Globalization, Technology, and Asian Development

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Globalization has many dimensions, mostly familiar to many such as trade, capital, labor, and knowledge. We distinguish between short-term and long-term capital flows, and between foreign direct investment and short-term capital flows. In terms of labor, we are not only interested in the flows of labor across countries but also across education markets. But these are only the economic dimensions of globalization. There are other dimensions to globalization as well, having to do with, for instance, globalization of civil society, which has had such an important impact on so many aspects of recent events. This discussion focuses on the economic dimensions of globalization and tries to relate them in a more positive way to development.

I. GLOBALIZATION THEN AND NOW

The process of globalization has been going on for a long time. Many of the foods that we have all the time, that we take for granted, are a product of globalization: a long time ago, coffee spread around the world from Ethiopia. But there are several differences between globalization today and globalization in the past. A first, obvious difference is its scale. Trade and capital flows are larger as a percentage of gross domestic product. A second difference is the speed of communications, which makes for a much higher degree of integration and has led to the enormous increase in short-term capital flows, which, unlike long-term capital flows, were previously very limited. Short-term capital flows have played a very important role in the instability that we have seen in the last 25-30 years.

Historically the whole process of globalization has been marked by asymmetries. Unfair trade treaties come in various forms, which we saw in the 19th century and continue to see today. Unfortunately, that pattern of asymmetric unfair trade treaties has continued.

A third difference with globalization today has to do with the use of force. In 1902, just over 100 years ago, when Venezuela could not repay its foreign debt, the ships of Europe bombarded Caracas. Today, when countries do not repay their

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foreign debt, they usually do not get attacked by military means but there are other forms of force, economic force, that is used to try to force them to pay.

There is one final way in which the process of globalization has changed, and that is related to the process of democratization. There is much more public scrutiny now of what is going on. That is why there is a stronger globalization debate today than 100 years ago.

II. THE PROCESS OF DEVELOPMENT

One of the central ideas that have emerged in the last 10 years has been that successful development requires not only closing the gap in resources between the developed and less developed countries but also closing the gap in technology, in knowledge. Some 50 years ago, at the time the World Bank and other multilateral development banks were first set up, it was thought that what distinguished developed from less developed countries was that less developed countries had less capital. Therefore, what was needed in order to make less developed countries into more developed countries was to transfer capital. That is why the development institutions were development banks. But today we recognize that what separates developed from less developed countries is also a gap both in knowledge and in technology. Therefore, one of the major responsibilities of international institutions, including the multilateral development banks, is to close that gap.

The region of the world that has been most successful in development has been East Asia. Over the last 30-35 years, most of the countries in East Asia have seen their per capita incomes increase eightfold. As time goes on, the East Asia crisis (1997-1998) looks more or less just like a blip. Countries like Republic of Korea (Korea) have returned to their strong and robust economic growth. Looking at Korea's progress over a long span of time, that country has been enormously successful not only in promoting economic growth but also reducing poverty. But a key to that success was the closing of the technology gap. Forty to fifty years ago, not only was per capita income in Korea roughly comparable with or a little bit lower than that of, for instance, India, but so was its state of technology. It was an agrarian economy. Today, Korea has become a major producer of chips and of other electronics. It is engaged in a whole variety of product innovation.

I was in Korea twice this year and it is always amusing to see how much further advanced their cell phone use is than in the United States (US). This was something I noticed when I went mountain climbing near the ancient capital. Usually, in the US, when you go to a remote place, you cannot get any cell phone service. But, in Korea, you have service even as you climb up into the mountains. Everybody has cell phones. Many of them are also cameras as well, so that the climbers can take pictures and send them to friends even as they climb up a mountain. The point is that Korea has made enormous strides in closing the technology gap, which in turn has a lot to do with the success that it has had in increasing per

capita income. This success in closing the technology gap is a result of explicit efforts on the part of government. It was not just an accident; it did not just happen. There was a broad-scale program involving a number of different activities of the government that were directed at closing the technology gap.

III. FREEING UP KNOWLEDGE AND TECHNOLOGY

I want to spend a minute examining the economic theory that lies behind the idea that the government needs to be involved in closing the knowledge gap; I want to explain why there is a need for government in this important arena. The role for government derives from the fact that there are fundamental market failures in the market for knowledge.

First, knowledge is a classic example of a public good. Public goods have two characteristics: one being "nonrivalrous consumption", and another being "nonexcludability." The basic idea of nonrivalous consumption related to knowledge is very simple. If you take an object like a chair, for example, only one person can sit on a chair at a time. By contrast, my knowing something does not detract from your ability to know the same thing. More than one person can know the same thing. We can all know, for instance, about how a chair is made or how it may be used, even if only one of us can occupy a particular chair.

