



New Trends in Value Chain Upgrading: Lessons from Large and Small Countries

Presentation Transcript

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Female: Good morning, everyone, and welcome to the 72nd iteration of Breakfast Seminar. We're excited here to have Dr. Gary Gereffi, it's a real treat, and without further ado, Dr. Jeanne Downing.

Female: So, I, too, want to extend my thrill about having Gary Gereffi here. When we started working under AMAP ten years ago, Gary was our inspiration, and much of what we've done was based on Gary's work. Gary – Gary Gereffi is his name – is a professor of sociology and the director of the Center of Globalization Governance and Competitiveness at Duke University, and I think it was 2002, Gary was saying that he, along with the people, along with Tim Sturgeon at MIT, and Hubert Schmitz, Raphael Kaplinsky at Sussex, and John Humphrey all were part of the Global Value Chains Initiative, and I think people have asked before about what's the relationship between clusters and value chains, and this was a coming together of the cluster people and the value chain people.

So, we had Gary in 2008, that was the first time he came, and, at that seminar, he talked about the upgrading trajectory of value chains in emerging markets, like China, Mexico, and India, looking at the trajectory of upgrading, and the strategies that these countries used, basically the private sector – I think private and public sector – used in order to achieve economic development. Today, Gary is going to talk again about the upgrading trajectory of different countries, of Costa Rica, Brazil, and looking at some of the changes that have evolved with the global meltdown, the changes in the global economy, shifting of markets, greater regionalization of markets, changes that have been happening. So, I wanted to talk a little bit about, okay, what is the relevance of Gary's talk today for USAID, because he's talking about countries that are not FTF countries, and he's going to be talking about value chains that are not the ones that we're working in.

First of all, I think it's really critical to understand the dynamics by which value chains evolve and lead to economic development. So, Gary does not look at donor projects; he's a researcher who looks at the private sector of these economies, these industries, and how they're developing. I think it's also really important for USAID's work on private sector engagement. We've been talking about how to get U.S. firms to invest in developing countries, and I think it's really interesting, as you listen to Gary, to think about how do these global value chains evolve, how do firms enter or join these value chains? I mean there are development processes by which the private sector develops, and how does our work in private sector engagement fit into that? So, with no further ado, I'll turn it over to Gary.

Male:

Thank you very much, Jean, and it is a pleasure to be back at your Breakfast Seminar series. I remember our 2008 version [*break in audio*], and I think that the history was relevant about how global value chains as a framework was bringing together people who were looking at local economic clusters, and people who were looking at global industries, and the organization that helped do that, the Rockefeller Foundation, created something called the Global Value Chains Initiative that lasted from about 2000 to 2008, and brought together about two dozen scholars from all over the world that were working on these different issues to basically try to provide an integrated framework to link globalization and development issues. I think that still is our agenda, but things have been moving really fast in terms of this. I think when USAID put out their value chain development web page, that was really, really helpful because that, first of all, said we don't just have to be talking about global value chains [*break in audio*] regional, national.

The key is, how do we use value chain mapping and value chain development to better understand markets and market systems, and these market systems include private firms that can be small-medium enterprises, large domestic firms or multinational corporations, but they also include state-owned enterprises. As we start looking at different regions around the world, and that's what this framework has been doing, it's been looking at these value chains in all different parts of the world – sub-Saharan Africa, Latin America, different parts of Asia – we're really trying to understand how development can occur in different parts of the world according to different [*break in audio*].

One sort of new feature of global value chains beyond the use in bilateral development organizations or development banks, now, in the last three years, I'd say virtually every large, international organization has adopted global value chain, that framework as a big part of their portfolio. I mean we see it in Inter-American Development Bank, World Bank, UN Economic Commission for Latin America, Asian Development Bank; all the UN organizations – UNIDO, _____, ILO, et cetera – but, even more surprisingly, the WTO, World Trade Organization, and [*break in audio*] have major projects on creating new statistics or metrics to look at global value chains because they're very interested in this issue of value capture and how it affects things like balance of trade. So, I think the framework has become widely utilized, and what I want to start with is a little bit the understanding of why, and then I want to go into these two cases of Costa Rica and Brazil, because I think they tell us some new things about how [*break in audio*] chains are evolving in ways that inform us no matter [*break in audio*] industry we're looking at.

