PSIS PROCEEDINGS

Arms Sales Versus Nonproliferation: Economic and Political Considerations of Supply, Demand, and Control

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MODERATOR'S COMMENTS

M. Granger Morgan

To many people, proliferation means nuclear, chemical and biological warfare, and missile technology. But there are growing numbers of folks who argue that that definition is too restrictive. There are a variety of other high-technology capabilities — regional surveillance, advanced communications, stealth, precision navigation, smart targeting — which together have the potential for being major force multipliers.

Perhaps our traditional definition of proliferation has been too narrow almost as a result of diplomatic accident. For example, modern high-performance aircraft may be as effective as missiles or more so in delivering nuclear weapons, so why the single-minded focus on missiles?

What are the motivations that regional states face for acquiring military capabilities? There are several. The largest is a response to legitimate concerns about external threats to security. In some cases there may also be concerns about maintaining internal security. Although high-performance military capabilities are probably not essential to meet that objective, it can provide added incentive. In at least a few cases, militarization provides a context in which to subsidize domestic industrial developments. It serves as a tangible symbol of national sovereignty and pride, and in some cases — certainly in the Iraqi case — to advance the expansionist interests of powerful rulers.

Some of these motives can be addressed through collective security and other actions from the outside. In particular, the most fundamental — the response to legitimate security needs — can be addressed by collective approaches.

On the supplier side, there are three basic incentives. Advanced military states have political and defense interests and allies and have historically engaged in arms transfer and other technology transfer to support their individual ends.

Increasingly, there is also a pressure growing from a desire to sustain domestic defense industries in the face of declining defense budgets. Historically, that has been a pressure faced principally by smaller states with advanced military capabilities. For example, the French defense market alone has not been large enough to sustain the infrastructure that the French felt they needed, so they have engaged in active export. However, today no one is immune to these pressures. In the United States, though such exports remain a relatively small part of the total volume, they will become more important as defense budgets decline.

A closely linked motivation is the need for hard currency and the balance-of-payments problem. A different set of states faces each of these. China, the Soviet Union, and a number of countries of Eastern Europe face serious hard currency problems, and their military technologies are among the few sectors that are competitive in international markets.

There are two routes around this problem. In the collective route, countries engage in cooperation among major military states to expand markets. But the experience of getting NATO, for example, to cooperate on arms acquisition has been pretty poor. Still, the U.S. delegation to NATO have recently put a "defense GATT" on the agenda for discussion. The only alternative looks to be a free-for-all.

From a narrow U.S. perspective, there are interesting dynamics at work here. Historically, the United States and NATO generally have pursued a policy vis-à-vis the Warsaw Treaty Organization of offsetting larger numbers with higher-performance technology. One of the unspoken side benefits of that, at least viewed from a U.S. perspective, has been that the United States has been able to enjoy decided performance superiority in regional theaters as well.

With the demise of the Cold War, that side benefit no longer becomes automatic. Faced with the rising unit cost of military systems and shrinking defense budgets, the United States needs to worry about high-performance systems becoming widely available and continued progress facing these budget constraints.

The alternative to the collective approach is to devise strategies for limiting proliferation and the militarization of regional theaters. The most important strategy is working directly on the problem of reducing the demand for military capabilities by resolving the legitimate security concerns of regional states through the development of new regional security arrangements, arms control agreements, and the like.

Closely linked to that is removing economic and other obstacles that block the attainment of legitimate

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development needs, because if one cannot meet those legitimate needs, fundamental underlying threats to a nation's security will remain.

In the meantime, we must develop supplier cartels that limit transfers of weapons and other military systems, as well as associated production technologies and expertise. We also need coordinated and rationalized export control regimes for dual-use items.

We are rushing into these new regimes without sufficient care and thought, and they constitute only one of a variety of appropriate policies.

Finally, some have argued recently that, in extremis, a collective approach to dealing with emerging major threats that is more direct — either military or covert — may be necessary.

THE ARMS TRADE AND PROLIFERATION OF BALLISTIC MISSILES IN CHINA

Hua Di

Primitive ballistic missile technology was introduced to China from the Soviet Union in the late 1950s. Three decades later, China began to export advanced ballistic missiles. Unlike the wide spread Soviet SS-1 "Scud," which has been operationally fired in at least three wars, Chinese-made ballistic missiles have never been launched in any military conflict anywhere in the world. China's ballistic missile proliferation, nevertheless, has become one of the hot topics of the international security field.

THE GENESIS OF CHINA'S BALLISTIC MISSILE EXPORT PROGRAM

China's arms export industry is a national economic endeavor. While the People's Liberation Army (PLA) sells its decommissioned weapons and the surplus stockpile left due to drastic troop reductions, the nation's defense industries have also been enthusiastic in earning hard currency to finance their own conversion and modernization and to contribute to the national economy as a whole.

In 1979, when economic reform started, the Communist party's Central Committee issued a guideline stipulating that the defense industries be managed according to four principles:

- *junmin jiehe* (combine military with civilian [products]),
- *pingzhan jiehe* (combine peacetime with wartime [production]),
- *junpin youxian* (give priority to military products), and
- *yimin yangjun* (use civilian [sales] to foster military [research and development (R&D)]).

However, the revenues from selling civilian products were far from enough to foster military R&D. The defense industries had to extend the principle of *yimin yangjun* to *yijun yangjun* (use military [sales] to foster military [R&D]). They began to tackle the international arms market. In 1980, the Central Military Commission and the State Council approved such an approach.

Among the items available for export from the Ministry of Space Industry (MSI) were satellite-launching service, antiaircraft missiles, and antiship missiles. By mid-1984, however, the MSI had not received any foreign contracts for satellite launching, while feeling severe financial difficulties due to insufficient domestic military orders. Facing a two-thirds cut in the 1985 R&D appropriations and watching the successful sales of antiaircraft and antiship missiles, it decided to develop tactical ballistic missiles for export. Foreign Soviet sales of the Scud also contributed to this decision. Later, the "war of the cities" between Iran and Iraq gave further impetus to the Chinese ballistic missile export effort.

