

Peterson Institute for International Economics

**Industrial policy for development**

April 1, 2026

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**[00:05:29.29] - Chad P. Bown**

Hello everyone, and welcome back to the Peterson Institute for International Economics. My name is Chad Bown. And I am the Reginald Jones Senior Fellow here at the Institute. We are very excited to host this morning's meeting that I have titled Industrial Policy is Really Back. Industrial policy has been back for a while now in industrialized economies, of course. Though we may have forgotten about all of this with the talk of tariffs lately. 2022 stands out in my mind as the linchpin year, maybe, with the Inflation Reduction Act and the CHIPS and Science Act. Here in the United States, covering both clean technologies, semiconductors. A number of other major high-income economies then went off and did the same thing. Countries in Europe, in the European Union, Japan, Korea, Taiwan, and more. Some will say, of course, that industrial policy really never went away. China has certainly never given up on its use of industrial policy, whether for shipbuilding, the Made in China 2025 program, or, or its more common 5-year plans. But now we have a lot of other emerging and developing countries thinking about and deploying it too. So today we are excited to have with us a couple of very special guests.

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Let me take a moment to introduce them. Ana Fernández is a lead economist in the Prosperity Research Program of the Development Research Group of the World Bank. She joined the bank as a young economist in 2002. I joined the World Bank not long after Ana, but as a much less young economist. And she is by far one of my all-time favorite colleagues. Tristan Reed— I was never a colleague of Tristan, but I'm sure he's great too. Tristan Reed is an applied economist, also in the Development Research Group at the World Bank. And alongside research, he provides advice to World Bank clients on sector development strategy and trade and competition policy. Ana and Tristan are with us today as co-authors of an amazing new World Bank report titled Industrial Policy for Development. They will present the report and then we will hear remarks from my current colleague, Mary Lovely, who is the Anthony M. Solomon Senior fellow here at the Peterson Institute. And then what will happen is we will all go up to the

stage and have a moderated conversation, including with Q&A from the audience. But to start, Ana and Tristan, over to you.

**[00:08:17.31] - Ana Margarida Fernandes**

Thank you very much, Chad, for the introduction, and thank you all for coming, uh, those in person and those online. It's really a pleasure to be hosted here and to tell you about this report that we recently launched. Let me see if I can get this to work. So, some of you, or maybe many of you in the audience, may remember a famous World Bank report written more than 30 years ago, the East Asian Miracle. At that time, that report ended up sort of stigmatizing industrial policy. Concluded that the East Asian growth experience had been mostly due to market fundamentals. And so at that time and since then, critics have argued that actually, you know, industrial policy had played a role, but the bank focused more on fundamentals. Moreover, that report also argued that what happens in East Asia stays in East Asia. It would be very difficult to replicate what was a unique culture, politics, and history. Now fast forward 30 years, and at the Bank, the developing countries in the board requested that a new analysis be done on industrial policy, that we should revisit it. So that's where Tristan and I came in with, you know, a view from research and trying to give a fresh perspective on Several questions about industrial policy that you can see here.

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So what is, who does, how to do industrial policy, which activities to target, and how to get institutions right. So as Chad said, we are researchers. So we did take as much as possible a view from research, and particularly thinking about what has been shown for developing countries And which industrial policies have been effective or efficient? So of course, we are not going to be able to answer all these questions here today. We're just going to give you a little bit of a flavor on some of the key insights we have. And we hope that, you know, many of you are going to go and read the report and then can engage with us subsequently. So let's start with the definition. So what we define as industrial policy in the report is government action that can grow specific strategic business activity. So there's a few key ideas in this definition. Of course, we talk about industrial policy. We use this expression because it's the historical expression that has been used. But throughout the report, we emphasize that this may be fostering activities that are not just in manufacturing. It might be agribusiness, tourism, skilled professional services.

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We often use the expression business activity rather than product, industry, or sector because the government action may be just to promote doing things or performing tasks differently, for example, using AI in forestry. And then we use the word strategic because we want to convey the idea that the government has decided that certain activities are more important than others. While we knew there was important demand for this report and for revisiting industrial policy for developing countries, we wanted to confirm this with our global network of country economists around the world. And so we conducted a survey that showed that overwhelmingly, more than 80-something percent of them had been asked about industrial policy advice in the recent years, and that countries were asking about that with the objective of growing investment, creating jobs, increasing domestic competitiveness. So mostly goals in the area of development and growth. And this is where it's quite different from what we've seen and what has been discussed very much in this institution, in this city, in EU capitals, which has been the goals of advanced economies in pursuing industrial policy recently, where those countries have been mostly focused on national security, geopolitics, supply chain resilience.

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For the developing countries, it's not that those goals don't matter, but overwhelmingly they are trying to do industrial policy to increase their, you know, to develop and grow. So that's the focus of our report. We are mostly focusing on industrial policy for development, and the idea is that in doing that, we are thinking about policy tools that can address market failures, that can promote activities with positive spillovers. And when that's done, this has net benefits and it can grow economic output. So one of the key messages in the report that is, again, a bit different from what's out there in recent work is that we are arguing that developing economies are heavier users of industrial policy than advanced economies. And we're going to do that today here showing you 3 pieces of evidence based on data that's different than the commonly used Global Trade Alert database. So the first piece comes from special analysis we did in the report looking at the national development plans of countries around the world, 183 countries. We looked at those plans and we identified which industries they are prioritizing for growth and how many of them. So what you can see in this slide is for each country, which is a dot, how many industries are being prioritized for growth.

