The Globalization and Changing Industrial Dynamics in Asia

Susumu Yoshida

Follow this and additional works at: http://scholarlycommons.law.hofstra.edu/jibl

Recommended Citation
Available at: http://scholarlycommons.law.hofstra.edu/jibl/vol3/iss1/3
Asia is a vital region of the world economy and is very diverse in terms of language, culture, history, business practices and above all, as an emerging industrial region. This paper attempts to identify the globalization process that is taking place in Asia and its effects on the changing dynamics of the business environment within various industries. The impact of globalization in Asia can be explained by the effects it has on the economies of the region, challenges that it will bring to the region, and the strategic impact that it will have on industries, especially the chemical industry.

I. AN OVERVIEW OF THE KEY ECONOMIC TRENDS IN EAST ASIA

Over the last few decades, East Asia has been the fastest growing region of the world. In spite of occasional economic turbulence, including the serious monetary crisis in the late 1990s, the economic downturn brought about by a sharp drop in demand for information technology (IT) related products in the United States and Europe in 2001, and the SARS epidemic in early 2003, the East Asian economies as a whole, have been expanding vigorously.

This expansion is clearly shown in international and intra-regional trade statistics. For example, U.S. exports to East Asia more than doubled over the last decade or so (from 54 billion dollars in 1989 to 117 billion dollars in 2002). Over the same period, U.S. imports from the region increased sharply from 93 billion to 261 billion dollars. Similarly, the European Unions’ exports to East Asia more than doubled from 44.2 billion dollars in 1989 to 111 billion dollars in 2002, while its imports from the region tripled from 54 billion dollars to 166 billion dollars (IMF, 2003). Table 1 presents some key economic indicators for selected Asian countries (Economist, 2003 and IMF 2003, and Political Risk Year Book, 2003).

The growing interdependence between the countries of the region can be observed through the growth of intra-regional trade between the countries of Asia. Japan’s exports to East Asian countries, for example, increased from 78 billion in 1989 to 171 billion dollars in 2002; its imports from the region

* Mr. Yoshida is currently a Senior Corporate Coordinator and Director at Sumitomo Chemical Company. Prior to his assignment at the headquarters, he was the President of Sumitomo USA from 1990 to 1998. Mr. Yoshida has worked for Sumitomo for nearly 40 years. Mr. Yoshida has a master’s degree in economics from the University of Hawaii, and a degree in international economics from Columbia University. He received his bachelor’s degree in economics from Kyoto University.
increased from 57 billion to 131 billion dollars over the same period. It is worthwhile to note that in 1989, Japan exported significantly more to the United States than to the East Asian region. However, in 2002, Japan sold more to East Asia than to the United States. China’s trade with the Association of Southeast Asian Nations (ASEAN) also sharply increased. ASEAN’s exports to China and Hong Kong combined, increased from 4 billion in 1989 to 25 billion dollars in 2002. If such strong growth of intra-regional trade in Asia continues in the coming decade, regional economic integration among Asian countries will become more realistic. This will contribute to further improving the living standards of the peoples in the region. For all the countries in the region, it has become extremely important to strengthen their economic fundamentals (IMF, 2003).

