

Back-to-Office Report:

Technology Innovation, Private Sector Development, and Economic Growth
(Hangzhou, China, May 25-27, 2005)

The conference was attended by around 100 people – about 30 government officials, 30 private sector representatives, 25 from academia, 6 from international organizations, and about 10 from public media. It consisted of 10 sessions (including the opening and keynote presentations), which covered a broad range of topics, and two enterprise visits. The key findings of each session are briefed below:

1. Knowledge, technology and growth:

- Knowledge, technology and innovation have become the key drivers of economic growth and global competitiveness; high value-added comes mostly from R&D/technology-intensive and marketing/branding segments of global value chains.
- Countries need to be able to respond flexibly and rapidly; for developing countries, the ability to absorb and utilize existing knowledge may be more important at early stages of development.
- China and India have proved to be great examples of using knowledge and technology to generate growth; however, for their continued success, both countries need to improve governance and overall investment climate; strengthen the linkage between R&D and business sectors, as well as technology diffusion; and enhance education quality through curriculum reform.

2. Institutional support for technology innovation:

- A good investment climate and regulatory framework is crucial for private sector development.
- Building good institutions for S&T development requires a series of reforms at the microeconomic level, government, market, firms, research institutes and universities.
- SMEs need special assistance for skills development. Korea's SME Training Consortium is a very successful model.

3. Technology innovation and enterprise development:

- Beyond the traditional technology innovation strategy characterized by imitation and secondary innovation, indigenous innovation is the best way to improve international competitiveness and to obtain high industry value for Chinese firms.
- As a successful model of indigenous innovation, Sunyard System Engineering Co.'s innovation involves not only the technology, but also product, marketing, services, management, and culture.
- Korea's Jusung Engineering is successful mainly due to its unique technology, and strong R&D infrastructure, boosting world's highest level of patents per employee (2.3 patents/employee in 2004)

4. Financing innovation and entrepreneurship:

- Financing is crucial for new tech start-ups, however, in China, the venture capital market is very weak.
- In Korea, the government successfully nurtured a venture capital market through infrastructure building, such as revitalizing KOSDAQ, activating M&A market,

and tax benefits, etc., and direct support, such as policy loans and credit guarantees.

5. Linking S&T to the production sector:

- Industry-science relationships are becoming increasingly important when economy is more and more technology driven.
- A public-private partnership plays an increasing role within the innovation policy toolkit of most OECD countries.
- With influx of FDI, more and more MNC R&D centers are set up in China, however, a high percentage of these R&D centers behave more like enclaves.
- The Korea Advanced Institute of Science & Technology (KAIST) has been very successful in promoting venture business and technology transfer by providing effective linkage.

6. Technology and industrial development:

- Korea's IT industry played an important role in overcoming the financial crisis. Its success can be attributed to effective government policy, R&D efforts in human resources and CDMA technologies (started in late 80s, and in 2001, the average annual growth rate of R&D expenditure in ICT was 33.3%), effective financing, and competition policy.
- In China, many industries are built on foreign technologies (many embedded in equipment), but FDI's technology transfer to subsidiaries are primarily production/process technologies. More advanced technologies may gain importance in the future.

7. New explorations of innovation system and strategy:

- Total Innovation Management (TIM) is a new paradigm of innovation management. It involves three "Alls": all elements innovation (strategy, organization, culture, institution, technology ...); all time-space innovation; all people innovation (all employees and stakeholders).
- Disruptive innovation could be hailed as an appropriate innovation strategy for the developing countries. It needs two conditions: performance overshoot (i.e. current customers are over-served); incumbents are attracted to higher-end/higher-margin markets, hence willing to run away (or relieved to get out) when attacked from "below".

8. Technology innovation & regional development:

- There is a regional imbalance in Korea's R&D activities: over 57% of R&D personnel and 62% of R&D expenditures are concentrated in the Seoul region, and regional innovation support systems are weak. Therefore, the central government introduced a series of policy incentives to promote regional clusters and strengthen RIS, such as increasing R&D funds allocation to regions, development of regional specialty zones, etc.
- In China, the regional innovation systems are still weak. Even in Shanghai, the innovation capacity is curtailed by several factors: lack of S&T incentive regime; low commercialization of S&T results; S&T and high-tech parks are not well integrated with local industries; and lack of international exchanges, etc. To overcome these weaknesses, China needs to strengthen the role of business sector in the innovation system, improve the technology commercialization and transfer

service systems, strengthen the governance and incentive systems, and establish a venture capital market.

9. Summary – Wrap-up

Some key messages can be derived from the three-day conference:

- In today's global knowledge economy, high value added mostly comes from technology and knowledge-intensive sectors where innovation is the key driver. Therefore, developing countries, especially countries like China, needs to move up the global value chain. China has made great progresses, but still has a long way to go to get to the frontier.
- China's innovation mostly focuses on the production side, more attention needs to be given to marketing, distribution, etc.
- The efficiency of China's innovation system is still low. More monitoring, R&D consortia, and public-private partnerships are needed to enhance the efficiency.
- R&D activities need to be better linked with the business sector, which requires strong interactions among the government, universities and business communities.
- Strong institutional support is crucial. This includes good policy incentives, strong IPR protection, sound financial market, encouragement of entrepreneurship, skills upgrading and training system, and so on.
- On the practical side, firms need to be spurred to do more R&D activities and indigenous innovation.
- Disruptive innovation is a very effective strategy, and has great potential for China.
- China's innovation system needs to address some urgent tasks, such as the growing inequality, shortage of natural resources, and worsening environment.
- All the discussions are very fruitful, and the key is to have concrete follow-ups to move the agenda forward.

This conference was very successful in terms of several aspects:

1. Good program design, both in terms of intellectual aspects, which had broad coverage of topics, involving almost all the key issues on technology innovation and growth, and extracurricular activities, such as field visits. The topics include knowledge/technology and growth; institutional support; technology innovation and enterprise development; financing innovation and entrepreneurship; linking science & technology and the production sector; technology and industrial and regional development; etc.
2. The first-class, highly relevant presentations and very in-depth and substantive discussions. Most presenters are well recognized experts globally or in China, and have cutting-edge understandings and expertise in their fields. As a result, most participants and even all the resource people found the presentations and discussions very informative, educational, and interesting.
3. Good representation of the key stakeholders, i.e., the government (30%), private sector (30%), academia (30%) and others, both in the pool of speakers and the pool of participants.
4. It provided a good platform for face-to-face interactions among experts from the central government, local government, and international community, including

Korea. Both the provincial government representatives and university professors said this is the first time to have such a high-level conference on this topic.

5. It not only generated fruitful intellectual results, but also several possible follow-up activities.
 - Publication of the conference proceedings.
 - A possible innovation climate or SME survey together with the Zhejiang Government and Zhejiang University;
 - A possible joint activity with Brazil with the help of WBI;
 - A possible pilot to apply the TIM or EFQM model to local SMEs to improve their innovation capacity, working together with Zhejiang University (Prof. Xu), and UK (John Varney, BBC).
 - Possible internship for Zhejiang government officials at the Bank on their own expenses, to help our clients better understand WBI's business and acquire international experiences, and to deepen future cooperation.