

I am really happy to spend over an hour with you today to talk about some big problems of the world. Shanghai is the right place to do this, because this is the center of business right now. China is a fast-developing country and will be the biggest world economy within a few generations. I think Shanghai, after London, New York can be considered as the capital center of the world. So we have to figure out ways together to resolve the problems on finance.

And here I want to talk about the meeting held these days---the African Development Bank meeting. It's interesting that all the African banks meeting in Shanghai. Think of the meeting, that's how it works. 20 years ago, the African Bank meeting could be anywhere; it could be in Washington, now it's in Shanghai. It makes more sense for Africa to look for business partners for economic development. In Washington they are talking about whether or not to save the current president of World Bank , so they have other things on mind today rather than Africa. Frankly, no matter who they pick, Africans will look more into China. So that tells more about the nature. For more than 25 years, my work is devoted into how globalization works. Of course, I didn't realize it at the very beginning.

As I started my work at one place and another, I thought the problems are very particular to each country. I started to work in Columbia, in Poland, Russia and India -- different language points. And the problem is how my country fit into the world economy. How economists are dealing with world economy, because just before I arrived in a short period of time, we seriously thought about regional economy deeply interconnected with global economy. And it is the big question that every country of the world is asking. What is the future of this region that is interconnected with the world. The economists may ask how to make that process. Well, Tom Freidman wrote a book called' the world is flat'. Basically it said there is an open competition for all parts of the world right now. The challenges that I have been working with are quite flat as Tom said.

I once worked at 14,000 feet above sea level in the Andes Mountain Range area. You are definitely out of plain there. Actually it's a big problem for development. How do you attract business to above 14,000 feet above sea level. The answer is not very easy. The world physically is not flat. And now I work in Africa, Africa is both flat, but it's not flat in Tom's sense. Now some parts of Africa is not yet part of world economy, even if there allowance are disconnected from world economy and are falling further further behind. So my question is how globalization can work for all parts of the world or just some selected parts of the world. What shall we do to the places that are left behind? What shall we do to help the one million people who still live in poverty? In addition to that question, which I will talk about later, there is another question, even now we are living in a flatter world, we'll all suffer from the pollution on this world that hands over that question. As the world who is achieving economic development is being threatened by the economic development as well. And we don't the greater greater price is.

And China is no exception. Now we have come to understand the environmental challenges are not only the footnote of China's success.

And now the environmental challenges will be the NO. 1 challenge for China, India, United States and some other countries to keep the overall global success. So I want to say a few words that how to make globalization work successfully or for every part of the world any time and sustainable over time. And of course if you put those ideas together, you will understand the big challenge is right now. The big challenge is sustainable development which is to ensure that there is successful development everywhere. How to ensure the development is sustainable especial in the environment sense. A few years ago I left Harvard and went to Columbia, I took my entire professor to remind me of what I am doing. And I am lucky to head the institute ---the Earth Institute which composes of hundreds of scientists who work on sustainable development. How do you make it work on economic side and environmental side.

So let me give you an overview of China's role. The good news is the world is flat enough. They have a best seller which is called "The world is flat". And by that means, the world is interconnected enough. Places like China which have been very poor have achieved the fastest economic development the history has ever seen. A bright idea is the notion that we live in a world of convergence economically. Broadly speaking, we are now living in the world where the poor countries can't easily catch up with the rich countries. and this is a huge change to the global society, because for several centuries we live in a region of diverge. And I believe there is a shift from divergence to convergence. It is said the rich are getting richer and the poor are getting poor. And this is broadly not true. That's cliché. And if you put it in a cliché, then the opposite will be more true than that. And the poor are getting richer, and faster than the rich getting richer. The poor are getting up with the rich. And China is case number one of convergence. So what is the time for Africa to shift from divergence age to convergence age is a very interesting intellectual question One is very interested in asking the questions. Let's see what happened. About 250 years ago, the world was flat and poor, but there were problems economically everywhere. There was not much economic growth anywhere. Any long period of sustainable economic development wasn't made possible because technology did not really permit it. But broadly speaking, 250 years ago there was not too much discussion on divergence or convergence. Then economic growth started relatively in small parts of the world. It started more in North-West of Europe, namely England and across England, the Netherland. And this is industrial revolution, the symbol of which is how to use science to develop. That started in a very small part of the world. There were only narrow part of the world that had industry. They had to have coals, they had to have science to make it happen and they had to have market economy, kind of capital economy. Then world became an uneven world. Unequal development happened and unequal politics happened as well because the military developed with the industrial development. So the west part colonized the rest of the

