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Welcoming Remarks:

CHENG LI
Senior Fellow and Director, John L. Thornton China Center, Brookings

Panel 1: Role Of MNCs, Intellectual Property, And Services

MODERATOR: ELISABETTA GENTILE
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KATHRYN LUNDQUIST
Economic Affairs Officer, Economic Research and Statistics Division, World Trade Organization

JOSEPH MARIASINGHAM
Senior Statistician, Economic Research and Regional Cooperation Department,
Asian Development Bank

YUQING XING, Professor, National Graduate Institute for Policy Studies
Overseas Academic Dean, Research Institute for Global Value Chains, University of International Business and Economics

Panel 2: Supply Chain Resilience

MODERATOR: DAVID DOLLAR
Senior Fellow, John L. Thornton China Center, Brookings

ETEL SOLINGEN
Distinguished Professor and Thomas and Elizabeth Tierney Chair in Peace and Conflict Studies,
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P R O C E E D I N G S

MR. LI: Good morning, everyone. My name is Cheng Li. I'm senior fellow and director of the John L. Thornton China Center here at the Brookings. It's my honor to welcome those of you in this room, along with the audience watching online from around the world of to the Washington launch. It's the East Coast launch of the “Global Value Chain Development Report 2021.”

This development report is the third in a series that draws on contribution from 25 background papers written by 51 authors from 20 research institutions in eight countries, and also like WTO, World Trade Organization, ADB are heavily involved. This extensive project reflect the value and importance of international scholarly collaboration. On behalf of my colleagues at the Brookings, I would like to offer my deep appreciation to our authors and speakers, prominent economists, and trade experts from some of the world's leading economic institutions for sharing their incites at this perplexing time, but also hopeful time.

The past three years have revealed many risks that can threaten the normal functioning of global value chains, GVCs, and international trade more broadly. The challenges posed to GVCs include compounding global financial instability, inward-oriented geopolitical issues, the COVID-19 pandemic, and the mobility restrictions, fair share of the gains from trade, and also some negative impact on micro, small, and medium-sized enterprises around the world.

Also noticeably, new geopolitical fault lines are emerging to -- are beginning to form with technology being essential domain of competition in the conflict among major powers. Yet, as the report also argues, the ongoing global slowdown in trade integration is not uniform. GVCs are more likely to evolve than to polarize into blocks or shut down. Dynamic factors such as new technologies, service-led goals, and the sheer need to revitalize a trading system that improve everyone's life will likely bring more players and also digital platforms into the international economy.

Now, this morning, we will particularly explore the shift in GVCs as they are increasingly moving beyond production and the traditional manufacturing processes to services and intangible digital goods. Our event today will feature two panels. The first panel will focus on the role of the multinational companies, intellectual property, and the services, and moderated by one of the report authors, Elisabetta Gentile, distinguished economist at the ADB. The second panel on supply chain resilience will be moderated by my colleague and dear friend, David Dollar, senior fellow at the Brookings China Center. And he really was the force and the leader behind today's event.

So, now I would like to hand over the program to our first panel. Elisabetta, and other distinguished colleagues, the floor is yours.

MS. GENTILE: Thank you so much, sir. Thank you for having us. And of course, thank you, David, in particular, for being the driving force behind this event. We are very grateful. Without further ado, I would like to welcome all of you here in person and also those who are following us online.

The first thing I would like to do is introduce the panelists and also the company, the distinguished company on this journey of producing this report. First and foremost, Professor Yuqing Xing, who is overseas dean of the University of International Business and Economics in Beijing, China. And then to the left of Yuqing, we have Ms. Kathryn Lundquist, who is economic policy officer at the World Trade Organization. And finally, to the left of Kathryn, we have Joseph Mariasingham, who is senior statistician at the Asian Development Bank and also a personal friend of mine.

So, Yuqing, in addition to being one of the editors of the report, is also the lead author of Chapter 2. Kathryn is the lead author of Chapter 6. And Joseph is the lead author of Chapter 1. This means that my question, my first warmup question will try to dig a little deeper into some of the key messages that the report contains. So, let's begin with you, Yuqing. And it comes without saying that the first thing I would you to discuss is beyond production, what does it mean?

MR. XING: Okay. Very happy to be here. Thank you, David, for organizing this very excellent launch event. Actually, this is the second in-person launch event since the report was published in November 2021. We did the first one a few days ago at UC San Diego. I'd like to pay attention to the beyond production. Now, I think many people talk about supply chain or global value chain. But we think all those kind of talk mainly focus on the manufacturing process or production tasks.

Actually, if you look at global value chain, you pick a single global value chain, it is a nonproduction task such as the research and development, product design, brand, retail, and distribution. They play much, much more important role in organizing global value chain as well as creating more value added. Therefore, we would like to bring, you know, all the people who are interested in either supply chain or global value chain pay more attention to the task and the firm which conducted the task beyond production. So, what's why we use this theme.

So, today, you know, like we talk about so-called supply chain diversification or supply chain reconfiguration. The question is who will decide the future trajectory of supply chain or global value chain? It is the firms which specialize in the task that beyond production, for example, it is Apple, not Apple's contractor decide where the production would be located. It is Nike which decide who would be the Nike contractor. In addition, we think like there are many nonproduction or noneconomic factor which have been driving the diversification of supply chain or global value chain nowadays. Like in Chapter 5 we mention the risks, geopolitical risk, environmental risk, and the unfolding COVID-19.

Those are the factors actually behind the so-called reconfiguration or diversification of supply chain. Because, you know, like think about in the last three to four decades, the global supply chain or global value chain had been performing very well. On the one hand, China had been the center of manufacturer assembly or production. On the other hand, U.S. had been the center of the demand side, right? So, this kind of structure had been performing very well benefiting both developed and developing countries. Why, certainly, we talk about resilience. We talk about diversification. We talk about moving away from China. Simply because those risks we emphasize in Chapter 5.

So, in addition in our report, we mention specifically that the global value chain not only exists in manufacturing sector. Why will people talk about a supply chain or, you know, like global value chains, they simply think about manufacturing industry. But in Chapter 4, we mention that clearly the service sector can be a stand-alone value chain. And they can also provide new opportunity for developing country to catch up to achieve their industrialization. Therefore, we select the theme, beyond production.

MS. GENTILE: Thank you, Yuqing. You really gave us an overview of all the aspects of the report that fit within the beyond production theme. So, then the next question for you, Kathryn, given the importance of technology, the importance of digitalization, perhaps you can tell us a little bit more about what is the relationship between digital platforms and global value chains?

MS. LUNDQUIST: Well, thank you, Elisabetta. And, yes, it definitely follows exactly from Yuqing's conversation, beyond production. This digitalization trend is promoting global -- they're strongly linked, global value chains and digitalization. You can see even in terms of regionalization where did digitalization take off. It's the same regions where the global value chains are the strongest, in Southeast Asia, in Europe, and in North America, in particular.

So, these two are tied together. And how exactly are they integrated? Both need required information and communication technologies in order to flourish, and they are inherently connected. And in fact, digitalization is creating new value chains in itself in data value chains, in understanding the internet of things and internet-driven value chains, as well. And so, this is where the chapter tries to illustrate some of these new ideas and new topics and bring them to the fore, and what are the considerations that policy makers need to have going forward in order to push this forward. Because this is a trend that has only grown from the COVID pandemic. And we've seen moving online, moving into more digital technologies, new digital services. And overall, it's important that we continue to consider these going forward into the future.

MS. GENTILE: Thank you, Kathryn. And thank you also for leading me right into the next question that goes to Joseph. Because Kathryn has mentioned regionalization, regionalism, so, perhaps you can tell us a little bit more about what you find in Chapter 1 of the report.

MR. MARIASINGHAM: Okay. In terms of what's happening with the evolution of global value chains and also the evolution of regionalism, what we see is there have been many regional agreements being signed and coming into effect. However, they succeed only to the extent that there is economic benefit associated with it. So, for example, when we look at Asian -- sorry. Asian countries trade more with regions outside of Asia than among themselves. The EAU, they hardly trade with each other.

So, we see many regional agreements being formed but we'll have to see what the economic benefits of that if there is no competitive advantage among themselves. So, I am not sure if just entering into a regional agreement would automatically mean greater collaboration or cooperation among countries. It has to be backed by competitive advantage and eventual economic benefit.