Table 1
Economic Indicators for Selected Asian Countries 1999-2003

<table>
<thead>
<tr>
<th>Country/Factor</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>China</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>7.1</td>
<td>8.0</td>
<td>7.5</td>
<td>8.00</td>
<td>9.1</td>
</tr>
<tr>
<td>Current account balance ($bil.)</td>
<td>21.1</td>
<td>20.5</td>
<td>67.4</td>
<td>35.4</td>
<td>31.4</td>
</tr>
<tr>
<td>FDI ($ bil.)</td>
<td>38.75</td>
<td>38.40</td>
<td>44.24</td>
<td>49.31</td>
<td>52.7</td>
</tr>
<tr>
<td><strong>India</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>7.1</td>
<td>3.9</td>
<td>5.1</td>
<td>4.6</td>
<td>8.1</td>
</tr>
<tr>
<td>Current account balance ($bil.)</td>
<td>(3.23)</td>
<td>(2.64)</td>
<td>1.76</td>
<td>4.66</td>
<td>3.08</td>
</tr>
<tr>
<td>FDI ($ bil.)</td>
<td>2.17</td>
<td>2.32</td>
<td>2.43</td>
<td>2.57</td>
<td>-</td>
</tr>
<tr>
<td><strong>Japan</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>0.2</td>
<td>2.1</td>
<td>0.6</td>
<td>(0.02)</td>
<td>2.7</td>
</tr>
<tr>
<td>Current account balance ($bil.)</td>
<td>114.6</td>
<td>619.0</td>
<td>87.8</td>
<td>112.5</td>
<td>135.9</td>
</tr>
<tr>
<td>FDI ($ bil.)</td>
<td>12.31</td>
<td>8.23</td>
<td>6.19</td>
<td>9.09</td>
<td>-</td>
</tr>
<tr>
<td><strong>Korea S</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>10.9</td>
<td>9.3</td>
<td>3.2</td>
<td>6.3</td>
<td>2.7</td>
</tr>
<tr>
<td>Current account balance ($bil.)</td>
<td>24.5</td>
<td>12.2</td>
<td>8.2</td>
<td>6.1</td>
<td>11.9</td>
</tr>
<tr>
<td>FDI ($ bil.)</td>
<td>9.33</td>
<td>9.28</td>
<td>3.53</td>
<td>1.97</td>
<td>-</td>
</tr>
<tr>
<td><strong>Malaysia</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>6.1</td>
<td>8.5</td>
<td>0.3</td>
<td>4.1</td>
<td>4.7</td>
</tr>
<tr>
<td>Current account balance ($bil.)</td>
<td>12.60</td>
<td>8.43</td>
<td>7.29</td>
<td>6.11</td>
<td>6.14</td>
</tr>
<tr>
<td>FDI ($ bil.)</td>
<td>3.90</td>
<td>3.79</td>
<td>0.55</td>
<td>3.16</td>
<td>-</td>
</tr>
<tr>
<td><strong>Thailand</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP growth rate (%)</td>
<td>4.4</td>
<td>4.8</td>
<td>2.1</td>
<td>5.4</td>
<td>6.3</td>
</tr>
<tr>
<td>Current account balance ($bil.)</td>
<td>12.43</td>
<td>9.31</td>
<td>6.22</td>
<td>7.65</td>
<td>8.53</td>
</tr>
<tr>
<td>FDI ($ bil.)</td>
<td>6.10</td>
<td>3.37</td>
<td>3.82</td>
<td>0.97</td>
<td>-</td>
</tr>
</tbody>
</table>
If a comprehensive economic partnership in the East and Southeast Asian region is realized, the combined GDP of the countries will amount to about 7 trillion U.S. dollars. With the mobilization of additional capital, goods, services, and information a rapid expansion of economic activities will be enhanced beyond national boundaries. If such a global trade structure is formed, we will see three major economic regions: the United States, with a population of about 290 million and its GDP amounting to 10.4 trillion dollars; the EU, consisting of 15 countries with a population of 380 million and its aggregate GDP amounting to approximately 8 trillion U.S. dollars (if ten countries which belonged to the previous communist block, including Poland, Hungary, the Czech Republic, and Slovakia, are admitted into the EU, the EU community will have a population of 460 million with an aggregate GDP of 8.2 trillion U.S. dollars); and the East Asian Economic Partnership with an aggregate population of about 1.8 billion with the GDP amounting to 7 billion dollars (if India with a population of 1 billion is included, the aggregate population in the region will be more than 40 percent of the world population). If an economic integration of the East Asian countries does take place, it may in the future challenge the global economic dominance of the U.S.