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And we plot that against GDP per capita. And you can see a very clear negative link. So the poorer the country, the more industries it is targeting. Why? Perhaps because countries are not, you know, they're overly ambitious, they're not sufficiently focused. But it's also the case that as countries grow richer, richer, they already have more industries developed, and what they tend to prioritize are sort of blanket technologies like AI, for example. A second element that we use

to show that developing countries are heavier users of industrial policy is actually a very classic measure, which is our beloved import tariffs. So we look at tariff rates as well as dispersion of tariffs across products within a given country. And we have the pattern that is shown in this slide where for developing economies, the tariff rates are higher and the dispersion is also higher. And if you're curious, the left chart would be similar if we used US tariffs. You know, if the US tariff instead of being 2023 as we have here, if it was 2025 or 2023, 6%, this wouldn't change the pattern at all. So developing economies are putting higher tariffs on some products, lower tariffs on others.

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So they are using, they're protecting some industries more than others. And we argue this is, you know, using this particular tool for industrial policy. And the third element we look at is also a classic measure of industrial policy, business subsidies. But instead of just seeing whether a new business subsidy was introduced or not, we try to quantify it. So we calculate for each country, what is the amount of transfers, direct transfers from government to business, as well as how much are tax exemptions, tax expenditures. We calculate the total, we divide by GDP, and we plot it by income group. So if you look at your left chart, you can, and if you can see the green line, just focus on the green line, that's the one that's growing the most and that achieves the highest value as of 2022. And that's for upper middle income countries. By 2022, they have about 4.2% of GDP in business subsidies. And so this again shows that it is for that group of countries, so not the highest income countries, that industrial policy— this particular industrial policy tool is the highest. So then in the report, we go through a very long discussion on how to do industrial policy, and I'm going to cover a little bit of what we show there, and then Tristan will take over.

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So the first thing that we do is really to introduce a very comprehensive tool, a set of tools of industrial policy. And this is where we also differ a bit from previous, even recent literature, because we emphasize very much that there are 3 categories of tools that can be used for industrial policy. So we have a first category of tools, public inputs, where you have industrial parks, skills development programs, market access assistance, or quality infrastructure. This is the most, I would say, unusual set of tools that often are not part of the discussion where the focus has generally been on tariffs and subsidies. But we really emphasize these tools for 2 reasons. First, because They end up being some of the first choice, first best tools that can really directly target market failures like coordination failures, lack of investment in training, or problems of asymmetric information. We have then the other, the other reason is that they often can be implemented with relatively low cost. Then we have the second set of tools, which is the

more traditional types of industrial policy tools that we call market incentives. These are the ones that do change relative prices, but they tend to be more controversial and they often elicit retaliation.

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And we have a large list there. You have some that are actually also first choice. So production or innovation subsidies, they also target the market failure directly. But then you have a lot of other tools that have— are currently being used by many countries that really go at the problem very indirectly, or they have costs for the rest of the economy. So tariffs, as we all know, they can have costs for consumers and for users of intermediate inputs. Commodity export bans or local content requirements, they try to foster downstream or upstream industries, but very indirectly. And so that's also— that can also be inefficient. And then we also talk about some— a couple of macroeconomic interventions. And then what we do is, given this enormous set of tools, we try to make some sense of what are— what can countries do depending on their context. And so we propose three country characteristics that determine policy feasibility. There are other characteristics that matter, but we think these three are quite important. The first is government bandwidth. Does the government have the workforce, the administrative capacity to engage with business, you know, frequently, such that certain tools can be tailored.

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Local market size, this can be the size of the domestic middle class, but also the size of your preferential destination markets. And this is absolutely crucial for certain, for the industries that are being promoted to achieve economies of scale. So this is crucial for certain tools to function, such as, for example, even import tariffs or local content requirements. And then fiscal space, this one is the easiest to think. Of course, fiscal space is required to be able to fund, you know, expensive tools. And then we propose a typology where we link the country characteristics to what industrial policy tools are feasible. And here in this table, we can see the 4 types of combinations of country characteristics that are most typical in the data. And if we look at the first row, there we have countries for which bandwidth size and fiscal space are small. These would be most developing countries. Most World Bank client countries would fit under that category. And for those, the tools that are feasible are not that many. You They can do industrial parks, especially if they are able to sort of delegate operation and management to the private sector to make them less costly.

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They can do commodity export bans or exchange rate devaluations. But those last two tools are, you know, they have either inefficiencies or they can't really be sustained. Then as you go down in the table, countries are gaining or improving some of the characteristics. So, for example, if you go from the first row to the second row, that means countries that have— they may still be small and have may have not enough fiscal space, but they may have, you know, a little bit more capacity in government. In those countries, they can also deploy other public inputs to help foster their strategic business activities. Then if you go to the last row, you would get to most advanced economies where the menu of tools that's available to them is much wider and they can better choose, you know, first choice and second choice tools. But the other thing, before I pass to Tristan, is that This is feasibility and perhaps, you know, what likelihood of being effective, but there's a lot we also do in the report to understand when are these tools, you know, what the evidence tells us about when these tools are effective or efficient.

