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REPORT ON THE RELATIONSHIP BETWEEN FOREIGN DIRECT  
INVESTMENT AND TECHNOLOGY TRANSFER IN CHINA

1. Overview of foreign direct investment in China

In December 1978, the Chinese Government took the strategic decision to shift the focus of the entire country's efforts to economic expansion; since then, it has established a basic national policy of reform and deregulation. Assimilating international direct investment is one important ingredient of this policy. Since 1979, China has constantly improved the investment environment, steadily perfected and amplified the regulations governing investment by foreign nationals and constantly broadened the scope for foreign business investment in China; enterprises with foreign investment now constitute an indispensable part of the Chinese economy, giving an ever-increasing boost to its development. Between 1979 and the end of June 1993, a total of 134,423 enterprises with foreign investment were authorized, with \$US 169,216 million in foreign capital contracted and actual foreign business investment of US\$ 43,750 million. Especially conspicuous was the fact that in 1992 China attracted a total of US\$ 57,510 in commitments to invest by foreign businesses, and foreign businesses actually invested US\$ 11,100 million - 280 per cent and 60 per cent more respectively than in the previous year; 48,764 enterprises were authorized for foreign investment, 29 per cent more than in the previous 13 years combined. Between January and June 1993 there continued to be a big increase in foreign business investment in China: 43,632 enterprises were authorized for foreign business investment, foreign capital contracted was US\$ 58,765 million and actual investment by foreign businesses was US\$ 9,396 million, representing increases over the previous year of 234 per cent, 300 per cent and 179.6 per cent respectively.

China has absorbed international direct investment from over 100 countries and regions and the investment is distributed widely over all industries, but concentrated rather more in oil, coal, engineering, electricity, chemicals, medicine, textiles, light industry, farming and aquaculture. Nowadays there are enterprises with foreign investment in every county, municipality and autonomous region in the country.

Foreign business investment in China displays some distinctive features. These are described below.

1. The scope for investment projects is extensive. The foreign capital contracted for a project averaged US\$ 1,190,000 in 1992, up 30 per cent on the previous year, and increased to US\$ 1,350,000 in the first six months of 1993. New projects in Guangdong, Shanghai, Hunan and similar provinces and cities average over US\$ 2 million in foreign capital contracted, and in 1992 there were over 200 projects in Guangdong province for which US\$ 10 million or more had been contracted.

2. Many well-known multinational corporations regard investment in China as a focal point of their overseas investment. Firms such as Motorola, IBM, Xerox, Philips, Citroen, Matsushita, Mitsubishi and Siemens already have investments in China, and many large companies have laid medium- and long-term plans for investing there.

3. The overall technological content of investment projects is growing and investment structure is gradually improving. As the pace of multinational corporation investment in China has quickened, the number of capital- and technology-intensive enterprises involving foreign business investment which have been authorized has rapidly increased, and in electronics, chemicals and instrument-making projects especially has become extremely large; the number of investment projects in farming and forestry, which in the past received relatively little foreign commercial investment but have now found special favour with foreign businesses, and the sums of investment capital involved, have doubled and redoubled. As every district offers useful guidance on the placement of foreign capital, foreign business investment has established a series of large energy supply, communications, raw and semi-finished manufactures projects of corresponding scope.

4. The investment field is constantly being expanded. Since 1992, China has revised and relaxed the limits on foreign business investment in tertiary industry to match foreign businessmen's enthusiasm for investing in it. The rate at which the development of commerce, food and drink manufacture, warehousing and housing construction attracts foreign capital leapt by a factor of 4-8, and banking and accounting institutions and fields such as insurance, foreign trade, consultancy and information services, public transport and quality control have all been the recipients of foreign business investment.

5. Patterns of investment are elastic and various, ranging from elementary to sophisticated. The starting-point for China's opening up to the outside and its assimilation of foreign business investment is that such investment should be managed through cooperation between China and its foreign partners, where the supplier brings in materials, designs and the specifications for assembling them and is offered trade in return. So far, flexible patterns to accommodate *sanzhi* companies (companies supported by foreign capital, joint ventures and wholly foreign-owned ventures), international leasing, cooperative development, development zones, joint stock enterprises, cooperative joint-capital groups of enterprises, transnational companies and holding companies have been developed. To date, more than 20 Chinese-foreign joint capital stock companies have been authorized; there are also over 20 companies trading special renminbi-denominated stocks ("B shares") on the Shenzhen and Shanghai stock exchanges. Some 30-odd holding companies provide composite services for the enterprises that these invest in.

