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VULNERABILITY AND RESILIENCE:
THE FUTURE OF EAST ASIAN SUPPLY CHAINS

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P R O C E E D I N G S

MS. SOLÍS: Welcome, everyone. I am Mireya Solis, director of the Center for East Asia Policy Studies at the Brookings Institution. Thank you very much for joining us for today's public webinar, "Vulnerability and Resilience: The Future of East Asian Supply Chains."

Global supply chains have been central to East Asia's economic rise. Trade and investment liberalization and moderate interstate competition allowed extended production networks to develop across national borders resulting in growing levels of regional and extra regional integration,

These production networks have thrived. Keep in mind that more than two-thirds of world trade today occurs through global value chains. And East Asian economies have been front and center in these developments given rise to what we now commonly refer to as "factory Asia."

Just to give you an example, East Asia leads the world in the share of supply chain trade that is trading components and machinery in technology services in the electronics sector according to a recent study of the United States International Trade Commission.

While these supply chain model of economic growth has long dealt with localized political risks and on occasion natural disasters we may be seeing a shift to a broader, more sustained set of risks brought on by great power competition, pandemic disruption, and economic nationalism.

As the geopolitical landscape has changed so have the sources of vulnerability and resilience for these production networks opening questions about the future of this essential driver of economic growth for the region.

To discuss this critical moment for East Asia's supply chains, we have with us today a panel of distinguished experts. We will discuss how great power competition, supply shocks and the pandemic have affected East Asia's supply chains, as well as challenges faced and strategies implemented by Japanese and Taiwanese production networks in mitigating risks brought on by these factors.

I will introduce today's panelists in the order in which they will offer their initial remarks. First, Dr. Etel Solingen is distinguished professor and the Tierney chair in peace and conflict studies at the University of California, Irvine. She is the editor of a forthcoming book, "Geopolitics, Supply Chains,

and the International Relations of East Asia.”

Next, is Dr. Tain-Jy Chen, who is a professor emeritus of the National Taiwan University. Professor Chen previously served as the minister of the Council for Economic Planning and Development and the National Development Council in Taiwan. Among his many books, he is the chief author of "Taiwanese Firms in Southeast Asia Networking Across Borders."

And last, but not least, Dr. Kristin Vekasi is associate professor in the Department of Political Science and School of Policy and International Affairs at the University of Maine. She's the author of the book, "Risk Management Strategies from Japanese Companies in China."

Following initial presentations from each of the panelists, we will hold a moderated discussion and then a Q&A session with our virtual audience. I would like to remind our viewers to submit their questions by email to events@brookings.edu, or by Twitter using #SupplyChains.

So, now I would like to turn the floor over to Professor Solingen for her remarks. Etel, please go ahead.

MS. SOLINGEN: (No response)

MS. SOLÍS: I think you're in mute.

MS. SOLINGEN: thank you, Mireya, much appreciate. Let me see if I can share my screen successfully. Is that visible? (No response) Okay, thank you very much. My focus on GVCs came out -- so you see the number one slide, right? (No response) Yes? Okay. (Slide)

My focus on GVCs came out of wrestling with an article I published in international security, the journal at the Belfer Center in 2014, on the centenary of World War I. And that piece argued in a nutshell that 2014 was not 1914, that China was not necessarily the new Geyser ride and the GVCs had much to do with all of that.

I have worked on the attraction between GVCs and security since. But my remarks today address a small subset of that broader agenda sharing some findings from my collaborative volume that is posted on this slide and that will be available this week or next week from Cambridge University Press.

I'd like to thank the University of California, Office of the President, for funding this project at a time when GVCs or global supply chains were well below the radar. Events since 2018 provide

some form of natural experiments for gauging the role of GVCs in the international relations of the Asia-Pacific because the preexisting GVC infrastructure has been under stress and interstate tensions, as Mireya remarked, have escalated beyond anything we have seen in recent decades. Events are still unfolding though, so what we have is a very glib preliminary snapshot. (Slide)

We're moving to a slide of the general background which includes the fact that the inward-looking turn in China and the U.S. targeted GVCs well before COVID. But the pandemic exacerbated geopolitical tensions dramatically and raised public awareness of GVC interdependence.

Criticism of efficient, just in time named inventories via GVCs became widespread along with calls for decoupling, reshoring self-sufficiency, self-reliance, etc. And pushbacks against these calls recommended enhancing redundancies and diversification as a better way to increase resilience and security of supply than decoupling or reshoring.

Now, firm level surveys suggests that reshoring has hardly been the standard DVC response thus far; for one, it's too expensive. GVCs have instead adopted by diversifying production and sourcing some relaxation of just in time production, more robust of entries, mapping all of the tiers and sub-tiers, more transparency, regionalization, near shoring shorter supply chains, and especially automation and digitalization. (Slide)

The next slide has a little bit more detail. So regarding firm strategies, according to a garnered probe, 87% of firms are investing in increasing resilience over the next two years, 66% in enhancing supply chain visibility or transparency and mapping.

Most firms retained -- and in China -- for China strategy with 80% having no plans to relocate production or sourcing outside China in 2018, rising to 85% in late 2020, so fewer than in 2018.

Developing Asia captured about 60% of favored destinations in 2019, declining actually to about 40% in 2020. Japanese, South Korean, Taiwanese, and even Chinese firms continued the flight from China's rising labor costs over the recent years relocated some production and final assembly to Southeast Asia, especially Vietnam, but also Mexico, India, etc.

