Restructuring the Military Industry:

CONVERSION FOR THE DEVELOPMENT OF THE CIVILIAN ECONOMY

China Association for Peaceful Use of Military Industrial Technology
and
The United Nations Department of Development Support and Management Services

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ARMS INDUSTRY AND CONVERSION IN DEVELOPING COUNTRIES

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PROBLEMS OF DATA GATHERING

Defence conversion does not exist as an independent field of study with specific theories and methodologies. Instead, defence conversion is a multi-disciplinary field within the social sciences and even the physical sciences. Its focus differs from the traditional analysis of security policies. Up to date defence conversion research from a political science point of view has focused on examining the possible impacts and effects on the defence budget, size and structure of military forces and the defence industrial base.

All the results of these studies have two features: most of them concern involvment only with western industrialized countries. They are more or less fragmental. The latter refers mainly to the size, structure and regional distribution of the defence industry. These results were obtained despite the deficit of macro-economic analysis to determine the effects of defence industrial development on the short-term, mid-term and long-term economic development.[1]

One of the causes of these deficiencies is the inadequacy of the data. Even in western industrialized countries it is impossible to obtain accurate relevant empirical data. In some cases the structure of the defence budgets, especially the procurement budget and expenditures for military R&D are known. More difficult to determine are those expenditures which are not listed in the defence budget but covered elsewhere. Even in western democratic industrialized countries, it is usually impossible to accurately sort out the uses of procurement expenditures by sectors of the defence industry, or to count the number of employees involved in all procurement projects, as well as the total sales of all the defence enterprises. More complex problems, such as, for example, the values created or productivity (as compared with civil economic sectors) cannot yet be ascertained even in western industrialized countries.

For most developing countries, even data on the structure of the defence budgets are not available. Therefore, it is impossible to estimate the figures or the domestic demand for arms and related equipment in these countries. Even if business reports or aggregate data on military imports and exports are available, only approximate estimates can be made on the domestic values of defence production.

Hence, the Stockholm International Peace Research Institute's (SIPRI) time series for the value of major weapon systems produced in the developing countries can merely indicate long-term trends, from which one cannot determine the value of the defence production in a specific developing country.

Table 1 (see Annex) showing the rank order of the most important developing countries producing major systems, is based on SIPRI's data.[2]

The rank, percentage of licensed production and trend indicator value have certainly changed since, but it can be assumed that the group of the top ten countries has changed little in composition, just like the corresponding group of countries in the rank list of industrialized countries. Even for the latter group no comparable figures exist on the value of the arms production.

As mentioned above, for some western countries, these values could be determined by a simple calculation, i.e. by subtracting the value of imported arms from the procurement expenditures shown in the budget and by adding the value of exported arms. But for countries of the former Eastern Bloc, it would not make much sense, not only because of the lack of data, but even if the data were available, problems would still remain: e.g. how can the values in roubles or zlotys be converted into a value in U.S. dollars? The United Nations statistics (according to the Industrial Statistics Yearbook) show the output values of all industrial sectors in currencies of the States concerned. Using the United Nations Industrial Development Organization's industrial statistical methods, values are converted into U.S. dollars according to the official exchange rate. A corrective factor is calculated for a few countries and selected periods of time to compensate for temporary overestimated currency values. To describe the proportion of industrial arms production in individual countries, these statistics will be used continuously even if they are hazy.

The different scope of arms production in industrialized and developing countries is clearly shown in the SIPRI's tables on the world trade in major weapon systems. According to the latest statistics[3] for the years from 1987 to 1991, the value of weapons supplied by the USSR amounts to 61.339 (in millions of constant 1990 U.S. dollars); supplied by the USA to 59.960, by France to 11.225, by the UK to 9.096, by the FRG

to 6.112, by the CSFR to 3.264, by Italy to 1.879, by the Netherlands to 1.758, by Brazil to 1.629 and to 10.420 by other countries. The total value reaches some 175 billion U.S. dollars. The portion of arms exports by the developing countries (here also including the People's Republic of China) in the world arms trade may not exceed 12-14 billions, or 7-8%.

