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Chinese Economic Prospects and Western Technology:  
Possibilities and Constraints

I. Introduction

1. New Chinese leaders clearly
  - (a) giving high priority to economic development, and
  - (b) showing renewed interest in Western technology for that reason.
2. Important for relation to Chinese prospects and external policy.
3. Hence want to discuss
  - (a) the underlying strengths and weaknesses of the Chinese economy, and problems leaders face;
  - (b) how foreign technology relates to China's needs;
  - (c) the factors that constrain China's acquisition of foreign technology,
  - (d) what are the implications for the US?

II. China's Economic Performance

Graphic I  
GNP -  
Industrial and  
Agricultural Output

1. Rate of Growth 1952-77
  - (a) In the last 25 years, China achieved a very creditable growth (6%) in GNP despite three serious upheavals -- The Great Leap Forward 1958-60, Cultural Revolution 1966-69, Struggle over Succession 1974-76.

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- (b) But a sharp difference in performance between industry and agriculture: industry's gains were quite dramatic, agriculture's barely adequate.

Graphic II  
Grain output  
plotted against  
pop. growth  
1952-76

2. Food and Population

- (a) Per Capita grain production grew in the 1950s but is now no better than in 1957.
- (b) In 1962, after three successive bad harvests, the leadership decided to give agriculture highest priority -- a ranking that has been sustained ever since.
- (c) But agriculture needs industry to help raise yields -- mechanization, fertilizer, irrigation.
- (d) China has stressed more than any other LDC (unique development of small-scale rural industry).
- (e) After gains in the late 1960s and early 70s, China's agriculture has now again faltered (no increase in grain crop in last three years).

Graphic

- (f) Continuing need for grain imports, despite efforts.

3. Heavy Industry

- (a) Substantial growth
  - Initial Sov. assistance (1952-60)
  - Major plants and rural industry.
- (b) Steady reinvestment of 25-30% of GNP in industrial facilities (much for agriculture).

Graphic

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- (c) Yet transport system inadequate and weaknesses in high technology.
- (d) And impact of Mao political upheavals serious: especially impact on management and higher education.

Graphic III  
Defense procure-  
ment plotted  
against industrial  
output

4. Civil vs Military Priorities

- (a) Faced with Soviet military threat, hard choices in civil-military resource allocation.
- (b) Mao downplayed. Military allocation was sharply curtailed in 1972 and has remained at that level ever since.
- (c) Even if the leadership decided now to modernize its military more rapidly, it would have to invest heavily in basic and intermediate industries upon which modern military production rests. (Specialized steels, non-ferrous metals, machine tools that can fabricate to higher tolerances, etc.)

5. Living Standards

- (a) The high rate of investment, (plus large expenditures on national defense) <sup>has</sup> kept living standards from improving much since 1957 <sup>despite</sup> ~~depth~~ 90 percent increase in per capita GNP.
- (b) Rough index of consumption for the average Chinese is suggested by trend lines for per capita production of grain, cotton cloth, and industrial consumer goods:

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(Stocks and imports have smoothed the fluctuations in grain and cotton cloth output.)

- Per capita production of nongrain foods such as vegetables, pork, and poultry has grown at a fairly steady, if slow, pace.
- On the other hand, despite percentage growth in production, industrial consumer goods remain in short supply and have had only a small impact on personal consumption. Highly sought after consumer durables such as bicycles and sewing machines are rationed.
- (The lack of significant real progress in expanding per capita supplies of basic commodities such as grain and cotton cloth has been made more palatable by formal rationing, whereby everyone is assured a share of available supplies.)

(c) Despite small gains in per capita consumption of commodities since 1957, consumer welfare has improved since then in the areas of health and education. It is much easier for the regime to expand education and health services than to increase the production of foodstuffs, cotton, and housing, and avoids inflationary pressures of higher wages with commodity shortages.

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- (d) Peking has reduced the income disparities between peasants and urban workers by increasing the prices paid by the state for agricultural goods;
- by lowering the prices that communes and brigades have to pay for tractors and other machinery;
  - by holding down urban wages especially since 1957;
  - by greatly increasing the education and health services provided to rural areas.

*50-60% wage hike should be mentioned*

6. In sum, resource scarcities in every direction
- constrain China's freedom of action;
  - underscore need for sustained, orderly program for development;
  - enhance Chinese interest in foreign technology.

