

## The IT Revolution and the Asian Economies

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### **1. The IT revolution/development and its implications for global economies and Asian economies in particular**

I would like to point out several implications of the changing nature of technological change. First, human capital is becoming more important than technology. The technology time lag is getting shorter. Technological change is not occurring in breakthroughs as in the Industrial Revolution, but it is occurring as rapid, incremental changes. This has implications for comparative advantage in Asia. Only countries that are rich in human capital--that have adaptive and creative people--will be able to make good use of the technology evolution. Countries that have historically invested heavily in human capital and an educated labor force will be at an advantage.

Second, we are seeing a more globalized and fragmented production world because of international sourcing. International sourcing is enhanced by IT, and to some extent by trade and investment liberalization. In particular, the technological time lag in Asia is very short. I argue that under the IT revolution the Flying Geese concept no longer holds. In the past you had to wait for your turn, but now it is a much more open world. I visualize the current situation very much like bidding for tenders, open bidding, so every time a new opportunity arises every country, regardless of the pecking order can submit a tender, and the one submitting the lowest price will get the industry. The situation is much more competitive. I coined the term 'Aerobatics' 10 years ago, but it seems it is now being realized. Aerobatics means not having to wait for your turn—Japan, NIES, near-NIES, etc. down the line—because now every country has access to new techniques. So I call it aerobatics, you know, like aeroplanes that organize into different clusters in accordance with opportunities or the tune of the music. So I try to revive this idea of aerobatics. In this connection you will see that supply chain management is becoming very important in the production process and that services and manufacturing are becoming blurred. Today, when you submit a tender it means that cost is most important. Technology can still be bought. It's brain power; it's cost-effectiveness that are critical to an economy's competitive success.

Third, economies of scale will become less important because of CAD CAM. I have been arguing this for a while. We have reached a stage in our IT revolution marking the end of 'Fordism,' or the idea of mass production under the Ford automobile model. That age is gone. We are beginning a new age. Scale is relatively neutral, therefore there's lots of opportunities for the Asian small and medium size enterprises because they can compete as effectively. Now they can have access to information and markets at relatively low costs. But the whole world at the same time is facing the increasing importance of economies of scope, while scale importance is going down. Conventionally, economies of scope are very much limited by coordination and communication. But the impact of the IT revolution is to remove all these difficulties. Now communication is much easier, coordination is much easier. That is why we find so many mergers and acquisitions in the past few years. Firms today think of splitting up in terms of production, but at the same time they branch into other areas. As a result, Asian corporations are increasingly being taken over by western corporations. This is a very interesting and important implication resulting from the cross-border M&A bringing Asian corporations to some extent under Western control.

### **2. Short term impacts: The IT-determined Business Cycle**

People may think there is no more business cycle because the United States had continuous prosperity for almost 10 years since 1991. Many economists argue that we have to take a new

look at business cycle theory. There's no more business cycle. But now the interesting thing is, since the beginning of this year we can resolve any difference of views. We can still have a business cycle. The U.S. cannot have a continuous prosperity. The recession in the United States is now a fact. There is not an argument whether the United States will face a recession. It means the recent thinking that there is no longer a business cycle will have to be reassessed.

This is a starting point to consider how Asia will be affected. In the past, despite the fact that there was no business cycle, no recession in the United States, Asia was still affected from time to time by IT. We were affected in 1985, I think. We were affected in 1996 by the IT recession. While the United States had no overall recession, it did from time to time have a recession in the IT sector. Some years ago we talked about a 'rolling recession' in which different sectors go into recession, but there is no overall recession. The United States at various times experienced an IT recession, but because the IT sector still accounted for a small percentage of the US economy—Robert Gordon estimates that IT's contribution to the US economy, direct and indirect, is no more than 12% today—there was no overall recession. The Old Economy is still very solid and huge. By United States' standards the new economy is small, but by Asian standards it is very big. So whenever the US has an IT recession, the United States is not affected, but Asia is. That is what happened in 1985 and also in 1996.