Nonexcludability focuses on the difficulties of excluding someone from the benefits of a good. Defense is a classic example: if a country's military expenditures succeed in deterring an attack, all individuals benefit; no one is excluded from the benefits, including the skeptic who thought the attack unlikely. If Dupont produces a synthetic fibre, rayon, then while it may try to keep the processs by which it is produced secret, it cannot keep the knowledge that it is feasible to produce a synthetic fibre with certain properties; knowing this can have enormous impacts on research programs.

In fact, the idea that knowledge is different from an ordinary commodity was recognized a long time ago. Thomas Jefferson, the third President of the US, talked about this in words that were much more poetic than we economists use. He did not use words like "nonrivaloust consumption" or "nonexcludability." He used the simple metaphor of a candle. He said knowledge is like a candle. When you take that candle and you light another candle, the first candle still continues to glow. And yet the second candle catches the fire. The second candle, in turn, can light still more candles. The light of a candle can thus be transmitted from one person to the next and not diminish as it goes on.

There are also large externalities associated with knowledge. (Whenever there are externalities, or public goods, market outcomes will not be efficient. When there are positive externalities, such as is the case for research, there will be "underproduction") The benefits that come from the discovery of the laser, the transistor, or the theory of cancer go well beyond the compensation received by

the person who makes the discovery no matter what he may receive. There are huge benefits that accrue to others that he does not appropriate himself.

Markets by themselves thus will naturally lead to too little research, especially in certain areas, like basic science, where appropriating returns is particularly difficult. To improve matters—to increase resources devoted to research—two approaches have been taken. One tries to make the market for ideas more like the market for ordinary goods, by making it easier to exclude others from the benefits of one's research. By increasing the ability to appropriate returns, the extent of positive externalities is reduced. This entails creating intellectual property rights. But there is a huge cost associated with this strategy: while incentives to do research are increased, knowledge is not efficiently used, and market and monopoly power is conferred, thus reducing competition in markets. Balancing the two—the gains in dynamic efficiency with the losses in static efficiency—is not easy, and it is not clear that we have achieved the right balance. It should be clear, however, that those who say the stronger the intellectual property rights the better are almost surely wrong, but such a position ignores the static efficiency costs.

Indeed, it is not even clear that stronger intellectual property rights (beyond a point) enhance dynamic efficiency; for the most important input into research is other ideas, and intellectual property rights may impede the use of earlier ideas in follow-on research. Accordingly, unbalanced intellectual property rights can both slow the pace of innovation and reduce economic efficiency today.

There is an alternative approach—direct government support for research—and a key policy issue entails the balancing of these two strategies. Unfortunately, much of the recent discussion (especially at the World Trade Organization) has focused only on enhancing incentives for private production through stronger intellectual property rights.

I want to take a slight digression here to emphasize that there has been too much emphasis on intellectual property rights as a basis for generating knowledge. A result of that is that there is a real danger that we will be left with an unbalanced intellectual property rights regime. The reason why I say this is that most knowledge is neither generated nor protected by intellectual property rights. To take an obvious example, the ideas I am discuss with you today are not protected by intellectual property rights. I think it is important that these ideas, like asymmetric information, are not protected by intellectual property rights. When I did my research, I was completely unconcerned with intellectual property rights. In fact, while the intent of intellectual property rights is to limit the use of the intellectual property to those who are able and willing to pay, I worked very hard to get these ideas out there. I travel around the world to tell other people about my ideas and hope that they would tell other people about those ideas. The whole idea of intellectual communities, of research within academia research, is that ideas progress most rapidly when there is open sharing.

Most of our basic insights are not patentable. The theorems that lie behind the computer are not subject to patent or copyright. I can go down the list of innovations that have transformed our lives in the last century, but the point that should be clear is that much of what we produce in the university—basic knowledge—which is the foundation on which all the other innovations rest, is not protected by intellectual property rights, and that excessively strong broad intellectual property rights may actually impede economic growth.

In the discussions leading up to the TRIPS (Trade Related Intellectual Property) Agreement that was part of the Uruguay Round agreement, both the Council of Economic Advisers and the Office of Science and Technology Policy raised serious concerns. We both thought the agreement was unbalanced. One reason was that the high drug prices would deprive the poor in the least developed countries of life-saving drugs. But we also thought it would be bad for the progress of science in the US and thus for our growth.

The US was represented in the trade negotiations by the US Trade Representative, and his position was effectively dictated effectively by the drug companies in the media. It reflected their special interests. While we were trying to say that we needed a more balanced intellectual property regime that reflected not just the interests of the drug companies but also the interests of the scientific community, of the developing countries, of a broad global interest, and maintained a balance between users and producers. Unfortunately, that is not what emerged from the TRIPS Agreement in the Uruguay Round. In the Doha Round, we are currently having difficulty redressing that balance[1] even though, initially, there was an agreement that something ought to be done about it. The US has been particularly recalcitrant in doing anything.