U.S.-China tensions were the most important reason for considering relocation for about 66% of firms in 2020, followed by, you know, general uncertainty in the policy environment and risk

management.

I want to focus now more directly on the geopolitical dimension for these firms. So 66% deemed U.S.-China decoupling to be impossible in 2019. Only 45% found decoupling impossible by March 2020, and this is the beginning of the pandemic.

In late 2020, for the first time, rising U.S.-China tensions became the number one challenge for 78% of firms across all international categories and services. About 50% were pessimistic regarding U.S.-China relations and only about 15% were optimistic rising to 35% optimism in another survey.

But in late 2020, 92% of U.S. companies projected a "quite likely" or "very likely" escalation in U.S.-China trade disputes over the next three years. However, prior to the 2020 elections, 34% foresaw a deterioration in U.S.-China relations, whereas, after the elections only 11% predicted further deterioration.

Prior to the 2020 elections, only 35% believed relations would improve and after the elections 50% predicted improvement. So things became slightly better towards the end of 2020. Let me real quickly move to some conclusions. Surveys then suggest a potential decline in China's status as factory of the world relative to past but hardly its demise.

Diversification implies a China Plus One or China Plus Many strategy where China's domestic market remains, of course, a powerful source of attraction but adding other countries softens this extreme dependence on China. A revised rather than (inaudible) GVC infrastructure maybe emerging, possibly, just possibly, one more resilient, but resiliency is not necessarily self-sufficiency.

However, weaponization and coercive state craft are two-way streets. Dual circulation policies and no execution orders continue to fuel uncertainty. So there is a non-trivial likelihood that dual politics, tech competition and the legacy of COVID-19 could unleash even more sizeable disruptions in the global geography of production.

Now there is much, much more in the book with contributions from excellent economists and political scientists to topics such as: global supply chains and technology, labor, trade balances, U.S. domestic politics, China domestic politics, the evolving smartphone industry, and, of course, artificial

intelligence, all as they relate to global value chains.

So, thank you again, and back to you.

MS. SOLÍS: Thank you very much, Etel, that was fantastic. And I didn't realize that the book is coming out in the next few days. So the timing of the panel could not be better, and thank you for sharing these highlights of what is a very, very rich set of analyses.

So, with that, I would like to now turn next to Professor Chen.

MR. CHEN: Can you hear me now?

MS. SOLÍS: Yes, we can, thank you.

MR. CHEN: Okay. Thank you, Madame Chair. I would just follow up, introduce a really very nice presentation of the general picture. If you ask multinational companies in China whether they are going to leave China because of this geopolitical thing, the general answer is no, because China is a very important market.

Nobody can afford to abandon the market over here, so the production in China will certainly continue. So the so-called In China For China Policy will be the important policy and this will be reinforced by the Chinese own policy of so-called "the emphasize in internal demand," as an engine for future economic growth rather than exporting.

And China also have very strong policies to encourage foreign company, multinational company to produce in China, just take Tesla as a very good example. So this is coming to be something if we define decoupling as whether you are going to leave China, you know, behind, the answer is generally no.

However, I think decoupling is happening in other parts of the production, for example, for Chinese companies we are making goods for American firms and for European firms. You know, we are under very big pressure for solo decouple.

We're changing the production solo configuration regarding China. For example, we are working, we are making t-shirts or shoes for Nike. Nike will tell you not to produce in China anymore, or, you know, the things that will remain produced in China we all need Nike shoes which, you know, to be sold for to Chinese consumers and all of the other production should be outside of China now.

So, therefore, that all company many years ago, and before 2018, when this trade war began, they already relocated production to Southeast Asia or South Indo-Asia. But remember that this Asian supply chain is so much integrated, are closely linked.

So when Chinese company relocate to Southeast Asia, for example, Vietnam, we continue to source upstream product for China because China has such a huge production capacity, you know, in every industry, every segment of the industry. So when you ship the downstream production to Southeast Asia, you know, you cannot help continue to import goods from the Chinese factory. So, therefore, Asia remain kind of connected, there is only a shift, you know, of these production.

So I think if we make another example, for example, the IT industry such as computers and phones, cellphones, notebook computer and cellphones are not yet subject to U.S. -- under the tariff.

So, you know, majority remain bruised in China now but they are really shifting, partially shifting those production which are now serving the Chinese market, particularly those who are serving the U.S. market to other countries.

For those IT product that are already subject to 301 tariff such as service, some telecommunication product, they already left China because nobody can afford to pay 25% extra tariff to serve the U.S. market. So those product were already related, I think mostly back to, for the Chinese company, mostly back to the Chinese factories.

So that's the reason that our export to U.S., particularly last year, have increased so much because of these so-called reshoring; so to speak, is not reshoring to the U.S. but reshoring back to Taiwan.

And, of course, then the supply chain I think somethings are just happening underneath the water, so you need to be -- you know, look at the Chinese government will show you a lot of statistic to demonstrate the modernization of company remain very strong in China, foreign investment is still increasing and production has never declined.

But underneath that there is a lot, a big shifting of these structure. For example, production of automobile in China has increased, particularly EV, electric vehicles. And, therefore, you see a lot of foreign investment, supply chain is actually kind of reinforced in China.