6. Investment regions are gradually creeping northwards. Two trends are becoming apparent: one is centred around the coastal cities and is extending to the adjoining areas, with enterprises in towns and villages enjoying especial favour. The foreign business investment attracted by enterprises in towns and villages situated in the deltas of the Pearl, Yangtse, and Minnan rivers accounts for over half the total for these areas. The second trend is a spread into the hinterland, drawn by its rich natural and manpower resources: a great many foreign businesses are beginning to look seriously at investment in the Chinese hinterland.

All the signs are that a new "China craze" in foreign business investment is taking shape. This is the outcome of China's unswerving policy of opening up to the outside and constantly improving the investment environment.

## 2. China actively encourages foreign business investors to import technology

China attaches the highest importance to the introduction of technology by foreign business investors. Through the foreign business investment it has attracted, it has gradually set up a large collection of technology-intensive enterprises and introduced a large quantity of international 1980s-generation technology and modern management experience to fill in gaps in domestic technology, promoting the overhaul of old business technology and effectively bringing together the factors essential for production, promoting the rational use of resources, improving the structure of production and invigorating the economic development of the people of China.

Foreign business investment has brought about epoch-making advances in the manufacturing technology used in China's car, lift, computer, colour television, sound system, communications equipment, processed foods and drinks, numerically controlled machine tools, instruments and meters, glass, pharmaceutical and other industries. Some of these are described below.

In the car industry, thanks to the foreign business investment it has attracted, China has constructed a total of eight large jointly financed production plants: (German) Volkswagen in Shanghai; (German) Volkswagen (Audi) in Jilin (No. 1 Automobile Works); (French) Citroen and (Japanese) Nissan in Hubei; (American) Cherokee (Chrysler) in Beijing; (Japanese) Daihatsu [Toyota technology] in Tianlǔ; (French) Peugeot in Guangzhou; (Japanese) Suzuki in Xian; (Japanese) Fuji Technology in Suzhou. The construction of these plants has raised manufacturing technology in the Chinese car industry to a new level, making the industry one of China's mainstays. In 1992 China produced 1,080,000 motor vehicles, up 35 per cent on the previous year, and the number is planned to rise to 2 million by the year 2000. At present, America's General Motors and Japan's Nissan and Suzuki expect to establish and expand cooperation with Chinese automobile circles by means of investment in China. According to the statistics, of the 500 largest manufacturing enterprises in China involving foreign business investment in 1992, Volkswagen GmbH in Shanghai remained the leader in overall sales with 7,108 million yuan; second and third places were held by Jeep Automobiles Ltd. in Beijing and Suzuki Ltd. in Guangzhou.

Communications: in today's China - both the large cities and the small towns and villages - many people not only have an IDD telephone at home but also a beeper at their waist and a hand-held cellular telephone, and amidst the traffic one can often catch sight of people sending messages over their car telephones. In 1992 the total number of telephones in Chinese towns and villages rose to 30 million, a fivefold increase since the founding of the new China 30 years before. That the Chinese communications industry has developed by leaps and bounds is also due in part to foreign business investment. In recent years the industry has attracted foreign investment amounting to US\$ 1,100 million. The American firm of Motorola invested US\$ 120 million in Tianlǔ in 1992 to set up a joint enterprise manufacturing paging devices and cellular telephones; the products are selling extremely well and are bringing in handsome profits. Motorola is now planning to make a further investment, setting up a technology-intensive silicon chip plant; the investment may be as large as US\$ 400 million. In February 1993, ATT and China's State Planning

Commission signed a comprehensive memorandum of understanding on cooperation in the fields of switchboard, fibre-optic data transmission, mobile communications and related broadcasting technology. Since the establishment of the jointly financed and jointly run Sino-Belgian Bell (Telephone Equipment Manufacturing) Ltd., in Shanghai in 1983, Belgian S12 digital telephone exchange technology and LSI circuitry technology have been successfully introduced, and total sales in 1993 may reach US\$ 450 million.