There are other reasons why one should recognize that intellectual property rights are really quite different from ordinary property rights, though they have been sold by its advocates as if they are just like any other property right. But they are fundamentally different. I will just mention two aspects of this here. The first is that intellectual property rights, as I noted earlier, cause static inefficiencies. What is an intellectual property right? It gives a temporary monopoly power over a certain idea. Any monopoly power results in inefficiencies. The reason we do it is that we believe there are trade-offs. There may be advantages by accepting the loss of static efficiency in order to have enhanced incentives for innovation. We recognize that there is a trade-off between short-run and long-run concerns. But we have to recognize that intellectual property rights do result in inefficiency in the economic system.

Moreover, much of intellectual property rights involve the enclosure of the commons. What do I mean by that? In pre-industrial revolution Scotland, there

[1]This is true, even though shortly before the Cancun meeting, the US, which had been the lone holdout in a drug agreement, did make some concessions.

was common land on which villagers grazed their sheep, but then the rich enclosed much of it and made it into private property. There was an argument that, by doing this, they increased economic efficiency even if it cost enormous hardship on those who were displaced from the land. In a way, much of the intellectual property involves the same kind of enclosure: much of what is patented involves patenting things that are common knowledge, and placing them within the ambit of property rights. That has become particularly apparent with the issue of biopiracy, which has been experienced in many developing countries where an American or European firm goes into, for example, the high Andes where the medicinal properties of many plants are widely known. American and Europoean companies come in and patent them as drugs, so that those in the Andes can no longer use them, unless they pay royalties to the American and European firms. Yet the people in the Andes already knew about them, including their medicinal properties. They had not done the controlled experiments that are needed in order to get permission to market them in the US or Eurupe. They certainly have not published their knowledge in American or European journals. The knowledge was common knowledge, yet the patent attempt was to enclose, to privatize, that common knowledge and give a particular firm the right to use it. (One of the criteria for getting a patent is whether it is novel. And one of the ways you tell if it is novel is whether the underlying idea has been previously published. Not surprisingly, it just so happens that people in the Andes, the Indians, do not typically publish the results of their herbal medicines, even were their journal is in their native languages; indeed, it is not clear that they could publish the findings since everybody already knows about it in the region, if not in North America.)

There is clearly something wrong with the system of intellectual property rights that was adopted in the Uruguay Round. There needs to be more fundamental reforms, not just the tickering on the "headline issues," such as access to AIDs drugs.

But there are other things I want to stress. The first point I want to make is that there are alternative ways in which knowledge is produced, i.e., through government support to research and development (R&D) including the products of development.

The second point is that market failures in finance, which arise particularly out of asymmetries of information, can adversely affect private expenditures on research and development (R&D). It is particularly difficult, or used to be particularly difficult, for firms to finance their R&D because it was hard to collateralize these assets. As a result of this, raising finance for many forms of research is difficult, providing yet another reason why there might be a need for government intervention.

That leads us to the question: Have technology policies worked? In the US, this has been a subject of enormous controversy. I call them technology policies although they used to be called industrial policies. But in some circles, the term

industrial policy has negative overtones, connoting government attempts to shape the economy. "Technology policies" is a better term because sometimes technology policies affect other sectors than industry, such as agriculture or services. One of my colleagues in Stanford who preceded me as Chairman of the Council of Economic Advisors, Mr. Mike Baskin, used to criticize the very idea of technology policies. His view was that he should not try to pick winners. It did not make any difference whether the US produced potato chips or computer chips. On the contrary, I think it does make a difference whether you produce potato chips or computer chips.

But the issue of whether the government should be involved is somewhat different than whether government can "pick winners." The issue, as I will explain below, has to do with whether markets have the rich incentives (and access to resources) to advance technology at the socially efficient pace, or in the socially efficient manner, given the public good nature of knowledge, the externalities, and the other market failures just discussed. That is the reason why government gets involved. It is not because the government is necessarily better in deciding whether the product of the future will be potato chips or computer chips. There is, in fact, a remarkable record of success in Asia, Brazil, and US in technology policies. In agriculture, for instance, the US's technology policy in agriculture began in 1863 and the result of explicit government support for research and dissemination of those ideas was the enormous increase in agricultural productivity in the US over the succeeding decades—and it was this that allowed the US to move from being an agricultural economy to an industrial economy, because fewer and fewer people were needed in order to produce food for the country. It was, in fact, the success in agriculture that provided the background for the later industrialization of the country.