If this economic integration becomes a realistic picture of the future global economy, reform of the present international monetary system would become an important issue. International tourists visiting the United States are often surprised that prices of their home country products are often sold at lower prices in the United States. It is often the case that these products are sold at lower prices than in the domestic market, even after having paid shipping fares, warehouse charges, and insurance fees. Since the U.S. is a consumption driven economy, (70 percent of the U.S. GDP is consumption based), almost all exporting countries want to export their goods into the U.S. In addition, the U.S. market is comparatively less regulated and practices the free market system, which provides a much more level playing field.

On the other hand, if the EU achieves a higher degree of economic integration resulting in the broader circulation of the Euro, a distinct advantage not only in account settlements of international transactions but also in international travel will arise. It is anticipated that along with an expansion of the EU economy, the Euro may become a key currency similar to the U.S. dollar in the long run.

As for the Japanese yen, it will not be able to bear the burden of an international currency. Japan, in order to make use of the yen as an international currency to meet the needs of advancing globalization of economic activities, needs to simplify use of the yen in the Asian region. However, due to the recent economic crisis in Japan, this may be a possibility in the distant future. A yen driven trade in the Asian region may then be able to compete strongly with the U.S. dollar and the Euro.
II. THE RISE OF CHINA AS A MAJOR ECONOMIC POWER

The Chinese economy grew by 9.3 percent in real terms in 2003. In fact, China is the only economy that has registered close to double-digit growth rate in the last decade. Its average annual economic growth for the years 1992-2002 is an astounding 11.2 %. Focusing on the chemical industry, China’s petrochemicals growth is forecast as high as 7-9 percent a year from 2004 through 2008. According to statistical data compiled by Japan’s Ministry of Economy, Trade and Industry (MITI), China faced a large shortfall of petrochemicals such as ethylene and its derivatives, which had to be filled by imports. The Middle East, the United States, South Korea and Japan, which produced more than their domestic needs, will be the principal supply source for petrochemical products. If China continues to import petrochemical products, the global supply-demand picture of chemical and other related products will be affected (Spitz, 1988). In spite of a domestic capacity buildup, it is estimated that China will still need to import more than 10 million tons of ethylene derivatives in 2007.

In view of such a vigorous expansion, China needs to increase its production capacities through new grass-roots projects by taking advantage of foreign capital, technical know-how, and managerial systems. In addition, it will have to undertake conventional decoupling and restructuring efforts. Large multinational companies have been carrying out new capital investment projects, and some believe that China will continue to be a vast magnet for foreign direct investment for years to come, which will help in carrying out the restructuring of its economy. China’s foreign direct investment (FDI) has risen from US$3 billion in 1979 to US$170 billion in 2002. FDI used to be a mere 3 percent of GDP in 1979 but now represents 30 percent of GDP. China is projected to be the world’s largest market by the year 2020, consuming about 25 percent of all goods and services produced.

Many Japanese chemical companies did not make commitments to large-scale projects in China due to the lack of industrial infrastructure, including railways, trucking, and other means for transporting bulk chemicals. In addition, Japanese chemical companies were also concerned about the often-inadequate administrative infrastructure, such as tax and legal systems for the protection of investors’ interests and property rights in China (Spitz, 2003). Even though U.S. and European companies have shown much more confidence in the regulatory and other infrastructure-based limitations in China, the Japanese chemical companies have taken a much more cautious approach to investing in the country. (Aftalion, 2001)

Another major issue the region as a whole needs to address, is the problems associated with the protection of intellectual property rights. Since its entry into the WTO in 2001, China has been working to install systems to protect intellectual property rights and improve the environmental performance of their products and processes. In fact, the legal framework for the protection of intellectual property rights is changing in China. It has, however, been pointed out by numerous companies which have been operating in China that the...
enforcement of such a protection system is still an important issue. China is also expected to deal with “Responsible Care.” It is an initiative in which more than forty-six industries commit to work together to improve the health, safety, and environmental performance of their products and processes, and contribute to the sustainable development of local communities and society as a whole. For companies from the U.S. and Europe, worker compensation, safety, and pollution control are issues that their own governments mandate them to follow. Therefore, there is an urgent need for China and other Asian countries to strengthen their environmental protection laws.