Electronics, instruments and meters: Foxboro Ltd. is one of the very first jointly financed high-technology companies in Shanghai to attract American investment. It makes use of advanced technology transferred from Foxboro Ltd. in the United States to produce industrial-process control and management meters and systems. In 1991 the company obtained ISO 9001 certification for its DNV device, becoming the first enterprise in China to win such certification. Since then it has steadily introduced new technology and products, keeping abreast of world levels, becoming more competitive and securing impressive economic returns.

Hewlett-Packard (China) Ltd. is financed and run jointly by the China Electronics Import and Export Corporation, the Beijing Computer Industry Corporation and America's Hewlett-Packard (HP). Set up as a high-technology enterprise, the company established and has stuck to international standards and an orderly strategy of technology transfer, and has laid down in practice five principles for its selection of technology: (1) the technology should be as advanced as the product; (2) the product should be something the Chinese market needs but cannot produce; (3) the product should have export and hard-currency-earning potential; (4) HP in the United States must be willing to transfer the product, and the Chinese side must be willing to introduce it; (5) the product must satisfy the Chinese Government's import control and the United States Government's export control requirements. The new HP 1651A (logic analyzer) and HP 54501A (digital memory oscilloscope) introduced by the company both met Chinese market requirements and boosted the development of analogous Chinese industry, making a positive contribution to the development of Chinese digital electronic instrument manufacture.

Beijing Panasonic Colour Displays Ltd, jointly financed and run by Japan's Matsushita Electronics Manufacture Joint Stock Corporation and China, has produced a million colour displays a year since 1989 that conform to American, German and British safety regulations and meet advanced international quality levels. As the technology has been successfully transferred and product quality is of a high order, sales and profits have been as high as the investors planned. The company expanded its investment in July 1993, installing a new assembly line.

Yet looked at overall, the general technological level of foreign business investment in China is not very high. The main signs of this are:

1. There are relatively few technology-intensive projects, while household electrical goods and light industry projects have increased proportionately.
2. Labour-intensive projects have grown as a proportion.

3. Advanced industry and precision industry projects are few in number, while the proportion of final assembly and rough machining projects has grown.

4. On occasion, technologies are introduced repeatedly. In the production lines for refrigerators, washing machines, clothing, processed foods and drinks, for example, there have been repeated introductions of (to varying degrees) low-level technology.

Looking from within China, the main reasons are:

- \* China's overall level of economic, scientific and technological development is still comparatively low and its capacity to use, assimilate and absorb imported foreign technology is limited by comparison with a great many of the requirements of modern, large-scale, finance- and technology-intensive international direct investment, although the investment environment is improving continually.

- \* In the past, policy governing foreign investment used to give preference to regional inclinations and ignore the inclinations of manufacturers, with the result that the policy of exchanging market access for technology was not able to be applied with much success.

- \* Conditions for the development of a market economy need to improve somewhat.

Looking from the outside, the main reasons are:

- \* The investment activity of some foreign firms is short-termist and they put undue emphasis on chasing short-term profits, being unwilling to export their better technology for the sake of cooperation.

- \* Some European and American firms neglect the Far Eastern market, moving slowly on investment in the important territory of China and following in others' footsteps.

- \* A few developed countries, ignoring the fact that the Cold War is over, still artificially erect all sorts of barriers to technology transfer to China.

In the 14 years since China opened up to the outside, as it has laid stress on improving the investment environment and made every effort to bring about production conditions for foreign businesses that are in keeping with international practice, it has ensured that the vast majority of enterprises involving foreign business investment that have so far been set up have gone into operation in favourable conditions, and both China and the outsiders have obtained impressive financial returns from their cooperation. In 1992 the value of output from enterprises involving foreign business investment already represented roughly 6 per cent of the total value of output from Chinese industry, and the value of their imports and exports represented over 25 per cent of that of all China's imports and exports. Consider, for example, Shanghai. Today, as the 90 per cent and more of *sanzi* enterprises in Shanghai become profitable, the pace of their activities will soon make them the main force behind the city's economic construction. The statistics kept