MS. GENTILE: Thank you, Joseph. Well, then if I may, I would like to follow-up with you because you mentioned Southeast Asia and the region. And there has been a lot of talk recently and we also received an audience question about this. There has been a lot of talk about some of this GVC trade being diverted, for example, from the People's Republic of China to Southeast Asia, and, you know, that this could create great potential. Do you see anything like that emerging already in the data? And what do you think are, you know, the potential obstacles or, you know, factors that could favor this?

MR. MARIASINGHAM: In fact, the movement away from China, so to speak, started way before the trade conflict, 2018 trade conflict, largely because of the economics of it. So, the factor costs and China like the labor capital, they have started to increase to the point that even Chinese companies started to look for places where they can lower the costs. For example, Vietnam, the countries that have the right infrastructure to absolve the movement. So, that includes Vietnam for electronics, Cambodia for textiles, and so on.

In fact, an interesting trend is that some of these garment assembly, you know, companies find even Cambodia more expensive, and they have started moving to your African countries. So, this is economics at play and businesses will try the most of the competitive advantages in specific locations, right?

But after the 2018, when in 2018 the trade conflict started to surface, the movement has hastened a bit. But not too much because even then, even after that, China is the largest trading partner for U.S. And China is the largest trading partner for most countries, right? However, the current situation is something that could change the dynamics. Because, for example, in 2018, even though there were tariffs and U.S. import status on a lot of goods, they did not impose any tariff on the semiconductors. But now, they have effectively banned the export of semiconductor technology to China.

So, the dynamics have changed now. And what could make things worse could be the brewing geopolitics. If not for that, basically the evolution of GVC will be dictated by competitive advantage, evolution of technology, and competition.

MS. GENTILE: Thank you, Joseph. Kathryn, there is an element that you mentioned earlier that I would like to explore a bit more. You mentioned that the distribution of, you know, digital platform is already quite unbalanced geographically. So, I wanted to follow up a little bit with that because in the chapter, you also mentioned that there are other aspects of concentration of digital platforms. And you mentioned that this would have some advantages, but also some disadvantages. I think it would be interesting to discuss those, especially given the next panel where geopolitical risks and other aspects will be discussed.

MS. LUNDQUIST: Thank you, Elisabetta. And I think this ties in also with the comment from Joseph where he mentioned that even now in Cambodia, the expense is such that they're trying to move into Africa or into other regions. And it's important to understand that to participate in an international production chain, you need to have the infrastructure available to have the communication that you need among the colleagues, among the organizations. This is tied with developments and this has been one of the reasons that certain regions have lagged. And I think that there's a growing recognition of this in the fact that as we move forward, the cost structures change. Other regions have developed in such a way that you can't continue producing in the same locations or it's now worthwhile maybe is another way of saying it to explore other locations.

Obviously, we live in one world, and we have to move forward incorporating everyone. And there's an inclusivity aspect of Chapter 6. We've seen that digital technologies can break down barriers and I think it's important once the baseline of infrastructure is developed, to understand that you can go out and explore other areas. And I can only see this as a trend going forward of looking into those regions that have been left out in the past.

MS. GENTILE: Thank you, Kathryn. Yuqing, I would like you to explore what I think is another one of the very, very important messages coming from this report, which is on the importance of trade in intangible assets. And there is an element that you emphasize in particular it's about how inadequate are the current trade statistics in capturing these flows. Would you care to discuss a bit further?

MS. XING: Definitely I think that is a very important contribution of this report. So, in Chapter 2, we focus on a new type of trade in the services of intangible asset as well as protection of intellectual property.

Let me start with a simple example. You know, when Chinese company like Lenovo installed the Window operating system, in all its Lenovo France. So, Lenovo should have paid like roughly $5 for each computer to Microsoft as a license fee. Then this kind of payment is recorded as U.S. export in service to China. Let's think about Apple. How Apple operates. Apple has its own independent operating system for all Apple computers. But Apple does not license its operating system to any company. So, how does Apple make money from its operating system?

It simply sells its computer to the global consumer, then it makes money. But this process, you know, the way Apple makes money from its operating system is not recorded as U.S. export to China because customs officers cannot collect information about how much value that is Apple's operating system is embedded. So, this is very significant new export in the service of intangible assets, which has been conducted by we called factoryless manufacturer.

Because more and more multinational company, in particular, American company like Apple, Nike, Qualcomm, AMD, they have adopted this global value chain strategy. By doing so, they outsource all the manufacturing tasks to foreign contractors. They simply focus on the creation of intangible asset, research and development, software development, brand development, retail network, logistic service.

So, how those company benefit from globalization? How do they earn income from their intangible asset? They earn income by selling physical products, physical products, which are made by foreign contractor located in China, located in Vietnam, located in Japan, located in Korea. So, current trade statistic have no ability to track this kind of very intensive trade activity. So, the significant portion of trade activity generated by what we called factoryless manufacturers in the age of global value chain.

So, this is very important. So, in this report, we show that why it's important because the U.S. export, the actual export, how we underestimated. So, that's one of the reason which caused significant imbalance between China and the U.S. Actually, we provide a simple estimation. The four American factoryless manufacturer, Apple, Nike, Qualcomm, and AMD, they earned roughly 27 billion U.S. dollar in 2018. That number is roughly about 50 percent of reported U.S. export in service to China in the same year.

In other words, if we include the income earned by those four company for their intangible asset in China, the U.S. export to China in service would increase 50 percent. This just four company. You know, when we presented in UC San Diego some commentator said, well, you know, if you simply like focus on China-U.S. trade imbalance, that may not be so meaningful. But we use this as example to show how important this is. Why? Because at the age of global value chain, how we should evaluate the importance of globalization and how we evaluate the benefit of globalization to industrialize a country. I'm not talking about developing country. Because everyone knows developing country, you know, have benefit from job from income.

Then there are a lot of complaint that is industrialized country have been losing jobs, right? You know, they have seen this kind of shrinking manufacturing base. But more and more industrialized country have specialized in the creation of intangible assets. But their benefit from globalization, from international trade cannot be measured. So, that is very important that how we should define export or international trade at the age of globalization. How we evaluate the benefit of industrialized country?

So, last not the least, you know, when we talk about intellectual property rights, we're always emphasize, innovation. Why do I have to protect intellectual property rights? Because we have to stimulate innovation. Otherwise, nobody would like to do innovation. I think one, you know, important message from this report is that protecting intellectual property is not just about innovation. Actually, it's about protecting the income of industrialized country. Because when more and more industrialized country they specialize in the creation of intangible assets that's where they earn their income. That's where they got their employment. Therefore, this is another, you know, aspect of why we have to protect intellectual property rights.

MS. GENTILE: Thank you, Yuqing. I am ready to fire up another round of questions. But I was wondering if we could take some questions from the audience too and I would invite all panelists to contribute. I would not want to be deciding who answers what. So, we can all contribute to the discussion. Any questions from the floor? Can we also take -- I also have some questions here that were submitted before the event. So, we can also go to some of those. But please feel free to give us the questions.

I think you have to come to the mike, right? Oh, there is a mike in the room, excellent. All right. Anyone? We left them speechless this is why. So, I'm going to go ahead with a couple of questions that were sent in advance. But please feel free at any point to ask for the mike and we will be happy to hear your questions.

So, one question that is very open-ended and I would like to hear from all three of you what you think. Is what is the future of global value chains in a multipolar divided world? So, I'm thinking that there are different ways to attack this question. One is from the point of view of digital technologies.

One is from the point of view of trade flows. And one is from the point of view of intangible assets, of course. When I look at you, it's always about it. But so, please, Joseph, Kathryn, and Yuqing, let us hear your thoughts on the future of global value chains in a multipolar divided world.

MR. MARIASINGHAM: Okay. The world has always been multipolar and divided. And if you look at purely the data over the last several years, we have had issues, and disruptors, and events that affected trade all along. Yet, global trade and global value chains, globalized production processes have thrived. Not only thrived, but also expanded, and reinvented. And, in fact, assumed different proportions over time, right?

So, each time we thought the globalized system is going to collapse, there was a resurgence. So, I believe the future is bright going purely by what has happened in the past.

MS. LUNDQUIST: I think the digital technologies will also support exactly what Joseph was saying. Using them it's possible to go beyond borders, beyond production, and if you are looking and as will be discussed in the next panel, in terms of security, if you are looking to diversify and to find other suppliers, like these are the technologies that will help you get there. They're able to bring people together. They're able to facilitate transactions that were not possible before. So, I think perhaps it's always been divided. There will always be conflict. And it's really what are the tools available to help your diversity and try to hedge against these challenges. And digital technologies are one of them.