One of China’s striking advantages is its extraordinarily abundant and diligent work force and low labor costs. China’s wage levels are about one-twelfth those of Japan. The results of a comparative survey of labor costs in various countries in Southeast Asia was conducted by Japan’s UFJ Bank. The general worker’s relative labor cost index (LCI, assuming the labor cost in Japan as of November 2002 =100) is presented in Table 2 (UFJ Bank, 2003).

<table>
<thead>
<tr>
<th>LCI</th>
<th>Japan</th>
<th>China</th>
<th>Indonesia</th>
<th>Malaysia</th>
<th>Thailand</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index = 100</td>
<td>100</td>
<td>8.2</td>
<td>4.3</td>
<td>8.3</td>
<td>6.5</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Most of the countries in Asia have a distinct labor cost advantage that is attracting foreign investors and fueling their economic growth.

China has a population of 1.3 billion, of which approximately 900 million live in the countryside and are engaged in farming. A recruitment system, which may be called “the fixed-term recruitment system,” has been developed for the effective transfer of labor resources between the rural areas and urban industrial centers such as Shanghai. In this system, with the help of local administrative bodies or recruitment organizations, young people who have recently finished elementary school education are dispatched to factories in specific urban areas. They work for 3-4 years in factories that are well equipped with company housing, cafeterias and other facilities, and thus are able to save enough to buy a modest house with furniture and electric appliances and earn a secondary school diploma before returning to their home villages. When one group leaves the assigned factory, a fresh group of young people are replaced to work at the same location. This type of labor rotation program sustains the vast manufacturing base of China, which is often labeled the manufacturing plant of the world.

Southeast Asian leaders fear that China’s full-fledged entry into world trade is likely to cause a large-scale hollowing-out of their industrial base. At the same time, they fully recognize that a stable and globally integrated China is in East Asia’s regional interest, due to the Japanese economy experiencing serious trouble for the past decade. The combined forces of the Chinese and
Japanese economy provide a strong base (anchor) for sustaining the economic growth of other countries in the region.

III. THE FEATURES OF CHINA'S BASIC STRATEGY TOWARD INDUSTRIALIZATION

In my view, China’s basic strategy toward industrialization has two distinct features:

First, for developing new industries: China has embraced a variety of initiatives that assist its economic growth. By adopting foreign technologies needed to achieve growth China has given public enterprises time to reform. Public corporations have been organized as administrative units with their own hospitals, schools, supermarkets, which employ an extensive number of people. It is a challenge for China to reform such public corporations in order to enhance their competitiveness vis-à-vis overseas firms. It seems they are taking a sensible approach to reforming public corporations, since hasty privatization would be extremely counterproductive and is bound to fail. The successful programs developed by China could be useful for other developing countries in Asia, the Middle East and East European countries as they seek economic success and part of the growing globalization. The approach adopted by China may be helpful for other countries when they carry out “privatization” for economic development.

Another striking feature of the Chinese industrialization process is the “simultaneous, multiple-sector approach.” Through this initiative, China simultaneously pursues both labor-intensive and highly sophisticated capital-intensive industries. Thus, in addition to traditional labor-intensive industries such as textiles, dyestuffs, and household electric appliances, China has been effectively pursuing vigorous development of capital-intensive industries, including machinery, telecommunications, automobiles, and semiconductors. The success of foreign operated companies such as Cannon of Japan, Motorola of the U.S., and VW of Germany are all a testament to this “multiple sector approach.”

China’s industrialization process is apparently different from the so-called “flying geese formation” process, which was applicable to the Asian tigers and Southeast Asian economies (Malaysia, Singapore, South Korea, Taiwan, and Thailand). In that instance, Japan spearheaded the process of industrialization, followed by Singapore, Taiwan and South Korea and then other Southeast Asian countries such as Thailand, Malaysia, and Vietnam followed. Hence, it is apparent that any economic growth of the region needs a sponsor – either China or Japan, or both.