I think that the real [*break in audio*] of a global value chain approach is it starts

to look at globalization and development through the lens of global industries, and I started doing my dissertation work in Mexico on the pharmaceutical industry in Mexico, and a lot of graduate students then were doing similar projects on the automobile industry, the copper industry [*break in audio*] and all the development people, we were looking at these industries more or less from the bottom up. The countries that were involved in them saw these industries as important to their development. Multinational corporations were typically a very important part of those industries, but nobody knew how to easily link the multinational or the global side. Usually, it was through dependency theory or something like that, or world systems theory. But, when we started to do global value chains, creating an analysis of the global industries and what global value chain analysis calls governance structures, allowed us to do a top-down analysis.

If you take any global industry – agri-foods, agri-business – who are the key players, where do they control key aspects of an industry? If you're looking at agri-foods, you can't ignore Monsanto on the seed side, you can't ignore a Cargill or Archer Daniels Midland in the middle side. All of those things affect how exporting countries are involved in those industries. So, I think that global industry approach for all these organizations allows them to connect things that they're interested in, like trade, investment, production networks with jobs, working conditions, environmental issues the countries are most concerned about. So, if we think about the current environment, there's a few key trends that I think are pretty important. One, after the 2008-2009 economic crisis, there's been a reconsideration of the role of export-oriented industrialization as a development orthodoxy, that what used to be called the Washington Consensus from the mid 2000's onward has been breaking down because there's new players. Big, emerging economies are really staking out [*break in audio*].

So, I think part of what we're doing with this framework is we're able to look at the transition point, actually, in global economic development strategies from just looking at export-oriented industrialization to something else, because the original markets – the U.S., Europe [*break in audio*] – their willingness to continue to import a lot from other countries has gone down. So, export-oriented industrialization has lasted about 25 years as a good model, import substitution before it lasted about 20 to 25 years as a good model; we're now moving to something else, and I think the something else is part of what we're trying to understand.

I think from the point of view of large, emerging economies – Brazil, India, China, South Africa, Turkey, Indonesia – one of the things we start to see is all of those countries are changing their role from just being export platforms, which

is what they were in the earlier model, to focusing much more on their domestic economy and on regional partners. So, I think we're starting to see, actually, a regionalization of many of these *[break in audio]*, not just the global approach we had before, but small countries are also trying to find their way in these global industries, and they've typically done it by trying to be niche players if they want to go into high-tech exports, and Costa Rica will be a very good illustration of what small countries are trying to do, but there's also a change in this current economy in terms of what the lead firms, or what multinational corporations are doing.

If you teach globalization, like I've done at Duke for 30 years now, a lot of the emphasis from the 1970s through about the mid 2000s was *[break in audio]* different industries started to move offshore *[break in audio]* specialization. All these multinational *[break in audio]* were looking for lower-cost production sites or places to access talented workers, or key raw materials, and you'd have companies like a K-Mart or a Wal-Mart *[break in audio]* have production or what they would call sourcing networks of 350 to 500 firms spread all around the world, and that was often because of the certain trade rules that were in existence, or something like the Multi-Fiber Arrangement in apparel.

[Break in audio] are saying *[break in audio]* and they're all talking about rationalizing and consolidating their supply chains, because they want to go from 350 suppliers to 20 to 30, and those 20 to 30 have *[break in audio]* more capable *[break in audio]* located *[break in audio]* ties in with this consolidation of the emerging economy, so emerging economies are playing a bigger role. So, if we're trying to look at globalization and development, and we're interested in low-income countries, we need to know what these multinationals are doing, and we *[break in audio]* role being played by emerging economies to figure out how *[break in audio]* countries, like the sort that USAID focuses on *[break in audio]* particular industries, like agri-foods, how these trends would play out.

So, we've already talked a little bit about global value chains *[break in audio]* useful. There's a confusion sometimes because there's this proliferation of terms. There's global supply chains, global commodity chains, global value chains, global production networks. For our purposes, they're all pretty much synonymous. Don't worry about *[break in audio]* that's kind of academic, sort of a market differentiation. The different terms mean slightly different things, but, essentially, all those *[break in audio]* global industries *[break in audio]* their research by focusing on firms and connections between firms, and most of the researchers have come from a development perspective, they're focusing on different countries and different regions *[break in audio]* trying to say, "In whatever country or region I'm working in, how are those key industries

organized at the global level, and how does that affect prospects for development?" and so that's what we try to figure out.