MR. XING: Okay. I would like to say that global value chain in the future will not be simply driven by profit and maximization and economic efficiency. As we mentioned, Chapter 5, the geopolitical tension, natural disaster, and COVID-19 pandemic will change the trajectory of global value chain. Specifically, I'd like to mention, you know, how the U.S.-China trade war, this unfolding trade war, has been affecting the China-centered global value chain. You know, I mention China-centered does not mean Chinese firms are leading global value chain. But if you look at, you know, the involvement of Chinese company from the scope and, you know, their skill, clearly China has been the center of global manufacturing value chain.

Well, as all of you know, U.S. has been imposing 25 percent tariff on about 250 billion Chinese goods and another 187 billion Chinese goods are subject to 7 to 15 tariff. This is additional tariff. We know many multinational company they outsource from China. They allocate production or assembly task to China. Simply, they try to save money, lower the cost. But 25 percent tariff will wipe out all the benefit of those kind of arrangements. That's number one.

Number two, think about this. We talk about global value chain. What does that mean? Basically, it means, you know, company from different location they jointly finish products like a iPhone. That's the case I always like to use. Many parts needed but the iPhone produced in Taiwan, in Korea, in German, and Japan. Those parts are shipped to China. Then Chinese worker puts them together. I know now iPhones are not subject to 25 percent tariff. But iPods are subject to 15 percent tariff. So, when all the foreign made parts shipped to China, then Chinese worker puts them together, then send to U.S. So, U.S. custom officer takes, you know, the products assembled or made in China on the gross value. So, that's also very important when we think about how damaging or detrimental the U.S. tariff. You know, in economics, we have a concept called real effective protection rate. So, if we measure in terms of China's value added, the 25 percent tariff could be as high as 100 percent in term of the iPhone XI study.

Therefore, you know, many multinational company they use China as either, you know, like assembly side or production base. Then they want to sell their, you know, China assembled products or made products to the U.S. market. Definitely, they have to move their supply chain or production base out of China because the cost is too high. So, definitely, we're faced with kind of a geopolitical divide. This is one of the reason.

In addition, as a consequence of this U.S.-China trade war we have so-called decoupling. So, decoupling is now just kind of hypothesis atop that happening. So, as more and more Chinese company are listed in the U.S. entity list, that basic means we can no longer source American technology.

You know, in Chapter 3, we mentioned there is a new growth path for the firm from developing country, including China. We call them nonlinear upgrading path. That's basically means developing countries they don't have to go through these, you know, step-by-step technology ladders because that is very difficult. It will require learning by doing huge amount of investment and human capital.

So, developing countries' firm can also source foreign technology, you know, like Chinese mobile phone company. Now, you know, like among the top five mobile phone brand, three are

Chinese. So, how Chinese mobile phone can suddenly become so competitive in the international market because they use the most of the ones the foreign technology. They use Google, you know, android platform. They use a cheap produced Qualcomm. But now, Hali used to be the second largest mobile phone maker in the world. Now, Hali is gone. Why? Because the economic sanction.

Then what happened -- I don't want to discuss about more reason, but I just want to tell the reality. The reality is Chinese company should think about homegrown technology. Then they have to develop their own technology. Then we see this kind of decoupling, right? We see this kind of decoupling before there is cooperation.

Another factor is COVID-19. This is like, you know, now I think I feel very happy in the U.S., yes. Because, you know, I, you know, like came from Japan. So, in Japan, on the streets, most people still wearing mask but, in the U.S., I don't see many people wearing masks. Now, I don't see anyone. So, if you're completely relaxed and I think our life finally returned to normal. But, you know, I mention so-called the center of global manufacturing assembly, China, has been imposed very strict zero-COVID-19 policy.

So, this cost a severe disruption to the operation of, you know, like global value chains. From the news, you can read many reports, you know, Japanese company their output fell more than 20 percent in April of this year because of lockdown in Shanghai. And Apple said its revenue would fall because of lockdown in Shanghai.

Then many multinational company they're thinking, well, we should shift our supply chain out of China. So, that's why now their popular so-called China Plus One or China Plus end. So, the reason is simply because they don't want this kind of very strict COVID-19 policy, which caused severe disruption, yeah.

MS. GENTILE: Thank you, Yuqing. And you led us right into the next question also submitted from the audience. The question is what makes a global value chain a resilient global value chain? Joseph, Kathryn, Yuqing, please go ahead.

MR. MARIASINGHAM: Okay, I can start. Simply, it's the motivation of for profit. That has always been the case throughout history. Anytime there was an event, incident, or you can go back to Crusades, you know, Genghis Khan and so on, anytime there was a disruption in the trade routes and so on, traders followed a different route. And they did so in spite of all the threats and all the hazards and all that. The reason is there was this motivation for profit. So, I believe eventually the economics will dictate the resilience of the global value chain.

MS. LUNDQUIST: I'm not sure that I can phrase it more eloquently than Joseph just did. But I will, of course, have to put in a plug for digital technology and the tools that it provides in order to assist that resilience of human being and the innovation that they have in order to surmount obstacles. And it's going to be there where we find the tools that are needed in order to continue forward. And I'm not sure that we can even imagine how they will change, but it's not that they will go away.

Humans have shown that there's a willingness to connect. There's a desire to communicate. And our information communication technologies have made it possible. It's hard to prevent that from going across borders and businesses will take advantage where the economics dictate. As Joseph said, there will be a desire to produce and supply those areas and they will use these tools in order to do that.

MR. XING: Okay. I'd like to say like why suddenly we talk about the resilience, because suddenly we face a variety of disruption. In particular, I mentioned before China-U.S. trade war, right? And now, there is the Russian invasion of Ukraine, and we have COVID-19. For COVID-19, I'd like to say, that's a natural disaster, a natural event. Then I think we had to be prepared. In particular, we think about public health is part of like national welfare. So, it's obligation of all the governments. They should think about how to prepare for another pandemic.

Therefore, as Joseph mentioned, you know, profit maximization should not be the only goal to drive the production. Actually, in my book I mention specifically I say maybe in the future many governments should think essential medical goods and equipment should be part of national security as important as oil and food. So, that's one way we prepare.

Another, you know, many people talk about diversification, right? Because of China and U.S. trade war. Well, the thing is, is it possible to reduce the risk which causes the shock? You know, like China and the U.S. do engaging the trade war. What are the objective of this trade war from the U.S. perspective? Is it possible for the two country sit together to solve the conflict? You know, because now I'm in the U.S., I'd like to say a few words about this.

So, if we recall what happened since 2018, you know, like I think in March 2018, the trade war started. You know, China lowered its tariff four times and China passed new law that is the foreign investment law to address the U.S. concern about intellectual property. And China signed a U.S.-China first phase trade deal. So, if you read the text, it's all China should do this, China should do that. So, there is no what U.S. should do, right? So, that -- yes, yes. Because you think if it's agreement between two country that should be the compromise from both sides.

That basically means, you know, like China has, you know, made a significant compromise. You know, like diplomacy basically means, you know, communication, negotiation, compromise. Then if politicians or policy maker they can work together to solve those kind of possible problems which cause disruption to the global value chain. We still, you know, are very efficient in term of producing, you know, like output and increase global welfare. That's also the way to strengthen the resilience of global value chain.

MS. GENTILE: Thank you, Yuqing. I would like to open up to the audience again. We would love to hear from you if you want to make ask a question now or simply make a comment. Please always feel free to -- there we go. We have one.

MS. LO: Hi, good morning. Thanks for doing this. I'm Kinling from the *South China Morning Post* based here in D.C. I have two questions. One is when we talk about how U.S. export is perhaps underestimated because of the how we look at what we consider as of value in the global supply chain today, I just wanted to ask that does that mean that China's export is overestimated then? And how would that change how we look at the China trade -- China-U.S. trade relations today? And does that also mean that the U.S. there's no necessity for the U.S. to be as concerned about China's position in the global supply chain today?

And another question is on when Joseph mentioned that in 2018, when we talk about the global value chain, it doesn't really -- it's not solely focused on semiconductors and how that dynamics has changed until now. I just want to see if you think the recent CHIPS Act, how is it going to affect that supply chain and perhaps how quickly or how significantly. Thank you.

MS. GENTILE: I think Yuqing, Joseph, you already got your tasks.

MR. MARIASINGHAM: Okay.

MS. GENTILE: I can relax. I'm not needed.