**[00:22:12.31]**

Go.

**[00:22:13.00] - Tristan Reed**

Thank you, Ana. Thank you, everybody. So I'll start off. I'm going to take you through basically the second half of the report. But to start, I think a lot of us had a prior that industrial policy is just not feasible for various reasons. But before I get into the data, I want to make 3 arguments as to why that should no longer be— or it should be more feasible or replicable than before. And that has to do with our 3 country characteristics. So government bandwidth to interact with the private sector is much greater. I mean, you see this generally in terms of better education and talent. Talent in government, but also in terms of independent agencies that can sometimes hire outside of the civil service pay grade. So for instance, National Development Banks, Investment Promotion Agencies, and even local government cluster initiatives. And these are some agencies that we highlight in the report. Second, this local market size is larger today. Middle classes are bigger. They've added domestic consumption. And also regional trade agreements, you know,, to the extent that you can apply industrial policies within them, provide greater markets to countries. And then fiscal space is also larger.

**[00:23:22.25]**

Tax revenue to GDP has gone up, particularly for countries that have moved between income groups. And also optimizing industrial policies that you have can yield more fiscal space. So let me now move to a few of the lessons. There's many— there are 12 lessons in the report about the tools. I'm going to take you through 3 of them. So the first is on production subsidies. And

one main message is that if you want to grow an industry, it's best to tie your subsidies to production, so output, rather than costs or profit. There's a couple of case studies that inform this. So I'll just take you through those. So one is— Anna started with the East Asian miracle. At that time, the World Bank had a lot of evidence on the costs of various subsidy programs and credit guarantees, but not the impacts. We've had new research that shows that, you know, that has generated over time improvements in total factor productivity, an estimate that today the GDP is 3% larger each year than it would've been otherwise. Obviously, there are caveats to that, which we can discuss. So that's a subsidy for an input, capital input.

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Capital investment. Then you can think about subsidies for labor. So in Romania, they had this payroll tax exemption for workers in the software industry, which led to people making investments in going to school and learning software development. And I think that is attributed to Romania's growth as a hub for software development today. I think the interesting thing about both of those is those were subsidies for inputs, right? So one for capital, one for wages. At least in Korea, it was clear that you wanted to import the capital equipment, and that's where the learning was from. And in Romania, you wanted people to invest in skills for themselves and get personal wage benefits from that. But if you don't have a theory that's tied to a particular input, one approach might be to subsidize sales or output and then let firms decide the optimal mix of labor and capital. And there's a study from the United States that shows that subsidies for output of renewable energy are actually more effective in growing the industry than subsidizing capital inputs. And that's again just to, you know, let— it sort of admits a lack of knowledge on the firm side.

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I'll talk about innovation subsidies. So this is where we're thinking of subsidizing a particular research activity or firms to adopt a particular technology. Two examples from Brazil. Is this group Embrapa, which directed research to staple crops in local climactic zones that weren't being researched globally. There's a new paper estimating that that, you know, was highly economically efficient with benefits 17 times cost. And I think that had some role in Brazil's move from a net importer to exporter of food. Another example is this program FINEP, which gives competitive grants to research proposals. So this is different from a just R&D tax credit. Here you have some evaluation of whether the research is high return. And what's interesting about that one is that it didn't generate patents that were close to the technological frontier in the sense that they were being cited a lot abroad. But it did generate patents that were citing foreign patents while the firms were importing technology. So in that sense, it was helping adapt foreign technology, which could be still valuable from a country that's not at the technological

frontier. I'll say something about time. So I think everyone says industrial policy should be temporary.

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A question is, how long should that be? And I think one of our takes is that it's about 10 years is about the time horizon you want to think about. So in China, there's evidence that industrial policies vary evidence that in China, industrial policies vary over time, but they also last for a long time. So in the shipbuilding industry, there was this change where initially they had entry subsidies. So they gave low-rate land prices and access. But they stopped that after a while because there was too much entry. And then they concentrated on subsidizing the growth of the existing firms. But the whole program still lasted for more than 10 years to allow the industry to scale. And you see that also in the solar panel industry, for example, a greater than 10-year time horizon. Another point is that governments often argue that policies are temporary and it's sort of a substitute until fundamentals improve. You've seen this in India with the production-linked incentive scheme. In that case, our recommendation is that the government should actually set for itself milestones to improve those fundamentals, and the private sector can help hold it to account for those.

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But overall, I want to say that one thing Danny Rodrik says is the problem is not picking winners, but letting losers go. At least in the United States, the problem may be not keeping winners long enough. So we saw the green industrial policy and the IRA turned around after 3 years. That's certainly not the time horizon that you've seen in other countries. OK, so I want to talk a bit about—targeting activities. I think if you're doing this for security purposes, it's more straightforward. You know what the military needs. If you're targeting for development, it's much harder. In 1983, Paul Krugman had this great quote where he says, there's a valid case for targeting grounded in economic theory, but the theoretical basis is too complex and ambiguous to be useful. We think that even today, after 40 years of additional research, that's still the case. So just an example, two recent papers estimate external scale economies in different industries. One finds that they're highest in rubber and plastics. One using a different method and different data finds that they're smallest in plastics. So it's difficult to get generalized knowledge. For that reason, we recommend for countries to follow a simple rule of thumb, which is just to try focus on things that are new in your economy.