Chinese missile engineers deemed that, based on technologies obtained in R&D on strategic ballistic missiles, they could quickly and cost-effectively develop tactical ballistic missiles much better than the Scuds. On 28 April 1984, they decided to start R&D on a tactical ballistic missile, code-named M-9. The Latin letter "M" stands for the English word "missile." The use of an English abbreviation implied that it was designed for export. The PLA is not English-speaking, and its ballistic missile arsenal is designated DF for "*dongfeng*" (east wind). On 5 December, the Commission on Science, Technology, and Industry for National Defense, which supervises the nation's defense industries, approved the development of tactical ballistic missiles. On 4 March of the following year, a feasibility study of the M-9 was completed. In October, the M-9's general design began.

The Chinese were so eager to export the M-9 and earn hard currency that they displayed it at the First Asian Defense Exhibition (ASIANDEX) in Beijing in November 1986, two months before the missile's design work was completed. They were delighted that the M-9 had attracted attention and admiration from across the international community. At that time, no one informed the Chinese that seven major developed countries (the Big Seven) were holding secret talks to limit ballistic missile proliferation. Nor had the West voiced any opposition to China's intention, expressed at the ASIANDEX, to sell the M-9 abroad. The Missile Technology Control Regime (MTCR) was not made public until April 1987, three years after the Chinese had set out to develop the export-oriented M-9.

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The high regard in which the M-9 was held internationally raised the PLA's interest in tactical ballistic missiles. Before the closing of the ASIANDEX and two years after the M-9 program started, the M-9 was given a domestic code name, DF-15, for the PLA's rocket forces. But for export, it would remain the M-9.

At the 1986 ASIANDEX, it was disclosed that there existed a whole "M-family" of ballistic missiles. In fact, at about the same time as the M-9 was under development, the Chinese started to develop two shorter-range tactical ballistic missiles for export. One is called M-11 or DF-11, depending on the customer, and the other is designated the 8610.

CHINA'S ATTITUDE TOWARD BALLISTIC MISSILE PROLIFERATION

During World War II, thousands of German V-2 ballistic missiles, each carrying a thousand-kilogram conventional warhead, struck London. The British, though suffering physically and psychologically, did not kneel down. In contrast, two atomic bombs delivered by B-29 bombers forced Japan to surrender in a week. Obviously, the essential difference is not the delivery system, but what was delivered. There are many ways — ground, air, and naval — to deliver destructive power upon a potential target. A human being with a suitcase, in some extreme cases, may constitute a system capable of delivering an explosive device. A ballistic missile is just one means of delivery. By itself, a ballistic missile is not a weapon of mass destruction, but only part of a weapon system. Why should it be singled out from other kinds of delivery vehicles to be barred from the international market? Why should we mix delivery means with means of mass destruction and raise the importance of ballistic missile proliferation to an equal footing with that of nuclear proliferation?

Unless equipped with nuclear warheads, ballistic missiles are less effective than strike aircraft by many standards, for example, accuracy, payload, and ability to attack mobile targets. When using chemical warheads, wind direction in the target area must be considered; a ballistic missile cannot adjust itself to the wind direction, but an aircraft pilot can do so upon reaching the site. When carrying nuclear warheads, ballistic missiles are only roughly as effective as strike aircraft. Why should sales of strike aircraft, but not ballistic missile, be permitted?

Whether a weapon system is defensive or offensive — or stabilizing rather than destabilizing — is also arguable. When attacking Iran in 1980, Iraq did not utilize its ballistic missile superiority. Years later, when forced onto the defensive under an Iranian counter-offensive, Iraq launched Scuds to stop the war it might otherwise have lost. At that time, the West did not speak out against the Iraqi Scuds, because if Iran had won that war the balance of power in the Middle East would have been upset. In 1990, during the invasion of Kuwait, Iraq did not use missiles either. Only in 1991, when it was in a desperate defense, did Iraq launch its missiles. Were the missiles offensive or defensive? Were not the armored vehicles, artillery pieces, combat aircraft, and helicopters, rather than ballistic missiles, the factors that twice destabilized the region?

Some experts argue that ballistic missile attacks are more dangerous than aircraft strikes because the former cannot be defended against, whereas the latter can. They obviously speak from a Western standpoint. For developing countries, ballistic missiles and aircraft alike can be expected to reach their targets, especially if used against large targets, such as cities.

The main task of nonproliferation should be to curb the spread of nuclear warheads. Ballistic missile proliferation, while perhaps undesirable, should not divert our central attention from nuclear proliferation. It must be considered in context, along with sales of other advanced delivery systems.

The United States itself has engaged for decades in sales of, for example, submarine-launched ballistic missiles — the Polaris and the Trident — to the United Kingdom. Whatever the reasons for these transfers, they, too, constitute ballistic missile proliferation, though between developed countries. Is it not discriminatory to say, What the rich have done is not allowed to the poor?

The U.S. Congress has passed a bill to impose economic sanctions on countries violating the MTCR. But if developing countries, led by China, create a control regime banning sales of strike aircraft, would the United States abide by it? Of course, having no economic sticks, Beijing would not be able to play power politics, as the United States is unjustly doing.

One of principles of the market economy recommended to China by the West suggests that everyone do business in areas of comparative advantage. In the international weapons market, one of China's strong suits is its conventional tactical ballistic missiles. Let others deal with their strong suits; but so long as others are selling strike aircraft, China can legitimately sell ballistic missiles.

While the United States is urging China to restrain arms sales, China reciprocally "calls on big arms export countries to take a restraint attitude toward the arms export." The Chinese rightfully point out that the United States wants to control others' arms sales — but not its own — and ask, Who in the world should first control arms sales?