So, these global value chains allow us to link trade, production, money, skills, jobs across these different levels of analysis. Very importantly, a key part of global value chain is also the movement of people. There's a huge discussion right now about immigration, not just in the U.S., but elsewhere *[break in audio]* those *[break in audio]* are extremely important for high-tech businesses right now, and if we ask why are multinationals putting their R&D labs in India, in China and Brazil, it's usually a combination of looking for the most talented pools of workers, and *[break in audio]* forcing the multinationals to do higher-value activities inside the country. So, typically *[break in audio]* doing this kind of global value chain analysis, we need to look at the mix of market dynamics, what are the forces that affect the way companies operate, and political issues in terms of what countries are trying to do with policies, and the policies are changing quite a bit, and I already mentioned global value chains as kind of the top-down/bottom-up – top-down these different governance structures, how industries are organized.

The original distinction was between producer-driven and buyer-driven chains, buyer-driven what was kind of new in the '70s, and now there's more complicated structures, like we talk about markets and hierarchies as two extremes, and then in the middle, different types of networks – captive, modular, relational. They're all ways of trying to better analyze market systems in these different industries. So, what I want to focus on, and this will be on the website later, so I won't go into detail on all the slides but I wanted to have them here so you could see them, we're doing two new studies that I think are very revealing, and they're parallel. They're not commissioned by the same group. So, in Costa Rica, the minister of international trade, Anabel Gonzalez, approached me because I have a research center at Duke called Center on Globalization, Governance and Competitiveness, and we do a lot of work on different industries, and she asked if we could look at three industries where Costa Rica is trying to move into high-value manufacturing *[break in audio]* part of Costa Rica's effort to do economic diversification.

[Break in audio] was very strong initially in the traditional, natural resource industries – bananas, coffee, other things – then they became famous for their recruitment of Intel in the late 1990s to kind of move into the high-tech world, and that was a huge investment, \$2 billion. It was the biggest investment in Central American history at the time. Intel was doing assembly and testing of semiconductors, but Costa Rica quickly also realized that the spread effects of Intel weren't as great as they hoped. They wanted to get more *[break in audio]*

they've been trying to *[break in audio]* can we push, and also how can they do more in the electronics. So, they asked us to look at medical devices, electronics, and aerospace. They actually also wanted automotive, and we're doing offshore services, but we could only fit three into this initial study.

At about the same time, Tim Sturgeon at MIT, who's a close colleague and we collaborate a lot on this work, was approached by the National Industry Confederation in Brazil saying Brazil wanted to do more studies on global value chains and how Brazil is positioned. We told him about this Costa Rica study, so he said, "Well, how about looking at those same *[break in audio]* industries in Brazil?" I mean automotive would have been another obvious candidate. We're doing these two parallel studies, one *[break in audio]* country for a very large country, and one thing about Brazil besides just *[break in audio]* resources in Brazil are enormous. The Economic and Social Development Bank, _____, has far more resources than the entire Inter-American Development Bank. For example, just for their – and so they are moving between clusters, and they call it a special term in Brazil, and this kind of global value chain *[break in audio]*. So, again, these are organizations in both countries' governments that are trying to understand, trying to find out what framework can help them map a strategy for how to move up in the global economy in different ways.

So, we're looking at these three sectors *[break in audio]* still early in the research. Both projects are going to be *[break in audio]* in November *[break in audio]* but I wanted to use this as a chance to bring you up to date on how new questions are being asked, and so what I'm going to do is focus on medical devices, which is the one we're furthest along for Costa Rica and Brazil, but also say something in Brazil about electronics and aerospace, because I think *[break in audio]* some really special *[break in audio]* of what's going on in those industries. So *[break in audio]* there's this broader discussion of how do we talk about inclusiveness in value chains, or how do we use it for national development. From a country perspective, Costa Rica is interested in several things. In the early 1980s, they put in place an export processing zone regime, and in the mid 1980s, Costa Rica really began to push for what they called preferential trade agreements with the U.S., with EU, with China. So, Costa Rica really bought into this trade _____ model in the mid '80s as a way to help diversify their economy. So, that was one of their key goals.