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So doing something for the first time is more likely to have knowledge spillovers. People also estimate—emphasize sort of sophisticated or complex activities, but we think that the newness is sort of the most relevant. And despite this, we've seen in our studies that many countries are still targeting old activities. So we're engaging the Kenyan government right now. They have dairy, leather, and tea in their industrialization strategy, which are not new by any standards. Serbia, you have 92% of the subsidy value supporting businesses that don't invest in R&D. So there's a lot of mistargeting by these measures. Another thing that we say is—so this is a table of criteria to pick industries. We said that the benefits are very difficult to measure precisely. We recommend these rule of thumbs. But two things that can be measured reliably are the size of the opportunity, so market potential, and also risk based on comparative advantage. Market potential, you know, you want to think about is the market large? Is the market growing? And of course, firms in declining industries have a greater incentive to lobby. So that's a good check for governments to say, are we targeting something with growth potential?

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And the second is this framework of risk based on revealed comparative advantage. So a low-risk activity in our framework has revealed comparative advantage already. Think tea in Kenya. You know, you know the industry works. Medium risk is sort of using adjacent technology in what Ricardo Hausmann calls the product space. That's just a probability measure that something will emerge based on what you already have. And that does, by the way, predict how industries move over time. And then high-risk activities are those that lack any adjacent technology or revealed comparative advantage. And I think, again, with World Bank clients, I think we see lots of targeting on low-risk activities. And so we're trying to suggest perhaps a little bit of ambition in the medium and high-risk categories. I want to move to institutions. So Danny Roderick offers this framework of sort of three qualities for institutions. One is embeddedness, so relationships with the private sector. One is use of incentives, so carrots or sticks. And a third is accountability. One thing we do in the report is we go through these seven independent agencies I mentioned and talk about how they achieve these these different criteria in practice.

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And, you know, so if you're a state-owned enterprise, you can be publicly traded to be disciplined, you know, by the market. Embeddedness can be achieved through diagnostic studies and so forth. You know, at some level here though, you do have to believe that the state, you know, is working for development rather than capture. And I think, you know, one piece of evidence for that is we just—we do have a lot better development outcomes today. So macrofiscal management is a lot better, healthcare delivery is a lot better. And so I think some of that suggests that governments should also be more effective in industrial policy. Just some

data, two of these agencies have grown a lot over time, investment promotion and export promotion. I want to say something about alternative goals. So we talked— mainly about diversifying and just promoting new industries. Yet you can have specific goals, earning foreign exchange, resilience. And two we have here about jobs and green industrial policy. So for jobs, the World Bank has now put that as its north star, though it does involve some trade-offs. So there's this trade-off between targeting what you could call labor-absorbing activities, Uber drivers and so forth, versus skill or capital-intensive industries, which will grow wages.

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You know, there's a balance to be struck there. You have to decide whether to subsidize labor or capital. It can be cheaper in the long run to— it could benefit workers more in the long run, more cost-effectively to subsidize capital if that raises their wages and productivity. And then there's a question of how to assist workers that are potentially being displaced by trade or technology. And our message there is that broader safety nets on the whole provide more benefits rather than targeted policies. For green, I think one— so a lot of people talk about green industrial policy as saying, oh, there's all these new industries that are growing, and so let's target them. We want to have a more narrow definition which says what you're trying to do is reduce the costs of compliance for firms so that they can remain competitive while reducing their pollution emissions. There are a couple trade-offs that are introduced here. So one is that you can— You can subsidize them to adopt new technologies for low pollution. Though that may not necessarily promote energy conservation. It can push more and more emissions to the grid. And then I think finally, the most controversial, some countries have said, we'll use local content requirements or tariffs to ensure some domestic benefits from green technology.

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That's not a given. So in the United States, there's evidence that the tariffs on solar panels have been a net destroyer of jobs because more people work installing them than manufacturing them. Although in China, in the EV industry, there is evidence that the local content requirement for batteries allowed learning by doing, which created domestic benefits. However, if they had done it even 5 years later when the other countries were more competitive, they wouldn't have benefited from that. Doing this local content requires being at the forefront of the industry and also understanding how labor is affected in the supply chain. Finally, I'll just— so this is my last slide. And our main message is to think about this. Do you want to pursue industrial policy for development? First, we still want countries to be focused on the enabling institutions, so having good quality, this embeddedness, use of incentives and accountability, but also just delivering fundamentals. You still need human capital. You still need roads. You still need a macro

framework. And so if a government ever comes in and says, we're going to do a temporary fix, we'd like to suggest milestones for the fundamentals too.