world. China never formally became colonized before Opium war and afterwards China has been put on more pressure of the western power. The Bund is the perfect example. Of course the rest of the world fell on the formal colonial rule. All of Africa, with tiny exception, Ethiopia, Liberia almost all fell on the European colonial rule. And most of the Asia fell under the ancient Columbia rule, France and British Empire. Other parts of the world, like Latin America were economically under the wave of Europe and mainly Britain during the second half of 19<sup>th</sup> century. So my view is the industrialization favors parts of the world and it's not easy to achieve economic development under the colonial rules. So the European countries' economy fell behind because they were not allowed to industrialize. They are not allowed to educate elites. Some economists argued that the colony actually spread the development. There was a writer of Harvard University who wrote a book on how the Britain benefited the world. It is good for Britain, but it's not good for the world that dominated by Britain. I believe that the empire did help the economic development of the areas that under domination. Actually it's after two world wars, the colony ended. There was possible to have a shift from convergence to divergence. Over very complicated subjects, I think it's the end of colonial era which at least made possible a shift to catch up economic growth. And that was modern development of logistics, enabling the global economic system to take place. Asia became the center of catching-up economic growth starting with Japan in 1950s and 1960s and then Korea and Taiwan in 1960s and south-east Asia in 1980s. and then after 1978, China became the example of globally centered catching up country in history. And now of course china's economy has been doubling in size every 6 or 7 years. This is never before seen in history. Shanghai is the perfect example and Pudong as well. When I first came to Pudong in 1993, there was construction on the way but basically there was flat. As I was taken to the Pudong development office, I was shown what Pudong's gonna be like. I just said this is crazy.

There is empty there but they are showing me a model of Manhattan. I thought it was a fantasy, of course it turns out to be the fastest. Without the globalization, without the inflow of the capital and without china's export, China would never achieve the economic development. So this is the great triumph of globalization and how the convergence can work out in a globalized economy. This depend on the followings:

1. avoiding the economic crisis. No wars, humanity. Because we have this incredibly stupid insane to each other and to the well-being in every other part of the world. We have to fight that tendency successfully.
2. it depends on each sustainable development. Not every country is achieving divergence. It is the question I am interested in as an economist. I understand why the convergence happened in some countries but not other countries. That's where I spent my intellectual energy trying to find out.
3. try to make sure the environment doesn't get destroyed within the process. If convergence continues with all those ifs, then I think a few things are quite confident. First, china would be the biggest in the world economy within generation. It won't be the richest country for

the per capita income is still 1/4 of the US. And within this century the per capita income will be half of the US. Since the population is so large, the total economy will be the world's largest. It has great effect on China, like the geopolitics. We know the world is not flat, it makes the economic difference to the world even if today. I mentioned my first experience working above the 14000 feet above sea level. When I first work there, I only understood the air is fresh, I could breathe easily and see a picturesque city. But I then understand the meaning of the port to a city like Shanghai, New York and Dubai. Being the outlet of the Yangtze River or the outlet of Hudson River or the outlet of the other great rivers as well are very important. So a lot of the world doesn't have this advantage. We know the western China lacks more than the coastal China in the economic growth. That's mainly the geographical phenomenon. The farther it is away from the coast, the less it attracts the foreign investment. The less they export oriented, the less they are part of the economic growth. What happens in China is there is a good migration from the interior China to the coast. Because the action is economically. So it is with America, the people live in the coastal cities and the middle part of the US is quite empty. In china, the people as soon as they can move away from the farms they can move the coastal areas. Because the coast is rich, it can launch economic strategy to the interior development. So physical capital is moving to the interior of china.

What about other parts of the world?

The parts of the world where is most left behind is Africa. It's challenging to figure out what's happening in Africa. Someone says it's just corruption, mistrategy, poor government. That is the stereotype. Frankly there are so many races in the world. I think Africa and some other parts of the world suffer more from their physical geography than from the indifferences from the government. I want to focus on three points very important to solve African poverty.

1. Africa has the profound challenges of food production.
2. Africa has a big river system, just like China.
3. as major problem of disease control.
4. Africa's infrastructures are very poor.

