When the conflict escalated, the Strait of Hormuz was blockaded. Within weeks, we saw major events declared between March and May. The diesel and jet fuel prices were climbing. Offshore manufacturing costs were rising across the entire world. The strait is a choke point. Roughly a fifth of the world's oil moves through it. So disruption there doesn't stay regional. It shows up almost immediately as higher fuel costs, longer lead times, margin pressure of companies that have no direct connection to the Middle East at all. Because modern supply chains are so tightly coupled and so dependent on cheap energy that a shock on one side of the globe reaches a warehouse in Pennsylvania in a matter of weeks, not months. And that speed is really the defining feature of risk today.
VETO: 04:08	The highest risk category this quarter was transportation. It increased to 87.5, you said. And can you talk about some of the disruptions that are causing transportation risks to increase?
ZACHARIA: 04:23	Absolutely. Transportation was our highest category of this quarter by a wide margin. And it's really a number of different pressures hitting at once. Number one is fuel. Diesel and jet fuel prices driven up by the Iran conflict. And essentially, that raised the cost of essentially anything that gets moved. So on top of that, you have a freight capacity shortage. Our respondents flagged that the first-quarter shipping demand has gone up over 20% against a rather smaller supply of trucks and drivers. We always talk about the chronic driver shortage, and that's always been a problem. Long hours, industry consolidations. And you have new safety compliance enforcement that is taking drivers out of the road. And of course, you've got the aging highway infrastructure. So, fuel, capacity, labor, and infrastructure, all those forces sort of hit together. We have longer lead times, higher costs, and less reliable delivery across the board. That's going to definitely increase the risk associated with transportation.
VETO: 05:31	And now let's talk about economic risk. It climbed to almost 84, which is a big jump from the previous quarter. Do you think companies are becoming more concerned about inflation, the recession, or a recession, or the unpredictability of everything, or maybe kind of all of the above?
ZACHARIA: 05:51	I have to go with all of the above. Really, an unpredictability could be the worst part. The hard numbers are real. In our respondents, the comments cited that CPI is running around 3.8% Consumer Price Index. PPIs in the 5% to 6% range with energy and commodity prices swinging unpredictably. But when I heard, most of the comments was that there was a fear that all of these is going to lead to a recession. In fact, a few of the respondents use words like cratering and inevitable. So it's not that companies are worried about inflation and recession as separate things. It's that stubborn inflation, elevated energy costs, and a persistent labor shortage. They're all stacking up. And no one can really forecast confidently which way it's going to go. So it's the uncertainty that sort of freeze investments and planning. And this is why economic risk sort of came out on the top, especially in the head-to-head comparison. I always say that the hardest things for business to deal with is uncertainty. Once you know, you can always work around. In fact, with the Strait of Hormuz, ships went a different direction. They added that extra number of weeks to go around South Africa, the Cape Horn. But all of those things means we can do it once we know

what's happening. It's the uncertainty that causes this idea of worries about inflation, recession, and so on.

VETO: 07:21 I learned so much from our previous conversation in Q1 and how supply chains need to be prepared for anything and any uncertainty historically. But I feel like it's gotten to a point where it is so unpredictable that they don't even know how to look ahead and prepare for it in ways that maybe in the past they were able to predict or, like we said last time, we talked about having that crystal ball where it's like we can see this coming, but it could turn left, right. It could do a whole loop de loop. We don't know what's happening. And can you talk a little about that? And I love the comments because you can see where the commenters can see ahead and what they're planning for. And still, that can change in three more months, a month, a week.

ZACHARIA: 08:15 Absolutely. I mean, one of the things that's the advantage of this report, the LRMI, the Lehigh Risk Management Index, is that you can't really predict what's going to happen. But with enough people looking out, asking to think about what risks are going to increase or decrease, you at least have an idea of what are things that I should be concerned about and what are things that I don't have to worry about at all. And so when you look at these kinds of things, you have to be aware of what is going around in the broader world. I mean, as I noted before, supply chains are much, much more closely coupled. But also, companies have learned through COVID and through a number of other shocks and disruptions that actually happen to not have everything based on super accurate forecast, super reliable transportation. I mean, you have these huge geopolitical shifts. So companies have learned to hedge their bets. Companies have learned that they're going to have to carry extra inventory. They've got to have more than one source of supply. Maybe have multiple suppliers in different locations. So that's how companies deal with risks. You have to plan for it. What are ways you can mitigate the risk? Are there other things that you can actually do to sort of manage it? Because those things are going to happen. And we talk about in supply chain this idea of being resilient, the ability to be able to handle a disruption and sort of planning ahead of time, what could possibly happen. And then having the resources and the wherewithal to be ready.

VETO: 09:58 And then we throw AI into the mix. And AI had a huge presence in this report, which has been the theme for a while now, right? We've talked about it every single time we've met. Do you think AI has gone from being this emerging technology to watch out for to now an integral part of the industry?

ZACHARIA: 10:18 Exactly. Yeah, I think you stated that so well. A year or two, AI started to show up in our comments. It's something on the horizon. But now it is really part of just about every category. It's not a topic on its own. It's sort of a factor inside the other risk. In fact, in cybersecurity, they talk about AI-enabled phishing and looking at autonomous exploitation of vulnerabilities in economics. Respondents point out to that AI data centers are driving up energy and water consumption in technology and competitive risk. It's reshaping who wins, who gets left behind. So you're absolutely right. AI is now a tool that companies are racing to adopt and a threat. They're racing to defend against.