But on the other hand, if you are looking at the automobiles or auto parts that are produced or serve the U.S. and European market, you know, and they're mostly are leaving China because this geopolitical reach is so much to fuel all of the multinational firms.

Okay. I will just stop there to sort of give a general picture of what has been happening since roughly 2018. Thank you.

MS. SOLÍS: Thank you very much. And I think those remarks really captured how much that the reign is shifting and how some of the responses are not what we anticipated necessarily. I mean when we talk about reshoring the U.S. hopes of bringing back that capacity might not materialize. But, actually, it makes sense to go elsewhere in Asia be it Taiwan or other locations.

With that, I would like to then ask Professor Kristin Vekasi to offer her remarks.

MS. VEKASI: Great, thank you so much, and thanks for inviting me to speak tonight. And my remarks are going to talk about, largely about Japan and China. This is an interesting piece because somewhat like Taiwan, Japan has experienced a lot of geopolitical risk in the Japanese market. And some of the cases I think are instructive for how we can think about supply chain resilience and firm level and state level responses to geopolitical risks and supply chains.

So I think there is two things to think about here and one is, of course, identifying points, choke points or points of vulnerability. And those might, of course, come from control of a resource or some sort of technological or manufacturing expertise that gives control over a particular product to a country.

But then there is also particular times of vulnerability and thinking about timing I think is very important because just because you are dependent does not mean you are vulnerable. It does not mean that that will be weaponized or become a point of geopolitical risk.

And when we think about responses, we need to take into account both the vulnerability and the timing because multinational firms often do not choose to respond to what are perceived as risks by political elites. They would rather usually stay the course, as Professor Solingen's comments already pointed to.

So, as we know with this China Plus One strategy to diversify throughout Southeast Asia,

this has been something that the Japanese government has been pushing for almost two decades now. And they first started, right, soon after China joined the WTO worried about Japan's growing economic dependence on China.

It was pushed through the Japan External Trade Organization (JETRO), as well as informally by the Ministry of Economy, Trade and Industry, but initially there was very little interest in diversification.

If anything, when faced with political risks like that like a big, anti-Japanese movement in 2005, and then another political shock in 2010, if anything there was more movement towards China and rather than any move towards diversification in most sectors, or decoupling, or anything else.

However, and this is despite that firm said they were going to relocate. And so you saw a concern stated but you didn't see movements. In 2012, we started to see a little bit more movement from Japanese firms. And so these data, this chart here shows movements from new Japanese subsidiaries moving to these Plus One countries.

And you can see, particularly in the right-hand graph, that the firms going to the Plus One countries do start to overtake new firms in China which decline as a percentage of the whole, all of the numbers do go up. But you can also see that this is a continuation of a trend that had happened before.

So what should we take from this is that these political moments can spur the private sector to change behavior, but we should not necessarily expect them to be proactive but rather it often is reactive in terms of building supply chain resilience.

Looking at a specific case is helpful of supply chain shock and a perceive geopolitical risk is really instructive of how Japanese firms and the Japanese state work together to do this.

And I'll talk a little bit about rare earth metals and the rare earth metal supply shock that happened in 2010, when amidst a political dispute amongst the disputed Senkaku or Diaoyu Islands. Japanese firms reported that they were unable to import rare earth metals from China.

And following this there was a broad response from the Japanese state, as well as Japanese companies to diversify the supply chain. Reshoring here is not an option, as Japan does not have a domestic source of rare earth metals. But all different arms of the Japanese government work

together, as well as the private sector in order to build a more resilient and less vulnerable supply chain.

So there was support from the Ministry of Economy, Trade and Industry through subsidies to Japanese firms that were seeking additional diversified sources of rare earth metals, as well as substitutions.

There was also a movement from JOGMAC, the Japan Oil, Gas and Metals National Corporation that, as you can see, those are the triangles on the map. All around the world, JOGMAC started pursuing projects, they were not all successful.

Many of these projects have not come to fruition. But they started pursuing new investments and mining projects around the world to try and secure resources. They did this in some of the successful cases in partnership with the Japanese private sector. And, again, those faced a lot of hurdles that I would be happy to talk about more in the Q&A.

We also see that the Ministry of Foreign Affairs started taking diplomatic trips often with private firms to countries around the world to try and open up new supply chains. So we see the economic arm, the diplomatic arm, as well as the private sector working together to try and build a more resilient supply chain after vulnerability support revealed.

Now this strategy was largely successful and Japan went from having about 90% of their rare earths coming from China to now it's between 40 and 50 sometimes; some months it's a little higher than that, but on average coming from China. On the bottom graph there you can see that the United States' trade patterns with China largely is with rare earth metals largely have not changed.

So what do we take from this? How did this work? So I think there is two main points. First, is that you need to have some sort of motivation beyond the economic fundamentals in order for firms to choose to do these decoupling or reshoring or even just building a diversified resilient supply chain.

Choke points are there for a reason. It's usually because they are very profitable and I think it's the easiest and best way to do business, right, made in China, for China, absolutely. But also, right, buy your rare earths in China because that is where they are the least expensive and they have a lot of expertise.

So some things geopolitical risks can lead to these reactive successful strategies but they also are places that introduce new risks. And that's a place that you could have state support at critical junctures that may help build those resilient supply chains.