MR. XING: Yes. Actually, if we look at China's trade or China's export from the GVC perspective, definitely China's export not only to U.S., but also to the rest of world, have been exaggerated. There are two points. Number one, as I mentioned before, China has been the center of a global manufacturer assembly. That basic means China imported many intermediate inputs, parts from country. When Chinese worker puts them together, export to the oversea. So, the value of foreign intermediate inputs are also counted as China's exports.

Why this is important because why we care about export? We care about the job and the income. But a foreign made intermediate input, they don't create a job, they don't create income for China. So, if you count that as part of China's export either in term bilateral trade balance or whatever, you're simply exaggerating the contribution for Chinese export. That's number one.

Number two, this is what we, you know, argued in our Chapter 2. Not only China's export to the U.S. are exaggerated, but also U.S. export to China how we underestimate. So, you know, in many of my talk I always tell the audience, don't say like that the U.S. number one exporter to China or, you know, airplane and the parts. Number two is agriculture production. Number three is so-called like a recycle, electronic garbage. No, that's completely wrong.

Number one is what? Number one is Apple's intangible asset service. Why? Because in 2018, Apple alone earned close to 19 billion from the Chinese market, 19 billion from its intellectual property. That number excluding all the parts value. That is much bigger than 12 billion China imported from, you know, like U.S. in term of for airplane and the parts. It's far bigger than agriculture.

So, we have to think about at this age of global value chain, American firm they no longer export Made in the USA. You know, you all see the slogan we have to export Made in USA. American multinational company they export Made in Vietnam, Made in Indonesia, Assembled in China to Chinese customer. This is a new way of export that is Asia for global value chain because of globalization, because of the operation of multinational company. They can export their services of intangible asset and the physical products even they don't produce their own from any corner of the world to any market of the globe.

MR. MARIASINGHAM: All right. To answer your question, so, the chip manufacturing,

manufacturing of chip is probably the most complex production process involving very complicated technologies in the world. So, that's two parts. One is the research and the other one is the production itself, right? And in fact, it requires a lot of investment both for research as well as production. So, it is for -- so, it requires about -- so, when you look at the chip production as well as compare that with all the other industries, I believe more than 20 percent of revenue needs to be invested in R&D. And more than 25 percent of the revenue needs to be invested in capital, right?

Now, because of this, you know, and then, you know, at least onset of billions and billions of dollars. So, a lot the research currently takes place in the United States as well as Europe because they are able to make that investment in R&D. And production takes place in Asia, principally. When you say production, it's like foundry, right? Takes place in Taipei, China, and Korea. The most advanced chips are made in Taipei, China, as well as -- and when I say Taipei, China, it's not Mainland China. Taipei, China, and Korea. And simply because of the subsidies provided by the governments and also relatively cheap labor because when you compare it to the labor with the same skills, it's about 80 percent cheaper in Taipei, China, as well as Korea.

Now, it's very interesting the CHIPS Act, the government was going to provide $52 billion in subsidies and assistance, right? In fact, a recent report by Boston Consulting Group, they even before they announced the $52 billion, they recommended to the tune of $50 billion. I don't know whether it had any influence on government decision.

So, this would certainly help to bring back production, whether it's a pure play foundry, right, like the actual production of chips, which is like a really complex technology production process. But the United States, as it is country -- sorry, companies like Intel, Samsung, and DSMC are already planning chip manufacturing.

But these chip manufacturing are like on the extreme end of technology, the high technology. It's not the, you know, the chip has several layers. So, you know, they, for example, they measure that in nanometers, right? So, the most popular ones are the 38 nanometers and above, which are used in many of these technology protocol products. But what United States is targeting and these companies are not -- so, these were the generic ones that they not going to produce in the United States. They want to produce the next best, that they will achieve their paradigm shift. So, the three nanometer two and even what you call the Angstrom milometer.

So, it will definitely change the value chain, shift the value chain, localization of the value chain on the high-tech sector from to let's say Asia to United States. One thing I would also want to add is that United States, whatever you may say, has always been the most innovative nation. That's what the data says, right? The next best thing has always come from United States.

So, I believe this act, as well as the aid coming through this act, will help the industry to produce the next technology that will propel the next stage in global value chains, yeah.

MS. GENTILE: Thank you, Joseph. I would like to -- we have -- we are almost at the end of our allotted time, but I wanted to ask another question that we received from the audience to Kathryn. This is what is the role of talent in the bright future that you have described for global value chains? I think it's only fitting that I ask our digital expert.

MS. LUNDQUIST: Well, thank you very much for that. Yes, talent and I think also human capital and training. Education is going to be critical. If you don't have the knowledge or the understanding, you can't use the tools that are available to you. And I think we've seen that in some of the developing areas where there's a lag, not only in infrastructure in actual tangible capital, but also in just the know-how of even if the tools are available, how to use them, and how to make them apply to production, and to participation in the global economy. And so, it's going to be important. I mean, even from an innovation perspective as well, if you don't have the knowledge and the ability to think forward, it's -- we won't be able to get there.

So, how we can get there from a policy perspective, I will definitely steer clear from that, but I think it's food for thought. And it's something that we all need to consider going forward.

MR. MARIASINGHAM: If I may add. So, India is a very classic case where investment in education paid off. So, when India got independence, the first prime minister felt their future was in education. They invested heavily in education. However, they reaped the benefits only in 1990s when they opened up. And India is now a software powerhouse only because of that prolonged long-term investment in education, yeah.

MS. GENTILE: Thank you, Joseph. So, it's very important for us to remember and this is a great consideration in terms of wrapping up this session and also in preparation for the next. That, indeed, despite the challenges that we have been facing in recent years, global value chains do contain a promise. A promise for development, a promise for opportunity, especially in economies that are now beginning to open up and to look outside in the world.

However, there is also the risk that if the right fundamental are not put in place, that these developments could actually exclude people. They could exclude individuals that don't have the education that is required to benefit from these tools. They could exclude individuals who are geographically remote from the centers of activity. They could exclude countries that perhaps do not have a debt stable and secure business environment that allows global value chains to thrive. So, it is then important to remember that in order benefit from these opportunities, there is some homework that needs to be done and as Joseph very rightfully emphasized, this is not something that can be done overnight, but it's the outcome of a long planning and execution.

So, with that, I think we can wrap up this session with a little bit of time to spare. And we are looking forward to the next session where we will continue this discussion. Thank you very much.

MR. DOLLAR: Hi, I'm David Dollar, Senior Fellow in the China Center here. And we're going to continue the discussion not that much differentiation between the two panels, but we are going to focus a little bit more on supply chain resilience and some of the shocks that have hit the world. Very happy to have Etel Solingen, Professor of Peace and Conflict Studies at UC Irvine. Right next to me is Victor Stolzenburg, Research Economist at the WTO. They've both been involved in drafting the report, but I've also pulled in my Brookings colleague, Marta Wosińska who is a visiting fellow in economic studies working on medical products and pharmaceuticals. I wanted to bring the discussion down to a little bit more specificity at some point. So, appreciate my colleague joining us.

So, Etel, I'm going to start with you. You were the main author of the chapter that focused on these shocks that have hit global value chains, Covid, the U.S./China trade war, geostrategic issues, lots of environmental disasters, so I guess my question for you is, you know, how do you see the main geostrategic challenges going forward and what's that likely going to mean for the value chains. You know, how are they -- it's very speculative, but how might they evolve in light of these geostrategic shocks?

MS. SOLINGEN: Well, thank you, David. And thank you for hosting us. All throughout the production of chapter five this was a picture in motion, right? We were under Covid, extreme events happening, and, of course, the geopolitics underneath it all. It was extremely difficult to figure out issues of resilience, but they are in more technical fashion in the report. So, chapter five dealt with all of those, huge mandate, geopolitical, environmental and pandemic, what we called meta risks, right? Not the typical risks that are discussed, perhaps, or have been discussed in sort of internal GVC risks that have always been the subject of analysis. Now, the question that he poses, have these risks basically increased? And the answer, especially since we finished the report, and the answer to that is an unequivocal yes. So, back in 2021, we saw a revised but far from obsolescing GVC infrastructure emerging out of these external or exogenous shocks, but we also saw technology, as my colleague, Kathryn, was discussing, becoming more of a tool to build resilience, in addition to diversification and other measures that were being taken in real time. But there was no detectable at the time GVC by bifurcation or significant reshoring. But the chapter ended with, I'm going to quote the last sentence of the chapter was, "Heightened uncertainty about geopolitics could unleash more sizeable disruptions." Nobody could anticipate -- this was again back at the end of 2021 -- nobody could anticipate Russia's assault on the Ukraine, of course. And U.S./China relations have been deteriorating as well, increasing those disruptions. So have extreme events, even more than, you know, in the preceding two years. Covid-19 policies are still afflicting large parts of GVCs working in Asia. So, the compounded effects of all of these add up to some short of perfect storm. And it's unclear how resilient GVCs are to ride this storm, because they must invest heavily in all of these tools to comply with export, with import prohibitions from prescribed supply as export controls, extreme weather and all these diversifications, all these other things. Now, enter Russia's war -- assault on the Ukraine. So, there is something, the Caldara Iacoviello Index of Geopolitical Risk, places Russia's invasion of Ukraine among the highest peaks in some of the geopolitical risk plot in 50 years. I just want to mention briefly maybe three effects of the war.