But the other thing Costa Rica was saying is they feel that their workforce is highly educated and trained, and they wanted to go into what they were calling the knowledge economy. They didn't want to just be natural resources oriented, and they're not big enough to justify major manufacturing industries as the driver of development by themselves. They wanted to figure out how

[break in audio] the value chain into higher value added activity, and how did they use *[break in audio]* so the whole idea *[break in audio]* export processing zones was a way to bring in foreign direct investment. So, if you think about Costa Rica's economies, there's about 40,000 firms *[break in audio]* of those firms are involved in import and export activities. So, those 2,000 firms are part of global value chains as traditionally defined, and those 2,000 firms probably have 80 *[break in audio]* may be only 20 percent of the employment, so there's this kind of typical contrast.

So, I wanted to be able to tell you a little bit about the Costa Rica story, and it's not just exports; they're interested in local linkages. So, the development side of the story in any of these countries that have export processing zones, from Mexico to Costa Rica to _____, is what's happening at the local level in terms of local firms participating in these chains, and to what degree can they get involved in innovation. So, we learned a little bit about that, and then I was going to go over some of these same themes for Brazil. So, if we look at Costa Rica *[break in audio]* any one of these industries – medical devices, electronics, aerospace, autos – a key first step is to try to figure out which segments of an industry a country is participating in, and I learned that very early when I was doing my work on the pharmaceutical industry in Mexico, and people would say, "Well, pharmaceuticals sounds like a homogenous entity, you know what you're talking about," except the people that make antibiotics don't compete with the companies that make cardiovascular drugs, don't compete with the companies that make HIV products, so there's this definition of therapeutic markets, or market segments that becomes very important. If we're trying to use global value chains to look closely at international industries and how those industries work, what we're really trying to look at is how competition works, and so that means we've got to break these industries down into their respective subsections.

So, in the case of Costa Rica, there were four components of medical devices that they have focused on – disposables, surgical instruments, therapeutic products, and then the capital equipment, the machinery that is used in some of these – so those happen to be their areas. The industry started around 1998, so exports are going up, and exports are now around \$1.2 billion. So, at one level, it looks *[break in audio]* successful, and they've been doing this by bringing in different kinds of firms. In all of these global value chain studies, if you've ever looked at that literature, you see usually some diagram that looks like this that's got boxes and arrows of some sort. What you're initially trying to do is, first, you're looking at an input/output structure that goes from the left to the right, and you're starting with raw materials on the left that go into producing key components, final products.

But, very interesting, from a value chain point of view, the production of the final product is in the middle of the chain. It's not the end of the chain like you would have for an industry study. If you were just looking at cars or producing that final product, you think you're done, except from a globalization perspective, once you produce those final products, you've got to distribute it and market it to different key buyers around the world. In this case, there's wholesale distributors, there's doctors and nurses, hospitals, patients, so medical devices is pretty much what they call a B2B industry, business to business. They're selling to other businesses. They're not selling to us as consumers. We're not buying the packs that they use in the hospital for intravenous drips, or things like that. Then, there's a big area of post-sale services connected to this. So, this is just laying out the chain, and what we try to do in studies like this is we try to say, "Well, where is Costa Rica positioned in this chain?"

This is the whole chain, and so parts of this that are shaded in tend to be where Costa Rica firms are more active, and it turns out most of what Costa Rica is doing is components manufacturing. Since they've set this up as *[break in audio]* they've got multinationals, like Boston Scientific, Allergen, St. Jude Medical that have subsidiaries in Costa Rica that are making products that their headquarters company wants and needs. Now, some of those products can be shipped back to headquarters to be redistributed elsewhere, or they could be shipped to regional markets. So, that's why it's real important to understand how this distribution works, because if we really *[break in audio]* how much value *[break in audio]* start looking at firms and jobs, that's one way, we could then ask what about exports, but we also really want to know where's the value added, and how is Costa Rica trying to get into the more profitable parts of the industry. So, this is just some of the key *[break in audio]* for Costa Rica listed down *[break in audio]*.

Typically, with these kind of studies, you do some sort of layering analysis in terms of firm entry. So, remember I said *[break in audio]* value chains to understand how markets work, and market dynamic of these industry studies, and it turns out there's about three generations of market devices firms, even just in this last 15 years in Costa Rica. Baxter was actually the first medical devices company, and in 1998 to 2004, they had some firms come in. Hospira and Boston Scientific came in toward the end of that period. Then, 2005-2008, they brought in some new firms, and, similarly, 2009-2011, another wave of firms. Generally *[break in audio]* they've been moving from lower-tech products and firms to higher-tech products and firms over time. One of the things that we're seeing is if you take one of those big multinationals and you sort of look at

upgrading success, in 2005 they were exporting about \$18 million. In 2011, they're expecting to export \$120 million.