I think that's more difficult to do in a proactive way rather than a reactive way because often there is more reluctance on the part of the private sector to diversify or take these strategies than the states might assume.

Today, we see from in Japan similar responses, as we saw in the rare earth case happening post-pandemic. And we see that through state actions from many. We see that in Japan reaching out to partners in Southeast Asia, as well as the United States develop more multinational resilient supply chains and I think there is a lot of lessons we can learn.

So I'll wrap up there, and I look forward to our conversation.

MS. SOLÍS: Thank you very much. That was really great and I enjoy very much the graphics. I think that they were very effective in making the points that you were referring to.

And, Kristin, and in particular I enjoyed very much the point you made that choke points are there for a reason, efficiency, the gravity, in the sense of the weight, efficiency conservation has, and therefore you need some kind of geopolitical shift to justify moving into a new pattern of production or integration.

So, you know, all of the panelists have been very disciplined and they presented a lot in a very concise way. So I think that that leaves us with a lot of time for discussion and I would like to start that.

And, you know, I think that sometimes we focus very much on the current moment, on the headlines and feel that indeed a bright new world is -- or bright dark world is opening in front of us. But I think that you all have a long expertise on the operation of these supply networks.

And, you know, it's par for the course that if you're going to be operating a production network across national borders, political risks, and other types of risks are embedded in that proposition.

So, you know, these global value chains are no strangers to the management of different types of risks and supply shocks. And, you know, Kristin made reference to one when she was talking

about the ban that China imposed on the export of rare earth metals to Japan in 2010, but there have been other examples.

I am also thinking mostly of the Japanese case but others can bring others. I'm thinking of the great Easter earthquake in Japan, a terrible earthquake, and how that damaged production networks.

So I was wondering if we look back and think about supply shocks, think about the exposure to some of these choke points, what lessons can we draw about how firms adjust to these disruptions?

Because my concern is that lately we just think about vulnerabilities and risks without really fully realizing or articulating that supply chains are also a mechanism of insurance, they provide a hedging option. If you tap on the trade channel, you can access components. You can rely on firms within the network. And that's also a source of reliance.

So, again, it's not just about the risks but also the benefits that comes from the supply chain network. So what can we learn from previous supply shocks?

MS. SOLINGEN: Okay, I'll start.

MS. SOLÍS: Go ahead, Etel, thank you.

MS. SOLINGEN: Yeah. So I think the main lessons from natural disaster which you mentioned, geopolitical and pandemic risks take us back to what I started out, you know, diversification, some relaxation of just in time, or hyper efficiency, more robust inventories, mapping all tiers, transparency, all of those things, digitalization.

But from the perspective of international relations, the lesson is simply there is no alternative to multilateral rule-based solutions. Coercive economic state craft may be sometimes necessary but also has a checkered record in our field, as you know.

Their blowback and steal back effects that sometimes hurt the sender no less than the target. So, and of course, all countries shoot themselves in the foot occasionally, some more than others.

But the case of rare earth that Professor Vekasi discussed is a good one because it is one thing to want to move up the value chain in rare earth and quite another to curtail supplies to others,

right, which China has done for over a decade now, beginning with that Senkaku Diaoyu events after 2010.

So what happened is that Australia, Brazil, Vietnam, Mongolia, the U.S. also have significant reserves. And the map that Professor Vekasi showed, right, showed some alternatives, right, other viable alternatives too rare earths maybe in the offing, not today.

But China also understanding some of this raised its production quotas slightly as a bargaining chip. But the executive order is explicit on targeting rare earths for a reason, you know. They have been used in the past. And European allies that are not fueled with decoupling, okay, they have incentives to diminish the vulnerability of supply chains and critical raw materials.

So those are some of the lessons. But as to your question, Mireya, I think you said something about what do we start to lose if economic nationalism prevails, is that --

MS. SOLÍS: Mm-hmm.

MS. SOLINGEN: I think we may end up very briefly exactly -- if economic nationalism does prevail, we may end up exactly with what protectionism portends to minimize, the loss of good jobs.

And other effects would be, you know, higher costs for consumers; potentially higher inflation at a time when we know that some inflation is expected perhaps; lower R&D investments by firms, lower productivity, lower competitiveness and growth; and the potential replacement of U.S. firms by others that are not interested in decoupling.

So, one last warning about these lessons is that a recent IMF study by Cordero et al. estimated that great tensions between the U.S. and China have costs about half of a percent of GDP globally, but the ten decoupling, including by Europe, could raise the costs ten-fold and up to 5% of GDP.

So, you know, doing away with more connectivity, according to another study by the OECD, could not just reduce GDP and incomes but also become more not less vulnerable to shocks. I'll stop there.

MS. SOLÍS: That was fascinating. Thank you so much, Etel. While there are comments from the panelists, go ahead, Mr. Chen.

MR. CHEN: Yes. So I will just follow up by saying supply chain management has a long

history and multinational firm, you know, they have learned to deal with this for a long time, such as natural disaster, and social unrest, and the others. But this political risks, this geopolitics getting into the supply chain management is something very, very new.

And so a big challenge for particularly smaller multinational suppliers who are not so familiar with international politics. For example, our Chinese company that never, you know, they always believe that stay away from politics is the best way to do business. But now the whole picture is different.