First, aggravated supply challenges especially in energy, fertilizers, food, critical raw materials, all of those, of course, worsening inflation and food insecurity most vulnerable countries. The U.N. World Food Program labels Russia's blockade of the Ukraine, the Ukraine ports, a declaration of war on global food security, increasing famine for over 70 million people.

Second, the war has led, ironically for Mr. Putin, to unprecedented transatlantic convergence backed by Japan, Australia, South Korea and others, and one underlying vector of this process is Germany's so-called *Zeitenwende*. *Zeitenwende* is the set of policies, the reversal of policies with significant implications for GVC, second, third order effects. *Zeitenwende*, for instance, has reached European business associations, chambers of commerce, etc. The EU Chamber of Commerce in China, which is 1800 very powerful firms, the service, I'm quoting here, that just 11 percent of firms considering moving out of China in February, February of this year. Fast forward to April, a flash survey in April, and 23 percent did so, the highest in a decade. So, mutual EU/China sanctions had reduced China's attractiveness for firms in 2021 by April 2022 33 percent said that China, that the war in China, made China less attractive, leaving aside huge concerns with zero Covid that my colleague mentioned, market access, the old issues, right, that are still lingering. The Chamber's president Jörg Wuttke pronounced Europe/China relations, and I quote, "Drifting further and further apart" in a position paper that he labeled The Darkest Ever. I want to think that there may be hopefully ways out of this conundrum, but my final point here throws another huge wrench in this picture. So, about a decade ago I shifted from years of working on nuclear proliferation and pivoted fully to GVC, Global Value Chains, but little did I know that the ultimate risk would creep back with risks to GVC's escalating to, for instance, nuclear threats from Russia, North Korea, et cetera, that percolate into the world of GVCs very, very directly. For instance, in industry advisories in unprecedented ways I hadn't seen that before. And these risks are further hollowing out the peaceful foundations that enabled this fantastic expansion of GVCs in previous decades. I'm going to stop there.

MR. DOLLAR: Okay, thank you very much, Etel. A little bit of tension with this sort of optimism about the triumph of economics that we, you know, had a little bit in the first panel in these shocks we're talking about.

MS. SOLINGEN: Can we just say to that --

MR. DOLLAR: Yeah sure.

MS. SOLINGEN: I mentioned specifically whatever data we can have on the European scene precisely because if I had given you numbers of U.S./China, you would have expected some of this. But Europe -- Europe plays a crucial role. I mean, if Europe is moving and we all would want to come back, come back to a context of cooperation. That's we all would prefer. But the reality is what I just said, more than sort of my own sense of optimism or pessimism, is that the reality that Europe now seems to be shifting and so the strongest possible coordination with the U.S. that I've seen in decades.

MR. DOLLAR: Okay, thank you. Let me turn to Victor. You know, Victor's contribution, one of the many contributions to the report, concern the growing role of services in global value chains. I think we tend to think of value chains as, you know, mostly affecting manufactured products, but as Yuqing explained in the report, we're trying to go beyond production and one aspect of that is the growing role of services, so could you elaborate somewhat on that?

MR. STOLZENBURG: Thank you, David. Yes, of course. I think it helps to maybe split the role of services and GVCs into two parts. The one is already quite well-known; services are very important for manufacturing. They, you know, they transport the goods, the (inaudible), the distribution, the marketing, all of these things, and they have been analyzed a lot in previous reports that we did, also in reports by the World Bank and OCD (phonetic). What is somewhat new in this report is that we also analyzed that services themselves are now fragmenting more and more and build their own value chains, you know. Two of the case studies we looked at is the software value chain in India where the production of softwares is not split into pre-development phase, the development phase itself, post-development and all of this is now more and more geographically decipitate and I think that is crucial for the future of value chains because that is now spreading to more and more services. The pandemic has shown that a lot of things that weren't possible to deliver from essentially spatially distributed are now feasible through work-from-home technology and so on. And if we think of management consulting services, financial services, legal services, even education services, we think that more and more these can be split up into different tasks. Some of these can be outsourced and build essentially their own independent value chains that have nothing to do with manufacturing. And an important factor there is that policy still is too centered on manufacturing, too much focused on how do we regulate manufacturing and too little on how do we regulate services. This is something that optimally has to change to jump on these opportunities, you know. As Elisabetta has said earlier that GVCs always offer new opportunities the way they evolve and right now we see that business is evolving in this direction and policy is a little bit slow to follow, but that might very well be the future, services that build their very own value chains.

MR. DOLLAR: You know, I just want to point out that our research project is a good example of a global value chain in the service sector because we've got contributions from China, Japan, Manila, where the ADB is headquartered, Geneva where the WTO, Southern California, here at Brookings, et cetera, and so we received the big shock particularly from Covid and yet we pretty much stuck to schedule and, you know, basically working oh, you know, over the internet and by exchanging drafts, et cetera, so, just feel compelled to point that out. Marta, I wanted to bring you on to the panel to get some additional sector-specificity, so let's talk about medical products. How are supply chains evolving? What is the myth versus reality? I mean, this is a kind of a hot political area certainly in the United States thinking about, you know, dependence on imported medical products including pharmaceuticals, a lot of talk about reshoring back to the U.S., what's really happening?

MS. WOSINSKA So, thank you, David, for inviting me here. What I thought I would do is provide a perspective specifically for pharmaceuticals, not more broadly for medical products, and, you know, what's interesting is that supply chain resilience has been a topic in pharmaceutical space for well over a decade. Back in 2011 we had a really large number of drug shortages for medically necessary products, and I think it sort of shook up everyone involved, regulators, and also industry and policy makers, in thinking about how could this be that these relatively straightforward drugs are in short supply? How could this be? So, in that sense the industry has had a decade to sort of grapple with it. And, of course, at the core of it is, surprise, not surprise, economics. You know, so there is, let me first talk about sort of the major drivers have been actually surprisingly, and this kind of comes back to onshoring, manufacturing quality problems in the U.S.-based companies. And I think that's sort of a big misconception and when we talk about reshoring, we tend to forget that fact. Another example is you might have, you might remember from the Covid pandemic the company Emergent, which is here in Maryland, they ended up messing up vaccine ingredients for J&J and I think, I can't remember whether it was one other vaccine, and millions of batches had to be thrown away. So, and this was actually a facility that was supported by the Federal government, funded by the Federal government there, contractor for medical countermeasures, so I think the piece of manufacturing quality and kind of where this comes from sometimes gets forgotten.

There have also been other reasons why we have experienced shortages and I think the list sort of goes back to the lists that you have heard here as well, environmental issues. So, for example, climate change. We had a major hurricane, Hurricane Maria, knocked out a number of manufacturing facilities in Puerto Rico and actually caused a shortage of saline, something as simple as saline. So these factors have played a role as well. There's been a lot of concern that active pharmaceutical ingredients, so not the sort of the key ingredient, the key element in the drug product in addition to various inactive ingredients that sort of makes the finished dosage form, is that, so there's been a concern that U.S. has a very large exposure, especially through China, when it comes to active pharmaceutical ingredients, APIs. And there is, it gets a little tricky in answering this question because yes, it has some exposure, and depends on the kinds of drugs that we're talking about. About 13 percent of manufacturing facilities making active pharmaceutical ingredients are in China, 18 percent are in India, 26 percent are in the EU and 28 in the United States. This is for serving the U.S. market. So, there's definitely exposure. It varies by country. What actually, even the FDA doesn't know, is what is the volume coming from those facilities? So, FDA can easily say, oh, in this application, in this facility is actually in this generic drug application, or in this new drug application, and the sponsor of that application is basically using this facility, but they don't have a very good sense of how much is coming from there. So, we actually have a gap in knowledge. So, it might be actually much higher. Where we have really no visibility at all are inactive ingredients. If you look at, if you take a pill, 80 to 90 percent of the pill are actually inactive ingredients, and the FDA does not even know where these are produced. And here, and we don't really have a sense. And what I expect is that a lot of them are actually outside of the United States and that's where we're sorting this. So, how much exposure do we have? I don't know.

