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TAIWAN'S CENTRAL ROLE IN THE GLOBAL ECONOMY

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PANEL:

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HASS: Good afternoon everyone. My name is Ryan Hass. I'm the Koo in Taiwan Studies here at the Brookings Institution, and I'm delighted to have a chance to welcome you all to our event this afternoon, where we will look at Taiwan's central role in the global economy. We all know that Taiwan is a crucial player in the global economy, global supply chains. Much of the global economy runs upon products that come out of Taiwan. But there are questions about how durable sustainable this model will be and how Taiwan's new leaders will impact Taiwan's position in the global economy. We have three of the smartest people I know to help us answer these questions. They are Jimmy Goodrich, who is a senior advisor for technology analysis to RAND, and also CSIS and University of California, San Diego. He's also one of America's leading experts on understanding semiconductor supply chains. Next is Janka Oertel, who is director of the Asia Program and senior policy fellow at the European Council on Foreign Relations. We are delighted that she is with us. She flew from Berlin overnight to be here to join us for this conversation, and we also have Shelley Rigger with us. She is back on stage. She was here a year ago at this time as well. She is the vice president for academic affairs, dean of faculty and Brown professor of Asian politics at Davidson College. She's also a director of the Taiwan Fund. So I am going to pose a few questions to these three. They're going to share a few of their thoughts. And then we're going to turn the floor over to you all. For the final portion of our hour together so that you can raise your own questions to them as well. We also have a global audience that is watching this live. This is, on the record. If anyone from our global audience would like to pose a question to this group, they can send the email to events@brookings.edu or via Twitter using #TaiwanEconomy. So with that this introduction, I have a question to begin. Taiwan is a set of islands, rock outcropping in a very difficult geographic space. How did it emerge to become so central to the global economy? Jimmy?

GOODRICH: Thanks, Ryan. And it's really fun to be here on a really important topic, which is how one little tiny island has become so fundamental to the global economy. I think, you know, Taiwan, like many other East Asian nations, played the developmental game very well, early on throughout the 80s. Moved up the value chain from, fruit, to textiles, to then industrials, chemicals, semiconductors, and now moving into biotech and pharmaceuticals and other advanced areas. And, you know, it really took a, fairly strategic and proactive role by the government over multiple administrations managing monetary policy, attracting talent from overseas and, bringing in smart people, integrating the global economy to help pioneer entirely new ways of doing business. So today, Taiwan was on the map economically for its semiconductor industry, not because, well, one reason, because of their advanced technology, but also because of their management, their invention of entirely new foundry business model that served, chip designers and didn't design their own chips. So Taiwan's been both a, I think, successful economy moving up the value chain over the last several

decades, but bringing in really ingenious talent that have pioneered whole new ways of doing business that have benefited, really the entire, electronics and IT, infrastructure. It's not just the outsource model of chip manufacturing, but we forget that Taiwan invented outsource electronics manufacturing. Your iPad, iPhone servers, everything, plays a role somehow with Taiwan.

OERTEL: So I think for me it's more surprising from a European perspective. And let me just start by also thanking Brookings for bringing me here and also thanking you for coming. It would be, I would say, impossible to gather a crowd of this size in Europe on a Friday afternoon on a Taiwan topic. So this already tells you that I'm coming at this from a slightly different angle. For me sort of the the question of how central Taiwan is in the global economy has not really been a topic in Europe until very, very recently. And, and no one has really thought about that little miracle that has been happening there in the Pacific. No one has been actually thinking about all those other things that are quite remarkable. The development of its democracy, transitional justice questions, questions of the green transition, all areas where you could think Europeans would be quite enthusiastic about a lot of those topics. No one really cared. For a really, really long time. And it was only basically with, the pandemic and the question of, of the kind of the semiconductor industry that it has put Taiwan on the map. And still, I would say it is not an area in which most people could even find it on a map. In Europe. Precisely. You know, it would be a bit difficult to say. So it's more of a gut feeling importance in the international economy than an actual understanding of how important it is. For Europe it is, a relatively, marginal business partner for the time being. It's just those critical industries in terms of overall volume, we're about 74 billion USD in terms of overall trade. That's not that much. It is Europe's I think it is Europe's 30th largest trading partner. That's not that big. For Taiwan, on the other hand, Europe is now beginning to be much more important. It is the fourth largest trading partner. It is becoming, not only an export destination but also an investment partner. Europe is the largest investor, in terms of FDI going into Taiwan. So there is an emerging relationship. I think the overall story that is most interesting is not that the volume is still not enormous, but it is looking at a graph. You know, if you look at how stable the investment used to be, and then looking over since about 2019, how that graph just moves up, and how the economic relationship is changing massively. On still a small scale, but it and in particular sectors but is playing a whole new different role in that regard. And so I think this is where we are still in the discussion, as in many discussions, sometimes about ten years behind from the US. In terms of where this is moving. But I think for Europeans, Taiwan is now finally on the map, and finally an area where there's, the exchange and the political exchange. And I think we can go into that a little bit later with the political exchange is also becoming something of, a political signaling effect, of what you think about democracy, what you think about freedom,

what you think about, the question of the rule of law. Taiwan has become sort of an embodiment of that of signaling for parliamentarians, etc. if we can speak about that a bit later, maybe.