If you don't pay attention to politics, you could be in trouble, and if you don't know how to deal with it. That's the new challenge I think for international to reach, you know, later in collaboration between firm from different countries.

For example, there was a sudden announcement by U.S. Commerce Department the other day to put in some Chinese companies on the entity list. And then immediately at, you know, one of the major suppliers to those company, one of the so-called military-related company, China I think the stock price, well, just dropped down for three or four days consecutively.

This is something very, very difficult. So I guess there is really a need for government of different countries to have more coordination in exercising these kind of management whenever these politics is involved.

Some of the issues we are discussing regarding the supply chain security is really responsibility of the government not companies. We are now asking the companies to build this responsibility which is I think is very, very difficult.

For example, you are talking about the risk of losing a supply of (inaudible) medicine from China and therefore jeopardize in your pharmaceutical industry such as what has been happening in India right now.

This I believe is something need to be carefully thought out, and the government has to create some rule in the process instead of, you know, try to kind of reconfigure the global production is solve solution to sort of make sure that, you know, security and the supply chain is maintained.

So there is a necessity for dialogue between the public sector and private sector, as far as these so-called the Brazilian supply chain is concerned, you know. I think we do make a big mistake

by putting too much production in China because for a reason of efficiency, you know, because this is such an efficient production.

You put everything in there and it's one country you can source everything and then, you know, almost every industry is available, all kind of materials are available and they, with the government subsidy and the other things, are so cheap, so convenient to do it, you know, just look what iPhone being produced.

So we do need to make adjustment to that. I think we need to diversity away from concentration in China. But we, you know, in order to rebuild a supply chain without China and as efficient as the one with China will take some time and we need sort of called the coordination between countries. Thank you.

MS. SOLÍS: Thank you very much. So, you know, going along with this conversation, you know, I think that some of the lessons that to me are striking is, one, that, you know, reshoring full set (phonetic) production in one country is not necessarily equivalent to a secure supply of products and a secure production of capabilities.

It seems that, you know, diversification is better. Because, again, what we have seen from firms that are effected by natural disasters or by interstate tensions is that frequently tapping on the network makes them more resilient. So, again, putting all of your eggs in one basket does not necessarily call for a good recipe.

But also I think that another lesson is that it is true that choke points can be manipulated by states. They can try to weaponize interdependence, and there is a flourishing (inaudible) on that.

But it's not a cost-free option. I would make the case that if you decide to exercise the card, you should be prepared to perhaps lose influence because supply chains are not going to stay still if a strategic vulnerability has been exposed. Now the success of the adjustment remains to be seen.

But we can, you know, go by the case of the rare earth metals in Japan, but also the more recent Japan-Korea dispute on export controls. And what ends up happening is that when firms and governments on the receiving end find themselves pushed against a corner, or they feel that they have to quickly develop alternative suppliers, develop domestic productive capacities, it is the firms, the

other firms that were supplying that market that are at the risk of losing those clients.

So I think that that's also an important element to take into account. And I also believe that when we talk about supply chains it really depends on what kind of product we're talking about because some are more strategic than others. And I have a two-part questions.

One is, I would like to ask a question to Kristin more because she told us that she could tell us more about successes and failures of the Japanese program to diversify and develop alternative sources of rare earth metals.

I think this is a very important topic because the United States today is attempting to do the same and Japan appears as a model, even though we do not have the same machinery of garment institutions being able to provide the kind of financing that's available in Japan. So what could be learned from that?

But after hearing from Kristin on that specific point, I would also like to ask the panelists if they feel inclined to discuss semiconductors because if we think about choke points that's another one that it stands out.

And it's really striking that when you talk about really advanced chain manufacture, you're talking about choke points, you're talking about concentration. There are very few firms that are the leading actors. There are very few countries that are producing the vast majority of these chips. They are located in East Asia in hotspots.

I'm talking about Taiwan and South Korea. And, therefore, this creates a whole debate as to where those are vulnerabilities that should be advanced in the manner in which I have been describing.

So I put on the table a lot, but if we think about a strategic commodities, choke points, rare earth metals, and semiconductors, what's the state of play and what can government and firms do to reduce vulnerabilities?

So, Kristin, why don't we start with you, and then we can continue with the other panelists if they feel so inclined?

MS. VEKASI: Absolutely, yeah, thanks for that question. So when Japan first started off

trying to diversify rare earth metals there is these many policies and JOGMAC went out and started to do these things. And one of the early successes was with this Australian firm named Lynas. And Lynas is also a firm that the United States is working with to try and diversify rare earth metals.

It's a key firm, a key non-Chinese firm that has a lot of experience. However, around 2010, Lynas was in a lot of trouble and was starting to go bankrupt. And so the Japanese, a general trading company Sojitz and Lynas worked together to sort of call Lynas out and to reinvest in the mines; and then Lynas later also began to go bankrupt again.

And so one of the things in the rare earth metal market is that China does have a lot of control over the production and can, to some extent, change the price, not completely, right, there is a global market. And so when the prices, the prices go way up in 2010, and then they crash after the geopolitical crisis and some people stop panicking and that means all of these new mines that had been opened started to close.

And so this initial diversification push failed because of normal market mechanisms that they no longer could afford to run. And so JOGMAC, the Japanese state and Sojitz needed to bail out Lynas a number of times and they did. And so, at that critical juncture, where Japan could have said, okay, well, you know, it's gone back to normal with China, let's just give up; they decided to stay the course.