Similar proportions are also reflected in the analysis of the number of people working in the arms industries. Here, the figures are based on the approximate values collected from many sources by Michael Renner.[4] The reason that even these values are only approximate ones is, on the one hand, that there are only a few "pure" defence enterprises in the developing countries, and therefore it is difficult to clearly demarcate the proportion of the employees working in the civil and military productive sectors respectively. On the other hand, the number of employees in the subcontracting companies can only be estimated. These reservations apply for both the figures for developing and industrialized countries.

Since the mid-1980s, the industrialized countries with a high proportion of military production in the manufacturing industry have undergone a slow but steady process of adjusting to the reduction of military requirements. This process will speed up in the 1990s with the end of the East-West Confrontation. The continuous reduction of defence budgets in almost all the northern industrialized countries (except Japan, Sweden and Turkey) has led to a progressive shrinkage of both domestic and foreign markets. Although the amount of arms transfers[5] among the industrialized countries increased to 15.2 billion U.S. dollars in 1988 and to 16.4 billion in 1989, from 14 billion in 1987, it decreased to 12.2 billion in 1990 and 9.7 in 1991. During the same period, arms and military equipment shipped to the developing countries from the industrialized countries have dropped sharply from 32 billion U.S. dollars in 1987 to 12.3 billion U.S. dollars in 1991.

In the industrialized countries, the process of adjustment to a significant reduction of military needs started too late and proceeded largely uncontrolled, especially in the USA and the former USSR. The CIS countries[6] reduced 350,000 jobs from 1988 to 1990; another 185,000 to 350,000 jobs will be lost by 1995. In the USA, the corresponding trend was not seen at first after the budget reduction announced by President Bush in 1992. It is estimated that on the basis of this reduction, 1.1 million employees will lose their jobs by 1995. The expected loss in Russia amounts to 1.5 million jobs in the coming years.

The afflicted arms industries in these countries have tried to maintain a part of the jobs by increasing exports. But as mentioned above, sales in the export markets decreased significantly. It can be predicted that the industrialized countries will lose one third of defence-related jobs in the coming years.

No respective estimates are available for the developing countries. However, it can be concluded from the statistical figures on arms exports by these countries, the changes in their defence expenditures and various reports on the problems of adjustment in numerous defence enterprises, that at least the first eight countries ranked in Table 2 (see annex) will run up against similar problems.

ARMS INDUSTRY IN DEVELOPING COUNTRIES

Brzoska and Ohlson identified, in the early 1980s, 54 developing countries with their own defence production capabilities. Most of them—about 35—were limited to producing ammunition and infantry weapons, as well as constructing small ships, most of which were for coastal defence. Only 15 countries produced aircraft, and almost all of them were produced under license, or were modified from old western or Soviet versions. Ten countries were capable of producing armoured vehicles; all of them were also produced under license, or were the modification of western or Soviet versions. There were only seven countries capable of producing rockets.[9]

There are no differences in the motives for establishing defence industries in developing and industrialized countries: to be independent of imports for economic reasons or security policy reasons. "Developing countries differ from the USA not in their motives, but in their resources."[10] This limitation of resources is reflected in the defence production capabilities and potential.

In the table of the top 100 world's defence companies,[11] only four developing countries are listed. No. 41 is the defence corporation Armscor in South Africa, No. 47 Israel Aircraft Industries, No. 68 Israel Military Industries and No. 81 the Indian Hindustan Aeronautics.

China's largest military-industrial organization NORINCO is not listed in this table. Although the number of employees and the turnover of this group are not mentioned in the related literature,[12] one can deduct from China's military exports that this group can be listed in the upper third of the SIPRI table. In

addition, the table concludes with a company which has created a defence-related turnover of 360 million U.S. dollars. It is impossible to determine the defence-related turnover of a company such as the Brazilian aviation corporation, EMBRAER, which in 1991 reached a total turnover of 600-800 million U.S. dollars with 8600 employees.[13] Even the latest study on the Brazilian arms industry[14] could not eliminate this deficit which exists also for all other important armaments companies, such as the manufacturer of armoured vehicles ENGESA, or the optical instruments manufacturer ENGEXO. For almost all other important defence enterprises in developing countries, such as the Arab Industrial Organization, in Egypt, such deficits also exist. For the latter, the statements[15] on employment vary between 15,000 and 20,000 employees and a turnover of between 100 and 300 million U.S. dollars in 1990.