MR. DOLLAR: Okay. Well, I have a quick follow-up that might have been implicit in the last thing you said, but, you know, in these policy discussions in Washington, you know, it's easy to throw out common sense generality, we should, you know, we should ensure supplies of essential medicines. Do we know what essential medicines are? I mean, is it realistic to identify essential medicines or essential medical products and really focus on those value chains?

MS. WOSINSKA: So, I think, thank you for asking this question. I mean, and you bring up an important point that sort of hints at the fact that unlike chips or unlike batteries where we sort of have, you know, the number of products there, I mean, clearly there's a number of very different batteries and different chips, but when you're talking about drugs, you're talking about thousands of drugs, right?

And they are all manufactured very differently, they have very different ingredients, so just the sheer number of them kind of requires us to think about what is essential, right? If we're going to be trying to incentivize industry, again it goes all back to economics, we have to sort of effect potentially either through push or pull incentives, how they make their economic decisions, you have to be thinking about how to prioritize. I would say the problem is that, depending on who you ask, the list of what's essential is different. Right? So, and there's a number of lists out there, and interestingly enough we have actually, FDA did put together a list of essential products, medical products, because of they were asked to do this in 2020 or 19, through the previous administration, but they defined for them what is essential, and those are basically acute products things that we might need for a pandemic, and things that you, medical counter-measures. So things that you might need, let's say, that there's a nuclear attack, or some bioterrorism, really, not a nuclear attack, but bioterrorism. So, but how you define that, I mean, I would argue that, for example, excipients are nowhere on that list. And it is true that when you are taking a diuretic there are a lot of substitutes. There are other diuretics, there are beta blockers, so, a number of other cardiovascular drugs, and so in a sense this would never end up on FDA's medical necessity, they would never designate it as a particular diuretic as medically necessary just because it has substitutes, right? And right now, this list doesn't really have products without -- that have good substitutes. But if you look at an excipient, suddenly the picture looks very different. Probably the same excipient is in all the other diuretics and all the beta blockers, right? So, I think we, there's more work that needs to be done in thinking about how we prioritize, and I don't feel we're there yet.

MR. STOLZENBURG: Maybe if I can hop onto this --

MR. DOLLAR: Yeah, please.

MR. STOLZENBURG: That's a very, very problematic approach to the discussion more general because it's difficult in medicine, but I think we are also trying to look at essential goods and services for supply chain resilience. But yeah, as Marta said, how, when do you draw the line for ping pong manufacturing employee, the ping pong table might be an essential product for his income security, you know. Depending on how you approach this, you can make the argument for almost any good there is in the world. And that makes it open to lobbying, to, you know, influence, in the end makes you lose your goal, your targets, so I think trying to argue from an essential good perspective is not the right way to approach the supply chain resilience discussion.

MR. DOLLAR: We've got some good questions have been submitted in advance. I think this one, Etel, I'll start with you and if the others want to supplement, that's fine, but I think this one is a good question for you. There were actually two interrelated questions, so they were specifically phrased as is democracy a challenge to reshaping GVCs, and then I think that's closely related to the question, you know, what is the future of GVCs in a divided world?

MS. SOLINGEN: Well, two huge questions, right? In the report we actually pretty much stayed away, you know, this chapter five, although it has a geopolitical dimension, it was sort of quite technical, you know. How do these three meta risks speci -- what are the mechanisms through which they affect GVCs, very technically, in what ways we have tables and all that, so, we clearly stayed away from issues like democracy and -- so it takes me out of what we had in the report and the question specifically wants me to address how democracies affect GVCs? What --

MR. DOLLAR: Well, the way I interpret it is that we -- one possible vision of the future is it kind of division into a sort of a democratic block and presumably --

MS. SOLINGEN: Oh, okay.

MR. DOLLAR: -- presumably an authoritarian block.

MS. SOLINGEN: So, there are two dimensions to that, and I want to leave the issue of friend shoring for last. First, I want to address the issue of how demo -- you suggested initially, you know, we are shifting towards more pessimistic view -- actually before the Ukraine, I was, we had discussions with friends and colleagues in the project about pessimism, and I used to be the perennial optimist. The Ukraine, the war -- Putin's assault on the Ukraine has changed dramatically a lot of this for the simple reasons that one might have expected the role the value chains meaning states involved in underwriting, because this is not just market forces, okay? This is not just market forces. States underwrite one policy or another. If it's a more sort of inward-looking populist kind of terrain, they are bound to underwrite a different kind of world for GVCs. With the Ukraine, one might have expected if GVCs were a priority to preserve then most states that derive benefits from GVCs would have reacted in a certain way to this attack on the Ukraine. But that didn't happen. And what, in fact, I am getting to the democracy - what in fact happened is that it consolidated blocks with more democracies but not just democracies. Because now we see almost daily other countries shifting in that direction basically leading to this bifurcation that is deepening more than it was just six months ago. So here comes in the, again now, we didn't discuss issues of political regimes or anything in the report, but what's happening right now is consolidating these camps, right? Where democracies -- now, democracies are not monolithic, there are many types, we have elections here and there and, you know, different coalitions come up, and we don't know where exactly they're going, but you can see a more rigid camps and that is actually affecting GVCs adversely.

Now, as a result of that, more than before, because this friend shoring term, right, again has emerged far more forceful since Russia's assault on the Ukraine. We didn't have a lot of friend shoring policy floating around. We had some. So now there is this idea in the business community that, yes, the cost of diversification and adjustments are high, but maybe the costs of not doing it are higher. What was the second question? Was it --

MR. DOLLAR: Well, it was just kind of a, you know, a sort of extension of, you know, what would be the future of GVCs, excuse me, in a divided world?

MS. SOLINGEN: Well --

MR. DOLLAR: Is it realistic for companies to have one set of supply chains say to serve the China market and, you know, a separate set to supply the United States or potentially Europe? I guess personally I'm very skeptical about this, you know, but the --

MS. SOLINGEN: I can see where skepticism -- I'm really just depicting descriptively what I see happening and I'm certainly not projecting that this is the most efficient path of history. We could have had a different path. But I think really the events of the Ukraine were very defining in sort of, you know, pulling apart these forces. I am not saying that we cannot tame this process. We can. But it's in the political will of everybody to come together on an array of issues. The environment, for instance, that could facilitate dialogue in other domains including GVCs, trade wars, et cetera. That I don't see happening yet. I especially the discussion of nuclear weapons should have brought together a strong reaction to dampen that source of risk but it's not happening yet.

MR. DOLLAR: Marta or Victor, would you like to weigh in on this?

MS. WOSINSKA: Maybe just briefly to talk about friend shoring. So, friend shoring very much came up in the context of Covid-19 in pharmaceuticals when there was this realization that, you know, we have this incredible demand spike, we will have to manufacture vaccines, there is going to be supplies, this is a global supply chain, how are we going to make that work? And I think the issue of friend shoring was coming up there. There were sort of an interesting kind of anecdote that made folk really nervous is actually around hydroxychloroquine you might remember that drug. The API for that drug was made in Hungary and the Hungarian government, from that I had heard, basically said that you can't -- they wouldn't release the API to the manufacturer unless they promised back the finished product with a certain quantity, so these kinds of disruptions that have made folks stand up even more and sort of think about this set of issues, so.

MR. STOLZENBURG: David, on the first question, whether democracy is somehow preventing the reshaping of supply chains, no, I don't think that can be -- that's backed up by the data. If we look at where the political disruptions to supply chains came from, I think that was all over the place. You know, think of China's lockdown policies. I don't think there's a correlation between the state of democracy in an economy and how many disruptions they were faced.