China's position against nuclear weapons proliferation has been firm and clear. In contrast, Beijing has never clearly promised to stop its ballistic missile proliferation. At a press conference on 27 March 1991, Foreign Minister Qian Qichen said:

> Now, nuclear weapons proliferation is prohibited in the world. There exists an international convention on the prohibition of biological weapons. An agreement banning chemical weapons is being negotiated. As to the export of conventional weapons, no regulations so far exist. As to the issue of MTCR, China was not a participant. It cannot be required that agreement reached among a few countries be obligatory to a non-participant country.

Qian was expressing his annoyance at the big powers' attempt to impose regulations on China. China has felt discriminated against since the 1963 Limited Test Ban Treaty and the 1968 Nuclear Non-Proliferation Treaty. Its feeling of unequal treatment has persisted through the present. Moreover, China had invested huge resources in its defense industries to the detriment of its economic development before the 1980s. Today, as economic construction programs become a national priority, it is imperative that revenues be retrieved from the defense sectors to help drive the entire national economy.

Beijing's position has become clearer since early 1991. On 13 March in Tokyo, Deputy Foreign Minister Qi Huaiyuan told his Japanese counterpart that Beijing was ready to cooperate with tighter controls on the conventional arms trade — not just ballistioc missiles — within the framework of the United Nations rather than the U.S.-initiated MTCR. Speaking in Washington on 7 May, Chinese Ambassador Zhu Qichen announced:

> China stands for a fair, reasonable and effective solution of the arms proliferation issue, including missile exports, through an overall and equal consultation among all countries, not through a decision made by few countries.

Premier Li Peng further explained that "overall" means control over all countries and with regard to all kinds of weapons. He added that it ought not control one kind of weapon while leaving another kind of weapon of equal lethality and the same nature uncontrolled.

Beijing's present official guidelines can be concisely summarized in eight Chinese characters: *gongping* (fair or equal), *heli* (reasonable), *quanmian* (overall or comprehensive), and *junheng* (balanced). These guidelines were accepted by all five permanent members of the United Nations Security Council in a communiqué released after their two-day meeting in Paris last July.

The Chinese position is thus clear. The MTCR, stipulated by few Western countries, is unreasonable. The three-hundred-kilometer and five-hundred-kilogram criteria are arbitrary and groundless. Ballistic missiles are nothing special and are certainly not weapons of mass destruction in their own right. Their export must be discussed by the United Nations within the framework of general restrictions on all arms sales. Any regime negotiated otherwise would not be comprehensive or balanced. It is unfair that China was not involved when secret talks on the MTCR started in 1983 or when it started developing tactical ballistic missiles for export in 1984. It is unfair that the sales of strike aircraft are unrestricted, and unfair to impose the MTCR on China by means of power politics.

China's president, Yang Shankun, has said:

> American opinion censures us for selling weapons. Yet the United States also sells weapons. Why does it not censure itself? There is a question of fairness here. China has a saying, "Only magistrates are allowed to set fires. Ordinary people are not even allowed to light lamps." You are strong, so you can sell without constraint. We are not so strong, and we sell much less. Yet you denounce us every day. We feel uncomfortable.

The essential questions are thus, Who authorized the United States to be an arbitrator in all these matters? Who gave the United States the right to stipulate what can or cannot be sold and to whom?

Moreover, unlike the bloody, disgusting suppression of mass demonstrations in 1989, China's export of conventional weapons has enjoyed popular support in the country. Those working in defense industries are particularly delighted with every sale of their products abroad, seeing therein their contribution to the people. They have long felt guilty in spending so much national wealth on weapons R&D over past three decades. When talking about the sale of DF-3 ballistic missile to Saudi Arabia, they hailed it as "*gande piaoliang*" (beautifully done).

THE POSSIBILITY OF COMPROMISE

Ironically, Uncle Sam's stick prevents compromise. Moreover, history proves that in adverse circumstances, the Chinese Communists tend to be confrontational and the people tend to unite around the government. The current behavior of the United States has justified Beijing's view that "one superpower is worse than two. Without being checked and balanced, the United States is going wild. Let's put aside the issue of domestic democracy temporarily and unite to repulse the U.S. imperialism first." Worse still, U.S. policy may politicize China's arms sales. The angered Chinese may export more ballistic missiles, not for

economic gains but to display China's backbone to the entire world.

China has invested heavily in tactical ballistic missiles for export. The cost of this investment must be offset, even if the expected profit is to be abandoned. However, if all major suppliers of all types of weaponry are willing to cut off arms sales and if other hard-currency-earning channels are made available to Beijing, an international regime controlling all arms sales, not only sales of ballistic missiles, can be successfully negotiated with China's active participation.

CONCLUSIONS

This discussion suggests four conclusions that should be heeded by Western policymakers.

1. **Deemphasize ballistic missile proliferation.** At this moment, central attention should be paid to proliferation of exotic warheads, while negotiating curbs on all types of delivery vehicles, including both ballistic missiles and strike aircraft.

2. **Decouple ballistic missile proliferation from China's ideology and "most favored nation" trade status.** The less hard currency China earns through civilian trade, the more it feels forced to seek more profit from arms export. Power politics is counterproductive. Cooperative approaches, with carrots offered to Beijing, may bring more success. The United States must exercise a certain self-criticism, not just criticism of others, if it is to evoke the same from China. Moreover, the Western media should filter out inaccurate claims about China's involvement in nuclear proliferation. False accusations deepen Chinese perceptions of Western behavior as discriminatory or imperialistic. Similarly, irrational sanctions consolidate the Chinese people around their government.

3. **Negotiate new rules of the game.** The MTCR is biased and should be referred to only cursorily when negotiating a new control regime. The new rules of the game must encompass all kinds of arms sales and be negotiated and legalized in the framework of the United Nations.

4. **Reward China for not selling ballistic missiles.** To dissuade China from ballistic missile export and to cover China's business loss, the rich West ought to provide economic compensation, for example, to buy these M-missiles or to provide low-interest loans to convert China's defense industries. The U.S. restrictions on China's space launch business must be suspended. The U.S. Congress was considering relocating $1 billion from the defense budget to help relieve the Soviet food shortage and convert Soviet defense factories. While the aid to Moscow would be a pure giveaway, the same amount may generate much return from Beijing. The United States can acquire all kinds of M-missiles and ship them back or destroy them on site in China.