In recent years, we have talked a great deal about the importance of the new economy in the US and the rest of the world. One of the aspects of the new economy is the improvement in communications, and especially the Internet. The Internet has had such a huge impact on the way everyone does business and communicates with each other. But we often forget that this whole sector of the economy owes its origin effectively to the government. The US government, for instance, in the 1840s financed the first telegraph line between Baltimore and Washington. So the notion of having a technology policy is not a recent one. It goes back over 160 years. More recently, however, the Internet was also an invention of the US government; many of its characteristics that have made it so successful, particularly its highly decentralized nature, were the result of decisions made by the US government. (At the time that the Internet was created this was done for defense reasons, because they were worried that if they did not have a decentralized system it could be interrupted; so they developed a system that basically could not be controlled by anyone.)

These are just a few of the examples of the many successes of government-funded R&D. Biotechnology, for instance, has become another major industry in the US, whose development rests on basic science coming out of government-funded research. I have always found it somewhat incongruous how it is that Silicon Valley entrepreneurs whom I got to know when I was at Stanford would advocate so strongly the advantages of free markets and getting government out of the way when, in fact, their whole success depended on basing their work on ideas that have been originally produced by government-supported research.

Inevitably, there have been some failures in government research projects. But I would argue that those failures are to be expected. Research is a highly risky endeavor. After all, if we knew the answer to our research before we began, it would not be research. The very nature of research has to be that we do not know the answer. Because we do not know the answer, sometimes we decide to invest in a research strategy that does not bear fruit. The fact that there are some failures should not be evidence against government-directed research strategies. In fact, I would argue quite the opposite. If there were not some failures, it would be evidence that we were not taking sufficient risks. Of course, there have been problems. Many of them have been noted and discussed in the literature. The government often has difficulty cutting off their projects and, in some cases, there are elements of corruption and political influence.

But one should also recognize many of the same problems arise in the private sector. The private sector mistakes in R&D in the US over the last five or ten years have become legion with billions and billions of dollars going down the drain—more than any government has ever wasted. (In many of these cases, they were also huge levels of what I would call corruption in the private sector, as a result of what might be called corporate governance problems, that have become endemic in banking, corporate, and auditing in the US and that led to massive misallocations of resources.

Overall, the social returns to R&D remain high, in both the public and private sectors, and indeed, there has been a remarkable record of success in publicly supported technology development. (A study done at the Council of Economic Advisers while I was chair showed that indeed, government R&D had a far higher return than other forms of investment in either the public or private sector.) I think that the record of success is sufficiently strong that it is worthwhile for governments in developing countries to consider having a technology policy.

IV. IMPROVING TECHNOLOGY POLICIES

This leads us to the next question: Are there strategies that one can have for improving technology policies? Are there strategies that are more likely to lead to success? This was, in fact, a question that, when I was in the Clinton Administration, we explicitly posed to ourselves. We were convinced that there was a role for

government in technology policy. But recognizing that there have been some failures, the question was how do we make those failures less likely? And how do we make the successes more likely? There were six principal points that came up in our analysis.

(i) *There are some distinct advantages of broad-based policies and broad-based strategies as compared with narrowly focused strategies.* It is much better to have competition among a whole set of alternatives than to have a very narrow focus. For instance, if your ultimate concern is improving energy efficiency and reducing greenhouse gas emissions, you are to begin with that as your objective and look for all kinds of research proposals that might succeed in fulfilling that objective. In contrast, at one point in the US, there was a very narrowly focused research strategy that was directed at improving the efficiency of coal-based technology. With that narrow focus, a correspondingly narrow set of special interest groups tried to design the research strategy, in ways that would enhance their profits, but not the ultimate national objectives. (Of course, it was partly because of these special interest groups that the focus was so narrow.).

(ii) *One ought to support a broad intellectual infrastructure.* Here, I want to emphasize the key role of education, especially advanced education and research institutions. This kind of intellectual infrastructure is something that developing countries have to work quite hard at to try to create. There was a time in which the World Bank emphasized, in its development strategy, a focus on primary education. There was an understandable reason for this, namely the desire to reduce poverty. The World Bank recognized that advanced education (secondary and particularly tertiary education) is very expensive. The notion was that, you could do most to eliminate poverty by directing more resources toward primary education. But the flip side of that is that it is very hard to close the knowledge gap (the technology gap that I spoke of earlier) without having people who are able to transfer technology knowledge from the more developed to the less developed countries. You do need to have a coterie of individuals who are able to absorb knowledge, translate that knowledge, and adapt that knowledge to the situation in the country at hand. That is why today there is an increasing emphasis on higher education as part of a development strategy. The countries in East Asia recognized this very early; countries like Korea made that an explicit part of their development strategy. I think that was part of the key to their economic success. Having said that, one has to still be aware that, in many countries,

there are excess subsidies given to tertiary education. One can and should support advanced education in ways that limit the extent of subsidies, for instance, by requiring individuals to pay more for themselves by working or taking out student loans. Recognizing the importance of secondary and tertiary education does not necessarily fully resolve the issues of financing.