The list of deficits can be arbitrarily extended, for it also involves the Pakistan Royal Ordinance, the Indonesian aviation enterprise IPTN, the South Korean Corporation Daewoo Heavy Industries, Samsung Aerospace and so on. Even a comparatively large research program would reveal only rudimentary data concerning the turnover and employment growth of the most important defence-related companies.

Despite these fundamental deficits, it still can be concluded that all the larger defence-related enterprises in developing countries are facing a significant reduction of military demand, except in South-East Asian countries where an opposite trend has been taking place in recent years. Thus, for example, the turnover and employment in the Singapore Technologies Holdings Ltd. have grown by 100% in the last ten years.[16] Similar trends can also be observed in Taiwan, South Korea and the ASEAN-countries. Presently, South Korea, with its technological and financial resources characterizing industrialized countries, is trying to set up an indigenous aircraft industry following the production of advanced combat aircraft under US license.[17] After having produced 300 Northrop F-5 fighters under license in the 1970s, Taiwan soon will start the production of an advanced fighter. This would be the first time that an advanced fighter has been developed and brought into batch production outside the industrialized countries.[18]

DEFENCE INDUSTRIAL CONVERSION IN DEVELOPING COUNTRIES

The development of defence-related industries in South Korea, Taiwan and Singapore is an exception. In almost all other countries, including the People's Republic of China, management and officials of defence-related companies hope to compensate for the reduction of military demand by expanding civilian production. This is especially true when the defence-related companies are state-owned, as is the case for most of the developing countries. The presupposition for the effective realization of this objective depends on several variables which differ from one country to another and from one arms company to another, even if they are active in the same field of business. These variables include the status of ownership, as well as the present range and flexibility of civilian and military production, age and type of existing equipment, economic and geographical situation, production depth and employees' qualifications.

Besides, these variables have varying significance, according to the economic sectors to which defence enterprises are subordinate. Even historical experiences of processes of economic adjustment or perhaps of defence industrial conversion may be important, as in the case of China or Egypt. After the first expensive attempt to set up an arms industry able to compete in the world markets had finally failed, Egypt tried to convert this industry. But the endeavour to switch from military to civilian production in the years from 1958 to 1970 must be rated as a failure.[19] Although conversion was attained by using the rigid means of a planned economy, the companies paid by getting heavily in debt, which saddled them until the mid-1980s. Moreover, due to production suspension and depreciation, the loss was exorbitant.

The situation in Egypt today is similar: beginning with the mid-1960s, it bought more and more Soviet weapons on very favourable terms instead of producing its own armaments at an uncompetitive cost and with large investments. Today the USA satisfies 85 to 90% of Egypt's demand for armaments.[20] In some of the ten factories of the Arab Industrial Organization, the rate of utilizing the defence production capacity is less than 15%. No data are available on the extent to which the surplus productive capacity is used and how much it cost to increase the civilian production capacity, for example, by providing the automobile industry (which is not very developed in Egypt) with parts and components, or the building of machines for agriculture or the production of cigarettes.

This fundamental question even arises with regard to the attempts made in Israel, Iraq[21] and India[22] to increase the proportion of civilian production in the defence enterprises. It is difficult to clarify whether it is an expansion of civilian production while keeping the existing defence production on the same scale, or

an actual defence conversion: that is making wide use of the equipment and workforce previously engaged prior defence production.

Apart from this unsolved question, there is another one concerning the possible deforming effects which could be a consequence of State-owned companies massively supported by the government intruding into civilian markets traditionally served by private-owned suppliers. This question concerns e.g. Egypt, especially in view of the ongoing efforts to privatize parts of the economy controlled by the State.

The plan of the Israel Military Aircraft looks more realistic.[23] The objective is to substitute the production of military aircraft by producing civilian ones. It is planned to modify jumbos, like the Boeing 747, converting them into cargo-transporters, and to focus on the maintenance and overhaul of civilian aircraft. This seems to be more realistic since they adhere closely to existing products and hardly any equipment has to be written off. Besides, it is not necessary to retrain personnel, and existing know-how can be continuously used. Moreover, there is a high probability that production can extend back to the supplies of prevailing contractors. By that the suppliers will also benefit from conversion and the option for completely returning to defence production at times of crises can also be kept, i.e., the option of reconversion or reconstitution.