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Second point is focused first on these public inputs, these direct market failures directly. They require some tailoring to the needs of industries. So if you're going to do an industrial park for agribusiness, it's going to be different than one for chemical refining. But you don't want it to be too tailored and too exclusive. The Bangladesh example is one that we use where they set up these bonded warehouses, which in principle could be used by any industry for importing. But there was a series of regulations that made it so that only apparel manufacturers were able to use them. Some argue that's hurt diversification. So these public inputs are, they're industrial policy, but they're also, they can be quite horizontal. Second or third, provide market incentives if the fundamentals and public inputs are sufficient. So I think, you know, whereas before we had maybe a negative prior on this, we now have an agnostic prior to say, let's try it, but let's also evaluate and measure the costs and benefits. And especially for large economies, these can also elicit retaliation from other economies, either through the WTO system or otherwise. And then finally, we want to be wary of macro interventions.

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Exchange rate devaluation is very difficult to sustain, can elicit retaliation. And these general tax credits, including for R&D, can have significant fiscal costs. And it's not clear how targeted they are towards the innovations. That you'd like. So that's my talk. Thanks.

**[00:37:41.13] - Mary E. Lovely**

Well, thank you very much, Ana and Tristan, for really an overview of this very rich report. I think you can see from their discussion this morning that The authors were very attentive to the practicalities, what they hear. And they're of course uniquely positioned to do that, having not only their own positions at the World Bank but the input from the country economists. So I think that really separates this report from other reports which are usually written by economists and are kind of filled with the don't do, don't do. One reason why the East Asian Miracle was such a successful report, and I remember using it in my classes over time, was that it really marshaled an incredible amount of evidence. And while it did come out in what we might think of as a discouraging message about industrial policy, it did open up an enormous number of debates, which you follow to some extent through the paper. So what I'm going to do is I mean, I recommend the report to you for its richness. I'm going to try to— I mean, it— as I was reading it and I was deeply engrossed in it, I kept thinking about things I wanted the authors to do.

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So I am going to try to push them a little bit. Their careers are, are, are continuing, and there's so much more to be said about this topic. Also because I think they bring a different outlook to this debate in that they really skip the high-level, here is first best, second best, and go very much into the weeds in terms of thinking about what is feasible, how our country is going to be able to do this and avoid capture. And they do it in a way that is meant to— I don't want to say the word simplify because nothing about this is simple, but really provide some rules of thumb. That might be used in the field. But as an economist who likes to complicate things, of course, my mind was moving in other directions sometimes. So this report's interesting because it reviews evidence and provides an optimistic assessment. And I think that's important because we hear a lot of negative things, particularly now that the Global Trade Alert is counting all these interventions, and we think intervention bad. They're saying no, there is a role. And of course It's prima facie evidence that there is a role because lots of countries are doing it, not just rich countries, but poorer countries as well.

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The chapters pull together an enormous amount of information. I particularly appreciated that they had thoughtful reliance on frontier research. Many of the careful evaluations of industrial policy that have been done over the last 10 years are incredibly technical and hard for people to absorb. And, you know, and, and these skilled economists take their mind to saying, here's what we can glean from this that is useful for practice. And I thought that that should really be commended. Um, they, they're— they have optimism because they're able to look at case studies and see kind of what works, what doesn't, and then draw some lessons. Throughout the report, they emphasize context and implementation for outcomes. So you don't have one size fits all. It depends on where you're sitting, what your endowments are, what your comparative advantage is. And then going from looks good on paper to actually works in practice is something that they also really pay a lot of attention to. They don't take the view that just because a policy tool didn't work in Korea or someplace else, that it's not going to work for your country. That it's interesting that they propose a practical guide for governments asking what should be targeted.

**[00:41:33.04]**

That's a really important question because, you know, there could be lots of industries that are asking for assistance, and governments need to, to face that down and decide where the money is actually going to go. And you saw in the tables that, that were presented today that they tried

to distill this really into a kind of a guidebook or framework for governments use. They also seriously consider the constraints that are faced by developing country policymakers, including country capacity and fiscal capacity, something that is often overlooked in the technical literature. Here's the first best, you deal with how you get there, right? I think it's refreshingly free of what I call bias against small country activism. You're small, stay in your place, don't do X. It's no, do you have opportunities? How can we best use limited resources to get the biggest bang for the buck. Um, the policy brief that ends the report is also interesting on its own for people who have only limited time to invest in this topic. I think it offers a useful synthesis, uh, that recognizes the limits on local knowledge, that is how, uh, you know, people on the ground are going to be able to absorb and then use the information that's coming from, you know, the, the ivory tower.

**[00:42:56.25]**

They're very careful throughout the report to condition their advice on attention to fundamentals. So in some sense, the, the message of the East Asian Miracle is still with us. It hasn't been discredited. Education, health, and shared infrastructure are fundamentals that they keep reminding us in their report are very important to have at top of mind. They argue that right—the right target is activities with positive spillovers, but they argue that these are too hard to measure directly. And I'm going to come back to that because I was a little less convinced that this can be turned into kind of a slogan— well, here's what you should target— although I do appreciate the impulse behind it. They warn against targeting outcomes such as job creation because they mean— what I took from it was that this is just too unfocused to actually be effective, even though they maintain, of course, the job creation is an important goal for development. I took a quote from the study, industrial policy is efficient only if it promotes an activity with positive spillovers. I think most of us would basically agree with that on technical grounds. But then they argue that the positive spillovers are impossible to mention, to measure, so they advise governments to target new activities since these require learning.