(iii) *It is important that there be close links between the* research *institutions and the education institutions and industry.* That is one of the areas in which the US has been most successful and accounts for a lot of the innovation that has occurred in the United States. Around major US universities like Stanford or Massachusetts Institute of Technology, a whole host of firms have developed whose job is to take the ideas being produced in the universities and translate them into products that have global market reach. The same thing can occur in developing countries as well. That, I would argue, is part of a development strategy that takes advantage of technology and globalization.

(iv) *It is important to have competitive selection of research projects and use peer review.* This just repeats the repeats the general theme of the importance of competition in the economy; without competitive mechanisms, one is likely to have favoritism and the kinds of inefficiencies and distortions that one saw so often in the past. But the siccesses in the US, of the National Science Foundation, the National Health Institutes, and DARPA, the agency within the defense department that was responsible for many of the advances in technology including the Internet in the US, shows that one can develop scientifically based independent peer review processes that work.

(v) *Government intervention should focus on areas where there are market failures arising, for instance, out of finance or out of externalities.* Government intervention is not based on the government being better at picking winners, but that it takes into account the full range of benefits that arise from research, and should focus explicitly on projects where it is hoped there are large externalities.

(vi) *Finally, one needs to think about joint ventures between the public and private sectors, and the partnerships can take on a variety of firms.* Such partnerhips can be particularly valuable when the key issue is a lack of finance. Joint ventures should require some equity commitments of those who are receiving funds from the government.

Such equity commitments can both act as a selection device at the same time that they help to provide good incentives for those receiving the government funds.

V. CORPORATE GOVERNANCE

In this and the following two sections, I want to expand the discussion beyond technology policy to broader issues concerning how firm decisions get made and how the global economic system is managed. The issues are obviously closely linked: if managers of firms have objectives that are markedly different from that of the long interests of the firm, they may underinvest in technology, and be especially reluctant to make investments that only yield returns in the long run. There may, accordingly, be a larger role for government.

The issues of corporate governance—how firms make decisions; ways that ensure those who turned over their resources to the firm, provided capital, or added their labor are treated appropriately—are perpetual issues for all governments, for all countries. It is easy to define examples of bad corporate governance, and to recognize its consequences: If majority shareholders rip off minority shareholders, tunneling out assets from the corporations, then obviously firms will find it difficult to raise capital from outside investors.

The issue has become particularly sensitive in the United States. In fact, I feel particularly sensitive because the very parties that were criticizing East Asia for its corporate governance were resisting reforms that would have improved corporate governance in the United States. Let me just tell two stories that you might find amusing.

In 1993-1994, I fought a battle when I was at the Council of Economic Advisers to change the accounting treatment of stock options, because they were extremely misleading. Treasury and Commerce gave absolutely the worst argument for not expensing. They said, if people knew what was going on, the value of the stocks will go down. They were only valued so high because people did not have the accurate information. But that was precisely why we needed to have better information. They won and the country lost. Some of the same people later were to criticize Korea and Thailand so strongly for bad accounting and corporate governance.

A second example focuses on the problems that have come to light in the US that involve enormous conflicts of interest in the banking sector. There are conflicts of interest for those saying “buy these stocks“ not because the stocks are good, but because they are working for investment banks that were raising capital for these companies. It is clear that there are a large number of different kinds of conflicts of interest. Actually, Treasury, at this time, was making those conflicts of interests worse, not better. We used to have separate retail banks and investment banks until we eliminated the separation. What was the result? Let me give you a

concrete example. When Enron was nearing bankruptcy, Chase Manhattan and the other banks continued to lend it money, not because they were making money necessarily on the loans, but because they were trying to hide some of the investment shenanigans that they had done on the investment side (and perhaps they hoped that, were Enron to survive, they once again would be able to make huge profits from the lucrative investment deals with it.). They were not judging the loans on the basis of the loan itself, or if it was safe enough to pass muster. Corporate governance problems exist in all countries. They arise from asymmetries of information, which are pervasive; those who have entrusted their money to the firm cannot monitor perfectly what the firm is doing with their money (and typically may not even know what the firm *should* do with the money). That is why you need government regulations to deal with them.

As we review the East Asian crisis, we should not minimize the magnitude of the consequences, which are still being felt for instance in Indonesia. The damage that arose from the way the crisis was managed, including the cutting off by the IMF of the food and fuel subsidies that led to the riots, will take years, if not decades, to undo.