On the second question, first of all we don't see at all a fragmenting of the world into two blocks, right? There are a lot of countries that are somewhere in the middle of this, and they don't want to take sides and you can't force them to. And that will actually help a lot supply chains to, you know, by linking essentially these two blocks. And partly also of course Russia is an important supplier of some goods but it's not the center of many supply chains. It's not a key player in many supply chains, so right now we see reglobalization, but we certainly don't see a fragmentation to two blocks, and we did some simulations on the effects and there would be extremely, extremely costly, much more than what we see right now. And I think that would also create quite some backlash against, you know, too many measures, political measures, into that direction, because already right now we see with inflation being so high that, for instance, in the U.S. there are some voices asking for the lifting of the tariffs on China, you know, which, of course, those is completely opposing to this idea of friend shoring. I think at some point it gets so expensive that there is no more political support for such measures, so I think this is not a realistic type of track.

MS. SOLINGEN: I want to endorse everything that Victor said and now I understand more the question of democracies as the source. I want to support everything he said including the inability to detect this dramatic bifurcation yet. One of the things that makes it impossible to come up with metrics whether this process is coming into being or not is that there is a lot in the perceptions of business and so on that we cannot capture. You know, there is some reshoring in the experience that I follow. There is something in the intention but there is no real effective measure yet. It's a slow-moving process. And we don't know what the end of the process is. It could well be sort of strong enough to prevent this bifurcation. But on the democracy, I couldn't agree more with Victor as well. Democracy now I understand as a factor of sort of this GVC, you know, weakening of GVCs. I don't see, I don't see that either because truthfully the process didn't start with the trade war, okay? It started with other countries engaging in inward-looking policies and sort of some mercantalistic practices where market access and all these issues. For instance, if you read the surveys of European chambers of commerce, many of the old issues are in there, okay? They are the underbelly that sort of, you know, the Ukraine and all that sits on. Complaints about, you know, these other policies, intellectual property and all the rest. So democracies being the origin, I don't, I frankly don't see that. Obviously, there is populism everywhere and populism straddles democracies and non-democracies, you know. If you really want a culprit, it's hypernationalism everywhere.

MS. WOSINSKA: Actually, if I could just add to this. You know, the anecdote that I provided, I frankly I can imagine any other country doing it in a pandemic, right? If the life of many, many of your citizens is on the line and you have a bargaining chip, you're going to use it, so, you know, friend shoring kind of potentially moves you into that direction of having a little bit more security but I don't think it does all the way, so.

MR. DOLLAR: If there are any questions from the audience here, please just raise your hands. Okay, I have more questions, but I'm happy to -- no, no, but let's take you sir. Yeah, thanks.

MR. BRUSHARE: Hello, my name is Maggy Brushare. I work at Brookings Global here. My question is about when you think of the longer trends for global value chains, how does climate action plays a role? How do you see the effects of that global integration of markets hindering global climate action and are solutions more technological or a question of scale? I'd be curious to hear your thoughts on this. Thank you.

MR. DOLLAR: Okay, so that's a great complicated question. Etel, you want to start on that or --

MS. SOLINGEN: If anybody --

MR. DOLLAR: I have a thought too, but no, you go first. You go first, because I'm the moderator.

MS. SOLINGEN: You know, these extreme events are really penetrating the, you know, the awareness of business and you can see that very clearly in sort of major efforts to move -- to really make GVC more resilient to these events. Everybody of course, and again the Ukraine crisis is sort of dragging us back in some ways -- but I do believe that that's probably something that GVCs are treating far more seriously than ever before.

MR. DOLLAR: Yeah, I mean, there were a lot of different directions you could go with the question but the thing that really struck me is, you know, I am personally very supportive of some of the actions the U.S. Administration is taking to, you know, promote clean energy. But this Buy America aspect of some of their moves is completely counterproductive. So, for example, you know, the --

MS. SOLINGEN: Batteries.

MR. DOLLAR: Yeah, well I was thinking the misnamed Inflation Reduction Act, which has some important environmental measures, basically, as I understand it, there'll be very few automobiles that actually meet the standards they've set out that would get you a very significant subsidy to buy electric vehicle because so much of it has to be produced in the U.S. there are almost no current models that would meet these standards and so maybe the auto industry will quickly evolve and it will turn out to be a very clever policy but I really doubt it. I think what'll happen is after a couple of years there'll be almost no electric vehicles that have been subsidized through this act and then they'll probably scramble to ease up on the restrictions recognizing that, you know, that this has really backfired, so, you know, protectionism can make meeting environmental goals much, much more expensive. That was my quick reaction.

MS. SOLINGEN: And runs against friend shoring.

MR. DOLLAR: What's that?

MS. SOLINGEN: It also runs against friend shoring, you know.

MR. DOLLAR: Yeah, I'm, you know, I'm very skeptical about this notion of friend shoring.

Go ahead, Victor.

MR. STOLZENBURG: Also in the more longer term perspective I think it might be intuitive to think that, you know, climate shocks will actually be also be a problem in GVCs because they will disrupt transport and issues like this, but I think it's somewhat misleading because a lot of the shocks that we see coming out of climate change tend to still be locally concentrated so in fact not relying on GVCs in these scenarios will be much more problematic because you know if you reshore everything and there's a hurricane and you have to shut down completely you will have, you know, no access to production anymore and related to this I think GVCs will be even more crucial to adapting to these factors, you know, because I think climate change will lead to an even starker distribution of some of the endowments that we have across the world in terms of where can we grow, for instance, what products and where can we build certain things, and we know from the basic trade textbooks that, you know, strong distribution of our spatial distribution of endowments leads to starker gains from trade and you know that's why I think we have to double down on GVCs and trade even if climate change will cause more disruption to transport. I think in general climate change will cause more disruptions, doesn't matter whether production is local or international, that's just something we will have to deal with more, but I think trade can be a solution here rather than an obstacle

MS. SOLINGEN: Yeah, actually, (inaudible) maybe. That was exactly the distillation of our chapter on environmental risks, that sometimes people define resilience as sort of moving away from trade solutions and that's exactly the opposite. If you want to be resilient, you want to have substitution elsewhere in the world. And keeping it locally will perhaps undermine your resilience, so, again, much agreement with --

MS. WOSINSKA: So, maybe I'll add a little bit about pharmaceutical perspective here. When you think about prioritizing supply chains for either push or pull incentives, such as from a policy side, you know, on the one hand one has to be thinking, and I spoke about this, about from the demand side, what is really important, right? But also what is the risk that -- what is the risk that the supply chains are at? And clearly, you know, some of the geopolitical considerations can play into it, but very much environmental issues do as well. You know, we have significant pharmaceutical manufacturing footprint in Puerto Rico because of tax incentives, past tax incentives. They were given, you know, a number of facilities that produce things like saline and other things sort of that have large quantity of water in them. Actually, are close, located close to rivers, for obvious reasons, right? But that means that they are at an increased risk and so I think as we think about which supply chains to prioritize for either be it onshoring or just and, you know, any other sorts of financial incentives to sort of strengthen the supply chains, I think that's actually one of the important elements to be considering, and I don't believe it's really something that's on the forefront at all. If anything, maybe some of the geopolitical considerations, but I haven't really seen much said about those considerations for supply chains of pharmaceuticals.

MS. SOLINGEN: Right, and on the environment, one maybe last thing, this is an arena, this is a global commons (phonetic), this would have been a favored arena for cooperation, you know. What does it mean I'm dropping out of cooperation on the environment? What good does it do to either your country or the international community? This is an area where you could have abstained from, you know, intruding or introducing the geopolitical tensions, you could have actually built a foundation for cooperation on everything else. GVCs, and, unfortunately, we now see less of that cooperation. Now, if every country were to act on their own unilaterally on the environment, that would be one thing. But international situations actually can play a great role in minimizing, you know, those frictions and, unfortunately, we don't have the disposition by major countries to do that.

MR. DOLLAR: I have a set of questions for all of you, and I'm going to start with Victor, so I'll just warn you. We got quite a few questions that are geographic, and I think the theme is developing countries in general would like to get more involved in GVCs and so we had questions about the role of Southeast Asia, about India, can Mexico play more of a role in value chains, can, you know, what's Taiwan's role? So, we don't have time to go into all these different geographic areas, but I thought we could use it as an opportunity to talk about, you know, what are the important factors that enable developing countries to participate? And I wanted to start with Victor because services, you know, you mentioned in the report Bangalore is a good example of a success story of developing country getting into a service industry, but we don't see too many of those.