CHALLENGES TO AND PROSPECTS FOR CONTROL OF CONVENTIONAL WEAPONS PROLIFERATION

Herbert Wulf

RECENT INITIATIVES TO ENHANCE ARMS EXPORT REGULATION

In 1990 a United Kingdom Royal Commission of Enquiry reported:

> Whatever may be the morality of international arms deals, there is unanimity among the international law experts of all civilized nations that effective controls must be maintained over the sales and purchases of armaments, and that their transshipment should be so monitored and supervised as to ensure that they do not fall into unauthorised hands.

An even more sweeping characterization of the obligations of government can probably be justified — namely, that in existing international law all governments are obliged to ensure effective control over arms exports and to monitor and supervise the movement of arms within and through their national territories. This requirement stems from the combination of the mandatory United Nations arms embargo against South Africa and the mandatory United Nations trade embargo against Iraq, on the one hand, and article 2.5 of the United Nations Charter, on the other.

In article 2.5, member states pledge to "refrain from giving assistance against which the United Nations is taking preventive or enforcement action." Without an effective mechanism for arms export regulation, member states cannot meet this commitment.

The need for the effective regulation of the international trade in arms has been acknowledged by many of the major industrialized countries. There is less agreement on the need to control the movement of other security-related commodities, especially civil technologies that also have military applications. There is a tension between regulating the international trade in so-called dual-use goods and the counterpressure to deregulate international trade.

The importance of economic development as an element promoting security and stability has been widely acknowledged for many years. Moreover, through the General Agreement on Tariffs and Trade, governments have stressed — at least at the level of declaratory policy — the need to stimulate trade in goods and services and remove barriers to the free movement of goods.

There is a consensus that while most trade should be unfettered, the free movement of goods must be tempered with controls on some kinds of goods and certain recipients. The nature of controls will be politically determined, underlining the fact that arms transfer policies operate inside the broader framework of foreign policy.

In the 1980s the issue of arms transfer control became a more important element of the conventional arms control debate. This reflected several unrelated developments:

- First, in a significant number of countries there was a growing concern about the relationships among the illegal arms trade, international drug trafficking, and organized crime.
- Second, there was growing pressure within the international community for a greater effort to adopt an arms embargo on either or both of the countries then at war in the region of the Persian Gulf — Iraq and Iran.
- Third, in the context of the improving U.S.–Soviet relationship, the United States raised the profile of aspects of the trade in weapon delivery systems. Foremost among these were ballistic missiles and associated technologies.

These factors notwithstanding, it was the Iraqi invasion of Kuwait on 2 August 1990 which propelled the issue of arms transfer control to the center of the conventional arms control debate.

The dramatic changes which have occurred in East–West relations and European politics and within the developing world have stimulated a reappraisal of the roles of global bodies (the United Nations) and regional bodies (including various European intergovernmental organizations) within the international

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Table 1. Changes in national export regulations in 1991

Australia	Defense export guidelines will now include consideration of third-party reaction to a sale, whether or not a proposed recipient is in an area of tension, whether an export could destabilize the region it is destined for, and Australia's nonproliferation policies.
Belgium	Arms exports will now be regulated by a new law passed in 1991 specifically for that purpose, rather than as part of a general import-export law as before.
Canada	Canada will now publish an annual breakdown of arms exports (other than those to the United States) by recipient and by category of goods.
France	A single official has been given responsibility for overseeing the administrative process of arms export decision making.
Germany	The punishment for violating export regulations has been increased; confiscation of profits from illegal exports has been made possible; German citizens now require permission to participate in arms projects worldwide; companies which violate regulations now risk closure.
Hungary	Hungary has established, for the first time, legislation to control the export of arms.
Israel	Israel has incorporated the guidelines of the 1987 Missile Technology Control Regime into its national export regulations.
Italy†	A more detailed commodity control list for general use is being prepared.
Japan	244 items formerly controlled only in cases of export to COCOM-proscribed recipients are now controlled for all destinations.
Netherlands	The Dutch government will make arms export data available to Parliament for the first time; Parliament will receive prior notification of major new arms deals; detailed information on disposal of surplus conventional weapons (disposed of under the CFE Treaty requirements) will be published.
Romania	Romania has established, for the first time, legislation to control the export of arms.
United States	The list of potential chemical weapon precursors subject to control has been extended; the commodity control lists used by the State Department have been revised to reflect changes in the COCOM control lists.

† Italy passed a new arms export law in 1990.

system. One of the issues to which these bodies have turned their attention is regulating the movement of conventional weapons. The most recent initiatives undertaken by multilateral bodies consist of

- Efforts by the European Community to make arms export control an explicit element of a future treaty on European Political Union;
- Efforts led by permanent members of the United Nations Security Council and supported by many countries to establish a register of the arms trade to be maintained by the United Nations;
- Efforts by the Conference on Security and Cooperation in Europe to promote transparency in arms export and import policy among its members;
- Efforts by NATO to establish new rules for military technology transfer both within the alliance and between NATO members and other countries;
- Efforts by governments and multilateral financial institutions to link economic assistance with arms procurement policies in recipient countries; and
- Efforts to strengthen or modify the activities of existing informal export control regimes, specifically, the Australia Group, the Coordinating Committee on Multilateral Export Controls (COCOM), the London Suppliers Group, the Missile Technology Control Regime, and the Zangger Committee.

Bodies such as the International Monetary Fund; the United Nations Development Program, and the World Bank, as well as nongovernmental organizations, are also active in the discussion of these issues. Nevertheless, the sovereign state remains the primary unit of organization within the international system. As a result, any successful multilateral control regime (even within a close inter-governmental grouping, such as the European Community) will depend on the national means of implementation and enforcement.

As Table 1 indicates, changes in national regulations continue.