VETO: 11:08 Do you think AI is going to affect supply chains in ways that weren't even discussed a year ago?

ZACHARIA: 11:15 Absolutely. Again, I'm basing this all on the comments in the report. The conversation is mostly optimistic. AI is going to help you for forecasting, for optimization, for efficiency. Interestingly, in this quarter, you're sort of seeing some of the second-order effects people are now talking about, like flawed AI. One respondent actually pointed out that a flawed AI input got reabsorbed into their ERP system. And those errors sort of compounded as machines sort of learned from other machines' mistakes. So another one talked about AI data centers is a huge driver of energy and water scarcity. So that is a supply chain risk. And then there's a real anxiety about the AI bubble. What happens if that investment cycle turns? So you're absolutely right. The risks are now more around AI's reliability and the resources using. And this wasn't even discussed a year ago.

VETO: 12:16 And what do you think the little old consumers are going to start to notice over the next several months? Little old me.

ZACHARIA: 12:23 Yeah. Obviously, the first one is price. When fuel and freight costs climb, and that it's definitely increasing, those prices are going to go down the chain. Several of our respondents have said that they are going to raise prices. So consumers are going to see that prices are going to start increasing at the register. The other thing is that and this might be a little bit harder to sort of identify that anything that depends on petroleum-based inputs, offshore manufacturing, you're going to have longer waited. This freight capacity stays right. Now, as I noticed, companies have gotten better at absorbing these shocks. So they are carrying more buffer inventory. But at least we're not I don't think we're going to go back to like empty shelves, but you're definitely going to see an increase in prices.

VETO: 13:14 Is there a risk category that concerns you the most?

ZACHARIA: 13:18 Economic risk. As you noted in this report, this is what our respondents said. Remember, I have two versions. I have one where it's a numerical number where transportation risk was the highest. The other thing at the end of the survey, I always ask my respondents to compare and pick the four risks, the highest risk on a head-to-head comparison. And in that ranking, economic risk was number one. Even though transportation is sort of a higher risk, I really believe that if the geopolitical situation stabilizes and fuel prices go down, that risk is going to go down. But economic risk is much more broader.

ZACHARIA: 13:57 It's stickier because it's got inflation, energy costs, labor costs, tariff uncertainty, AI-driven anxiety. And it's really sort of a risk that could tip us into recession. So when the underlying economy is a concern, it's not, I don't think, resolve in a single quarter. And that's the one I feel is going to drag most of the other categories along with it.

VETO: 14:21 Looking at all three quarters and having the data and information for it, are you noticing any trends?

ZACHARIA: 14:30 Yeah. It's really interesting because if you look at the index of the last three quarters, it really sort of went up and down. Quarter 1 was 68.78. Quarter 2, it went quite a bit down to 65.74. Quarter 3, it jumped up to 69.34. And you could almost say that each reversal sort of had a different driver. Your tariff and inflation fears in quarter one. Everyone was not sure what's going on and that increased the risk. Then sort of the tariff fears got down. Everything stabilized. Everything was good in quarter 2. Then you had the Iran war in quarter 3. So it's this idea that it's not that risk is going to sort of stay level, but how quickly it can change depending on these kinds of impacts.

VETO: 15:17 I don't think I'll ever get over how rapidly things change in the supply chain industry. This is our third time talking. I've been doing these about a year now. And I remember when we first met, I was like, "What are we going to talk about every six months?" This is silly. I look forward to these, and I look forward to the report. It's nuts.

ZACHARIA: 15:36 It is actually kind of crazy how it actually works. But I am really-- also, I mean, obviously, biased, but I think the Lehigh Risk Management Index does a really good job of identifying what people are thinking about and what people are worried about. And it has done an excellent job of saying-- in fact, if you remember in quarter 2, it was the only category to rise. Transportation sort of grew up because everyone was kind of worried about transportation. We're almost a quarter early. While even 9 of the 10 fell, many respondents thought that, "Hey, this could affect transportation." And sure enough, transportation went up from 71 to 87.

ZACHARIA: 16:20 So you've got to imagine that climbing 23 points on the bottom of the pack really makes a big difference. And I think that's where you've got to think about this risk index does a good job of sort of predicting what's going to likely be important further on. The other important kind of thing to note when you're looking across the past three quarters is that the top concern sort of changed between each quarter. So in a head-to-head ranking, government intervention was number one in both Q1 and Q2. Remember we were worried about the tariffs, the Supreme Court fight. And then it got handoff to the economic impact in Q3.

ZACHARIA: 16:57 So clearly, the dominant anxiety sort of migrated from policy to energy and now to the broader economy. So these are real things that people are worried about. And obviously, in supply chain, we've got to make decisions based on those kinds of risks.

VETO: 17:13 Zach, as always, thank you so much for being on the podcast.

ZACHARIA: 17:18 Fantastic. Thank you, Stephanie.

VETO: 17:21 That was Zach Zacharia discussing the Lehigh Business Supply Chain Risk Management Index Third Quarter Report. You can view the current and past LRMIs on the College of Business Supply Chain website. This podcast is brought to you by Illuminate, the Lehigh Business blog. To hear more podcasts featuring Lehigh Business Thought Leaders or to follow us on social media, please visit Business.Lehigh.edu/news. This is Stephanie Veto, host of the Illuminate podcast. Thanks for listening.