RIGGER: Most of what ought to be said has already been said. So I'll just add one more little angle. You know, European imports from Taiwan, directly from Taiwan represent only a small portion of the value that Taiwanese firms located in Taiwan and also located outside Taiwan are contributing into European economies. So another dimension of this story that, I think is worth considering is the degree to which the PRC economy is a product of Taiwan's engagement and Taiwan's own development. So in the 1960s and 70s, at the sort of the height of that, the sort of first wave of Taiwan's economic miracle, Taiwan became an important, export oriented manufacturer for global brands. And, you know, we all kind of know that story. In the late 1980s, when Taiwanese were finally permitted to go to mainland China, they immediately recognized the opportunity that the PRC economy in the early stages of reform and opening under Deng Xiaoping offered for lowering costs, lowering the cost of production through, relocating traditional manufacturing to mainland China. So a lot of the the industries that we associate with PRC export oriented manufacturing, especially in traditional sectors, and especially in the 1990s, 2000s into the 2010s. You know, shoes, apparel, toys, anything injection molded. Those opportunities became available to entities in the PRC thanks to Taiwanese investors and the opportunity to contribute to global supply chains and to be in contractual relationships with international brands. Was thanks to these Taiwanese investors who already had the contracting relationship with international brands. And then when they started making whatever it was in mainland China instead of back in Taiwan, suddenly the thing is stamped Made in China. But it's a Taiwanese company, and it's only made in China because of that, that Taiwanese investment. So that trend or that sort of set of practices cultivating a new industry or a new industrial style in Taiwan and then taking it to mainland China, as well as to other other manufacturing platforms, continues into the tech era. So after Taiwan's traditional manufacturing was offshored to mainland China, for the most part, the Taiwanese economy looking for new industries to get into and to reinvigorate that, to fill the space. That's where the high tech boom came from. And now many of those high tech industries are also moving to mainland China and whole new industrial processes and and modes of manufacturing, like the way Foxconn manufactures devices in mainland China. Like, that's a that's a mode of production that has never existed before Foxconn went to the PRC. So your iPhone says it's made. I don't know. Europeans are not as into iPhones as Americans are.

GOODRICH: Designed in Cupertino, right?

RIGGER: To the extent to which you have an iPhone. And in Europe it says it's made in China. But it is also very meaningfully a product of the Taiwanese economy.

GOODRICH: And maybe just add one little point just to emphasize, I think, you know, ten years ago, Taiwan was not on the map for most consumers. Taiwan has never really had a large group of competitive consumer facing companies, with the exception of maybe HTC, Acer, Asus, if you remember Android phones back then, but it was the and Taiwan was always this important cog in the global supply chain that kept companies running. You just never thought about it because they were the companies making dozens of little widgets that you just didn't have to worry about until the pandemic came along and everyone couldn't get access to the chips they needed. And sort of an interesting example. I was at a neighborhood barbecue two years ago, and everyone was talking about TSMC and Taiwan, and even though they had nothing to do with it and in a way that no one would have. Five, ten years ago, it's it's a conversation topic on the kitchen table now.

HASS: That's great. Shelly, another conversation topic in Washington that is very prominent is the concern about Taiwan security and the potential of China to try to blockade Taiwan and what impact that would have upon the global economy. But I was wondering, just to pick up on the point that you were making, if you could turn that in reverse and talk about what the implications would be for Chinese value chains if there were ever an event in the Taiwan Strait?

RIGGER: Sure. I think as, the, as US economic policy has kind of deemphasize China and has, created incentives for manufacturers of all kinds, but certainly including Taiwanese manufacturers to kind of, minimize their exposure in mainland China. And as the PRC economy has become less friendly to, foreign manufacturers, perhaps, China's mainland China's exposure to, that kind of a crisis has become less of a factor. Nonetheless, there are still enormous cross-strait flows. The PRC is still a major target for Taiwanese exports. And most of those exports are for their, you know, B2B. So there's the the final destination of of whatever that is, it's going from Taiwan to mainland China is not in the PRC. It's it's on beyond. So the the risk to the PRC economy of, severing the economic relationship between the two sides is, is certainly, two way risk, and it is one that has kind of ripple effects to the entire global economy as well, because the degree of integration between Taiwan and the mainland, is such that to kind of try to cut that off all of a sudden would be hugely damaging to not just the PRC, not just Taiwan, but absolutely all of us.

HASS: How about the European perspective? Where do you see the Europe Taiwan economic relationship going from here?

OERTEL: So I think the fact that we're now talking to companies, to governments across Europe, almost on a weekly basis about Taiwan contingencies, says a lot. That wasn't the case even five years ago at all. That was something exotic. That was something for the expert community, something to worry about that. But now this is a really the the most conservative people are concerned about this and are talking about what could we possibly do? The most cynical companies are the ones that are heavily invested in China. Particularly large German companies that are basically saying, well, if we're in that zone and we're having a military confrontation on the Taiwan Strait, then everyone's going down and probably we're still relatively well off then, because we are critical companies, we are important for strategic industries where chemical companies, we're, auto manufacturers were critical for European economic stability. So no one will touch us at that point. No one will blame us for bad decision making at the time for taking too high risk on China. So actually, we'll ride this wave as long as we possibly can. And every cost that you, every penny that you spend on de-risking is basically a waste, a penny, because it just, in relative terms slows you down in comparison to competitors. It's a very different story when you talk to small and medium sized enterprises. Small to medium sized enterprises are deeply worried, that this could kill their business because they're not critical to the overall, societal, future and the overall industrial future of Europe. So you see a lot of hedging there. You see a lot of carefulness, on their behalf. And you see that, they are actually wondering whether it is clever to invest either in Taiwan or in China. And I think that is something that is, should be of concern in the long run to the future of the Taiwanese economy, because that is really something that could be damaging. This is important investments that are coming from Europe, these are important companies that could play a significant role also for the future steps of the development of the Taiwanese industry. And you see and you feel that that is a great degree of concern for overall stability. And this is enhanced by, the experiences in, in, in Europe, this is enhanced by a Ukraine. I think every company in Europe has understood what it means to write off assets. That's been a very, very hard lesson. And now everyone's doing the math and saying, can I afford to write that off? So all of those that are not in the kind of critical zone we don't care about, this zone, are actually just doing some calculations and thinking, how long does it make sense to still write this wave? When is the exit point? And if there is an exit point, how do I get out without damaging myself too badly? So, these are very real conversations. There's these are more real, I would say, in the economic space than they are in the political space.