But growth has now at last returned. East Asian countries are doing much better than I thought they would, but they have not returned to the growth levels they had before the crisis. That is understandable because in most of the countries of the world, particularly East Asia, much of growth is financed by debt. Even in the US, new investment is financed to a very limited extent by new equity issues. The theory of asymmetric information helps to explain why new equity issues are a limited source of funding. If you have to rely mainly on debt finance, the magnitude of the debt finance that you can bear depends on the volatility of the market and how you respond to crises. When the IMF responded to the crisis in Korea, for instance, by forcing them to raise interest rates to, first, 25 percent and then all the way to 40 percent, it taught a very important lesson to the firms in Korea. Keep your debt down because, if you let your debt go high, you risk your survival. Companies like Samsung Electronics today have zero debt. They have taken this advice to the limit.

The consequences for growth are obvious: if you are not willing to borrow, your rate of growth is inhibited. This too is a legacy of the mismanagement of the crisis and of the capital market liberalization that led to more volatility. Yes, these are part of the permanent legacy. I do not think you will expect to see growth to return to the levels that otherwise would have been achieved. (In this way, the IMF policies not only did not work in the short run, making the downturns worse; they continue to have adverse effects in the long run, slowing growth and, by limiting the workings of the capital market, making resource allocations less efficient.)

What about regional efforts to stave off crises? I am very strongly supportive of the Asian Monetary Fund for several reasons. Asian countries are more

dependent on each other. Therefore, they have greater incentives to help each other. I do not know if you remember the remark by the Secretary of the Treasury as the Thai crisis began, when he basically said, "This is Thailand's problem. We are not going to do anything about it." This caused an enormous amount of resentment. The US came to the rescue of Mexico because Mexico was on its southern borders. Thailand was a long way off. Inevitably, there is going to be more sensitivity to one's neighbors. That is why you want to have an Asian Monetary Fund.

There is another reason to create an Asian Monetary Fund. I certainly know that, in my discussions during the Asian crisis, Japan and the other Asian countries had a much better understanding of the economies of the countries in the region than the IMF and US Treasury did. If policy formulation had been left to Japan, to the countries in East Asia, you would have had a much shallower recession, a much better policy framework than what happened relying on the IMF. I do not, however, think that one should anticipate moving toward a single currency area. That is very problematic. But, between doing nothing and a currency area, there are lots of areas of cooperation that go further than you have already gone.

VI. TRADE LINKAGES AND FDI VIS-À-VIS CAPITAL MARKET AND BANKING SECTOR LIBERALIZATION

One does not need capital market liberalization to get foreign direct investment (FDI). The strongest example of that is the People's Republic of China, which is the largest recipient of FDI—about $50 billion in the last couple of years—and which has not liberalized its capital markets. The two are separate. In fact, if the argument I gave before is correct, that capital market liberalization is associated with greater instability, capital market liberalization is bad for FDI because FDI wants a stable economic environment. There are advantages in having some foreign banks, particularly when a country is a recipient of FDI. Investors often feel more comfortable dealing with their own banks. The real question is how do you maintain at the same time strong domestic banks, and how do you, if you do have more foreign banks, maintain a flow of funds to small- and medium-size domestic firms. One way that I have emphasized is that one ought to try to encourage banks to lend to small and medium-size enterprises and other underserved communities. In the US, banks face what are called CRA (Community Reinvestment Act) requirements, which require all banks to put some amount like 10 percent of their lending portfolio into underserved communities. One could imagine having a similar requirement of all banks, including foreign banks, to invest 10 or 20 percent in underserved areas, including either small- and medium-size enterprises, outlying islands, etc. That would redress some of the problems caused by the foreign banks investing excessively in a particular narrow clientele.

VII. GLOBAL RESERVE SYSTEM

There are some very severe problems with the global reserve system. Our current system has a number of problems. They affect all countries. Let me just illustrate two of them.

One arises from the basic arithmetic of trade: the sum of the surpluses of the world have to equal to some deficits. If somebody imports more than they export, some other countries have to export more than they import. What does that mean? That means that, if there are some countries in the world that insist on having surpluses, then that must mean that there are other countries that must have a deficit. Deficits become hot potatoes. In the way we run our systems today, if you have a large deficit, you get castigated. If one country has a large deficit, like Korea, and then it experiences a crisis and gets rid of the deficit, that deficit is bound to show up in the hands of somebody else. There is going to be crises going on from one country to another. That is part of the reason why we have crisis after crisis.