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And learning is important for productivity growth. You learn how to do things better. But learning is a kind of a vague concept, right? There's a lot of different learning that happens. And governments are going to have to decide what kind of learning matters. Do new activities— is that the right focus? That had me wondering. Whether this advice is too narrow to be applicable to all interesting cases. So the advice is to target new industries since these require learning. But I wondered what it covered. Does it include sectors in which the country has a nascent comparative advantage and needs to achieve scale? Would these be old or new industries? Obviously, I think that the authors are— reacting to the fact that many countries are actually

targeting their older industries, probably constant returns to scale, ones in which they've had revealed comparative advantage for quite some time. But we can ask, isn't there possibly learning there that could take the basic comparative advantage that these countries have and improve it? Is it through backward linkages or forward linkages. So for example, one of the things that they mention in the report is export subsidies, which many trade economists would simply choke on just trying to get the words out.

**[00:45:41.44]**

So, um, we've seen exports, uh, not export subsidies, excuse me, export bans. We've seen export bans be used. Oh, also in the United States we choke on export subsidies, but that's a different, that's a different issue. Export bans, we've seen obviously in Indonesia the use of export bans on nickel to promote refining within the country. So I was wondering, how does this— how is this reflected in their policy advice to focus on new activities? How does learning happen? Is that important for policymakers to consider? Is that just a shorthand for thinking about where can we get productivity growth? And how is learning related to scale? And how do we achieve scale? They talk a little bit about how to achieve scale, I think, in a very thoughtful way, but I wanted to see more. So scale could just be related to the size of the market. But you also want to protect your market if foreign competition is keeping you from developing an infant industry. So there was this tug behind the text that had me thinking we haven't really solved these questions. Learning by doing requires more production for active market studies. You can't just produce and then hope the markets develop.

**[00:46:55.24]**

We've seen this. It leads to glut. It leads to depressing your own export prices. Then there's a development of external economies, which are very hard for any one firm to do and may not be fully captured by providing specialized input. So for example, skill pooling in certain parts of the country. Development of backward linkages. I remember talking to, uh, one of the key EV makers in China talking about the possibility of investing in Europe, and his response was, it's going to be very difficult for us because of our ecosystem of suppliers. And many people who are now looking at how supply chains are reallocating are thinking, okay, this is a great opportunity for middle-income countries to begin to replace China in certain functions. Of the supply chains, but they don't have the echo. How do you get that ecosystem for the OEMs that really drive down costs and make you competitive? So, you know, the expectation, there has to be an expectation of sectoral growth based on certain markets that make investment innovation, which is a form of investment, more attractive today. How is that dynamic being driven and how does that drive into the policy tools?

**[00:48:06.18]**

Practical advice. Export bans, trade agreements, which they emphasize, but what else? I think that this does lead to some conflicts, which I'll talk about in a minute. But feasibility in the report is OFO noted to depend on competitiveness, market potential, and comparative advantage. And it seems important that local policymakers assess each of these. But again, I was— I thought the report was a bit tantalizingly vague, as I put it, on how policymakers should look for these targets, despite the fact that they offer a framework for identifying strategic business interests. And I do like the fact that they emphasize strategic, and they're very small-c catholic in thinking about which industries should be encouraged. I think more concrete advice could be given. So guys, I have your research agenda for the next 10 years. Taken from studies of infant industry motors, for example, we see factors that should be considered, like how far are local producers from the competitive frontier? How long is it going to take us to get there? Is this just a pipe dream, or are we— you know, we all remember the old pictures of watchmaking and the old Krugman, Obstfeld textbook where, you know, other people can enter into and beat Switzerland at its game, right?

**[00:49:29.40]**

But they have to achieve scale. How far are they from the competitive frontier? How quickly can they catch up? What's the potential learning rate? And what is needed to access a large market to reach scale? None of these questions seem easily answerable from publicly available data, which is one of the things that the authors say. You can measure these things with publicly available data. But I think a lot more could be done in providing advice to policymakers. Trade-led growth is discouraged. They talk about it, but I think in the undertext, the undertone is quite discouraging. But exports allow markets— producers to find larger markets. Exports still seem to me to be very important. The authors narrowly, you know, they highlight the narrowing path for manufacturing-led growth. They caution against import substitution that shields local companies from competition. They note the turn to protectionism and nationalism in advanced economies, all of which suggests quite clearly that, hey guys, this is not your best option. I remember the development report a couple years back on GVCs, GVCs for global value chains, and I wonder what happened to all that. What happened to hooking into global multinationals who are controlling a lot of these markets?