And so, today there are still some issues. They have a processing plant in Malaysia. It's a very high polluting process. There are difficulties in the Malaysian market with that process but the metals are mined in Australia. They're shipped to Malaysia for processing and then they're sold to Japan, and they're mostly turned into electric car batteries.

And there have been multiple investments and sort of reassessments of both business risks and political risks. And so the reason I think that's so important to think through is that the ventures particularly that the state might do often will fail.

And so if it's a key part of a national strategy, securing critical materials, then there will be many times that don't work out the way that the investors initially thought.

Currently, the Department of Defense is investing in a Lynas processing plant in Texas

and that's a component of the strategy. And we don't know what will happen, but it's been years in the making. It hasn't started to supply the United States market yet and it still may take a long time.

To pivot slightly to Japan and then maybe go into this next part of the question, I think the Japan-South Korea semiconductor, or the materials that are used in semiconductors is also a great example of how these choke points can be maybe wasted if used for economic coercion.

Now once you let that arrow fly from the quiver, you do not get it back. And South Korea has not managed to replicate the photo resist, I believe, at the purity and quantity that they need from Japan.

But once the private sector and state were well aware of that vulnerability to Japan and that Japan might be willing to loosen the arrow then it's the Japanese suppliers that are really at, you know, facing business risks of losing their customers.

MS. SOLÍS: Thank you, great discussion. So then let us pivot to semiconductors and if there are any comments on that. You know, I think that there have been a lot of developments that's at the center of the U.S.-China tech competition.

Professor Chen mentioned the entity list and how that has been applied more strictly. You know, it was not just American companies but later on this was also applied to foreign companies that used American technology and machinery that they also need to abide by the entity list.

And I think this whole episode did underscore what is a key vulnerability of China, and that is that it has not really yet produced the most advanced semiconductors. And I think this only redoubled the Chinese intent to become self-reliant and it's a question as to how fast can it do it, but also puts, you know, Taiwanese, and South Korean, and the Japanese firms who are part of that supply chain in a difficult position because they must navigate these uncertainty.

The rules of the road are now being changed frequently and also we're seeing moves from the United States government to try to bring some of that advance manufacturing capacity to the United States with, you know, plans to invest, say, in Arizona, and so forth.

So, you know, some analysts have said that in the future when we look at supply chains that's where the real risk of fragmentation exists. I think that holds true in a report that he published that

he co-authored talks about red supply chains, and blue supply chains and that, you know, we talk about resilience.

We were going to talk about redundancy in the sense that you are going to have to be targeting different customers or it might not be possible to service both markets. So how does this picture look for you, if you're looking at semiconductor industry?

MR. CHEN: I will say, well, this has become a very hot topic now. The concentration of semiconductor production in three countries of East Asia: Taiwan, Korea, and Japan. But all together I think these three countries account for over 60% of the global production of semiconductor.

I think there are two reasons for that we have to keep in mind. One is, of course, the scary economies, right. As to the technology events, you're making semiconductors with thinner and thinner solar line width.

The scale economy will increase, so you need a huge investment. A lot of production different kind of product putting together in order to support a semiconductor fab, okay. If you do not have such huge production output, you just cannot have an economical production here.

So that's one thing, then they have to be concentrated in only a few places. Secondary, also we have to keep in mind production of semiconductor is particularly harsh. This fab operate 24 hours a day. You cannot afford to shut it down.

So, therefore, the engineers, you need to have the kind of labor, kind of working ethic that engineers which who are paid very well, of course, however, they are very precious brand. They can be used in other industries. Those people they have the tech terms to work in the factory in the fab for 24 hours.

And then unlike medical doctors, they are on call, even if they are home. So this is not an industry that every country would like to have, you know. It's very hard to have this kind of industry. In other countries, if you have a very liberal, so-called a liberal labor law.

So, really, that this is the reason why the production is continue to shift to East Asia because of this, I think, working ethics of the engineer. And, of course, now it's too much concentrated, we also worry.

For example, in Taiwan, we produce so much and then we are now short of labor. We are short of engineers. We are short of water. So these things cannot continue. We already reach sort of limit of the natural resources supplies, so they need to be diversified. So there is an incentive, even on the side of the company to diversify somewhere else.

Must I say that you need additions, you know, you need first a big demand in order to support this scale of production so that you need a big market to do that. And, second, you need to have engineers who are good enough, who are disciplined and then are willing to suffer.

So I think there are only a few places you can do this, but I think that will happen. Now back to China, because of this political confrontation and choke points so-called, China, of course, is very determined now to build its own semiconductor industry at any costs.

So this is going to happen sooner or later. They already have kind of reasonable technology to begin with, and then I think for their purposes I think they are certainly -- this is the project is where is the money. So this will continue to drive the so-called decoupling because of the motivation for self-reliance, okay.

And that of course also put the pressure on Chinese companies because China is also a big market for us. So, you know, if allowed if not for the concern of national security, we certainly would like to serve those customers, that's number one.

Second, you know, China has all kind of tools to get our people away from Taiwan, work in China; they pay them several times their salary; they can get technologies one way or the other. So this is the treatment this pressure from both ends of this two big superpower in the world.

So very hard to deal with but this is something, you know, we have to confront in the future. There is just no way out. There will not be a compromise. I cannot think of anything that will stop China from pursuing their objective of self-reliance.

