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**POST-CRISIS ERA: POTENTIAL FOR BRIC COUNTRIES
TO DEEPEN COOPERATION IN S&T INNOVATIONS**

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3 sub-topics

- **---1, Response to the financial crisis: Industrial restructuring with S&T innovation**
- **---2, Post-crisis period: Achieving sustainable growth through S&T innovation**
- **---3, Future prospects: Exploiting potential for intra-BRIC cooperation with S&T innovation**

1, Response to the financial crisis:Industrial restructuring with S&T innovation

- A law: The historical experience shows that each severe economic crisis is generally accompanied with a new technology revolution, which in turn will be the key engine for a new round of economic growth and prosperity.
- In this way, technology innovation takes the lion's share in Chinese government's plans against the global financial crisis, and it is clearly encompassed in several countermeasures.
- How China responses to the international financial crisis?

- Aim: the policy objective of “guarantee growth, expand domestic demand and adjust structure”.
- Policies: Chinese government promptly made positive responses by putting forward a 4-trillion-yuan (USD 585 billion) fiscal stimulus package

10 specific measures are implemented thereof:

- **1) Build more affordable** and low-rent housing and expand the program to rebuild rural housing.
- **2) Speed and improve rural** infrastructure construction. Increase rural biogas, the safety of drinking water and rural road construction projects, improve the rural power grids, speed up the major water projects (i.e. the construction of South-North Water Diversion) and dangerous reservoir reinforcement, and strengthen large-scale irrigation area.
- **3) Accelerate the expansion** of the railways, highways and airports and other major infrastructure. Focus on building a number of passenger lines, coal projects and the western route rail line and improve the highway network to arrange for the central and western trunk and feeder airports airport construction, speed up urban power grids.
- **4) Upgrade the health** and medical services by improving the grass roots medical system. Speed up the transformation of rural junior high schools, special education schools. Promote the central and western regions and the cultural construction of integrated townships.

- **5) Strengthen** the construction of ecological environment. Speed up the sewage, waste disposal facilities and the water pollution control in key areas. Accelerate reforestation and other tree planting programs. Further support the energy conservation and pollution-control projects.
- **6) Encourage innovation**, industrial restructuring and development of the high-tech and service industries.
- **7) Speed up reconstruction** in the May 12 earthquake-damaged areas.
- **8) Raise the average incomes** in rural and urban areas, subsidies for low-income urban residents, the pension funds for enterprise employees and the allowances for those receiving special services.
- **9) Carry out a comprehensive reform** in value-added tax, encourage the enterprises to upgrade their technology, and reduce the tax burden by RMB 120 billion (about USD17.6 billion).
- **10) Improve financial support** to stabilize economic growth.

- It should be noted that Chinese Government adheres to maintain a steady and rapid economic growth through accelerating industrial restructuring and transformation of growth mode(development mode). Proceeding from the requirement for coping with financial crisis, it combines the short-term policy adjustment and long-term strategic readjustment.
- To enhance the indigenous innovation capability, Adjustment and Revitalization Plan has been issued and is to be performed within the next two years as one of the major countermeasures against crisis in the following 10 key sectors:
 - —automobile—iron and steel—textile—equipment manufacturing—shipbuilding—electronic information—petrochemical—light industry—non-ferrous metal—logistics industries.

- **Automobile Industry:** to promise a 10-billion-yuan (USD 1.5 billion) subsidy over the next three years to support technology innovation and transformation, as well as the development of new energy vehicles and parts; accelerate the scrapping and replacing of old automobiles; implement measures on special projects for technology progress and transformation, pilot-demonstration program for energy-saving and new-energy vehicles and strategies for the export of auto products.
- **Iron and Steel Industry:** to accelerate eliminating laggard productivity, cultivate large and extra large steel group with international competitiveness, and make large dominant enterprises the leader of the industry.

- **Textile Industry:** to increase investment in technological upgrading and working capital loans for textile; set up a special fund in the newly-added central investment and put its stress on the technical progress of spinning weaving, dyeing and chemical fiber industries.
- **Equipment Manufacturing Industry:** to support the joint reorganization of the backbone enterprises; make full use of value-added tax policies to promote technological progress; set up a special fund in the newly-added central investment for revitalization and technology transformation.
- **Shipbuilding Industry:** to expand the domestic market demand through the to-be-announced policy on the scrapping and replacing of single-hull oil tankers, chemical tankers and old tankers; advance into the phase-out policy for the single-hull tanker in Chinese waters.

- **Electronic Information Industry:** to expand investments in 6 major projects including updating the integrated electricity grid, transforming the new-pattern display and color television industries, developing the 3G industry, popularizing the digit TV, applying the computer upgrade and the next generation internet and developing software and information technology services industries, so that to promote the integration of telecom, radio and TV, and Internet networks.
- **Light Industry:** to accelerate the technology transformation in paper, household appliances, plastics and other industries.
- **Petrochemical Industry:** to increase investment in technical transformation, restructure chemical fertilizers production; advance organizing and implementing the in-construction major projects as oil refining and ethylene; promote the high value-added chemical products.
- **Non-ferrous Metal Industry:** to promote the cross-sectoral and cross-regional annexation and reorganization, as well as the mergers and acquisitions of foreign resources; strengthen technological transformation support for key enterprises.
- **Logistics Industry :** to rationally plan the Logistics Park in China.