The intentions behind the various national and multinational initiatives can be classified as follows:

- To monitor the movement of arms and report the findings;
- To establish global criteria by which permission to export arms would be denied;
- To prevent the misapplication of civil technologies for military purposes, especially those technologies

which may contribute to the production of weapons of mass destruction or ballistic missiles.

An evaluation of these efforts has been left to the concluding section, and the following section will identify trends in the global arms market and what they imply for arms control.

REDUCED ARMS EXPORTS, INCREASED PRESSURE TO EXPORT

Since 1988, the Stockholm Peace Research Institute (SIPRI) has recorded three consecutive decreases in the estimated value of transfers of major conventional weapons. The estimated value was almost halved between 1987 and 1990, not as the result of a conscious effort to disarm, but primarily because of three factors: less hard currency has been available to a number of leading importers; several "hot wars" — notably, the war between Iraq and Iran — have ended; and several countries which expanded their arms industries in the 1970s and 1980s have reduced their dependence on arms imports.

Data published in the United States reveal the same broad trend. According to the Congressional Research Service and the Arms Control and Disarmament Agency, the value of new arms agreements signed has declined since 1984–85. The value turned upwards again in 1990, largely as a consequence of an increase in the value of orders for U.S. weapons. The value of new agreements with Third World countries for U.S. weapons increased by $10.5 billion in 1990, while the value of new agreements for weapons from the Soviet Union, France, the United Kingdom, and Germany declined. Looking at deliveries, a downward trend in the value of the arms trade is also visible. The decline in the estimated value of major conventional weapons deliveries as measured by SIPRI was particularly dramatic in 1990, being in the region of 35 percent.

This decline largely reflected a fall in the volume of arms transfers within the former Warsaw Treaty Organization and between the Soviet Union and some important clients in the developing world. Afghanistan, Angola, India, Libya, North Korea, and Syria all reduced the level of their imports.

The downward trend might be halted as a result of the 1991 Gulf War, since there is no evidence that this experience has fundamentally changed arms procurement policies among Middle Eastern countries. New initiatives with regard to controlling arms exports, discussed below, are also unlikely to have a short-term impact on the value of the arms trade. However, any reversal of the overall downward trend is not likely to be sustained.

While the momentum for arms transfer control is stronger now than at any time during the last four decades, so are the economic pressures on the arms industry. Procurement budgets in most of the member countries of NATO and the former Warsaw Treaty Organization are falling at the same time as export markets are shrinking.

How the tension between the political imperative for arms control and economic pressures on industry will be resolved is an open question. However, if production capacities are not reduced, arms export controls seem bound to fail.

Within the market for arms and military-related technology, the importance of sales of finished weapon systems has progressively declined. While the strength of this trend is impossible to quantify, it is reasonable to assert that other forms of military technology transfer have become progressively more important since the mid to late 1970s.

There are many factors behind this change, but the most important are the following:

- To underline sovereignty and avoid dependence on either former colonial powers or the new superpowers, some newly independent governments sought arms and the capacity to produce ammunition and spare parts. This has been true for larger developing countries — such as India, Indonesia, Iraq, and Egypt — and those which have learned how to use or develop technology — such as Israel, South Korea, and Taiwan. It is not a global phenomenon, and the number of countries that are significant arms producers or importers is small.

- European countries — and especially France — had not only rebuilt arms production capacities by the mid-1960s, but also were sympathetic to the political objective of reducing dependence on either superpower.

- Military technology developments increased the importance of nonlethal systems required to find targets on a battlefield.

- The possession of oil wealth or economic development produced the resources needed to buy more advanced weaponry.

CHALLENGES TO THE CONTROL OF WEAPON PROLIFERATION

These broad trends have contributed to the growing importance of four categories of technology: (1) international coproduction; (2) the concentration and internationalization of arms-producing companies;

(3) sales of components and subsystems; and (4) sales of dual-use technology.

International Coproduction

As part of adjustment to declining procurement budgets, arms-producing companies are increasing their emphasis on international business. Two of the means for doing this are the sale of licenses and co-production agreements.

Weapon systems such as the three-nation Tornado multirole combat aircraft, the Anglo–U.S. Harrier jump-jet, or the Franco–German missiles Roland and HOT are all genuine international products, with a multinational joint-venture company as a prime contractor. All of these systems have then been sold on to other customers by that multinational grouping. This form of technology transfer is not a new phenomenon — Roland and HOT date from the mid-1960s, the Tornado and Harrier, from the mid-1970s. However, the fact that a growing percentage of major new weapon systems in development around the world are produced in this manner makes it difficult to control the transfer of arms and technology on a purely national basis.

Cooperative arms production takes place between different country groupings: Industrialized countries cooperate with Third World arms producers; the Soviet Union has supplied production licenses to its former European allies; within NATO, the issue has been discussed since the 1950s.

Expanding collaboration is easiest to illustrate in U.S.–European relations. A study of the Office of Technology Assessment of the U.S. Congress describes more than seventy U.S.–European cooperative agreements signed in the years 1986 to 1990, with a rapid growth in the number from year to year.

In the 1990s, a heavy dependence on imported technology is already the norm for complex platforms, such as warships and combat aircraft, with platforms independent of imports — or dependent to a small degree — being rare.

The speed and range of military-related technology development means that no country — not even the United States — can be a leader in all fields. Moreover, the technical complexity of designing and building major systems has become too great for any single company to manage. Financially, not even the largest corporations can bear the cost of developing major systems alone. Market conditions have also meant that governments of importing countries have been able to insist on the maximum transfer of technology through the involvement of local industry. Therefore, teams have increasingly been formed between companies across national borders.

Besides economic and technological criteria, political and military considerations also play a role in stimulating international collaboration. Within alliances, equipment standardization has been an important declaratory aim. On occasion, collaborative projects have also been a convenient means to circumvent arms export policies. Where governments, for whatever reason, want to promote the collaborative process, this has sometimes found expression in legislation or a political directive to cooperate — for example, the 1986 amendment to the Defense Authorization Act sponsored by Senators Nunn, Glenn, Roth, and Warner, widely known as the Nunn Amendment.