And I will not, you know, I have not have any idea that U.S. will stop, you know, cutting the supply off from China because the purpose of the two countries are exactly the same. So, you know, this is something that we really need to think about and not coordination, as I say, that is needed.

For example, the recent shortage of the automobile semiconductor chips, yeah, that is

something that is not -- there has never been a major product of our industry here in Taiwan, okay. But suddenly the world is in short of this supply and everyone was looking to Taiwan and said, why don't you sort of, you know, rev up the production. So we really need to work together, yeah. Thank you.

MS. SOLÍS: Thank you very much, a really fascinating discussion. I'm enjoying it very much, but I also now need to bring the questions from the audience and there is a very large number of really excellent questions. So I probably will not do justice to all of them, but I would just want to start.

And I want to use this image from Kristin about, you know, the arrows in your quiver and, you know, geopolitical competition. This is a question from my colleague, Michael O'Hanlon and the question is: What is the most important vulnerability democracies should mitigate in order to be able to withstand any Chinese economic warfare or embargo in the context of a future security crisis in Asia?

So if there is indeed a security crisis in Asia, and China is willing to use some of these arrows and, you know, apply pressure on choke points what should we be concerned the most with?

And then, second, can democracies pull together? Because that's a really very important premise of the Biden administration foreign policy that one way in which we create resiliency is by coordinating strongly among like-minded democracies.

So how would these be operationalized? I think that we already highlighted that some Asian democracies also have frictions amongst each other, but also even if they're fully aligned and they share third perception and they share political willingness to coordinate what are the steps to actually be able to do this in real time in concrete industries?

MS. SOLINGEN: So I can address the second part on a few thoughts on what do we do with allies, right, especially because the Biden administration is placing quite a bit of emphasis on that strategy.

So I think, first of all, it's important to deescalate from two broad a scope for identifying those risks in supply chains, right. And that means not stretching legitimate concerns with national security and dual use to encompass much less sensitive domains where cooperation and interdependence make more sense and I think most allies would welcome that.

Strengthening trusted supplier networks with democracies, for instance, with our allies

that are mostly democracies, it seems reasonable in principle but too broad a definition to return to the point, too broad a definition of what's risky will most certainly backfire in my view, and indeed some foreign allies are quite hesitant.

Germany's foreign minister just, I believe a week ago was very clear, decoupling is not the way. It's the wrong way. Taiwan and South Korea we heard just now from Professor Chen don't want to lose their China market or U.S. patents. European allies, from Europe to Asia, they don't want to choose and they are basically playing both sides for advantages.

So what most U.S. allies would like, for instance, is for the U.S. to join the CPTPP and restore its commitment to freer trade and, of course, RSEP is now a fact. So they wanted the limit -- is what I'm trying to say -- the limit, the forgotten items.

What do they also want? Well, some are defining the Biden strategy as containment. But the allies would prefer, and it's probably more likely to emerge, as more of a mix, as some conengagement, if you will, some containment where China, you know, has been more hostile and continued engagement in areas where China's leadership seems more reasonable, and not just the environment on nuclear proliferation, but conengagement will require mutual transparency, humility regarding each other's liabilities and building trust.

The GVC issue should be nested in this accommodating framework. And, by the way, conengagement is not a new thing and Mexico has been there in some way since China opened up. It's the dance and the rhythm of conengagement that is sometimes altered depending on the issues at hand. For instance, again, some of China's policies in recent years, traps, responses, and especially COVID have accelerated the rhythm. So we need to be very careful to make those good decisions, especially regarding GVCs that requires slowing down the populous frenzy on all sides.

With respect maybe a word, if I have one second, a word on the military-related risks, the bottom line I think is the trick with respect to high tech concerns will be to find that balance, you know, a way to minimize the minimax, right, to minimize the worst risks to U.S. security and maximize the benefits of continued global deployment of U.S. tech.

And I'll stop there.

MS. VEKASI: Could I just add a tiny, a comment to that, as I absolutely agree that -- so it's difficult to say, well, what will the sector be that's the most risky? And we don't know. And maybe somebody has the right guess out there. But every sector is so specific, the nature of the engineers, the magnetism of the metals, right, these very, very sector-specific things are going to become important, right, the quality of the face mask and that I absolutely agree that building strong institutions perhaps amongst democracies and being able to have coordination to solve those very, very sector-specific problems mis what would help.

MS. SOLÍS: Excellent. Thank you very much. So then let me, you know, put together two questions that look at the element of reshoring. And one question was about Taiwan's reshoring program. The question was about Japan's reshoring subsidy. So let me then combine them, so we can have a discussion as to whether it makes sense to hedge on the margin by subsidizing a firm's reshoring activity.

So the first one comes from Dennis McNamara, who is a professor at Georgetown University, and it reads as follows: Cross-trade investment in the Xu'nan region of Jiangsu province continues to operate.

Taiwan's investors appear content to continue using mainland knowledge, resources, exploit markets and cooperating global value chains will precedent size incentives for reshoring attract them? What about for research and development?

And the second question comes from Yves Tiberghien, professor at UVC, and distinguished fellow at the Asia-Pacific Foundation of Canada, and Yves asks: Can the speakers evaluate the impact of the Japanese reshoring programs since April 2020?