Now this time, in 2001, certainly Asia will be affected and the United States will be affected to some extent and to a larger extent this will be affecting the Asian economies. Currently the US economy is going into a recession—it must be true. But there are two views about the prospects for the Asian economies. One view is, okay, we have a recession, but it is short and cyclical. It won't matter because of over-optimism in IT products. Soon it will go away. The conventional business cycle imposing in the United States. But at the same time, there is some pessimism for some individual countries. Some believe there is a fundamental, long recession in the United States for one to two years. If that is the case, then Asia will face a very tough situation. The theory is because in the US postwar experience, about 10 business cycles in those years, every cycle is about 5-6 years, with the recession phase about 6 to 18 months. But this time, possibly, some pessimists will argue the recession will be longer in the United States, because technological change is going to slow down and venture capital funds will dry up. So the situation is very bad in the US. You get a vicious circle. So whether you side with the pessimists or the optimists you will have a different view of how different countries are affected.

### **3. Asian Economic Prospects**

My own view is optimistic. I see a more or less conventional business cycle. I don't see the US heading into a 2 or 3 year recession. I don't think technological change will stop. It is incremental and there are fewer visible breakthroughs, but technological change is going on all the time. I don't believe that money will dry up because of central bank policy, because of IMF policy, because of modern capital markets and financial instruments. I don't believe there is something called drying up of money in the modern world.

More importantly, I think it is only hardware production that is in trouble. If you look at the IT industry by sector, you see that some sectors, like networking, are still flourishing. Although Cisco Systems is in trouble, the networking business in general is not bad, the software business is not bad, telecommunications services is not bad. It is basically only the PC, the chip sectors that are in trouble. Moreover, IT is not a product, it is not an industry; it is an application. It is an application through services, the blurring of services and manufacturing. Its pervasive application for the time being is still flourishing. I don't think that is going to stop. Old and new must interact. In that aspect, the ICT industry or ICT will flourish. It is only some hardware production in trouble for the time being.

Lastly, my optimism is based partly on the fact that a lot of countries are still spending, not on the normal capital, but on R&D. Even in Taiwan, even in Korea, in Japan, many companies are maybe cutting expenditures, cutting capital expenditures, but not actually reducing R&D very much. That will boost to some extent industry.

#### **4. Policy Matters and Regional Cooperation**

Origin is modest, but transmission to Asian countries has serious consequences. This has implications for policy. If even a mild, IT recession in the US has a rather serious effect on Asian countries, then maybe Asian countries should think about their future directions and policies, in order to make the transmission less severe.

First, inventory control is very poor in Asia. We talk about the effect of IT on inventory, but Asian countries are using IT very poorly. They cannot control inventory as well as the United States. In the US, inventory figures are looking very good because they have just-in-time. Now the Japanese model is being best used by the US. But unfortunately in Asia, inventory control is a problem. For example, look at Korea. My figures tell me there is possibly a 50% increase in inventory; Japan—30%; Taiwan—25%, vis a vis last year. This sudden building up of inventory means that IT, logistics, supply chain management is not being well used in Asia.

Second, market information is not adequate, it seems. Again, it is an irony. We're in the IT age, but we have not been using it very effectively to gather market information. The US is very good. In other words, in Asia, we are still confining ourselves to the elementary stages of IT application. Other countries are using IT for industry solutions, for example, for ERM (enterprise resource management). But not in Asia. It's still below standard. That's why they cannot gather information so quickly. In the United States they use ERM to have a direct monitoring of customers' wants. They already know the demand, they know the pulse of the market very quickly. It seems Asian countries have not been achieving this. They knew nothing about the market until the 3<sup>rd</sup> quarter of 2000, until Thanksgiving. Suddenly all their orders were cut and they got the idea they were in trouble, but all the production was already in hand. It's really ironical. They're producing IT, but they are not using IT effectively in industry solutions.

Third, is the over-concentration of production and markets. This is a typical 1950s analysis of concentration of production and trade. If you look at the concentration ratios, we will see Asian countries are highly concentrated on the US and highly concentrated in a few products, even within ICT, and again a lack of diversification to services, IT services. These are the problems and we must come up with the solutions for a better future for IT in Asia.