In principle, every military production item can be substituted by a civilian one. But on the micro-economic level, conversion by substitution depends mainly on the flexibility of rearranging the production. The latter is determined not only by the proportion of civilian products in the defence production, the degree of specialization, the output's volume or depth of manufacturing, but also by the capability of marketing these products. Most defence-related companies with a small proportion of civilian production do not have this capability nor the experience of developing and producing civilian products at low cost.

Even if the above-mentioned decisive factors are positive, their effects will ultimately depend on the absorbtion capability of a market wherein the new products will be placed. Speaking from the level of the macro-economy, the presuppositions for conversion differ fundamentally from those in the industrialized countries. The domestic markets of most developing countries are too small for both the products of the capital goods and consumer goods industries as well as for the products of the arms industry. The attempt of these countries to compete with these products in the world markets will probably have as much prospect of success as the failed attempt of Egypt, Brazil or Argentina to compete in the world's armaments markets.

The plans of Israel Aircraft Industry, at the first glance bearing the promise of success, are also questionable. Besides IAI even other affected aircraft manufacturers in developing countries such as Hindustan Aeronautics or EMBRAER, and certainly some in the industrialized countries will develop similar strategies for diversification or substitution, and compete in a market which is as narrow and limited as the defence market. If these attempts fail, the consequences will be more serious for the industrial bases in developing countries having no developed industry. Conversion of the arms industry is not part of a structural policy, as in the industrialized countries, but an integral part of development policy.

By establishing a domestic defence industry, developing countries tried to use the transfer of technology necessary even for the development of civilian industry. This goal was hardly attained in these countries, just as the goal to accelerate technological development in the industrialized countries by improving the defence industrial base by the means of high technology. The expected effects of spin-off or spill-over of military technology into the civilian industry have remained an exception. Unlike in the industrialized countries, the developing countries' arms industry was not established by using an extensive and diversified industrial base. The greater part of the needed capital goods were imported, as well as the related know-how. In most cases this was carried out by using the financial means urgently needed for the development of civilian industry. The greater part of production still depends on the supply of essential components by the industrial countries.

The political goal was to become independent from the industrial countries supplying weapons and the political compromises linked thereto. This goal has been only partially achieved. This little advantage was at the same time neutralized by new dependencies. In the industrialized countries the decrease of military demand resulted in a retrenchment of overcapacities and the necessary restructuring of the defence industrial base which should have been initiated earlier. If there is some political aptitude, the related problems can be solved in a way that preserves the defence industrial base. As briefly shown in the case of Egypt, it can be assumed that most developing countries producing arms or military equipment will not master

the problems of economic adjustment without the support of the industrialized countries.

The necessary adjustment process could be assisted by cooperative conversion projects within the industrialized countries' development policy. Such kind of cooperation would make sense only if the developing as well as the industrialized countries are willing to integrate the more advanced parts of the related industry into the international division of labour. First signs, such as, for example, China's Xian Aircraft Corporation, producing components and parts for Boeing or Canadair, show that this kind of industrial cooperation can effectively support conversion.[24] But this seems possible only in selected companies active in such industrial branches as aerospace, electronics, road vehicle manufacturing or shipbuilding. Cooperation in these branches consequently leads to the transfer of advanced equipment, such as numerically controlled machine tools. Such kind of equipment is dually usable and can even be used for the remaining military production. Consequently, the cooperation in areas of dual-use technologies implies not only the control of the final destination of the related equipment but also of its utilization.

It will remain a legitimate goal of developing countries to maintain the arms production needed to supply the domestic market. Cooperation involving the transfer of dual use technology or products presupposes not only the controls mentioned above but, in a long-term perspective, the development of criteria concerning the reasonable sufficiency of a country's defence industrial base. Some criteria can be derived from existing treaties on the control of nuclear, biological and chemical weapons; others, from the Treaty on Conventional Forces in Europe or the Missile Technology Control Regime. This is not the place to analyze the possible contribution of single treaties to a catalogue of related criteria. But one can see them as having some things in common: they prohibit or limit certain types of weapons; they are in force and, despite single violations, represent a successful attempt to slow down the arms race. Therefore, it should be possible to develop an effective system of controlling the defence industrial base which orientates with the production or nonproduction of certain types of weapons.[25]