**[00:50:50.56]**

And increasing the number of fragments that you do over time. China has been incredibly successful at this. Every study that's really gone in and looked at the microdata shows that China in many industries has been able to expand the range of functions that it performs in-country, and that has helped to raise its domestic value added. Do you say enough about how

to leverage trade? How can producers find markets if their own domestic demand is too small? And what's the role of imported intermediates? This is very important because both China and now India have reduced tariffs on inputs that are necessary to actually have an active, say, assembly of iPhones. I wonder finally if trade-offs and costs are not being a little bit underplayed here. Industrial policy sometimes can be used in sectors without positive spillovers, and one can read the report as an attempt to discourage those efforts to retain non-competitive traditional sectors, perhaps it's TEEP, perhaps it's something else, to reshore sectors that have constant returns to scale and really don't have positive spillovers. And they really don't mention distributional concerns that much. However, most of these require some tax base, some tax revenue,, which will transfer money from regular taxpayers to particular industries.

**[00:52:14.37]**

But the report is very light on political economy motives for IP. And one wonders if we're going to keep industrial policy around for 10 years. The political economy of it has to be more attended to. For example, we had some— Chad mentioned some very interesting industrial policy in the United States. Whoops, it's not here right now, mostly. Not all. What parts stayed? Why did they stay? It's important not just to play to, you know, just to feed the beast in a sense of the special interests. But if there aren't special interests, then the lobbying and support for the policy may not last the 10 years that are necessary to see the payoff. I would like to have a little bit more discussion about that. Okay, you can see that I was very motivated to think hard about industrial policy. And also harder than I have in the past about the types of issues that arise on the ground and what kind of advice we can give to policymakers. And I thank Anna and Tristan for this very interesting report and for engendering those questions. Thank you.

**[00:53:33.44] - Chad P. Bown**

Come up on stage and further the conversation. I think what we'll do is I'm going to ask you a couple of questions as well, and then we'll give you a chance to kind of respond writ large to Mary's points and some of the other questions that I'll raise too. So I basically had 3. And first, I wanted to commend you both for— you know, as Mary indicated, providing a really careful and nuanced and evidence-based update on what we have learned, and especially the literature has evolved over the last couple of years. I've spent some time surveying it myself, so I know it's made great strides and leaps and bounds, but in a lot of places it's actually still pretty thin too. So I wanted to congratulate you for kind of acknowledging the nuances there. OK, 3 questions. The first is just a practical one. You had mentioned that there's increased interest, obviously, in this topic from World Bank clients and country economists. And I want to know a little bit more about why. Is it China? So they see China has been incredibly successful, and they say, we want to do that too? Is it the pivot and the turn by industrialized economies, as I mentioned, the

United States, Europe, Japan, suddenly doing this as well, and thus developing countries saying they're doing it, it's got to be good for us too.

**[00:55:07.48]**

Where is the motive? Or are they, are they seeing market failures in the underlying economic cases in ways maybe they hadn't seen previously and are identifying things to target? I think that's part of, we need to better understand where this is coming from. Second, and let me play devil's advocate for a moment here as someone who's recently been in government and experienced the limitations of state capacity. What you're proposing requires access to a lot of information and data. And Mary already talked about the limitations of publicly available data. And we've got new, at least for the United States, companies out there providing better data on supply chain linkages and things like that. It's just really hard for policymakers to have access to all the information that they need to really identify and make these targeted interventions that even in our economic models are kind of second best oftentimes, right? So how do you think about that? Some of the realities of state capacity, I'd love to hear your thoughts. And then along two dimensions, one is the implementation part, designing the policy initially. But then I think the second part is the assessment and the refining.

**[00:56:24.51]**

And if this is something that's going to live for 10 years, how do you build a program in which you can update it along the way by collecting data, reflecting, self-assessing? What sort of additional domestic institutions do you need to build ex ante to be able to make that possible. And I think one of the challenges with the United States in its implementation of industrial policy over the last couple of years really didn't do that, really didn't necessarily build in the data collection and learning to be able to make adjustments in real time, even if institutionally it had been more possible. And then finally, my third question is, you mentioned, Tristan, retaliation. I want to think about the international spillovers piece.

**[00:57:06.57] - Tristan Reed**

And I'm—

**[00:57:07.08] - Chad P. Bown**

so I'm putting on my multilateralist, uh, rules-based person hat here. So that China shipbuilding example was one where China was absolutely successful through an incredibly inefficient use of policies, I think is the way the authors of that study framed it. Um, they were very successful at achieving market share and entering into the market and achieving, in a sense, market

dominance albeit quite inefficiently. Sometimes international spillovers are positive. But oftentimes, it's just zero sum. And I think as the Barwick et al. paper mentioned, they called it business stealing, essentially, from existing market shares of more efficient firms in Japan and Korea. So how do we deal with this issue? If we're now recommending this to everybody, or we're not thinking about— the limits and the fact that— anyway, how do we think about this? We used to have rules. We do still have existing rules in the WTO. They're sort of being less followed nowadays by all countries. But now we're suggesting developing countries pursue these sorts of policies. How do we think, as an international system, about the international spillovers that might come along with it to help us think through some of the disciplining forces that we might want to have on that, or else we might face a kind of race to the bottom.

**[00:58:29.10]**

I think I've asked so many questions, we now have about 5 minutes left, so we're going to have to be really, really quick in terms of our responses on who wants to go first.