by the ministries concerned on Shanghai's 1,400 *sanzi* enterprises show that in the first half of 1993 their sales receipts amounted to 19,000 million yuan, profits to 2,400 million yuan - double the amount for the corresponding period in the preceding year - and the taxes paid, to 1,057 million yuan, or 10 per cent of the city's entire tax takings. Foreign business investors have also enjoyed impressive bonuses. Experience shows not only that both sides in foreign business investment can capitalize on their strengths and downplay their weaknesses, giving free rein to the advantages each enjoys and developing together, but that they can profitably promote economic and technological cooperation and interchange between China and all other countries and regions to the benefit of world development and prosperity.

The growth rate in China's economy in 1992 was 12.8 per cent, in the front rank world-wide. According to the revised Eighth Five-Year Plan, China's annual average economic growth rate has been in the 8-9 per cent range. The Chinese market is enormous. and the prospects for development are also bright. To enable the economy to sustain a consistently high rate of development, China must open up further and put the technology brought in by foreign capital to productive use, and for this it must adopt effective measures, constantly improve the investment environment and provide foreign businesses with still more attractive conditions in which to manage their investments.

1. China will amplify and perfect its laws and regulations governing foreign economic activity. Since it opened up to the outside, it has drawn up and issued some 500 such laws and regulations, signed treaties on the protection of investments with over 50 States and double taxation treaties with nearly another 30. It attaches particular importance to the protection of intellectual property rights, and its laws and regulations in this regard are gradually approaching international standards. It already has laws on patents, trademarks and copyright, and regulations on the protection of computer software, and has joined the World Intellectual Property Organization, the Paris Convention for the Protection of Industrial Property and the Universal Copyright Convention. Laws on foreign trade, corporations, anti-dumping and mortgages are under active preparation. As it amplifies and perfects its laws and regulations, it will strive to enforce the law strictly and guarantee the lawful rights and interests of all sides in any cooperation with foreign partners.

2. China is conducting an orderly review of the application of policy governing foreign business investment in industry. It actively encourages foreign businesses to mount technology-intensive projects and is gradually directing foreign capital away from labour-intensive industry towards a technology-intensive industrial strategy, making ever better, faster and more extensive use of the technology brought in by foreign investors, rebuilding traditional industries and creating new, rising industries and an improved industrial structure.

According to its industrial policy, from now on the main features of China's absorption of foreign business investment will be as follows:

- \* Faster development and construction of the basic transport, communications, energy resources, important commodities, farming, hydroelectricity and similar industries, and related basic facilities.

- \* Energetic development of the roads, railways, ports, docks, electricity generation, iron and steel smelting and machinery, electronics, oil, chemicals, automobile, building and other industries.

- \* A speeding up of technological reform in existing enterprises, especially large and medium-sized State-owned enterprises, welcoming large-scale, technologically advanced investment projects in China by internationally known multinational corporations and consortiums.

While directing foreign businesses to continue to expand their investment in the developing coastal regions, China will increase investment in the interior. It is making some necessary amendments to policy, bringing regional inclination policy and industrial inclination policy into organic harmony in order to secure maximum policy effect on foreign business investors.

3. China is applying to good effect a policy of exchanging market access for technology. International experience indicates that the policy of attracting foreign capital by means of tax exemptions only works in the initial stages of a developing country's opening up to the outside world, and lacks sustained attractive power. As China has already signed double taxation treaties with many other countries, tax exemption for enterprises involving investment in China is not as potent a means of attracting multinational corporations in particular as estimates would suggest; on the contrary, the fact that each locality pursues a "copycat" tax benefit policy creates unstable and uncertain conditions for foreign business investors which have scared off several large projects. Hence the most important thing for the foreign companies, especially the big multinationals, making long-term investments in China is that they have spotted China's enormous existing and potential markets. In order to make these markets and market shares grow, unified industrial policy, the arrangement and relative strengths of the different regions and other State policies must all be looked at and determined together. This means that import substitutes required over the long term by the interior and high-marginal-cost goods produced in the interior can gradually be exposed to the market. Judging by present-day practice, the benefits of exchanging market access for technology include: (1) Considering the long term and the overall situation, it can produce a competitive effect and prompt native industry to develop amidst the competition; (2) It raises the level of industrial technology in the country receiving the investment quickly and beneficially; (3) It effectively increases the country's power to attract investment from multinational corporations, and stimulates them to export technology.