As a footnote, India is also treading a similar path of industrialization, but has, like many developing countries, a challenging population problem. In the late 1970’s, India’s population was about 670 million. In 2000, it was estimated to have reached one billion. This means that over the past 20 years, India’s population increased by as much as 40 percent. If the present rate of its
population increase continues, India's population is forecasted to exceed 1.5 billion by 2020, surpassing that of China.

The combined populations of India and China (approaching 3 billion) with their expected rate of growth in population, will have a profound impact on the global marketplace. The resources required to drive these economies, sustain the required GDP growth rate, along with the social and cultural impact of a traditional society are all deadly combinations for geo-political instability in the region. How will this affect the economies of the neighboring countries, as well as some of the industrialized countries in the west that have investments and trade agreements with these countries?

A stable and globally integrated China and India is in Asia's regional interests. However, at the same time, the emergence of two super powers in the region, along with Japan may dwarf all other countries of Asia. In the long run, how this scenario will play itself out will be of critical importance to the overall economic growth of the region in particular and the world in general.

IV. MODERN CAPITALISM AND THE ROLE OF CULTURE AND TRADITIONS

(Crouch and Streeck, 1997). A country's cultural and philosophical thinking is quite often the foundation on which its economic and industrial base is built. In broad terms, a society must be organized to bring about the maximum accumulation of capital for the growth of the economic pie. For this, two types of human beings are needed; the capitalist and the worker. The capitalist is theoretically entitled to consume the larger portion of the pie but is brought up in practice not to spend, but instead to save for future capital investment. The worker must diligently perform his or her job as if it were an end in itself (Calder, 1993). In America, saving, hard work, and willingness to learn, can be traced back to people such as Benjamin Franklin and the Pilgrims. The spread of Protestantism and the rise of the capitalist class in the West are described in the classic “The Protestant Ethic and the Spirit of Capitalism” by the German sociologist Max Weber (Weber, 1958). These influences shaped the industrialization process and the early economic growth and dominance achieved by the United States.

In the case of Japan, the people had limited exposure to Protestantism because of its national policy of seclusion from the early 17th century until the mid-19th century. Nonetheless, a group of thinkers in the 18th century preached the virtues of diligence and hard work. They argued that devotion to work, however simple and monotonous, whether it is farming, commerce, or craftsmanship, was part of religious practice and a concrete means to spiritual enlightenment. According to these thinkers, making profits and saving money were not immoral activities. Thus, from early times in modern Japan, saving money became a virtue, and economic growth a national objective (Hayashi, 1988). The strong propensity to save reflected a general awareness among the Japanese. The national economy was small and they would always need to
husband limited capital, as well as natural resources for future growth (Chen, 1995).

Similarly, China an insular country bound with strong traditions and beliefs, was a major trader in the world market. However, with changes in government and new philosophical thinking, it degenerated into an economically depressed country. Its emergence in the last two decades can be traced to its abandoning some of the earlier thinking and adapting a more liberal attitude towards trade, FDI flows, and working with its partner countries in Asia and the rest of the world. Though China and Japan took two different paths to modernization of their economies (for China it took only 24 years), they both have achieved a measure of success working through the cultural and traditional norms and business customs. It appears that there is no one single model that countries could adopt to achieve economic success (Chen, 1995).

Finding a feasible path to industrialization in the information-oriented world is a profound challenge for the leaders of developing nations. They can often be caught in a dilemma. On the one hand, if the pace of economic development is too slow, their performance does not measure up to people's expectations. On the other hand, if the economy grows too fast, society could become extremely unstable, resulting in the kind of social upheaval that we have observed in a number of developing countries in the world. Thus, in the process of industrialization, it is a fundamental issue for the leaders of developing nations to maintain an inner balance between their traditional values and the impact of new science and technology.

In spite of the problems faced by the developing countries of the region, cautious optimism is justified. The spread of modern technology, industrial processes, education and political awakening are changing the nations of Asia. Countries such as Malaysia, Philippines, South Korea, Thailand, Taiwan, and Vietnam have all demonstrated the effects of focusing on some fundamentals. For the first time in their histories, many Asian countries can afford to provide adequate nutrition, housing, and education for their people, and are able to instill in them optimism about the future and healthy national pride.