Except for the prospective answer on future criteria, irreversible conversion will be a goal of cooperative development policy. The opportunities provided here include cooperation in the field of environmental protection technologies. In this case it is not necessary to transfer expensive high technology, which after its application, can only be operated and maintained by experts from the industrialized countries, just like imported defence technology.[26] The technology to increase the efficient use of energy and reduce environmental pollution is relatively simple, although the prerequisites for the application of these technologies within existing resources are quite different. But they exist, in general, and are capable of development. "Developing countries generally have access to the required technologies. This is more a perceived than a real barrier. The really beneficial technologies were not pieces of equipment, but the 'soft' technologies—training in operation and maintenance methods, the particular—which have been 'historically neglected'... The view that technology can be transferred from North to South has been proved wrong. A technology which involves the mere transfer of machines and chemicals will last as long as the creators of the material are around. What is needed is the training of people in skills and technologies to allow them to creatively adapt, innovate and invent new technologies appropriate to their needs and societies."[27]

In many countries, this is also true for the application of production equipment and technologies used in the defence-related industrial sectors to other sectors, such as transportation and communications. Industrialized countries can contribute to the civilian use of existing technology and know-how through cooperation. This can be realized either through developmental projects or by investing directly in joint ventures or subsidiaries. But it is necessary to develop a corresponding political and economic framework.[28] In many developing countries this also includes administrative reform which must comprise the bureaucracy responsible for central economic planning. This concerns also the respective laws and related implementing regulations. Cooperation aimed at successful conversion can be supported and stimulated by privatization plans. In the framework of the United Nations Development Programme such plans could also be supported and subsequently financed and realized by the relevant United Nations special organizations.

NOTES

[1] See Lutz Köllner: "Konversion in hochentwickelten Altindustriestaaten" (Conversion in highly developed long industrialized countries). In: *Abrüstung und Konversion*./L. Köllner; B.J. Huck (eds.) - Frankfurt/New York: Campus, 1990, p.151-191.

[2] Michael Brozska; Thomas Ohlson: "Arms Production in the Third World: an Overview". In: *Arms Production in the Third World.*/M. Brozska; T. Ohlsen (eds.)/Stockholm International Peace Research Institute - London: Tylor and Francis, 1986, p.10.

[3] *SIPRI Yearbook 1992: World Armaments and Disarmament*/Stockholm International Peace Research Institute - Oxford: Oxford University Press, 1992, p.272-273.

[4] Michael Renner: Economic Adjustment after the Cold War./United Nations Institute for Disarmament Research - Dartmouth: Aldershot, 1992, p.15. Data on armed forces according to ACDA; data on employment in the arms industry according to Renner except: Irak op. cit. in Yezid Sayigh: *Arab Military Industry*. London: Brassey's, 1992, p.126. South Africa cit. in Signe Landgren: Embargo Disimplemented. Stockholm International Peace Research Institute—Oxford: Oxford University Press, 1989, p.46. Data on employment in the manufacturing industry cit. in *Statistical Yearbook 1987*. United Nations, New York, NY: United Nations 1990, p.78-88 except: Taiwan op. cit. in Statistical Yearbook of the Republic of China 1987. Taipei, 1987, p.4. South Africa cit. in South Africa 91-92: Official Yearbook. Pretoria: South African Communication Service 1992, p.152.

[5] See note 3; figures in millions of constant U.S. dollars.

[6] See: *Restructuring of Arms Production in Western Europe*. M. Brozska; P. Lock (eds.). SIPRI - Oxford: Oxford Press, 1992, 240 p.

[7] See note 3; Israel is the only country exporting arms to industrialized countries. The main customer is the USA. The value of exports in these countries in the respective years amounted to 90, 22, 95, 71 and 74 million U.S. dollars.

[8] *SIPRI Yearbook 1991-92*, p.259-263; figures in billion U.S. dollars at prices and exchanges rates of 1988. Figures on the People's Republic of China are not mentioned. It is assumed that the official figures are much lower than the real expenditures. The defence budget for 1991 amounts to 32.5 billion Yuan, approximately 6 billion U.S. dollars. The PLA disposes of other sources of income and some defence related expenditures are hidden in other budgets. Estimates on the real defence expenditures vary between 12 and 24 billion U.S. dollars. See SIPRI Yearbook 1991-92, p.245-250; John Pomfret: Reform fuels China's military machine. *Wall Street Journal* (1 July 1992), p.6.