MR. STOLZENBURG: Yeah. No, it's true, and I mean we've been discussing within the team because like entering a GVC, that is something where I think we lack still knowledge, you know. Of course, especially as services will grow in importance, so will human capital. And it doesn't have to be, you know, this high-tech knowledge, okay? Everyone needs to code super-well. What helped in India and also in the Philippines was that they had a lot of English-speaking, a large English-speaking population with a basic understanding of some of these technologies. Now what we also saw in particular in the case of India is, of course, that idiosyncratic factors played a role that are hard to replicate, you know. The Indian diaspora in the U.S. funds this in Silicon Valley, they help to establish the initial contacts, they brought back knowledge to India and distributed it, so there is always an idiosyncratic factor which makes it hard to predict exactly what's the next big thing, you know, in GVCs. But if I would have to, yeah, if I would have to narrow it down, and particularly on outward (phonetic) services, it's the human capital and investing in education to make sure that whichever chance comes along your population will be able to grasp it because education helps to, exactly, helps to grasp different opportunities, you know, especially if it's these basic types of education. You know, you can do some math, you can speak English, that's all that's required almost to, yeah, so that you are in place to grasp these opportunities.

MR. DOLLAR: Marta, when you quoted some statistics about where the U.S. gets active ingredients, it was just striking that it was primarily Europe, North America, China and India. I think I can guess the answer, but, you know, why China and India and we don't see much else in the developing world?

MS. WOSINSKA: That I don't know why, exactly why these two countries specifically. But I can tell you sort of what has driven part of the movement and why I also think that excipients probably also have a much bigger role there. So, clearly, you know, labor costs, and sort of building sort of the infrastructure is one issue, but going back, not to climate specifically, but environmental regulation. That's also been a big driver there. Onshoring active pharmaceutical ingredients and excipients would really be complicated in the United States because of environmental regulations. So, but that's been sort of one of the drivers in that shift.

MR. DOLLAR: Do we, does the United States send inspectors to these plants in India and China?

MS. WOSINSKA: Yes, they do send inspectors to India and China. They do have small offices within those countries, even inspectors sent from the United States to India and China, or anywhere else in the world, the government actually gets notified and what has frequently happened is that then the facility gets notified and you can read, there's a number of books and reports and whistleblower effects that then what ended up happening is that there was this rush to like clean up the facility, burn documents, change the (laughter) (inaudible) so you see these things. So that's been a bit of a problem, yes.

MR. DOLLAR: Etel, do you want to weigh in on this one or move on to the next one?

MS. SOLINGEN: Maybe briefly because of this transitions that we're going through there is a lot of talk of, for instance, leaning more on a Latin American supply chain and so on. Mexico, of course, we've been hearing since Covid and all that but could well serve as a near-shoring, you know, solution. The numbers don't bear them out and that's perhaps because of the resistivity, let's say, of Mexico to become sort of a Vietnam in the continent. That hasn't happened yet. There's Costa Rica and all that -- there is potential. But, of course, and I go back to the underlying politics that enables or disables this aggregation to supply chains. If a whole continent is moving towards populism and policies that are not receptive to GVCs, you won't have that.

MR. STOLZENBURG: If I can just add one more thing that we also discussed in the report which is the size of the domestic market. Because obviously with pharmaceuticals you were mentioning China and India which have huge domestic markets. And I think that has been a problem for some of the smaller developing economies and there, for instance, we can just applaud the AFCFTA because you don't need like the question is also how the market is defined and if you achieve regional integration such as the EU has, your local market will grow. And I think one problem for Africa, why we see so few value chains in Africa outside of natural resources, was that trade costs within Africa were higher than between Africa and Europe, you know, it was bizarre that trade between neighboring countries was costlier than for shipping something from South Africa to the U.S. And so I think that is, it's important that right now we see in some developing country regions attempts to bring these costs down, to integrate, because I think having a larger domestic market makes it more attractive for the lead firms in developed countries to enter your market and start producing there.

MS. WOSINSKA: Actually if I can add to this. This is actually a very good reason, I think, why China and India are two big markets. You know, what's interesting is that the strength of an

FDA stamp of approval for a facility or getting a drug approved by the FDA is really powerful to the extent that some companies in foreign countries will get a generic drug approved not because they ever want to sell it in the U.S. but because then they can say internally within their markets is that they have a drug approved by the FDA. So, I think there is very much of a cross kind of pollination here and if you have a big market base that it sort of as both a technology transfer but also this sort of, I don't know, branding aspect.

MR. DOLLAR: Okay, so I have a last question that will give each of you an opportunity to make a few final comments. It came from the audience. It's an obvious good question which is, you know, what would be your number one policy recommendation to improve value chain resilience? Marta, I'm going to start with you because since you're stuck in the middle, we tend to start at the ends, so this time let's start in the middle.

MS. WOSINSKA: Number one right now would be to more-broadly to take a step back in thinking about how to prioritize and then assessing supply chains for a shoring up. I think that would be the number one step. But in the long term, I mean, I'll just basically say it's not one thing. I think it really is a combination of things. To have a resilient supply chain you have to sort of understand all of the weak spots and there could be many. And it's not going to help if you, you know, resolve one really weak link because the other ones can make the whole thing fall through, so in a sense you have to think about it, you know, will we have manufacturing quality at the end, but what -- do we have back-up suppliers for the API? You know, what, so it's really, there's no one solution to supply chain resilience. It really is about sort of a comprehensive look and thinking about what the weak points are.

MR. DOLLAR: Victor?

MR. STOLZENBURG: I think one key aspect is lower policy uncertainty. You know, it's, there are sometimes reasons why you need, you know, policy uncertainty, like think about the conflict the one in Ukraine, the sanctions and how long they are in place. That's something you have to deal with. But we have a lot of policy uncertainty that's somewhat unnecessary, you know. Do you need to kick down a review of certain tariffs every six month, you know? Business will just wait and they're waiting to invest, that accumulates, and that costs, and that brings strong growth, but that also brings down GVC resilience because they don't invest in the facilities, logistics firms don't invest into shipping, and that is very costly. But as a small side comment to the question I think is, and that's related to stepping back, I think we should sometimes step back and look at what our expectation, because we've been criticizing supply chains a lot because we got so used to that we can order anything at any, in the middle of the night, and expect it to be delivered the next morning, you know, thanks to Amazon Prime and so on. And maybe that's not normal, you know. Maybe that comes at such a high cost to the environment and maybe that just is realistic in a world where everything aligns, and maybe that's not a realistic assignment, so I don't think we should be maybe also too critical with how businesses handle this by itself, being left alone, you know. Maybe we don't need policy to do always a million things. Maybe it's also a bit about expectations.

MR. DOLLAR: Etel?

MS. SOLINGEN: And on this I'm going to come out to say that actually policy has a very important role to play. And I agree that it's a cluster of factors. It can't isolate. But one important consideration is to think about domestic distributional costs and benefits of participation in GVCs. It's huge. But reconsidering and revamping this scenario of domestic distribution does not entail reshoring. All of this sort of resilience can be built along the way with greater attention to those gaps that can emerge out of this. So that's at the level of states internally. At the level of firms, of course, we know there's a plethora of things that, solutions, having to do with resilience. I'll stay away from that for a second. But then there's at the level of international institutions. And, unfortunately, we've seen a retreat from the kind of cooperation that international situations can provide. We have a bright light in the current Director of the WTO that is really investing a lot of effort in recreating a foundation for GVC that is attentive to all those things, and that's a ray of hope. But international institutions can soften the rough edges of, you know, pandemics, environmental and so-on, and we really need to think through how to rebuild that foundation.

MR. DOLLAR: So, my answer to this last question is from the point of view of the United States is that we need new trade agreements, I think very consistent with what you were saying, Etel. But you know we could finish the free trade agreement with Europe. We could rejoin the transpacific partnership and I guess implicit in my thinking is that, you know, GVCs are here to stay, they're going to evolve, but they're not going to go away. It would be hugely costly if they went away. And trade agreements can be a way of setting the rules and the parameters and create more policy certainty.

Well, I'm going to wrap things up. A couple of quick advertisements, so I'll just remind you, we've been here discussing Global Value Chain Development Report, Beyond Production, available from the Asian Development Bank website for free, okay, public good. So, I encourage you to take a look, and this has been a program of our John L. Thornton China Center at Brookings and the next program is next week, Tuesday, October 4th. We're going to have our leader, Cheng Lee together with somebody named Tom Friedman from the New York Times, are going to be talking about the 20th party congress and will China's strong man become even stronger?

SPEAKER: Give us a preview. (laughter)

MR. DOLLAR: Yes. So, you know, welcome you to join in-person or online and let's give this group a nice round of applause.

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