But the interesting thing you get from the company case studies is you understand, first, why did you come to Costa Rica to begin with, and what are you actually doing over time, if we're looking at it from an upgrading point of view, and when we asked all these companies, "Why did you go to Costa Rica?" there was usually several key factors that came out. First, political stability as a country we can go to where we're really confident that we can be there for the long-term. Second, human capital. Costa Rica has very highly-trained, good workers that we think would fit into these industries. Third factor, geographic location. They're close to the U.S., they're in the same hemisphere, and we think that they can actually be a great part of their global production network. So, these multinationals, they might have all these medical devices companies, they have operations maybe in *[break in audio]* other places around the world. Some of them are in Mexico, some of them are in Ireland, some of them are in Israel *[break in audio]*, and so they're looking at a Latin America location as a kind of strategic bet, "Where can we have Latin America?"

So, that was the first thing, "Why did you come here to begin with?" But, also very important, that first set of companies that came in in 1998 to 2004, *[break in audio]* those competitors *[break in audio]* do well, and they like Costa Rica. Many others said, "Well, we came in because so-and-so was really doing well here in Costa Rica, and it seemed like that was important *[break in audio]*. Many of them were also comparing Costa Rica *[break in audio]*, and the problem with Mexico was the violence, and *[break in audio]* cost in Mexico and there's a higher turnover, there's a lot of other issues. So, *[break in audio]* really looking at Costa Rica very strategically, and they said, "Okay, we're going to come in because we think there's real growth potential, the government policies are favorable," but what happens when you look at a company is this particular company started making simple things, like disposables and exporting them, but very quickly started to move to these higher-value products in its supply chain, and so that *[break in audio]* don't capture from the trade data. It's typically sort of too early.

One key factor, for example, sterilization: in medical devices, you need to sterilize certain equipment. Initially, companies were making things in Costa Rica, sending it to the U.S. to be sterilized, sending it back to Costa Rica to put into a final packet, so pretty soon, then, they found two Costa Rican companies that could do sterilization locally. So, once you're there for the longer term *[break in audio]* doing the *[break in audio]* represent real value added, and the final point of this case, which was really interesting, they said, "We *[break in*

audio] on the product side. We can make these goods," and if you look at Costa Rica's exports, something like one-third of the value of Costa Rican exports come from local products, about 60 percent of them are services, 40 percent are goods, two-thirds come from imports that they repackage and send elsewhere, but that's not a bad mix from a developing country point of view, and Costa Rica is going to want to push that one-third up to one-half, try to find ways to make more of that happen.

But, what these companies were saying is, "Because we're here on a production basis, *[break in audio]* their high-value headquarters services to Costa Rica." They said, "Costa Rica is going to be our hub *[break in audio]* Latin America," and they closed down factories or plants, in this case in Ireland. They had a *[break in audio]* and they closed it down to do more work in Costa Rica. So, part of what we need to understand from a research point of view is this combination of goods and services that go into what any company does in Costa Rica, and whether that means upgrading, in this case it does, or in some cases there's downgrading, you lose position. I can't go into it, but in electronics, for example, Costa Rica in certain areas can't compete with China for medical devices, and so their companies have had to shrink.

Let me sort of highlight, okay *[break in audio]* for Costa Rica, which is one of the things the government wants to know. One big challenge, actually, shortage of human capital. All these companies are _____ in to the San Jose *[break in audio]* area of Costa Rica. They've got pretty good universities, but they're still limited in the numbers of people that they can train, and, as you start getting *[break in audio]* the aerospace companies, and you're starting to get electronics, they're all looking for a highly-trained workforce. They're running into problems, especially at the managerial level. I mean getting good managers is critical, and training those locally, so that's a constraint. They're looking at going to other parts of the country, but if you go to another part of the country, the universities aren't so good, so then you have to be willing to build that up.

There's also uncertainties about the EPZ regime, export processing zones. The government would like to tax them a little bit more. Companies are now saying, "Uh-oh, uncertainty is a problem for us. If we know that these things are long-term agreements, we'll keep expanding. If you're going to start to tighten the screws, we'll step back." Transportation infrastructure is also tight. Limited potential for R&D, they do want to do R&D, and there's lots of _____. I think in terms of product and process upgrading, that *[break in audio]* illustrates that many companies, once they bring a part of their product family in, they look to be able to move to those higher-value products, but they don't do it initially. They want to see what they can get out of that location.