HASS: Interesting. Jimmy, in the, several years since you were having conversations at barbecues about TSMC, a lot of, countries have decided that they want to stimulate their capacity to produce chips or to be involved in the semiconductor supply chains. How is this going to impact Taiwan going forward? Is there a risk of Taiwan being hollowed out? As some some suggest.

GOODRICH: That's a it's a good question. I know it's a hot debate within Taiwan as well, particularly last year and the run up to the election. You know, stepping back, if you look at the most highly valued companies today, Microsoft, Nvidia, Amazon, Google, Apple, the entirety of their business value is dependent upon on chips from Taiwan. Now, you know, investors clearly don't think there's a risk there because they keep on piling in. And now they're, you know, worth combined more than the GDP of Germany and the entirety of the Chinese stock market. So, you know, I think just putting that in some perspective is really useful. Obviously the Chips act in the United States, started last year, now is moving forward, funding projects with TSMC in Arizona, Samsung and Texas, Intel in Ohio and Arizona. Korea too, is offering tax incentives. Japan now several billions for their own advanced chipmaking efforts. Europe is bringing TSMC to their shores. TSMC just announced a partnership in Singapore. So all of this combined obviously the big question is is this hollowing out Taiwan? I think the the simple answer is no. In fact, despite all these efforts, which are important to improve resilience, the world is going to continue to be very dependent on Taiwan for, particularly the advanced node semiconductors. You know, none of the, fabs that are being built outside of Taiwan, with the exception of maybe Samsung's, are at the bleeding edge of technology, and TSMC still retains a technology lead over everyone else in the industry. And being able to build the fastest and smallest chips at the largest scale, and in particular as demand is exploding. For generative AI. For Nvidia, that's just going to exponentially increase that dependance at the leading edge. Now, the struggle for the United States and others have been, how do they convince TSMC to bring their most leading edge technology to the United States? The challenge is they probably can't and won't for both management and technical reasons, because trying to split that miracle of TSMC into to have two different R&D teams all across the world slows the whole machine down. And that's not good for global innovation. But also TSMC politically and Taiwan, they want that advantage. They want that competitive advantage to stay there. So if I were in Taiwan, I wouldn't be worried that, Taiwan is going to see their leading edge semiconductor capability hollowed out. However, where the challenge will be is that those more, less advanced technologies where China is investing quite aggressively and quote legacy chips Singapore, Japan, India, many others. Taiwan today is about 30-40% of the legacy chip production from a capacity share. So that's where some of those companies. But guess who's leading that drive in Japan India, Singapore it's Taiwan. So all the growth that's

happening outside of Taiwan is by mostly Taiwanese led firms because they're, the most capable, innovative companies are doing this. With the exception of the Chinese companies don't have to worry about profit and loss. And, you know, they're not expanding overseas.

HASS: Interesting. Is that a view that you both share?

RIGGER: Yeah, I would I would just add to that, you know, we're we're constantly thinking, as long as I've been following Taiwan, which is longer than I care to admit at this point, they're at at every juncture the question has been, but can they find the next thing? Right? Yeah. Okay. Okay. They're great at. Footwear. But can they do furniture? Okay. They're great at furniture, but can they do bicycle? Okay. They're great at bicycle. But can they. You know. And so from my childhood when it was, you know, Barbie dolls to at every moment when is Taiwan going to miss the next wave. And it's just interesting, you know, we're talking about, semiconductors and and absolutely. Semiconductors is really important. But it's like semiconductors for what. And just in the last 4 or 5 years, semiconductors were for the Apple supply chain five years ago, you're doing portfolio investment in Taiwan. It's all about the Apple supply chain, the Apple products cycle and so on. Then it was semiconductors for the sake of semiconductors. So like we stop talking about the Apple supply chain and talking about TSMC and and other similar firms. Then it was EVs and green energy and Foxconn's moving into, electric vehicles. And now it's AI and GPU, and GPU is a critical technology for artificial intelligence. And it is almost entirely a Taiwanese industry in Taiwan as so. It is absolutely possible that Taiwan will miss the next wave. But so far, Taiwan has hit all the waves. So I think the fear of hollowing out. Is it self of driver of the kind of active collaboration among universities and sort of technology leaders, private companies and government entities and international partners? That is is what keeps positioning Taiwan to kind of hit the next opportunity. So, you know, past performance is no guarantee of future success. And yet there is a lot of past performance to suggest that this is not an economy that just kind of hollows out and and gives up.