V. COUNTERMEASURES FOR INDUSTRY'S "HOLLOWING-OUT"

Competition among the producers in the region is extremely keen. In notebook PCs, Taiwan’s share continues at a high level, and Singapore’s position is predominant in manufacturing the hard disc drive (HDD). In consumer electronics products such as DVD players, VCRs, and mobile phones, China's production share has been increasing rapidly over the past few years. This presents a stark contrast with an alarming situation in some of the Southeast Asian countries. For example, Malaysia's weak performance in the electronics sector has been showing a decline of international competitiveness vis-à-vis other electronic exporting centers including South Korea, Taiwan and Singapore.
From such situations, the important lesson each country should learn is in order to achieve the best possible results, it has to select core businesses and technologies in a very timely manner and concentrate its managerial resources on those areas where it has a distinct comparative advantage.

As globalization advances, Japan has been faced with international competition, not only from developed countries, but also from newly industrialized economies (NIES), including Taiwan, South Korea, and Singapore. Developing countries, notably China and India are adding significantly to this competitive pressure. All of these emerging nations have pursued export-oriented development policies. In fact, products that are competitive in terms of quality, price, design, and delivery can find customers in all corners of the free world, a result of the globalization process.

Along with the sharp appreciation of the Japanese yen vis-à-vis the U.S. dollar and other currencies that took place following the Plaza Accord in 1985, the transfer of production bases to overseas was accelerated. In particular, production of labor-intensive products such as textiles, household electronics, general purpose electronics products and their parts and components have been transferred to various countries in Southeast Asia and East Asia where abundant labor is available at significantly lower costs.

As a result of this transfer of production bases, products manufactured by the developing countries in Asia and East European countries became available all over the world market. These developments have had a significant impact on Japan’s price and wage levels as well as on employment, causing the “hollowing-out” problem. Due to various institutional constraints under the traditional labor market, the wage level in Japan is “downward rigid.” Therefore, as a means to remain competitive, many companies have been reducing the number of employees.

If the bulk of companies in Japan streamline their business operations or withdraw from the market, it will cause shrinkage of macroeconomic activity. Individual companies’ rationalization measures help improve their balance sheets, but have a negative impact on the economy as a whole. This is a typical case of the “fallacy of composition.”

In order to cope with this challenging problem, new industries and enterprises, which bring new demands, are acutely needed. As an effective measure, the investment climate in Japan must be made attractive in order for foreign companies to make direct investments in Japan.

In this context, Japan can learn valuable lessons from the initiatives taken by a number of U.S. state governments; they set up their representative offices in Tokyo and elsewhere to encourage Japanese companies to make direct investments in their home states. For revitalization of its economy and creation of new jobs, central and local governments as well as municipal offices, may well follow suit. In order to remedy the comparatively high cost of doing business in Japan, initiatives such as providing tax incentives, reducing cost of public services charges and telecommunications, could be implemented. Needless to say, creation of an investment climate attractive to foreign companies will bring similar benefits to domestic companies. Consumers will
also benefit from intensified competition, resulting in increased presence of foreign companies.

The number of foreign companies operating in Japan sharply increased from about 1,500 in 1990 to 3,400 (as of the end of 2001). The primary reason for such a remarkable increase is the fact that those foreign companies have been successfully providing Japanese customers with "differentiated" and attractive products and services.

Redevelopment of the urban areas will enable people to live near their work places, alleviating the commuter congestion. The major world cities such as New York, Paris, London, Singapore and Hong Kong have been well organized in this respect. This is due to political leaders possessing a clear vision that was executed through sound city planning. For example, in the 1980's, under the strong leadership of Prime Minister Thatcher, the British government implemented a London development plan. Mrs. Thatcher established "the Development Corporation," and made it wholly responsible for urban development in London. A new financial center was built in the suburbs of London, complete with some 150,000 residences. At the same time, the Development Corporation revised the immigration law and the tax law to enable foreign experts such as IT professionals to work at London’s financial center.