At the same time, China also hopes that companies that cooperate in good faith will lay more emphasis on the long-term benefits, and will increasingly export appropriately advanced technology. It appeals to the developed countries to consider the world that exists today from the point of view of



peace and development and abolish policies that discriminate against technology transfer to developing countries, giving the developing countries genuine assistance in accelerating the pace of their technological advance in the quest for a world of prosperity, peace and coexistence.

### 3. Some insights

1. Inflows of foreign capital into a country are in essence one form of resource inflow. Considering the entire process of foreign capital inflow, however, at the stage when the capital first begins to flow in its value is additional - only later does the responsibility to repay it have to be shouldered. The assimilation of foreign direct investment entails conditions and costs. If one traces the inflow of foreign capital, only if the micro- and macro-benefits to the State receiving the capital both increase and the balance of the resources lost and gained is in surplus are the associated repayment terms and costs worthwhile. The most important thing is that developing countries relying on their own overall industrial policy and research to lay down a strategy for the assimilation of direct foreign investment, must mount a comparatively large number of projects involving the advanced technology they need to develop and ensure that technology import permeates the entire process of foreign capital use.

2. The introduction of foreign investment on a certain scale into a country's economy necessarily has an impact on change in that country's industrial structure that cannot be ignored. The rational, methodical and effective direction of foreign capital is the key to improved industrial structure and deployment of resources.

A rational industrial structure is an important guarantee of a country's economic development. The influence of foreign capital on a country's economic development is felt mainly through its effects on the industrial structure; and its influence on the industrial structure comes mainly from the way it is directed. The same quantity of foreign capital, directed in different ways, will have different effects on the structure of industry. Rationally directed, such capital can bring about the rational development of that structure; otherwise it can lead to lopsided development. China's experience of opening up to the outside world has already produced evidence of this.

Profitably assimilating the technology introduced by foreign investment and steering foreign capital gradually away from labour-intensive industry towards technology-intensive industry means, in essence, constantly seeking the most favourable deployment of resources, increasing the quality of foreign capital introduced, and bringing that and the quantity of foreign capital introduced into organic harmony.

3. Industrializing developing countries nearly all run into the dual problems of inadequate finances and backward technology. Using imported technology to boost their capacity for industrial development and innovation, they can gradually narrow the gap between them and the developed countries. For a while, however, they often find it difficult to assemble the relatively large sums of foreign exchange for importing technology and they are

restricted in scope. Under such circumstances, making use of foreign capital to import technology becomes imperative. Foreign capital can serve as a means to technology import.

There is an inherent link between foreign direct investment and technology transfer, but the two are not synonymous. Foreign direct investment can be practised by itself, if for example a project only needs to resolve financial problems or to import machinery.

Even though many patterns of foreign direct investment can constitute a pattern for the import of technology, not all can do so - enterprises wholly financed and run by foreign businesses, for instance.

Some forms of technology import can also be practised in isolation. Only if a country opts for a pattern of foreign direct investment that brings with it transfers of technology can technology import and foreign direct investment be pursued in concert.

Foreign direct investment can broaden the scope of the technology introduced. Contrast the direct and indirect benefits of introducing technology. The direct benefit is that the investment brings the technology directly into the recipient country. The indirect benefits often emerge only after a little time, because the technology introduced may not be used effectively and many factors may have to be resolved, not only in connection with the technological and economic microstructure of the introducing party but also in connection with its technological, economic and social macrostructure.

The extent of the benefits that foreign direct investment may bring to the introduction of technology is determined by the nature and level of that investment. If it cannot efficiently increase market provision, the question of its conferring benefits does not arise.

Foreign direct investment does have some limitations as regards the introduction of technology: it cannot completely supplant foreign exchange. A country in the process of introducing technology can only opt for a policy that combines the use of foreign exchange and foreign capital for that purpose.

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