In terms of insertion of local firms, medical device firms – in these export processing zones, there's a tendency to be isolated, as you can imagine, and there's a phenomenon in many of these higher-tech industries called follow sourcing. All these multinationals that need critical inputs have other multinationals that can provide that around the world, so some of them come in, but the key for Costa Rica is how do we create more spillover benefits, like that sterilization step, where local firms can be doing those things? We have some *[break in audio]* analyses, but let me go on. I mean the local firms typically are located in the support services part of these chains, or in some high-tech niches, like software. When we were actually in Costa Rica, we _____ looking at aerospace, there was a software company that was designing a product for the airbus, or sorry, for the new Dreamliner that's coming out, and *[break in audio]*. So, small firms have to usually plug into these bigger value chains in order to participate.

Okay, what about Brazil? Brazil is a really different case, and for a long time, Brazil has not been on the radar screen of a lot of these global value chain studies. Everybody is talking about India and China for different reasons, and Brazil itself consciously *[break in audio]* but they didn't really *[break in audio]* articulate it in the way that these other countries did. But now, they'll understand that it's not only a global player, but if it doesn't negotiate its position in these chains carefully, it risks losing ground. It has long-term soybean contracts to China, where China sets those contracts up so Brazil *[break in audio]* processing, and now Brazil says, "We want to change that." So, Brazil is using its large domestic market to build global supply chains rather than simply join them. Costa Rica is joining them, Brazil wants to build them, and there's a real *[break in audio]* back to the future.

We've been doing a lot of these interviews in Brazil, and Brazil was pretty famous before *[break in audio]* tough policies on local content, backward and forward linkages, joint ventures *[break in audio]*. People might remember *[break in audio]* computers in the '80s, which didn't work out real well. Well, now, they're using industrial policy again, but in a very effective way, to say to these multinationals, "We want you here, but we want you to help build these industries for Brazil," and they're also focusing on innovations. So, I'm just going to give one slide each of medical devices, electronics and aerospace to illustrate particular company dynamics, and then we'll go to some concluding remarks and Q&A so you can ask questions.

This is a kind of a global value chain for Brazil. We can do more on this. Most of those companies here, this is just number of national firms. Many of them are

relatively small. From a Brazilian point of view, they are many of the smaller companies, but interestingly, in these six markets, the product markets, two of them are dominated by multinationals – disposables and radiology – but they have very different links to the global market. Disposables is Brazil's biggest export product, but it's very low-tech stuff, I mean stents and tubes and things *[break in audio]*, things like that. High-tech is radiology, the MRI machines, all these other things that Brazil wants to do. If we were just looking at trade data to sort of chart Brazil's position, we would really miss out on most of the high-tech industries that Brazil is interested in, and that's to me a big binding, because we typically use trade data. What Brazil is doing is they're using access to their domestic market as a way to push innovation.

I didn't realize it, but Brazil claims the largest public health system in the world, and in that public health system, you've got public hospitals and you've got private hospitals, and they're actually using the public hospitals as a way to drive industrial policy, and that's a big chunk of the market. So, exports in that case would come after these companies have developed products for the Brazilian market, and then they might actually export to regional. I'm not going to go into detail. This is Brazil's exports of medical devices by these different therapeutic markets. The main thing to keep in mind is around 2011, exports were a little over \$500 million. The key thing is that imports are five times exports, so you look at Brazil's imports of medical devices, they're about \$3.3 billion, so how does Brazil read that? "We're importing all this stuff, how do *[break in audio]* those imports for major local production in high-tech areas. So, Brazil is saying, "This medical devices industry is huge, and a big part of our demand is public sector demand, our national health system," and so that's the game that Brazil has been playing. So, let me just take the example of GE Healthcare.

GE Healthcare currently makes three product lines in Brazil, fairly sort of standard medical device products. They want to go to 17, and they've proposed 14 new areas, including these high-tech areas, like radiology and those imaging machines, and *[break in audio]* entry or permission to produce those initially because they're not complying with Brazil's industrial policy. The Ministry of Health has to *[break in audio]* permission to produce new products. Part of the idea for producing new products is the company has to show that you're going to do local production in Brazil, and you're going to do local R&D in Brazil. They learned from China. You don't just ask companies to do it, you tell them if you want them to do it, and _____. So, there's a big fight right now over how these products, how quickly they could be registered, and it's a bargaining power battle. The Brazilian government says, "We want you here, we know you want to be here, but we want you to do a lot of extra things in terms of local

development," and GE has been sort of pushing back. I'm guessing they're going to do it eventually.