The role of the dollar as a reserve currency creates not only this instability but also an enormous inequity. The only way that the system effectively works is that the US becomes the deficit of last resort. The US is able to absorb all the deficits of all the other countries' surpluses. Here we have the richest country in the world that is living well beyond its means. It is borrowing $1.5 billion a day, giving lectures to poor countries saying, "You will have to live within your means." In the end, right now we are facing a situation in which the system is being exposed to the possibility of an instability. Why do I say that? If the US is borrowing $1.5 billion a day, somebody has to be lending $1.5 billion a day. The only reason why they lend that money is that they have confidence in that country, in its economic management, its political leadership. Well, there are reasons that one might be worried about the quality of at least the economic management. I will not say anything about the other dimensions of management. But even with the best of management, eventually, as indebtedness mounts, others may be reluctant to lend.

On the economic side, one has to say America's economic management is a remarkable failure, and one that is likely to have consequences not only for the US, but for the global economy. To give you a picture of the magnitude of what has happened, in May 2001, the US was projected on the nonsocial security account to have a $3 trillion surplus over the next ten years, a big number. Right now, we are projected to have a $2 trillion deficit. That is a $5 trillion turnaround in two years. But the administration is now making proposals to increase that $2 trillion deficit to $4 trillion. It is the largest turnaround of any country any time, and, obviously, should cause angst to any investor. The developing world may suffer too as a result: the increased demand for funds will lead to higher real interest rates, making the cost of capital facing developing countries all the higher.

VIII. GLOBALIZATION STRATEGIES TO PROMOTE TECHNOLOGY AND DEVELOPMENT

I want to now return to the central theme of this talk, which is on technology, globalization, and development. Well-designed globalization can promote technology and development. Trade links and FDI often bring access to markets and to technology. In fact, it is only with a certain degree of openness that one can get exposure to the ideas that are going to be necessary to close the knowledge gap. Joint ventures may be particularly effective because they take advantage of the local knowledge in facilitating the adaptation of technology. These are some of the ways in which globalization can act as an important vehicle through which technology is promoted, and, by promoting technology, so too can development be promoted.

But I want to emphasize that poorly designed globalization can, in fact, inhibit development. For instance, capital market liberalization can lead to instability in the real economy, making real investment in both fiscal and human capital less attractive. Instability provides a bad environment in which to engage in real investments, including real investments in technology. At the time that the IMF was arguing vociferously for capital market liberalization, some suggested that it would lead to more investment, or even more stability. Those arguments made absolutely no sense. You cannot build factories on the basis of speculative capital that can come in and out of a country overnight. Even worse, speculative capital that comes in and out overnight leads to macroeconomic instability. The policies of capital market liberalization are actually growth inhibiting. Both theory and evidence show a clear link between capital market liberalization and instability and the absence of a link between capital market liberalization and economic growth.

I was pleased to see that, that quite recently, the IMF finally conceded the point. They finally came out with a report recognizing that short-term capital market liberalization does not lead to more economic growth but does lead to more economic instability. It took them a long time to recognize this, and it was only after enormous amounts of pain were felt by many countries, including the countries in East Asia and Latin America. I say this as an aside but it is an important point. Here you had a major international economic institution trying to change the rules of the game, trying to change the policy framework that was adopted by developing countries, to change its very charter, even when there was absolutely no evidence at the time that it was good for the countries in question. It was good for Wall Street, however. They made money out of it. The question is: Was it good for the developing countries? Even then, the weight of opinion and evidence was that it was bad for growth and bad for stability. Now, six years later, the IMF finally came around to look at the evidence and they say, "you know, you were right."

The same point is true on the excessive focus on inflation. We all know that hyperinflation, too high inflation, is bad. That is not the issue. The issue is, Does it do much good once you get inflation down to a moderate level to push it down lower; and, what is the moderate level, 10, 15, 20 percent? To put it another way: do countries in which the monetary authorities focus exclusively on inflation, grow faster, have lower unemployment, and have higher real wages than those countries that have a more balanced monetary policy? The answer is that there is no significant benefit from pushing inflation lower and lower beyond this critical threshold of 10, 15, 20 percent. Countries in which the monetary authorities focus exclusively on inflation do not grow faster, do not have lower unemployment, and do not even have a better trade-off between inflation and employment in their Philips curve. The evidence that those policies work is less than convincing. In fact, there are some arguments that, by focusing on inflation, on stability of prices, you may lead to greater instability in the real variables. By leading to greater instability in the real variables, you again deter investment because what business cares about is the stability of the real environment.

There is another aspect of globalization that I will just mention very briefly, which is one of the aspects of the recent WTO agreements, —the opening up into new areas, including services. That, of course, made an enormous amount of sense because manufacturing is an increasingly small part of the economy and of trade. The US manufacturing is now down to about 14 percent of GDP. The things we used to talk about in our textbooks are really a very small part of the economy. The services sector is the one that is dominant.