GOODRICH: It's those like silent dependencies I think, that are really important. Everybody thinks about Nvidia and their GPUs and their dependency on Taiwan and TSMC. But as you point out, the assembly of the circuit board is made by Wistron and Pegatron, Foxconn industrial owner that builds the servers. Supermicro builds all of it in Taiwan. It's just you go on and on and on. Lead tech does the module assembly for the GPU card. It's almost like the company is practically tied at the hip at every single point in the supply chain, and that's virtually every other tech company out there.

OERTEL: But there's also a political dimension to this, and I think that's the one where sitting in Berlin, Germany is one of those places where I would say, it looked like we could never miss a boat, and then we missed the boat. And now we're not at the cutting edge of the development anymore and are desperately trying to catch up in a variety of areas in which we used to be very good. And there's a huge dimension of this that has political alignment around these questions, actual funding made available and education. And I think this is where Taiwan's biggest success story is to be told. That's the education side of things. It is the having the skilled labor and workforce in, in supply that you need for all of these developments. And that's something that in Europe at the moment we don't have. And then if you have those investments like in Dresden, where we're trying to build a, a chip infrastructure, a chip ecosystem in a region in Germany, the level of political support that is needed to just generate a flow of students at the moment between Taiwan and Germany, the level of kind of handholding you have to do to make that happen, because no one really cares so much about this. That's just quite striking. And I think this is where this is why I would also be more optimistic about the ability of Taiwan to kind of steer this on its own. It's just the question of how high the risk tolerance of all other players involved remains, and how much the pressure level rises.

HASS: Well, can I, push you a little bit further on this? In America, we have a famous investor, Warren Buffett, the Oracle of Omaha, who once invested in TSMC and then later divested from TSMC, not because he didn't like the business or the business model, but because he was nervous about the security situation in Taiwan. Do you think he made the right call? What would you tell him if he asked you for advice?

OERTEL: So I'm super glad that Warren Buffett will never ask me for business advice. And I pride myself on not being a business consultant, but sort of a think tank, looking at the level, slightly higher and above that. And I don't think it is our job to give investment advice, but what I can sense in the business community is a growing sense of nervousness. It is slinging all those figures around of 20. I mean, how many times I've talked about 20, 25, 2027, 2049, when is it going to happen? Is it 2030? So this is sort of the sense of just kind of, unclarity about where things are moving is something that is hurting, long term investments and it's making it difficult to make decisions that are not fast money decisions or not decisions where you say, okay, I can either not do this at all or do this now, but if you have an option, then at the moment I think there is a fair chance that you will have, a choice around this. And I will get nervous when other investors get nervous. Know when the banks and the hedge funds and the slow money and the fast money get nervous,

then that's when everyone else will also start pulling out. And then the big the house of cards can crumble. Even despite all of the good elements that Taiwan has, available to itself. And I think that is a real concern.

GOODRICH: And I think to add on that, I think, you know, there are while TSMC is staying in Taiwan, with their advanced node production and the leading edge chip companies are going to be dependent on that. Again, it's the technology that's a little bit more mature, where Taiwan is already losing out on some of the investments for fear that, companies making investments there, they don't know what the risk profile is going to be. There were several large semiconductor projects that could have been made in Taiwan that were made elsewhere, and geopolitics certainly made, a factor in that decision making process. And I think, you know, if you if you listen to the debate in Taipei, they're worried that, that the tensions themselves make Taiwan a risky destination for investment. And the Taiwanese authorities have made an attempt to try and, you know, reach out and sort of calm things a little bit, but all people have to do is read the newspaper and get slightly worried. But at the end of the day, it's still not swaying the, you know, the investment community on these large dependencies, particularly in the chip and technology space. It's where you don't see in these legacy areas, memory chips, other areas where there have been investment movements away from Taiwan. We just they're not they're not in the headlines.

HASS: So to move quickly from geopolitics to domestic politics, Taiwan recently had an election and inauguration, and, Taiwan has a divided government. The ruling party controls the presidency for a third straight term. And then there is no majority in the Legislative Yuan. At the same time, Taiwan has challenges with, electricity, energy, social safety net, etc.. How is this configuration of power inside Taiwan going to affect their ability to address some of these challenges?

RIGGER: Shelley I think it is not a pretty picture for energy in particular. One of the things about Taiwan that is kind of challenging to get your mind around is for a place that has such contentious politics across many domains. The so there's like a lot of froth on the water all the time. But the deep currents, especially in terms of industrial policy and economics, are very steady. And there isn't a lot of debate about whether or not to support Taiwan's industry or semiconductor industry. You know, the, the, the kind of bedrock ideology in Taiwan is pro-business. But pro-business only takes you so far when you're talking about things like taxation, because pro-business equals, you know, low, low tax environment, for many people. But if your taxes are too low and you cannot support the kind of public infrastructure that is required in order to sustain that level of, especially of sort of expensive high tech development, then, maybe that that pro-business, ideology starts to

get in your way. So I think there are ways in which the, the deep current is a little sluggish for moving in the direction Taiwan needs to go. And the froth on the water about things like, now, today, today's legislative reform, usually it's something to do with cross-strait relations, scares investors because that's what you see. And you don't sort of see the the way the sort of fundamentals are headed in a, in a good direction. But you mentioned energy, and I think that one really is a sort of rubber hitting the road, challenge for Taiwan, because the particular industries that are leading the economy are energy intensive and some of them are water intensive, and both of those resources are in relatively short supply in Taiwan. And there is a long standing disagreement about how to solve Taiwan's energy dilemma. On the one hand, Taiwan does not have a lot of indigenous sources of energy production other than geothermal, which has never really kind of, reached its potential. And on the other hand, one of the two main political parties has a long standing anti-nuclear position, which was reinforced in 2011 by the, catastrophe in Japan with the earthquake, tsunami and nuclear plant meltdown. So the sort of the obvious way to solve your energy problem without imported fossil fuels and, in with kind of mature technology is with nuclear. And that is just super controversial in Taiwan. So I think energy is one place that is a genuine bottleneck.