VI. CLOSER COOPERATION BETWEEN ACADEMIA AND INDUSTRY

Given the intensifying competition in the world market, methods of research and development in private sector companies have been changing. Emphasis has been placed on applied research that enables introduction of new products to the market in a short period of time. Industries have higher expectations towards universities for discovering innovative technologies.

Private-sector companies are seeking creative researchers who can generate technological innovations more than ever before. IT has been accelerating a new "Industrial Revolution" and is becoming the driving force of the drastic reform of the industrial structure in the 21st century. When this reform becomes full-fledged, it will certainly create enormous new demand, as was the case of the Industrial Revolution, which began in Great Britain in the later half of the 18th century. Along with the phenomenal development and spreading of IT, the modus operandi of private sector companies' research activities will significantly change.

The physical boundaries between private sector companies and universities have practically disappeared. Researchers of both academia and industry can communicate and collaborate with research institutes at home and abroad on a much broader basis. As a result, management of traditional academia is presented for rapid change; building close cooperative and mutually beneficial relationships between academia and industry is now in high demand.

In order to strengthen international competitiveness with other industrialized countries, particularly the United States, the government should play an important role in setting forth national technology development
strategies. The imminent necessity to reform higher education has also been broadly recognized in the industrial countries. Reform of university and college education will certainly cause repercussions on primary and secondary education.

Also, researchers in both academia and industry should communicate and collaborate with research institutes at home and abroad on a much broader basis. In this regard, building close cooperative relationships among the United States, Europe and Japan in the fields of advanced technology, such as biotechnology and nanotechnology, should be of high priority for both industry and academia. All the parties stand to gain a great deal through mutually beneficial collaboration.

For example, one of the key topics today of the global chemical industry is about redesigning its legislation. The EU is in the process of preparing the final proposal for a new legislation of the REACH (Registration, Evaluation, and Authorization of Chemicals) program. The European, American, and Japanese chemical industry councils are supportive of the new policy’s basic objective to enhance protection of human health and the environment. At the same time, multinational chemical companies are deeply concerned about the damaging effects such a policy would have on the global chemical industry. It would be useful to have closer cooperation among the various regional associations, including the American Chemistry Council, CEFIC, and Japan Chemical Industry Association.

VII. CONCLUDING REMARKS

Cross-border alliances are becoming the strongest integrating force of the world economy, and the economic activities of all countries are increasingly intertwined. The success of the European Union, its member states and the impact of the North American Free Trade Agreement (NAFTA) on its member states, is a forerunner of many more successful alliances that will be formed in the future. Hence, in the era of accelerating globalization and intensifying competition, private sector companies must develop links to external constituencies. These constituencies include government agencies, academia, and the technology development sector; information technology, biotechnology, and nanotechnology.

In the case of Japan, new knowledge-based industries and enterprises are acutely needed. As an effective measure to enhance its economic development, Japan must make the investment climate more attractive so that investors can realize a reasonable profit if they work diligently.

In this context, Japan can learn valuable lessons from the initiatives taken by a number of U.S. state governments. By setting up trade and representative offices in key countries such as Japan, they have succeeded in attracting foreign investments directly to the states, creating jobs and development in their home states (Hammer and Champy, 1993).

By creating an attractive investment climate, many of the Asian countries can assist local companies too; the Chinese experience attests to this
fact. The FDI flows into China and the corresponding influx of foreign operations in China have directly resulted in the upgrading of many of the supplier networks. Similarly, there was a turnaround at Nissan Motors in Japan after its CEO Carlos Ghosan, accepted foreign investments to implement some new initiatives. Countries that remove barriers, adapt to changes, and are focused in their efforts will achieve greater economic success than those that remain closed to outside investors.
REFERENCES


Hayashi, S., *Culture and Management in Japan*, University of Tokyo Press, Tokyo (1988).