[9] See note 2, p.16

[10] James Everett Katz: Understanding Arms Production. In: *Arms Production in Developing Countries*. J.E. Katz (Ed.), Lexington, Mass: Lexington Books, p.5.

[11] *SIPRI Yearbook* 1991-02, p.392-396.

[12] Richard A. Bitzinger: "Chinese Arms Production and Sales to the Third World"./RAND, Santa Monica, CA: RAND, 1992, p.46.

[13] Charles Bickers: EMBRAER Cuts Jobs in Crucial Run-Up. Jane's Defence Weekly (6 June 1992), p.963.

[14] Patrice Franko-Jones: *The Brazilian Defence Industry*, Boulder, CO: Westview, 1992, p.262.

[15] Yezig Sayigh: *Arab Military Industry*, p.58.

[16] Singapore Business: Industry Built on Ambition". *Jane's Defence Weekly* (22 February 1992), p.287-292.

[17] "Defence Industry Develops". *Jane's Defence Weekly* (8 August 1992), p.25-26.

[18] Paul Proctor: "First IDF Delivered as Taiwan Spools up for Full Production". *Aviation Week and Space Technology* (27 April 1992), p.38-40

[19] Mohammed El-Sayed Selim: "Egypt". In: *Arms Production to Developing Countries* (see note 8), p.134.

[20] Philip Finnegan: "Egyptian Arms Makers Shift to Civilian Goods". *Defence News* (16 March 1992), p.12.

[21] "Iraq Appoints an Adviser on the Production of Civilian Products". In: *Disarmament Newsletter* (June 1992). p.4.

[22] "India's Hindustan Aeronautics to Boost Civil Share Sharply". *Aviation Week and Space Technology* (2 March 1992), p.21.

[23] "Israel Aircraft Industries Reports Rise in Sales, Profits". *Aviation Week and Aerospace Technology* (20 April 1992). p.67.

[24] Paul Proctor: "China's Xian Aircraft Corp. Emphasizes Y-7 Production, Foreign Subcontracts". *Aviation Week & Space Technology* (24 February 1992). p.112-117.

[25] The necessary steps towards such a system are described by: Burkhardt J. Huck: *Dual Use Technologies, Conventional Arms Control and Conversion. Conversion—Opportunities for Development and Environment*. A. Brunn; L. Baehr; H.J. Karpe (eds.), Berlin/New York: Springer, 1992, S.65-68.

[26] In the mid-1960s foreign experts were forced by the USA, in cooperation with the Federal Republic of Germany and Israel, to withdraw from the Arab Industrial Organization's defence programmes. This immediately led to the collapse of the ambitious enterprise. See: Mohammad El-Sayed Selim: "Egypt". S. 132ff. In: *Arms Production in Developing Countries*.

[27] Excerpted from the study of the Conference ASCEND 21 on technology policy for the Earth Summit in Rio. Cited by Fred Pearce in: "The Hidden Cost of Technology Transfer". *New Scientist* (9 May 1992). p.36-39.

[28] For details see: "Reforming Public Enterprises". In: *Trade and Development Report*. United Nations Conference on Trade and Development. New York: United Nations, 1992, p.117-142 (Chapter II).

ANNEX

TABLE 1

Rank order of the main Third World major weapon-producing countries 1950-1984 and 1980-1984; figures are SIPRI trend indicator values, as expressed in US $ million, at constant (1975) prices.

Rank/Country 1950-84	production %	licensed	1980-84	Rank
1. India	3.923	77	1.265	(2)
2. Israel	2.885	4	1.342	(1)
3. South Africa	1.143	62	380	(6)
4. Brazil	1.116	26	566	(3)
5. Taiwan	1.051	85	562	(4)
6. Korea, North	775	41	265	(8)
7. Argentina 599	34	391		(5)
8. Korea, South	478	58	346	(7)
9. Egypt	289	57	162	(9)
10. ASEAN countries	249	84	109	(10)
Others	200		121	
Total	12.707	50	5.509	