GOODRICH: Maybe two quick points on that. I think one interesting thing is that, in the new cabinet, the minister from for Maui is actually a semiconductor industry executive. And I think it shows that the new government's very focused on this industry. They've already made some comments around how, global expansion of Taiwanese companies does not harm Taiwan. So they're trying to, you know, I think massage some of that messaging domestically. But I agree, you know, nuclear is clearly the one thing that would be very helpful for Taiwan's energy situation. Although what is interesting, you still need to fuel the plant and that needs to come from overseas. But 18 month timeline. So it's a little bit longer. So, you know, from a dependency, it helps, but it's not a silver bullet. From a I think, energy, complete dependence perspective.

OERTEL: I think the the rowdiness of the democracy is currently not being spun, by the Taiwanese government and, and the sort of the Democratic Party's in general as a sign, of the virtue of the democracy and how this works and how this is sort of this is a good and vital sign of the democracy that there are, let's say, lively, engaged, physical debates in Parliament. For those that are not very familiar with, with the way democracy has sort of evolved over the decades in Taiwan, it just looks messy. And that is not something that makes you believe in stability. And it also it lessens or it opens a door for, Chinese propaganda about instability and about sort of the, that this is not really a democracy, that this is just chaos. And I am worried how some of these narratives are playing in some European capitals in the midterm, because there are

capitals in which, you know, all the excuses that you can find, to not support Taiwan would actually be exploited and this would fall on relatively fertile ground as well. So I do think one has to be very careful. I, I am a big fan of, very engaged Democratic discussions, but I do think that there is a responsibility on the side of all parties in Taiwan at the moment to sort of also signal, that this version of the change in government is also going to create a stable, democratic environment within which business can flourish and within which this government is doing everything they can to, that is in their minds, to preserve stability in the Taiwan Strait.

HASS: I have two more questions, and I will turn the floor over to our audience. But the first question goes to you, Jimmy. And it's, there's a discussion in Taiwan about trying to develop or form a democratic alliance in Asia where democratic countries that are chip producers sort of come together and serve as a bulwark against authoritarian pressure. What are the strengths or shortcomings that you see with this concept? And I welcome others to jump in as well.

GOODRICH: Well, I think, you know, this idea has been floated before. You know, there was the Biden administration a year or two ago, floated the idea of a chip for alliance, which would be, the East Asian nations plus the United States in some sort of a chip alliance focused on talent development research, but also, you know, a broader signal of aligned democracies in the region. I think that didn't really work out just because Europe was over there saying, what about us? We we make all the critical equipment. Why can't it be a chip five? And so it never really got off the ground. So I think, you know.

RIGGER: 31.

GOODRICH: Exactly

RIGGER: Everyone

GOODRICH: Trust me, every, every country wants a chip industry from Tajikistan to Australia. And they've all looked into it, which is interesting. You know, I think it's a it's a it's an interesting discussion point because there are other regions out there that now have increasing ambition that are non-democratic in the chip industry, primarily in the Middle East. And now you have the Saudi Arabia Public Investment Fund, the UAE talking to big terms of investing hundreds of billions of dollars to build a chip industry. You know, OpenAI,

Sam Altman has flown out there many times and possible rumors around building chip fabs there. So I think countries, democracies who today dominate the advanced chip making capability are going to have to face an important decision point over. Well, they made a decision to constrain not Chip making on a government level in China. How are they going to view other, non-democratic nations with, you know, different considerations, different regional situation, economies who too want to be advanced in the chip making industry? I think that's, you know, if something like that was formed would be one of the, you know, critical tasks those countries would have to face because, you know, yes, it's great to democratize chip making capability and make more chips available for the industry and innovation. But also, you know, what trade offs does that come when some of the investors are sovereign in nature and may have different considerations?

OERTEL: There are a lot of European companies that just want to make some money, and want to sell. Also, they went to China where there is a big market for chip manufacturing as well. So I think one has to be exactly, but it's sort of the the discussions that we've had over the last few years about export controls, the United States and the effects on allied partners and their economies, and what this means for them as something that hasn't gone away. I think this is going to be the next few years are going to be years of tough choices also for the Europeans. And I think that's fair enough. But this is not going to go without kind of without problems. This is going to have repercussions. So I do think it is any kinds of exclusive formats that are being created that have this, sort of, you know, the instinct where the instinct immediately is, hang on. We want to be part of that, too, you know, why do you leave us out the door? Is probably, at the time of. Already heightened kind of nervousness on the part of everyone because of the geopolitical situation that we're facing. Probably slightly counterproductive for, for getting the kind of reaction that when one's as well warranted as it is. And I don't think European whining on a lot of these issues is actually where we need to be, but I think it's sort of what is the most effective way of getting these things done. And I think in some ways it is in consultation, and in trying to get as many people on board, with as little arm twisting as possible, but as much as necessary.