**[00:58:40.50] - Ana Margarida Fernandes**

I'll just take the first one. I think the interest in industrial policy with World Bank client countries probably comes from several sources, certainly China, seeing what China has done. I'm not sure. Yeah, perhaps also what rich countries are doing, but I think also, at least for several regions, although we do emphasize the fundamentals, I think a lot of countries feel that they, you know, their growth trajectories have not been, you know, as successful as they could with, you know, being based mostly on fundamentals. And so they're, I think they're open to thinking about other tools. In a lot of countries in particular, I think they have, as Tristan said, we're engaging now with Kenya. They have these big industrial national plan strategies, and so they're trying to get support to understand which industries they can target, which policies they can apply to develop those industries. So I mean, I think it's a combination of reasons.

**[00:59:58.25] - Tristan Reed**

Yes, I'll speak to the sort of data and institutional capacity and then spillover. So to Mary's point about measuring the market capacity, I mean, we're trying to do that based on trade data. So you can put— you can know whether a country has a revealed comparative advantage in a product. That's very easy to see. You can also use this Hausmann product space measure to say, is it close or far technologically? And so I use that to put low, medium, and high risk. You can also look at market growth in the regional markets and just point out that what are the characteristics. And we don't know if those will— actually, growth trends happen. They can be quite consistent over time. So I think that does help at least shape a conversation. We're doing

this now with some countries about what types of policies you want. So in the low-risk ones where you already have a comparative advantage, that's exactly where you say, hey, let's try to do a new activity. So you're already farming coffee, but maybe you want to roast it, for example. I think to Chad's question on data— well, I also just want to say we're very positive on trade-led growth.

**[01:01:10.23]**

We've called it trade-led rather than export-led because exports seem to have become a bit of a dirty word these days.

**[01:01:16.40] - Ana Margarida Fernandes**

And also because we recognize very much the importance of imported intermediates.

**[01:01:21.23] - Mary E. Lovely**

Yes.

**[01:01:21.33] - Ana Margarida Fernandes**

So we can't revisit the text now, but we wish it had not been seen as negative towards that.

**[01:01:28.41] - Tristan Reed**

I think on the data points, I mean, I think what you were pointing to is these efforts of the US government to very much map the detailed supply chains, I think. That's not as much the issue here with development. I mean, that's for the resilience goal where you say, I want to reshore everything for national security purposes. But here, you're just trying to develop a new industry. And you may import the intermediates. And that's fine. I think on assessment, so I think one thing we recommend is that you want data on the cost per unit of output, so a measure of productivity. In the targeted industry relative to a control. If you have an economic census every 5 years, you can do that. And so in Mexico, they have great data. In the US, they have that as well. And I actually think that this idea you get from a lot of the technical literature that you should be checking in with the firms every year or something and measuring— 5 years is a good horizon to, say, build a chip facility and measure its— its productivity. So the census might be useful in that sense.

**[01:02:34.48]**

Finally, I'll say on spillovers. So one is that the spillovers are going to be larger for bigger countries. And so I think with China, there's potentially much larger spillovers than with very small countries. You talked about the multilateral system. I mean, that hasn't limited subsidies in agriculture, which is the comparative advantage of developing countries. So it hasn't been totally fair, I think, to a lot of the developing countries, that system. They suffer from spillovers from other countries. And I mean, it would be great if they had less of those. But I think one way to think about this is to think about whether industrial policy is a race to the top or a race to the bottom. So the shipbuilding case is stealing market share in a mature industry with not very much innovation or benefit for consumers. Creating electric batteries and more efficient solar panels is a new product that wouldn't have existed otherwise. And so that push, also in pharmaceuticals, you could make that argument. Those have benefits globally, creating more consumer or even producer surplus. So I think that's one way to moderate it. But it's also a non-cooperative game. And there could be negative spillovers.

**[01:03:59.12] - Chad P. Bown**

Yes. Okay. Thank you. I think we do have time for one question just to basically show to our online audience that we actually do have people in the room. And for that question, I'm going to go to Nick Lardy here at Peterson. On the magnitude of subsidies disaggregated by income level. First of all, what is the number of countries that's included in all countries? How many countries are in the sample? And secondly, how did you overcome difficulties, if there were some, in making sure that the measurement of subsidies was roughly comparable across all these countries?

**[01:04:42.07] - Ana Margarida Fernandes**

We can— I think for the left chart, for that chart, it's about 70 countries. China is not included. And this is based on data from the IMF, Global Financial Statistics, as well as data from the Global Tax Expenditures Database. So both those make a very big effort to make things comparable. Of course, you know, there may be limitations, but we are, you know, we didn't collect this data ourselves. We are using the best source available out there.

**[01:05:19.56] - Tristan Reed**

I'll just say one thing that surprised us from that is, you know, you've heard a lot of this IMF estimate that China spends 4% of GDP on subsidies. We find that's about average for upper-middle-income countries. So the issue with China is not necessarily that it's subsidizing more, but that it's the scale of the subsidies because GDP is so large. Thanks.

**[01:05:39.59] - Chad P. Bown**

Great. Well, once again, this is a super rich report, and congratulations to the authors, Tristan, Ana, for writing it, to the World Bank for publishing it. Industrial Policy for Development. Industrial policy is really, really back. We would invite everyone to read the report and continue the conversation. And thanks everyone for joining us here at the Peterson Institute today.