TABLE 2

Armed forces and employment in military industries 1986

Country	Armed Forces thousands	Arms Industry thousands	Manufact. industry thousands	Proportion AI/MI %
Developing countries				
PR China	3,783	5,000	32,092	15.5
India	1,362	280	6,263	4.5
Egypt	452	100	1,642	6.2
Iraq	800	100	n.a.	n.a.
Israel	191	90	323	26.2
South Africa	100	80	1,437	5.7
Brazil	319	75	8,986	0.7
Argentina	95	60	962	6.2
Korea, North	842	55	n.a.	n.a.
Taiwan	390	50	2,614	1.8
Pakistan	484	40	3,800	1.5
Korea, South	626	30	4,416	0.6
Indonesia	284	26	5,606	0.4
Singapore	56	12	318	3.6
Thailand	273	5	2,300	0.2
Philippines	105	5	2,059	0.2
Malaysia	108	3	913	0.3
Chile	96	3	607	0.5
Industrialized countries				
USSR	3,993	4,400	36,891	11.9
USA	2,246	3,350	20,935	16.0
UK	324	650	5,398	12.2
France	550	400	4,636	8.6
Poland	430	272	4,196	6.5
FRG	495	191	8,121	2.1
CSFR	211	125	2,762	5.6
Italy	390	103	4,639	2.2
Spain	304	66	2,588	2.6
GDR	175	42	3,533	1.2

TABLE 3

Arms exports from developing countries to developing countries[7]

	1987	1988	1989	1990	1991
PR China	2917	1866	865	954	1127
Brazil	666	505	287	163	0
Israel	318	133	287	37	45
Egypt	234	277	78	42	5

TABLE 4

Defence expenditures of the top arms producing developing countries[8]

	1984	1985	1986	1987	1988	1989	1990	1991
India	6.9	7.7	9.0	9.8	9.3	9.6	9.5	9.0
Egypt	6.0	5.2	5.2	4.6	4.0	4.0	3.6	3.1
Iraq	31.5	23.5	16.5	17.0	12.6	10.7	9.2	7.4
Israel	8.4	5.2	4.3	4.1	3.8	3.8	3.8	3.9
RS Africa	3.4	3.4	3.4	3.6	4.0	4.1	3.8	3.0
Brazil	3.7	3.8	4.4	3.9	3.8	3.8	3.9	n.a.
Argentina	4.0	3.0	3.1	2.9	3.2	3.0	2.0	n.a.

TABLE 5

Rank	Turnover Defence related		Total	Employees
Company	1990	1989	1990	1990
	Millionen $			
41 Armscor	1330	1460	1663	18,900
47 IAI	1120	1030	1400	16,650
68 IMI	640	590	655	12,000
81 Hindustan	500	520	515	43,000

香港灣仔港灣道26號華潤大廈高座40樓

CE ICC '93 HONG KONG
CHINA-UN

'93軍轉民香港國際合作討論會

'93 HONG KONG CONFERENCE AND EXHIBITION ON INTERNATIONAL COOPERATION
TO PROMOTE CONVERSION FROM MILITARY TO CIVILIAN INDUSTRY

701

Mr. Huck (table 5)