I think it's now \$3.1 billion that have been committed to this. Some have argued that Japanese firms have used public money to reshore product lines that were not competitive in China while still increasing investment in China in more competitive products, is that true?

So are these subsidies good idea, or are they really just, you know, companies making use of them in a difficult time, but again not to the best outcome with the most efficient outcome.

So it's notable that there are these programs. The U.S. actually is now considering also

providing support for reshoring some production. Should the state be in the business of facilitating that private activity or not?

MR. CHEN: Yeah, I think I will take the Taiwan's, the question on how Chinese firms in China and reshoring. Government subsidies really minimal. I think they only have marginal effect on, you know, business decisions as to whether come back to Taiwan or not.

This is a trade war, U.S.-China trade war that play the majority, you know, the most important role of reallocating their production in, you know, in China and outside of China.

I think China now is already, you know, 40 years after this open and reform, reform and opening has reached a point that -- and we should say that in economics that service labor is no longer there. It's a high cost production process already.

If we look into the future that in order to conform to their commitment of common neutrality by 2060, a lot of production have to be stopped in China. So they are also under immense pressure for restructuring industry. And, of course, Taiwanese company in China is one of the forces that are leveraged to upgrade the industry, and there is also incentive also from the Taiwanese companies side to continue to develop in China because they are very much rooted so much connected with the local industries.

So I'm talking about -- I don't know the percentage, but there are certain percentage of the Taiwanese companies now in China who are producing something to be used in China rather than for exporting.

And those are the forces I think the Chinese government is targeting with different kind of incentive to help them localize, using more local resources, upgraded technology. And, of course, from economic perspective this is not too bad because we do need some Chinese resources to continue to grow.

On the other hand, this is not too bad from the political point of view either because maintaining a good economic so-called a mutual benefit between China and Taiwan is good for stabilizing the cross-trade relationship.

So, all in all, we are supporting, you know, the U.S. initiative of, you know, so-called a

resilient supply chain things. But, you know, for our own, sort of from our own perspective, it's also very important for them to minimize attention, you know, across this trade; and then this economic so-called benefit, to the extent which it does not jeopardizing in the national security is something good, so this is certainly a compromise there.

So I think, as I mentioned before, that the Chinese policy is to increase in their dependence on the domestic consumption rather than export also, so to kind of they're moving toward kind of more inward looking internal demand as a driving force of future economic growth. And so that is something I think is pretty much consistent with what the U.S. government is wanting.

So the both side is reinforcing each other, so it's going to see a big restructuring on the production in East Asia. Thank you.

MS. SOLÍS: Very interesting. Are there any other comments?

MS. VEKASI: I'll just say quite quickly that I am, in general, skeptical of reshoring subsidies that bring companies back to their country of origin that they might have left. They often did leave for strong efficiency reasons and the inefficiencies that may have existed in the whole market will still be there.

And I don't want to speak to whether these particular companies are doing things we don't know yet. We'll have to wait a year or two and find out what the results are. But in terms of there have also been subsidies that -- and I'm a little bit more optimistic. And I think that there is a public policy case to be made for helping companies diversify internationally, particularly if they're entering new markets that they may not have a lot of knowledge about, particularly if they are smaller companies that many of these, you know, 10,000 plus Japanese firms in China they have their headquarters in Japan and then one small subsidiary in China.

They're not large multinational firms with thousands of employees, and etc. So, in that case, there might be a case to be made that that will help the overall resilience and some will fail. But even though some fail, I think there is a public policy case to be made that that could ease supply shocks of, say, medical supplies, or critical materials, or other things.

MS. SOLÍS: Thank you very much. And I think that leads to what will probably be the

last question for this evening and some of you have already touched on this. But I would like to bring it in case anybody would like to add something because this is really the question of what to do next? What are the best practices?

This question comes from Saori Katada, of the University of Southern California, and she asks: What is the most effective method for governments which worry about supply chain resilience as a part of countries economic security to increase supply chain resilience and incentivize private sector to hedge risks?

So, you know, it's a risky world, increasingly so, uncertainty is rising. What are the best practices out there to manage these in a way in which we do not kill economic drive, innovation, openness, and hedge against risks? Any words for wisdom on this?

MS. VEKASI: Well, I'll start off and just say that they -- it's really in the details, and I applaud governments that are doing deep studies of where there may be risks and really looking very specifically sector-by-sector and focusing in there rather than taking a very broad brush to, say, trade with China.

That's not helpful and it's -- you need to drill down and to very much at the product level to understand supply chain, where supply chain vulnerabilities are, and then to look for allies that could help build more resilience.

MS. SOLÍS: That strikes me as great advice. So, probably if there are no short interventions from any panelists, I think that we are at the end of our -- Etel, please go ahead.

MS. SOLINGEN: Just one endorsement of what Professor Vekasi just said, that in that context of mapping vulnerabilities maybe the Biden administration's effort to do just that, to map, may be the right way to go, provided the use of the, you know, the end results of that study are the appropriate ones. But mapping those vulnerabilities I think might be a very valuable exercise.

MS. SOLÍS: Yes, I fully agree with that. thank you very much. So, again, this has been a fantastic, vigorous, and dynamic discussion. So thank you very much for sharing your insights. And thank you, everybody, in the audience for joining us tonight. It has been such a pleasure. Have a good evening and good day.

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