### III. Experience with Foreign Technology

Graphic IV  
Imports of  
machinery and equip-  
ment, and complete  
plants

#### 1. Trends in Technology Acquisition

- The level and scope of China's import of foreign technology has fluctuated with the changing fortunes of the revolution and the economy.

#### 2. Impact of the Soviet Experience

- (a) In the 1950s Chinese depended on the Soviet Union for the largest and most comprehensive technology transfer in modern industrial history.
- (b) Severe economic disruptions from the abrupt Soviet departure in 1960 have left their indelible imprint

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on Chinese attitudes toward foreign role in their economy and foreign sources of technology.

- (c) Ever since the Chinese leadership has guarded against what they regard as -
- "excessive dependence" on any single foreign source,
  - large foreign debts to finance imports,
  - "exploitation" of their national resources by foreigners.

3. Technology Acquisition from the West

- (a) A modest program of technology acquisition from the West -- launched in the mid-1960s -- was cut short by the upheavals of the Cultural Revolution.
- (b) A second and larger phase begun in 1972 was disrupted beginning in 1975 by a struggle over succession, domestic economic problems, and the world-wide recession.

IV. Technology Acquisition Since Mao

1. Intentions

- (a) The pragmatic post-Mao leadership, which is intent on modernizing China, clearly wants to expand acquisition of foreign technology.
- (b) All indications -- statements of the leadership, number and variety of trade missions, approaches to Western firms -- point to a serious Chinese drive.

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(c) With the demise of Mao and the purge of the Gang of Four, the current drive is likely to be more durable than previous episodes.

(d) How much we can expect of this drive.

2. Constraints

At least three constraints limit the expansion of China's technology import drive --

(a) Political/Ideological Constraints

- Chinese leaders' stress on "self-reliance" is a watchword to warn against three dangers:
  - the danger of foreign dependence -- the leadership's determination to avoid trade dependence on any single source or financial dependence on foreign lenders rooted in experience with Soviet withdrawal and long history of humiliation by unequal treaties.
  - the danger of alien contamination from the corrupting influences of bourgeois values.
  - the danger of psychological dependence - the need to develop the habit of workers and managers of relying on their own ingenuity and resources rather than looking to the outside for help.

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(b) Technical Constraints

- China's capacity to absorb foreign technology is significantly limited.
- China's "learning by doing" approach to industrial training has produced many middle-level factory technicians but not highly trained technicians so essential in setting up and operating a modern plant.
- The ten-year neglect of higher education -- a legacy of the Cultural Revolution -- has created a void in supply of well educated engineers and of scientists to succeed the Western-trained leaders of Chinese research institutes, now in their late seventies and eighties.
- Hence China's current difficulty in putting into operation many of the complex modern plants it has purchased in recent years.
  - (1) Only a few of the large ammonia/urea plants purchased in the early 1970s have come on stream. (US/Japan/France).
  - (2) The Spey jet engine plant purchased in 1975 is well behind schedule. (United Kingdom)
  - (3) A major expansion at the Wuhan steel plant scheduled for completion early this year will not be completed before the end of 1978. (Japan/West Germany)

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- The new regime is trying to rectify this deficiency, by reviving national respect for higher education, by more advanced foreign training for Chinese students, and by new efforts to entice overseas Chinese scientists to return to the homeland.
- Amelioration of the problem, however, is bound to take a ~~very~~ long time.

(c) Financial Constraints

- China's "ability to pay" is currently in a better state than it has been for several years.
- China has repaid much of the modest level of short- and medium-term debt incurred in 1972-75, thanks to two successive trade surpluses in 1976 and 1977.
- China enjoys an excellent credit rating in Western financial circles; Japan and Western Europe are willing to extend it attractive terms in their trade.
- However, several factors will inhibit China's taking advantage of its relatively favorable financial position.
  - First and foremost, it <sup>has been</sup> ~~is~~ unwilling to accept government long-term credit, mainly to avoid the risk of leverage. This constraint may be mitigated, however, through the device of private credits. Still, China's imports will depend

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mainly upon its current capacity to earn foreign exchange.