GOODRICH: I think you're a key point, which is a lot of economies don't want to choose a side. They want to be able to trade to both China, Taiwan and everyone else. And, you know, that's something that's not commonly recognized in Washington. But all you have to do is go out to the rest of the world and hear from many, many other economies and say, we don't want to get in the middle of this or choose a side. We want to be able to continue as is. Now, that's not the practical reality, but that's the view of many other.

OERTEL: And I think that's not going to continue to be the reality for them. I think there are going to be these tough choices coming up, and I think there's a lot of people in Europe that are still living in this kind of fairy dust and magic wonderland land, despite the fact that there's a war at our doorstep. So it's sort of there is not a reality check yet in many places that this is probably where this is heading to. But it still means that the instincts are slightly different.

HASS: So my final question to you before the audience takes over is imagine us in 20, 34, ten years from today, we come back together in this room, all of us looking exactly the same. Do you expect that Taiwan's role in the global economy will be more central, less central, or about the same as it is today? Shelley, why don't we start with you?

RIGGER: I think it's. It's possible that it's about the same. If the potential for really disruptive new technologies that would sort of get us out of the, the groove that we're in. You know, we're sort of we've been moving along this silicon. Groove for a long time. And and the things that we need are more and more complex versions of the things we used to have. And the things we want to do are more and more ambitious versions of the things we used to want to do. Taiwan seems to do very well in that groove, but if we are off that, you know, if we are like in a metaverse and another one. Or another one of the verses in the metaverse, that where these kinds of technologies that Taiwan has established such dominance in. That many analysts would tell you it has a five year lead on anyone, no matter what. If we're still in that version of the verse, then I think Taiwan is about where it is today.

HASS: Yeah, okay.

OERTEL: I mean, yeah, paint an optimistic picture. This is a Friday afternoon and it's sunny outside and I think we should. So if by 2034 there was no military escalation, no great conflict emerging, but sort of a stabilization. And of the, of the overall political environment, then I think Taiwan's role could be even more central because there's so many lessons to be learned on industrial policy. There's so many lessons to be learned on education that are not just I mean, yes, it's all about semiconductors, but it's not just about the semiconductor. Also, that battery technology, the big advancements in Europe on that regard, it's about kind of Taiwan's, inventions and Taiwan's, industry powering the green transition of the world. So if in 2034, we're in this magic world, where, we are all going towards, carbon zero, production, then Taiwan's industry could play an even more central role. Taiwanese universities will probably then become, major advisors to

European universities and how to upskill their, their, their kind of STEM research. Taiwanese companies will play a significant role in biotech, and will be kind of leading there and will have jumped on the next train. I think all of that is possible. I think the question is whether it's likely.

GOODRICH: So I dare not spin the magic eight ball around. The risk of military conflict. So I won't go there. But I think in terms of technology and economy, I think Taiwan has the opportunity to be as strong or stronger than they are today. However, it's not without significant risk. I think there's a couple of things that Taiwan has to think about. Number one, Taiwan is technologically relevant because of their technology leadership. Just a short while ago, in 2014, Intel had the predominant lead over TSMC had 40% of all the world's advanced chip production capacity in the United States. They lost that for management and technology decisions. And, and TSMC could make the same mistakes. This is really hard technology. The next generations are going to be increasingly complex. Couple other companies could pull ahead and that could completely, you know, reframe the technology debate and the global economy. The other is that energy constraints could be a real, challenge. And particularly if you look at the booming demand for AI, you know, people are predicting that, you know, competing systems to power ChatGPT are going to have, hundreds if not millions of chips individually. And, you know, McKinsey put out a report that at least ten new logic fabs need to be built just in the next few years to support that demand. And if Taiwan doesn't get their energy situation right, those are those are going to be built elsewhere. And so, you know, they have to be thinking long term strategically. How do you maintain technology leadership? Because it's no guarantee they will. And everyone stumbles at some point. And the other is in terms of energy.

HASS: The floor is now open. I saw this Sam first, and then Jason.

AUDIENCE QUESTION: Great discussion. Thank you. What is it about Taiwan that has led them to be leaders in technology? Is it the the culture? Is it the people themselves and what's inside them? What do you attribute it to?

HASS: Jimmy.

GOODRICH: Maybe I'll take a stab. And I know there's others here who who might have a view on that. So I think it's a it's a it's a culture and it's a mentality. It's also, culture of excellence and diligence and precision. Particularly, you know, TSMC talks quite loudly. Maurice Chan gave a talk about how, you know, if there's an

engineering problem between one of their fabs. They shipped 500 engineers and one morning on the high speed rail to another factory. They have their own dorms that they sleep at, so they don't need hotels. They all work late overnight. And, you know, they kind of put in everything into that mission of the company, really. Above all, in some cases are family. And that's created social issues for, you know, the worker culture, particularly younger Taiwanese who are say, I don't want to live the life that my mom and dad did working in these type of factories. So that's what I think is instilled also, the, awesome education. But the level of overseas educated Taiwanese inside Taiwanese, companies is very high. But even in a position, for example, I had a discussion with a, professor of electronics, engineering the United States on this where in Taiwan, a, mid to low level factory worker who's maybe maintaining the Hvac system for air purification probably has a master's degree. Where in the United States that might just be a vocational or a bachelor's degree. So overall, I think the level of education per position is much higher in Taiwan. Some would argue maybe it's overeducated, but, you know, that leads to, I think, much more, organized and, intense innovation effort.