There are good news and bad news. The good news is if you look at each specific problem, agriculture or disease control, or infrastructure we basically have the technology already to solve the problems. We have technology to raise food production in Africa by three or four times by using fertilizers, and better water technology. We have roads and know how to send powers to the places right now. all of that is good news, I don't see any barriers to solve those problems. The bad news is all of those solutions cost money. If you are extremely poor, you don't have enough money to do it. So if those parts are region of region economy, like western china is part of china, then the richer part will be called to help the poor part. And if the poor

region is part of the economy, then you will keep migrating from poor areas to the rich areas. But in Africa, there is no rich Africa to save the poor part of Africa. And there is no place to migrate. Because the rest of the world isn't accepting the migrants of Africa. You have the poverty that isn't solved by internal processes. There is solution through migration. Then it comes to a practical question: can we organize a global effort to help solve these problems? That's what I've been trying to do for a couple of years. My view is we have to treat this problem as we treat the problem of our country. We should have an African development program for the world. But our government organizes nationally not internationally, and since the international cooperation doesn't work very well, and people are greedy generally, or they are not attentive to meet others. Getting these efforts to work is very hard. So I've spent a lot of time encouraging the rich country to help the poorest country. And the problem is the rich country promised to do that, they have nice words talking all the time, they even had the institutions like the world bank which supposedly could do this. But they don't really do very much. The biggest attitudes towards Africa is to ignore. The second attitude is to pretend to help it. Way down to the list of actually helping it.

For early development the step is subsidy so the private sector has the financial ability to undertake. We are still in the technology demonstration phase. Later on it could be a tradable currency system. You need a lot of public finance to get the technology to improve the science. You need the political will for all the things. Political power doesn't mean the politician cares about it, but they institute the incentive system to bring it out. We are really quite far from that. There is now no agreement technically on what it will work on. I think what we need is the standard.

We know the power plant burns coal to produce power. Rather than let the carbon dioxide out of the chimney, we capture it before letting it into the air and deposit it into some underground formation. The geologists suggest some places where it's possible sequester the carbon dioxide. This technology is crucial either for china and the whole world. Because china's main energy source is coal. Coal is the major source of carbon dioxide emissions. If china uses the coal without this technology, it will surely break the global environment for everybody, including for china. So the only way to use the coal safely is the carbon dioxide capture technology. There is just one problem, it's never even been proved yet, if I were the Chinese leadership I would try to test the technology and try to master the technology. Then I would sell the technology to other places of the world in good Chinese fashion. We want to be the world leader of Chinese clean coal technology. Of course other leaders want to sell the technology to china like general electric and the Chinese way of doing this is to import the technology at first. A number of demonstrated factories under way as soon as possible. Both to show china's commitment to solve the problem and become the masters of the technology. I would also ask Europe to help these factories. If china says we are ready to do it, I will add my voice that America will pay for

it. Why doesn't china have to pay for it? Because this problem was not created by China, but some rich countries.

China's per capita is approaching the world average, but not as high as the rich countries now. It's a favor that china gotta do for china. Because you go on doing the normal economic development, the environment consequence will be so severe to china. It could turn out to be the main barrier to the economic development.

Let me just end by making another observation, nobody's gonna know how old this will turn out. These are very big issues. Strangely they are not sturdy, china's medium term future by which I mean china's economy in 2050 not sturdy very much at all. Because when you think about it, you think about the current situation, or the business you may project a few years. Or you are in the state planning commission. Almost nobody studies 40 or 50 years. It means we don't have good scenarios of how this can work out. We have been working on how the age of convergence can work with sustainability. When I mentioned this to a Chinese senior official, I was shocked by the answer, 'oh professor Sachs, because the state is so high. The challenges are so unprecedented.' So one of the things I do in the academic field, is to put forward a Chinese research institute and some American and European institutes to inaugurate a project which we call china 2049, which will be the scenario for china on the 100<sup>th</sup> anniversary. Where will the population live, where will the water supply come from, where is the energy supply come from, whether china is a dominant economy in the world in terms of the trade relations with the rest of the world. Literally you can not project of course. It's still an intellectual exercise that we try to understand, try to look at this scenario, what the challenges are need to be solved. So that's the project we're gonna launch. Thank you .

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