- China will not be able to expand its existing export industries rapidly.
- Many traditional exports depend directly on the backward agricultural sector; and China likely to need grain imports regularly.
- The Chinese failure to invest in minerals and metals extraction and processing has forced it to import many of the commodities that it should have been able to export.
- The prospects for exports of petroleum -- China's great black hope -- now appear limited.
- Expanding output from China's oil fields will take time.
- Rapidly growing domestic demand will absorb most of the available oil supply.
- Hence oil exports during the next five years unlikely to rise much above the amounts now *e* [being negotiated] in a long-term Sino-Japanese trade agreement (300 thousand barrels per day).
- In sum, these several factors will constrain the flows of advanced technology into the PRC. *r*

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V. Chinese Priorities for Advanced Technology and Equipment

The Chinese are negotiating for a wide range of Western equipment and advanced technology, which could easily top the billion dollar mark in 1978, and continue at a steady pace subject to Peking's foreign exchange and technology absorption limitations.

1. In the civilian sector:

(a) The Chinese seem particularly interested in acquiring complete plants to produce steel, fertilizer, petrochemicals, locomotives, trucks, nonferrous metals, electric power, and electronic components.

(b) The Chinese also have shown interest in acquiring mining equipment, sophisticated electronic equipment, machinery for the petroleum industry, and possibly technology for nuclear power plants and uranium enrichment and reprocessing facilities.

2. In the military sector, a renewed Chinese interest in various types of Western military equipment and production technology.

(a) Two separate Chinese delegations recently visited West European countries, where they toured military production facilities, examined equipment, and were given lectures on modern military systems. (No contracts were signed for hardware or production technology.)

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- (b) China's primary interest appears to be in defensive weapon systems, particularly air surveillance radar and communications equipment to relay data at high speed.
- (c) Purchases of military hardware will <sup>probably</sup> be minimal, mainly prototype equipment that can be adapted by the Chinese and applied to their current capabilities.

#### VI. Primary Sources

The main suppliers will be Japan and Western Europe, with the United States a distant third.

1. Japan is China's largest trading partner and its single most important source of advanced technology and equipment. Japan's lead reflects its long experience in dealing with the Chinese, favorable financing, low transport costs, and low prices.
  - a. The Chinese and Japanese have negotiated an eight year agreement that reportedly calls for the Chinese to purchase up to \$10 billion worth of Japanese industrial plants and related equipment, in exchange for oil and coal.
  - b. Included in the package is a \$3 billion steel mill with an annual capacity of six million tons.

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2. Western Europe

- (a) On recent visit to the United Kingdom and France, Foreign Trade Minister Li Chiang was shown a variety of civilian and military production facilities and discussed trade plans with Prime Ministers Callaghan and Barre.
- (b) Western Europe offers advanced civilian technologies and equipment comparable to that available in the US and Japan and is also flexible in arranging financial terms.

*refer to  
EEC agreement  
MFN, institutionalization*

- (c) Western Europe can meet Chinese needs in specialized fields such as nuclear power plants, petrochemical plants, and computer controlled machine tools.
- (d) The PRC also sees Western Europe as the best source of military equipment and technology, such as the Spey engine contract signed with Rolls Royce in 1975.

3. The United States will be the source of last resort.

Peking is likely to continue limiting purchases from the United States when alternative supplies are available.

- (a) US firms have been contacted in fields such as packaging, magnetic tape manufacture, color TV, computers, and high technology electronics.
- (b) The US continues to be the source for sophisticated equipment and technology used in oil exploration and development.

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- (c) No serious inquiries are known to have been made for American military hardware, although the Chinese have expressed interest in a US process used to coat jet engines.
- (d) Even with full normalization, US technology sales, while benefiting from the removal of Chinese policy constraints would still face stiff competition from long-established suppliers in Japan and Western Europe.

VII. Implications

Graphic V  
 Total Chinese  
 Imports-US share  
Graphic VI  
 China trade

1. The US role in the China trade will be <sup>valueless</sup> [very] modest.
  - (a) The only years in which US exports to China were significant were the agricultural distress years of 1973 and 1974.
  - (b) As regards technology imports, the US has accounted for <sup>concern about COMCON recent marked increase in</sup> only 7% of total Chinese imports of machinery and equipment and less than 8% of complete plant purchases. <sub>distinct measure</sub>
  - (c) Even with normalization, this pattern would not be significantly altered.
2. The situation and needs of PRC have some wider implications.
  - (a) For its development over coming years, China will need imports of grain and of technology.
  - (b) Hence likely to be constrained by that need from assertive foreign policy toward West.

Graphic VII  
 Imports of  
 plants and  
 equipment-US share

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