誘柬
Invitation

CEICC '93 HONG KONG

CHINA-UN

請柬

Invitation

謹訂於一九九三年七月七日（星期三）下午六時三十分至八時，在香港灣仔港灣道26號華潤大厦50樓舉行**"'93軍轉民香港國際合作討論會"**開幕招待會。

恭候

光臨

中國和平利用軍工技術協會
聯合國經濟與社會發展部 敬約

CHINA ASSOCIATION FOR PEACEFUL USE OF MILITARY INDUSTRIAL TECHNOLOGY

AND

THE UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL DEVELOPMENT

CORDIALLY INVITES YOU TO

A COCKTAIL RECEPTION FOR THE OPENING OF

93 HONG KONG CONFERENCE AND EXHIBITION ON INTERNATIONAL COOPERATION

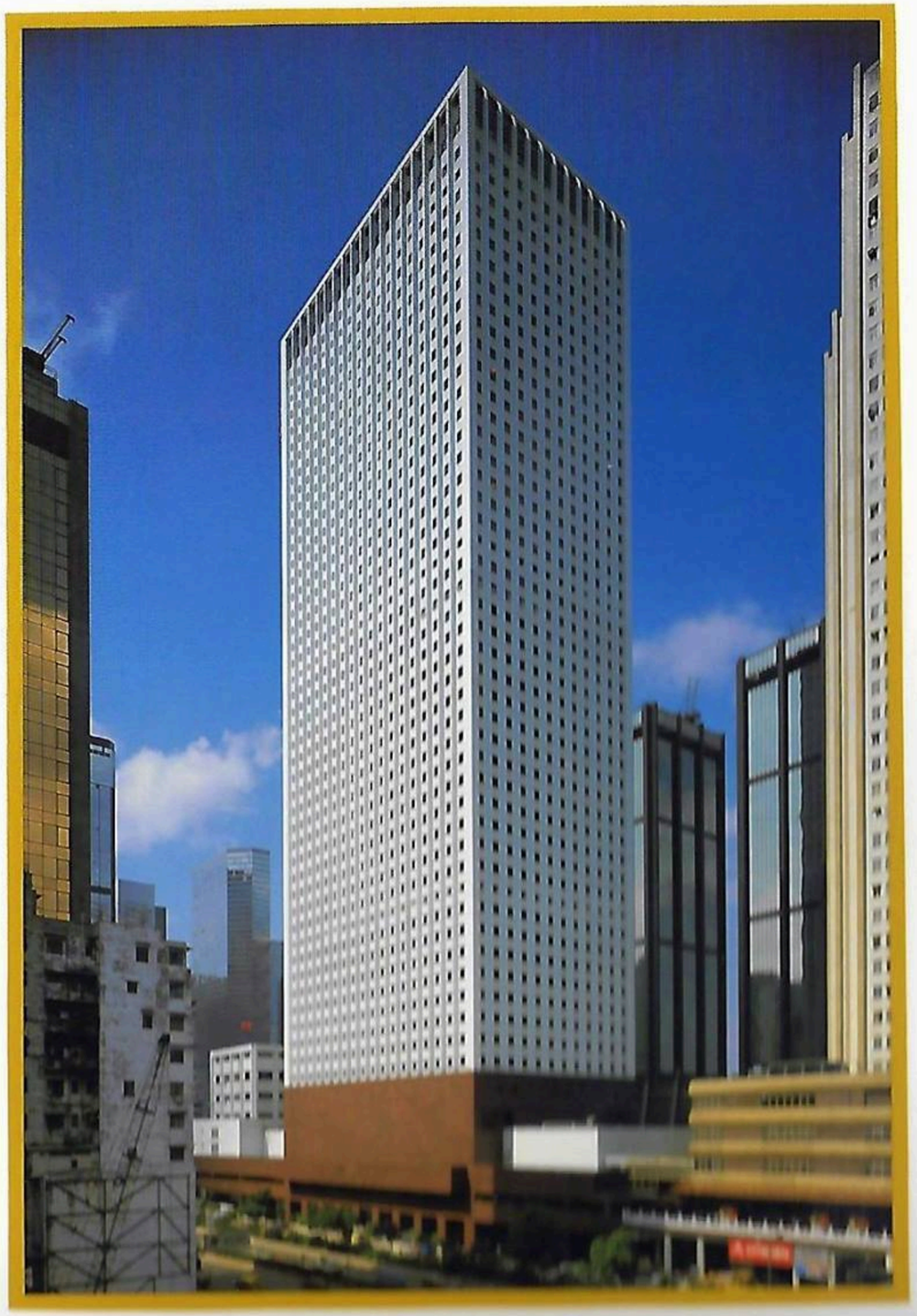
TO PROMOTE CONVERSION FROM MILITARY TO CIVILIAN INDUSTRY"

AT 50th FLOOR CHINA RESOURCES BUILDING

26 HARBOUR ROAD, WANCHAI, HONG KONG

ON WEDNESDAY 7th JULY, 1993

FROM 6:30pm TO 8:00pm



華潤(集團)有限公司

貴賓廳

中国和平利用军工技术协会宴客

一九九三年七月七日

MENU · 菜譜

龙　虾　沙　律

北　京　烤　鸭

原　盅　鸡　炖　鲍　翅

姜　葱　鲜　鲍　鱼

蟹　黄　扒　蜜　豆

清　蒸　青　斑

干　烧　伊　面

荷　叶　饭

杏　仁　豆　腐

合　时　生　果