AUDIENCE QUESTION: Yeah. Thank you all for your insights. My question is both, Jimmy and Janka. So I was just in Berlin a week ago, and, had a chance to meet with some government people. And it seems to me that, Germany has reservation, terrorists, China. And I wonder to what extent that, German relies on China's, dependency, that it is probably growing. And do you see, that's a growing concern with respect to in the long term, if that continues to be a trend. What would the broader, European, situation would be look like? And the second question is, how it now now that TSMC is building a new plant in Dresden, Germany, and how would the German government do to help TSMC avoid the same blunders and mistakes or challenges that the firm runs into with its Arizona project? Arizona was announced in December of 2022, but we haven't seen any chip be made out of that, that, project yet. And, Jimmy, I'd love for you to comment on China's capability to produce, advanced AI compute power and as well as the algorithm and training large language model. And it seems that you have some insights into this love for your take on that. Appreciate. Thank you.

OERTEL: So let me start with the Dresden question, because that's an interesting one. I mean, the incentive was €5 billion. That's already pretty good. There's not a lot of countries in Europe that can throw that much money at the problem, which also creates problems within Europe. Right? Because in Lithuania, you would have liked to have had that investment as well. And instead you got a German brigade to say, we've got your border, and you rather wanted to have some semiconductor investments to have the others protect that, because then you get both, you get the jobs, then, you know, I mean, this is something that is not without

problems. We had Spain also vying for the Intel investment, and it also went to Germany because there is an ecosystem that works. There is, kind of sustained support by the government is expected. Political stability is expected. And therefore these investments in Germany, when you want to invest in Europe, make a lot of sense. But whether we are going to be able, in the German context to with our, you know, fantastic history of engineering and a fantastic history of our schooling system, which is not that great anymore as it used to be. To actually pull something off. And our fantastic work ethic, which is also a historical dimension, more so actually going to be able to pull off something like in Japan and not wind up like in Arizona is, I think, still to be determined. There was one additional factor that I think, is is severely underrated because this is, a factory in eastern Germany. And we have local elections coming up in the eastern German states. There is a significant problem with far right populism, and the far right parties that create an environment, of extreme, anti-immigration, sentiments. I think that doesn't create a sentiment for inviting large swaths of international workers that want to work in an environment like that, now Dresden is a beautiful city. But if you don't want to send your kids to school there, then that is not very attractive for high skilled international personnel. And we certainly don't have enough domestic personnel. So I would say the jury is out on the first one. I wish everyone the best of luck, and I do think that Germany has potential in that regard, but it will take a lot of everyone pulling themselves together to get this kind of really off the ground. I do think we need more, cross-border investments of that sort. So it is tricky. Yes, but if we can't pull it off in Europe, where could we do it? So that you create, you know, ecosystems that run like that include Czech universities, Polish universities, German universities that are in cross-border regions that can benefit from slightly lower wages in some other countries in Europe, etc., so that you can create clusters that make it possible for these ecosystems to emerge. That will take a lot of political will in Europe, and that will take a lot of kind of activity and a lot of money, particularly German money that they can take into their hands and put at the problem. And that is in a situation of increasingly constrained fiscal space because of a massive war that we have right at our doorstep. So I think that that one is a is a tricky one. On the EV tariff. Watch that space Monday you'll know more that sort of that the decision will be there. And and I think there will be what we've seen from the EU Commission, from Brussels is a really new sense of urgency. Is a really new sense of understanding trade. And there's a really new sense of understanding defenses. And, you know, you don't talk about revolutions in Brussels lightly because Brussels is not the place for revolutions. But if you hear the narratives that are now coming out of Brussels, then that is nothing short of a revolution in thinking about how to defend, a European industrial future, against China's overcapacity, and against kind of, market distorting practices that you find that, that literally erode the basis for Europe's prosperity. So, it's not a question of is there an understanding

of the dependency on China? Is their understanding. It's more of how do you operate with this? And currently we see the the gravitational center of activity in Brussels, and certainly not in Berlin.

GOODRICH: That I think isn't one of the issues as well, environmental approvals. I was reading that I think it's the Intel project in Magdeburg, Germany has a yearlong soil sampling review that has to go underway. And, you know, this is going to be a real.

OERTEL: This is what I mean in terms of the so what you would need for this is, you know, the question around the Ukraine invasion was, how long does it take to build an LNG terminal by eight years. Well, how long does it take when there was a war at the doorstep? About eight months. So it's a question of how urgent is the problem, and how urgent do you want to address the problem? And that's the political will question that we will need. And there are some, some trade offs, that will have to be made for certain investments. And then the question is, is Magdeburg really the best place for that investment in the end, or would not a place like southern Spain, where there is an abundance of solar energy and of renewable power, be actually an ideal space for for future kind of digital investments in Europe that then German, the German industry could benefit from. And this is what's lacking, I think, is is actually capitalizing on the diversity in Europe that you could have if you had if you fully build out the single market, if you fully use the market potential that Europe has because as. A single market, then we would be incredibly strong. But we are not. So it can't be bad enough yet. I guess is usually the answer for this, because otherwise we would be doing something about it.