Internationalization of Arms-Producing Companies

The changing arms market has affected company strategies significantly, but strategies now being adopted — selling or closing arms-producing facilities, converting to nonmilitary production, looking for niches less affected by budget cuts, acquisitions and mergers (on a national and international level) — all lead to a greater concentration within industry.

The trend towards concentration has already reduced the number of producers — and therefore arms suppliers — in Western Europe and North America. In France, Germany, and the United Kingdom only one company could offer itself as the prime contractor for a combat aircraft. While in the electronics sector several suppliers of major systems remain in each country, single companies normally dominate specific product sectors — such as airborne radar or antisubmarine sonar. Competition in domestic markets for major weapon systems is either nonexistent or very limited.

The main instruments of concentration where industry is privately owned are mergers or the acquisition of one company by another. Within countries this has been a feature of the arms industry for many years. Moreover, there has been a long history of cross-border mergers in the civil sector. Mergers and acquisitions in the arms-producing sector are a new development, however. Previously, manufacturers of weapon systems confined their international activities to cooperation, without significant foreign investment. In the past few years there have been important mergers and even some hostile takeovers involving large arms-producing companies. More companies have established significant shareholdings in other firms, perhaps as a first move towards some more formal integration.

Concentration proceeds at the expense of small and medium-sized companies unable to compete in an international environment. Representatives of industry regard the formation of fewer, larger companies in Western Europe as inevitable. According to Sir Raymond Lygo, formerly the chief executive at British Aerospace, "the big dogs will eat the little dogs, spit the bones out and we will have a centralised defence industry." In 1991 it seems that British Aerospace may itself become a victim of this process of concentration. In Europe, certain market sectors may come to be dominated by a handful of companies. Producers of engines, electronics, missiles, and helicopters are in the process of forming joint companies. Even small-arms producers are coming under the umbrella of GIAT of France and Royal Ordnance, a subsidiary of British Aerospace.

If this happens, then an increasing number of what are now considered to be exports will become intragroup sales in a multinational corporation. Such sales are not likely to be subject to rigorous export controls until the product has reached final assembly. The export regulation of the country of final assembly is already the key element of the international export regulation system. However, if the country of final assembly is itself the problem country or the target of security-related export controls, there is no effective means of regulating the movement of many military-related components.

Sales of Components and Subsystems

In the present budget environment, the volume of sales of components and subsystems is likely to increase through the retrofitting of existing systems as an alternative to buying or developing new weapon platforms — an arms procurement option that more and more governments will be forced to examine seriously.

Through-life improvements have long been a feature of shipbuilding. Since the active life of a ship is likely to be in excess of thirty years, it will typically go through refits after ten and twenty years to upgrade the quality of onboard systems. Increasingly, the capabilities of land and air systems also derive as much from onboard systems as from the airframe or chassis. In the *SIPRI Yearbook 1991*, more than two dozen fighter aircraft programs involving substantial retrofits were identified, underlining that many governments now prefer to upgrade existing platforms rather than buy new equipment.

As the arms trade becomes dominated more by transfers of small, nonlethal items, the difficulty of effective monitoring and regulation grows.

Export of Dual-Use Technology

Preventing the misuse of technology has become a central issue after the Iraqi invasion in Kuwait. Information obtained by the United Nations during inspections of facilities in Iraq seems to indicate that the government of Iraq had systematically built production facilities not only for conventional and chemical weapons (widely known before August 1990) but also for nuclear and, possibly, biological weapons. The basis for these programs was imported production technology.

In many cases, production capabilities can have both military and nonmilitary applications. Production equipment cannot be sorted into military and nonmilitary, lethal and nonlethal, offensive and defensive products; the key is application. In practice, restricting the international transfer of such items means restricting a significant proportion of total world trade.

Many technologies with military applications also hold the greatest promise for economic development. Biotechnologies, production plants for pesticides, computers, and mobile and secure telecommunications systems are all of potential value in business and to the military.

Moreover, the range of sources of supply for such goods is growing. Whereas, in the past, technologies developed in the defence sector were subsequently turned into successful commercial products, today a growing number of generic technologies used in weapon development emerge from the commercial sector. This is particularly the case in information technology.

While impossible to quantify precisely, sales of dual-use technology represent a significant percentage of total trade. Certainly such sales represent a far greater volume of trade than strictly military items. That this is so is illustrated for the cases of the United States, Germany, and the United Kingdom.

A study of the U.S. General Accounting Office contains data on imports of U.S. dual-use technology by Middle Eastern countries. The report concludes:

> Most countries in the Middle East are subject to similar controls on U.S. exports of dual-use items, munitions, and nuclear-related items. Although five of the countries covered (Iran, Iraq, Libya, the People's Democratic Republic of Yemen and Syria) have been subject to stricter export controls, the U.S. government approved about 67 percent of all licenses to export dual-use items to these countries in each of the past 4 years. The United States approved an average of 94 percent of applications for dual-use to the five other Middle Eastern countries [Egypt, Israel, Jordan, Kuwait, and Saudi Arabia]. Over 16,000

export licenses for dual-use goods were granted between October 1986 and December 1989, the majority to Israel.

An official statistic of the German government states that German exports of civil technology with military significance are also more important from an economic perspective than sales of weapons. The German Weapons of War Control Act (*Gesetz über die Kontrolle von Kriegswaffen*) regulates exports of weapons and the Foreign Trade Act (*Außenwirtschaftsgesetz*) regulates exports of military-related technology and armaments. The value of exports of goods controlled under the Foreign Trade Act — taken here as dual-use technology — is several times that for exports of weapons. Licenses worth M 45.5 billion ($24.2 billion) were granted in 1989, and licenses worth M 20.6 billion ($12.7 billion) in 1990 have been granted. As is expressed in the official statistics, not even all relevant export licenses are included. The export of weapons was only a small fraction and amounted to M 1.5 billion in 1989 ($0.8 billion) and to M 1.8 billion in 1990 ($1.2 billion). The export of goods considered by the German government to be militarily relevant represented roughly 7 percent in 1989 and 3 percent in 1990 of total German exports. In contrast, arms exports represented 0.2 percent of total exports in 1989 and 0.3 percent in 1990.