The particular aspect of this that I am concerned about is opening markets to financial services. This is an issue that Americans know very well because, until 1995, banks were not allowed to operate throughout the United States. The US only had state banks. What was the reason for this restriction? The restriction was imposed because people in the Midwest and the West were worried that if you have banks from New York operating throughout the country, the banks in New York would take all the savings out of the Midwest and out of the West, and put them into New York. There was a worry that there would not be a flow of investment funds going into the Midwest or into the West and so that the growth in the US would be unbalanced. There was a real worry about national banks in the US, that having a banking system dominated by such banks would not result in a *nationa*l development strategy. That was why, until 1995, national banking was not allowed in the United States.

But, interestingly, just as we were getting around to allowing national banking in the US, we were insisting on global banks all over world. Thus the same banks that were just now being allowed in the Midwest would also be allowed everywhere else in the world. If they could go into Chicago, they should be able to go into every other country in the world.

Well, the worry in many developing countries is that the foreign banks will find it more comfortable, at least in the short term (though not necessarily in the long), to lend to large enterprises and particularly large multinational enterprises. The empirical evidence on this continues to be debated. Let me just mention an anecdotal experience. One of them was that, about three years ago, Argentina was facing a real problem of economic growth. It has had double-digit unemployment since 1995. The question was: What was hindering their economic growth? There was a widespread feeling that many of the small- and medium-size enterprises did not have adequate access to finance. The reason for this, put forward by many people including those in the government, was that the Argentinean banking system had essentially been sold to foreigners and the foreign banks were not particularly interested in lending money to medium and small Argentinean firms.

Just last year, Mexico sold one of its major banks to Citibank so that today there is only one remaining Mexican bank. Exactly the same concern about access by small- and medium-size enterprises to capital is now being heard extensively throughout Mexico.

The final caveat relates to the unbalanced TRIPS agreement that I referred to earlier, which may inhibit access to new technology. There are other WTO restrictions that may impede the transfer and development of technology. Many of the policies, which were used by the US in its earlier stages of development, are now not going to be allowed in other developing countries under the new WTO arrangements.

IX. CONCLUDING COMMENTS

To conclude, the countries that have been most successful have had a comprehensive technology policy, including education, research, and finance. Asia is, in fact, the most striking example of that success. But the US as well has had, over the years, a comprehensive technology policy, one involving education, research, and finance.

It is important for me to digress here just for a second. One of the things that is quite striking about the US's relationship with the IMF is the fact that the US is the only country that has veto power in the IMF, so that the IMF policies often reflect the perspectives of the United States. But what the US tells other countries to do is often markedly different from what it has itself done.

Just to give you a couple of examples, the US has been telling other countries that monetary authorities should focus exclusively on inflation while the Federal Reserve Board focuses on inflation growth and unemployment. The US has told many other countries like Argentina, when they had an economic downturn and the downturn resulted in a deficit, that they should reduce that deficit. They should raise taxes. The IMF gave the same advice during the East Asia crisis. Yet both political parties in the US, during its recession of 2001, agreed the

US ought to have a stimulus. Both Republicans and Democrats advocated doing what is taught in every graduate macro course in the world—cutting taxes and raising expenditures *even if it results in a temporary deficit*. But that is not what the IMF has advocated around the world. The US continues to support a public social security system that has been enormously successful, has low transaction costs—far lower than any private system—and has virtually eliminated poverty among the aged, providing insurance against instability in stock markets, and insurance against inflation. Yet the IMF has been pushing countries all over the world to privatize their social security system.

The IMF has voiced opposition to countries having a technology policy or "industrial policy." The IMF has suggested that it is inappropriate for governments to do so, yet the US has, for 160 years, had a very strong industrial policy that has been extremely successful and accounts for a great deal of the US's economic success.

Because of globalization, challenges and opportunities today are greater than ever before. There are new opportunities to seize. Globalization has made the knowledge of the world much more easily available than ever before. And the Internet too has made knowledge much more available than it ever was before. The question is: Will the design of the international regime and the design of the international economic institutions and the policies that they have pursued help developing countries seize these new opportunities to reduce the disparities in knowledge, the gap between the developed or less developed countries? Or will the design of the international regime make it all the more difficult for the gap to be overcome? I fear that, in many ways, what has happened in the last few years has been making it more difficult, not easier, for the developing countries to overcome these knowledge barriers. But I remain hopeful. That was one of the reasons I wrote in my book, *Globalization and its Discontents*. I believe that globalization can be a very powerful force for developing countries, enabling the technology gap and the knowledge gap that separates the developed from the less developed countries to be overcome. But if that promise is to be achieved, I do think that there will have to be fundamental reforms in the institutions and in the policies governing globalization in the world today.