HASS: I saw Steve Orlean's hand next. If there are any ladies that would like to join, the Q&A. We'll we'll have you next, right after Steve.

AUDIENCE QUESTION: Great panel. First of all, on Buffett. He was right when he bought and he was wrong when he sold. He's a great investor, but he didn't get the geopolitics right. Taiwan's centrality, to the world economy is one of the great deterrents to conflict across the Strait. In that context, does the Chips act, which actually is a hollowing out in part of Taiwan, a detriment to that stability?

HASS: Shelley.

RIGGER: Can I just toss this to Jimmy? Because I feel like. I feel like he should have to answer this question. Sure.

GOODRICH: I mean, I would disagree that it's hollowing out Taiwan, I think. Yes. There are some investments overseas. But still, if you look at the overall manufacturing base, the investment dollars, 90, 95% of that is still in Taiwan. And so the United States is going to have some new capacity. Europe will have some, Japan will have some. But it's in no way coming anywhere close to replicating the scale. And that scale, as I said with AI, is actually increasing in Taiwan, not decreasing. You know, one of the big questions is how does trying to think about these dependencies. Obviously the advanced chips, they're really important for AI, for your smartphone. But for everything else, you need the less advanced chips, for IoT, for cars, for your military modernization, don't necessarily rely on, you know, the these advanced chips. And as China moves to build a more fortified economy, with, you know, some of the, things they've been doing on energy security, on strategic stockpiling, on legacy chips and other areas, you know, are they going to look at this the way they do now? Maybe the same way in 3 or 4 years? You know, I think that's that's an unknown question. But today, as it's already been cited, I mean, whether it's the Rhodium Group or I think Citadel also the the investment, I mean, the economic impact would be massive for not just, the rest of the world, but China and multitrillion dollar economic crisis. You know, China would stand to benefit. I think I would stand to lose the most as its economy is the most manufacturing dependent, and where those chips are most important in the manufacturing economy. But if China, five years down the road. Thanks. And has the most self-sufficient legacy chip supply chain in the world. Are they going to look at it differently? I think they will. And that's something we need to watch.

AUDIENCE QUESTION: Okay. Thanks so much for the discussion today. As a Taiwanese, I was, very, interested about how you think about, as all of you have mentioned, you predict that, the, the role of Taiwan will be, most likely as important or more important in the near future. The but and also, how do you see, if you see, there might be like a drive from the, the economic side or the industrial side that would possibly make, other countries maybe, like, consider changing their foreign policies to help.

AUDIENCE QUESTION: Like, really. Stabilize the, situation around Taiwan because a lot of, how stable our market is really relies on how strong our foreign supporters are. So that's just, what I'm curious about. Thank you.

RIGGER: I mean, I think that's a process that's already underway. And it's interesting to think about how complicated and challenging it is for Taiwan. Right? So as for example, during the Trump administration, the,

tariffs on goods imported from mainland China had a lot of implications for Taiwanese companies because so much of the value in those goods was actually created in Taiwan. So it's a Taiwanese company manufacturing in the PRC using components made in Taiwan. And it's being subjected to this tariff, which is designed to punish the Chinese Communist Party leadership right. So it's it's pretty complicated. And some of those measures have really put a lot of pressure on Taiwanese companies to change their business models. At the same time, the economics of the moment and the political and sort of the political economy within the PRC are reinforcing those trends. So it's hard to disentangle all of the pieces, but it does seem like everybody loving Taiwan a lot is not straightforwardly positive in all the ways for Taiwan. And I think that's one of the things that's most difficult is it's also true at the political level, right? People, members of the U.S. Congress want to show their love for Taiwan. So they do something that the PRC then reacts to with a ratcheting up of military force that never ratchets down. Yes, you felt the love, but now you feel the heat. So this is, I think, our challenge when we're talking to, decision makers is how do we make really wise and sophisticated and nuanced policies that have the effects that we desire without the kind of negative, unintended consequences? Or how do we help each other manage the necessary side effects so that the overall the negative is mitigated and the positive is maximized?

OERTEL: Maybe I can add a word to that, because I was going to kind of wanted to put that in at some point, but the fact that European policymakers now are very comfortable traveling to Taiwan, and having Taiwanese in their discussions, even at ministerial level, state secretaries going there, delegations from parliaments. That's a pretty new development. And I would see that as a strong sign of political support for Taiwan, from the European side, where it's harder to show kind of military support, or other forms of, of contributions. And I think it does way and it does bother the leadership in Beijing as well, that this is the kind of development that we've seen. I would very much agree with you that this is kind of something that needs to be calibrated. Right. But I think also it is on the Taiwanese leadership to basically say Taiwan's leadership needs to say, this is what we want. This is the kind of support we want. I don't think that infantilized that relationship and tell them what they should have. But actually, if there's a demand for the kind of political delegations coming through, then I think and there's a willingness to travel, then I think that should be fulfilled.

HASS: We are basically out of time, but I want to make sure that each of you have a chance to offer a final word or a parting shot if you if there's.

OERTEL: Anything, consider that mine.

RIGGER: I'm set too.

GOODRICH: I don't I don't have much more to add. I just think, you know, Taiwan has been nothing short of a miracle. And it relates to the ingenuity of the Taiwanese people. And, you know, we just hope that can continue, that can continue forward.

HASS: Well, on that hopeful note, please join me in thanking this, brilliant group. And thank you all for spending part of your Friday afternoon with us.