Almost every country in the world receives dual-use technology from Germany — a total of 54,648 licenses for 161 countries were granted in 1989, and 41,191 licenses for 158 countries were granted in 1990.

Data for the United Kingdom suggest a similar pattern to that in Germany. Data on the value of exports of items subject to regulation are not available, but the distribution of licence applications shows that less than 20 percent of licences applied for were for arms and military equipment.

HOW SUCCESSFUL WILL CONTROL INITIATIVES BE?

Three broad groups of present efforts to regulate trade in sensitive goods have been identified: efforts to monitor and report on the movement of arms; efforts to establish global criteria by which permission to export arms would be denied; and efforts to prevent the misapplication of civil technologies for military purposes.

Transparency

United Nations efforts to establish a reporting procedure for major conventional weapons have been carefully planned. Moreover, the idea of a register of the arms trade has won the support in principle of most of the major arms-exporting countries in the world, including all five of the permanent members of the Security Council.

The logic underpinning a United Nations arms trade register is that greater transparency is both an end worth having in itself — as a confidence-building measure — and a means to further progress on more substantive arms control efforts. Such a register should therefore be judged as a contribution to a wider arms control agenda, rather than be criticized for the shortcomings it will inevitably have. A register will establish a body of official data on the arms trade against which the reports of nongovernmental sources can be compared. More important, the principle will be advanced that governments have a duty to place such information in the public domain to ensure that foreign and security policy decisions can be held accountable before parliaments and private citizens.

While there is reason for cautious optimism about the prospects for such a register to be established, two qualifications are in order. First, in framing a resolution to present before the General Assembly and assembling sufficient votes to pass that resolution, there is much that could go wrong. Second, the successful establishment of such a register will not contribute in any material way to enhancing international security. As noted above, its primary importance lies in the precedent it will set and as a first stage in a process that can be deepened in the number of items reported and expanded to include future as well as past transfers.

Global Arms Export Policy Guidelines

In the wake of the Iraqi invasion of Kuwait, efforts to establish global guidelines by which export policy decisions can be made have been remarkably successful. The second meeting of the five permanent members of the Security Council, held in London in October, agreed on export control guidelines in principle. These guidelines are now likely to be advanced as the basis for a European Community approach to arms export policy. Compare this with the diametrically opposed arms export policies with regard to Iraq and Iran pursued by the United States and Britain on the one hand and China, France, and the Soviet Union on the other during the eight years of the Iraq–Iran war.

Important caveats must be offered to this positive development. The guidelines agreed are general in nature, and these governments would argue that they already pursue a careful and responsible attitude towards arms exports. Interpretation of the guidelines is left to the national authorities concerned and, because they are general in nature, whether or not they have been broken is largely in the eye of the beholder. Finally, there is as yet no "complaints procedure" by

which governments can challenge specific export decisions taken by one another.

Again, however, the guidelines must be judged according to whether or not they are an end in themselves or part of a process which can be further developed. The decision of the five permanent members to meet again in the United States early in 1992 must be seen as an encouraging development.

Efforts to Control Dual-Use Technologies

The effort to prevent the misapplication of civil technologies for military purposes is the greatest arms control challenge facing the international community, and one which probably defies technical solution.

The obstacles to technical forms of control are many. Assuming that a list of goods that should be controlled could be devised, problems of implementation and verification would remain. Effective implementation would have to be ensured without paralyzing international trade, restricting economic development in recipients, or creating unfair competition among suppliers. The nature and volume of international trade disallows comprehensive monitoring of the movement of goods. The cost and infrastructure required to carry out intrusive inspections or monitoring of the end use of dual-use goods in recipient countries would be daunting. More importantly, there remain political objections to such practices in most recipient countries.

The inescapable conclusion seems to be that technical approaches to arms control have to be seen as part of a wider process directed at finding political solutions to the problems which drive demand for weapons.

Question: I am sympathetic with the point that there should be more consistency between the United States' position toward its own exports and that it wants to require from others, but I am not prepared to accept the assertion that missiles and aircraft are the same, have the same qualities, and should be subject to the same restrictions. Aircraft have and will perform a wider variety of roles than missiles can and have performed.

The missiles that have been exported are very inaccurate and are only useful for attacks on cities. That is how they have been used in the past, in World War II, in the Iran-Iraq war, and the Kuwait war. They have not had any other uses when armed with conventional warheads. They would only really be useful if they were armed with unconventional warheads.

So in light of that, don't missiles deserve special consideration apart from aircraft?

Hua: I agree that aircraft and missiles are not the same. But ballistic missiles are less effective than aircraft. With aircraft, how it's used depends upon who it's used by. The United States has smart weapons. But developing countries use the same aircraft to strike civilians. It is the same aircraft, but different uses.

There is a difference between developing countries and developed countries. When a Scud killed two dozen American soldiers, this country was shocked. But if a Scud struck Iraq or China and killed two thousand people, it would be nothing. We have so many people and the cost of the life of a Chinese or a Third World person is drastically less. They don't even have life insurance, and the family is not compensated. We have seen so many people killed; for us it is common.

Morgan: Would you argue that because aircraft can do all the things that short-range missiles can do, plus a whole lot more, they are of less concern from a proliferation point of view than missiles which can only do a small number of things?

[Laughter.]

Question: One of the reasons that nuclear weapons are considered immoral is that they are useful only for one thing: blowing up cities. We tried to find other uses for them, but all of those proved not to be very effective.

Ballistic missiles are only useful for attacks on cities. That gives them a special character as weapons of terror. Shouldn't we consider them differently from aircraft that are used to destroy tanks?

Also, since tactical ballistic missiles armed with conventional warheads really don't make much military sense, they create a pressure to arm them with unconventional warheads. Further, defenses against ballistic missiles are far more difficult, especially when you are trying to defend a city.