2, Post-crisis period: Achieving sustainable growth through S&T innovation

- Back in January 2006, Chinese government, in its **National Mid-Term and Long-Term Science and Technology Development Plan (2006–2020)**, identified 16 major national science and technology projects as strategic emphasis to enhance the national innovation capability. In the financial crisis, China has accelerated the 16 special projects and taken them as one of the driving forces for growth.

- The basic principles under which 16 major special projects are screened out are as follows:
- **1) strategic industries** that are closely linked to the major demands of the nation's socio-economic development, capable of coming up with core proprietary intellectual property rights, and having a major impact on indigenous innovative capacity at the enterprise level;
- **2) key enabling technologies** that have an overarching bearing on raising the overall industrial competitiveness;
- 3) efforts that are aimed at overcoming major bottlenecks to socio-economic development;
- **4) activities that** combine both civilian and defense efforts or make defense part of the civilian industry and have a major strategic importance to maintaining national security and strengthening comprehensive national strength;
- **5) efforts that** are in line with the nation's development status and within the reach of its strength.

- The 16 major special projects are:
- core electronic devices,
- high-end generic chips and basic software,
- super large-scale integrated circuit manufacturing technology and associated techniques,
- the next generation broadband mobile telecommunication,
- high-end numerically controlled machine tools and basic manufacturing technology,
- the development of large oil-gas fields and coal-bed methane,
- large advanced pressurized water reactors and high temperature gas-coolant reactor nuclear power stations,
- water body contamination control and treatment,
- new genetically modified varieties,
- major new drugs, prevention and treatment of major infectious diseases such as HIV/AIDS and viral hepatitis,
- large passenger aircrafts,
- high resolution earth observation systems,
- manned space flights, and
- the moon probe.

- the 16 major special projects will be completed in 2020.
- In the comprehensive feasibility studies accomplished in 2009, 11 projects were successfully verified and commenced on full scale, which distributed in major sectors (i.e. information, equipment manufacturing and energy industries) and areas that are of great concern to the people (i.e. water conservancy, pharmaceutical industry and agriculture). The overall deployment and implementation of all the above projects will have a significant influence on the future economic development of China.

3, Future prospects: Exploiting potential for intra-BRIC cooperation with S&T innovation

- As globalization accelerating, the worldwide technology innovation and product upgrade are speeding.
- Under this circumstance, BRIC countries attached great importance to technology innovation in recent years. Before the financial crisis,
- ----Chinese government has formulated a long-term planning and the corresponding goals for S&T innovation.
- ----Brazil adopted in 2004 the *Innovation Law* and gradually perfected a number of supporting policies in the following three years.
- ----Russia adopted in 1999 the *Act on Innovation activities and National Innovation Policies* and further introduced in 2007 the legislative amendment of “Creating conditions for investment in innovation by making supplements and amendments on several legislations”.

- In financial crisis, many countries, while putting forward fiscal stimulus, increased financial inputs on S&T innovation to encourage and promote national and corporate R&D activities.
- In this regard, no BRIC countries will be willing to lag behind.
- --China's R&D expenditure increased by average 22.4% annually between 2000 and 2006, and further respectively rose by 23.5% and 24.4% in the following two years.
- --Brazil's R&D, In 2008, investment for new products reached 32.57 billion Reals (about USD 18.9 billion), the largest in the last decade.
- --Russia's R&D expenditure added from USD 9 billion to USD 20 billion between 1996 and 2006.
- --Indian government's S&T budget grew in recent years by average 10% annually.

- However, we must be clearly aware that, compared with developed economies, R&D proportion in GDP of the four economies remains relatively small.
- In 2007, it was about 1.49% in China, 1.13% in Brazil, around 1.08% in Russia and about 0.8% in India.
- In order to change such a situation and accelerate the pace of technology innovation, BRIC countries have adopted corresponding measures, laid plans to increase public investment and encourage R&D investment by private sectors, and intensified the R&D activities.
- China pointed out that its R&D proportion in GDP would be 2% in 2010, and over 2.5% in 2020, so that to make it an innovative country.
- Meanwhile, Russia and India respectively set their goals of 2% in 2010 and 2012, while Brazil planned to increase its R&D proportion to 1.5% in next 10 years.

- It reveals that BRIC countries have great potential for cooperation in technology innovation. The cooperation can be advanced at least in two aspects:
- **First**, to strengthen intergovernmental collaboration in S&T innovation. In BRIC countries' R&D investment, the public inputs take the major portion. In other words, the government drive forward R&D, so that the technology innovation will be improved when the governments work together to seek the possibilities for R&D collaboration.
- **Second**, to organize inter-corporate joint R&D activities that will benefit the market-based development of technology innovation. In the cut-throat competition, innovation has drawn more and more attentions from the enterprises, which is reflected from their increasing R&D inputs. Brazil's private sectors bear more than half of the total R&D investment. Since 2000, Chinese enterprises' R&D proportion surged and now approach to that of EU. India's companies take 1/3 of its total R&D spending. To this end, there's a broad prospect for BRIC countries to improve innovation capabilities through the inter-corporate collaboration. In particular, in the post-crisis period, the cooperation in technology innovation will play a significantly positive role on economic development. Deeper and broader intra-BRIC cooperation in S&T innovation will have a bright future.

Thanks !

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