So, the Dilma administration, the current government, has basically approved a 25 percent preference for national healthcare *[break in audio]* healthcare system to purchase locally manufactured medical devices. So, if somebody is selling a product \$100.00, let's say GE, that's imported, versus \$125.00 locally produced, the national healthcare system has to buy the \$125.00. These are the kinds of policies we've seen in the past, and so GE is basically pushing to get these regulatory requirements eased or to get through them. A separate example, Foxconn in electronics. We've all heard about Foxconn and Apple and China, and how all the iPhones and iPods and Kindles we get in the U.S. are all made in China and assembled in China. Foxconn is now the world's largest contract manufacturer for electronic components, and they're the ones that make all of the Apple products that come to the U.S.

Brazil asked Foxconn to come to Brazil to make Apple phones there, and they're willing to have a \$200.00 increase in the price of the phones to have it locally made. The interesting thing *[break in audio]* wasn't just to have Apple phones made, they said because Foxconn is the biggest contract manufacturer, they can supply Brazilian firms, and many other parts of the electronics _____ to help domestic innovation. So, Brazil is trying to push their local firms to do more domestic innovation, and that's very similar to what Taiwan and South Korea did, for example, when they put petrochemical firms as a high priority, or petrochemical industry, to supply downstream firms, or they made wafer chip designs to help their companies get into the industry. So, it's kind of controlling what might be called the commanding heights.

The final _____ aerospace. You probably all know that Embraer is one of the leading aircraft companies in the world, so Brazil has an advantage that Costa Rica doesn't of having a major end producer, Embraer. This is just pointing out two Brazilian companies that actually have been created by Embraer and are sort of developing aerospace. The interesting thing about this market, again, like healthcare, if we think about Brazil's market, there's three segments of the Brazilian aerospace industry: the commercial segment that supplies Embraer; the public sector segment that supplies the government with defense equipment; and the export sector that supplies multinational companies with parts. Costa Rica is only in that last one. They're only doing parts for export production, but Brazil is able to use this domestic – so, they're using Embraer to bring in the multinationals, and they're using the local defense industry for local firms, because they'll basically say, "You can't supply the government if you're not a national firm," and we do it in the U.S., and Canada

is doing it, I mean it's a big deal of using defense procurement as a way to try to promote local economic development. So, all of these things are happening in Brazil in ways you wouldn't see in a small country, and it's new for Brazil.

So, let me just conclude here *[break in audio]* couple implications for this idea of inclusive value chain development. I think when we think about it from a development point of view, I know there's emphasis in a lot of organizations that say about *[break in audio]* enterprises, or things like that. This inclusive development has several tiers to it. Costa Rica says, "Inclusive for us means we want to be part of *[break in audio]*. That means we want to export *[break in audio]*." Another layer of inclusive development is we want local firms to be part of those chains. We don't just want multinationals in. So, that's another part of our policy. We want locally owned firms, whether they're wholly owned or joint ventures. *[Break in audio]* they want backward and forward linkages, they want services and other things to come into the chain, and then, finally, they also want firms, small firms as well as big firms, to be part of the chain. So, inclusive includes all those things, but there's limitations in terms of skill shortages.

Brazil, it's using multinational companies not just to promote exports, but to create local production opportunities. They're using industrial policy to do it, and they're not shy about it, and they're putting an emphasis on innovation. I think in terms of small-medium enterprises, they are in high-value niches, and they are in support and service activities, and there's a way for them to grow, but the main lesson I take from this about internationalization is if SMEs want to get into the international economy, they have to link to these supply chains in one way or another. Government policies try to help that, they try to make it easier, but you don't just go in by yourself. If you're not exporting as an SME, it doesn't mean you're not affected by global supply chains, because imports can greatly affect your position in domestic markets. Finally, if you're a local producer and you're supplying a national market, you still have to go through the same power companies or power dynamics in terms of who's going to buy your product. So, we can learn from value chain development, even for nationally-oriented value chains. So, let me stop there and leave some time for questions. Thanks.