Hua: For the United States, a ballistic missile is difficult to protect against, and the aircraft is easy to shoot down. For Third World countries, it is equal. Neither Iraq nor China can defend against American aircraft.

The concept of face-losing or face-saving is very important for China and other Third World countries. If China hears from the United States a self-criticism — "We are sorry for the past" — that would encourage China to compromise. But American officials put pressure on the Chinese: "Stop this; otherwise, we will impose sanctions." You are never self-critical of your past.

Question: There is something peculiar about ballistic missiles. Attempts to distinguish between types of weaponry in terms of their effects on strategic relationships and stability are problematic. The difference between an offensive and a defensive weapon is whether you are standing in front of it or behind it.

[Laughter.]

Nevertheless, there are some curious aspects about ballistic missiles which do distinguish them from aircraft: short warning time, difficulty of defense, and difficulty of delicate command and control systems. Physical properties make ballistic missiles inherently more destabilizing than manned aircraft.

But it is impossible to secure universal consensus on precisely which weapons ought to be focused on or, indeed, which supplier-recipient relationships ought to be focused on. If we think about the political or strategic impact of arms supplies, we ought to recognize that not all recipients are the same, either. Some of them ought to be picked out more immediately than others.

The only promising method or approach at the present time is what Mr. Hua suggested: a universal comprehensive ban on all weapons transfers.

Aside from appeals to the better nature or the moral conscience of suppliers, what kinds of incentives are there? What kind of incentive structure can be created?

Wulf: It is difficult to single out one particular weapon system, and China will not give in on this particular item. So we have to look for other alternatives.

One of the driving forces for the arms trade at the moment is the overcapacity in the producing countries. Unless we do something about it, all these wonderful and complicated regimes to monitor and to control the arms trade are not going to work.

If these production capacities are not drastically reduced — by at least one-third and maybe one-half in the United States, Western Europe, and the Soviet Union — then we will not be successful with arms transfer control.

On the demand side, we should try to encourage regional initiatives. The Indians and the Pakistanis should sit down together and at least agree not to expand their arms race any further. They could do that instead of waiting for some supplier cartels.

Morgan: There is a problem because one has a general public goal and some organized interests that counteract it.

The new register that the United Nations approved last Friday should be viewed as a first step. Similarly, the United States recently passed a set of freedom-of-information laws that provide general public access to the emissions of toxic and hazardous materials from chemical plants in this country. That was viewed by the environmental movement as the start of a process of building public pressure to force more attention to such emissions. The U.N. registry might be viewed in similar terms.

But the diffusion process might be quite slow, and the short-term pressures are compelling. It is not clear that that process alone will be sufficient.

Question: Waiting for the golden age when all countries gather together and say arms trade is a bad thing is not the policy to follow. If the United States had a policy restricting arms transfers, we could change the context of this debate. The first thing we should do is think about U.S. policy.

As we cut our defense budget, we will inevitably be reducing that excess capacity, because there is not enough arms trade in the world to sustain those companies. They *are* reducing capacity. They are buying each other and closing down and laying off thousands of workers.

The U.S. Government should act on its better principles. George Bush talks about the dangers of proliferation, and then he says how important it is to allow our companies to compete in the world because they are under pressure.

The United States is currently the largest exporter and has a huge industry. This is part of the problem we can actually act on. Let's not hide behind the argument that says if it is not completely fair and everybody is not doing it for every weapon, it is not worth doing.

Morgan: Working on U.S. policy could, because of the large volume of U.S. trade, have a big impact. From the perspective of U.S. producers, yes, there is substantial overcapacity in the world. But each firm believes that it has a unique comparative advantages; they do not want to be one of the firms that falls out.

Question: This is a straight tragedy-of-the-commons situation. Every single one of them thinks it is going to survive on the basis of a large market share in a tiny market. It cannot happen.

Some of them are going to go. If U.S. policy were "Let some of them go, let Northrop go down the tubes," — the way we let the steel industry go down the tubes — then we could do it.

Question: In 1988, a U.N. study group was appointed by the secretary-general. China was invited to participate in it, and China declined.

In the vote on the First Committee resolution on the arms trade register, China abstained. In the General Assembly, China will probably support it, and it will be asked again to appoint a member of the expert group.

Hua: China was reluctant to support the register system. China's export of ballistic missiles was transparent. It is Uncle Sam's stick that forced China to go underground. They exhibited the M-family. They said, "We want to sell it." It was a public exhibition. You have photographs. Suddenly, the next year, the Missile Technology Control Regime (MTCR) was issued.

In 1983, the Big Seven left China out. They didn't ask the Chinese. China was not aware of that. In 1984, China decided to develop this missile for export and exhibit it. Even in 1985, China was not told about the Western opposition.

After MTCR was issued, China went underground.

Question: There is very great pressure to make weapons much more cheaply. Technology has so drastically improved on the commercial side that it is pos-

sible to build powerful and inexpensive capabilities, not based on the 1970s technology that we saw in the last war, but based on the 1990 capabilities that are not restricted to any particular country. They are produced throughout the world.

Our problem is not how the big companies are going to be handled, but rather how we are going to handle the vast number of people who have access to this.

Wulf: At the moment, it is the big companies that are pushing and the big producing countries that are in great difficulties. If the United States would stop trading of arms or reduce it substantially somebody else would step in, but at the moment, the United States is the major supplier. It is critical that a more restrictive U.S. policy be implemented.

At the moment, the most effective restriction on the transfer of arms is the financial constraints in a number of importing countries. This factor is being compensated by the the United States with military assistance programs.

Question: What concerns do you have about China's nuclear trade with Iraq, Iran, and Algeria?

Hua: I am a political dissident here in exile, but there are still a few things on which I trust the government of Beijing. One of them is nuclear proliferation. I have been very well informed about and I believe that China has never exported and will not export nuclear weapons. But nuclear-weapon-related technology is quite ambiguous, because there is no clear-cut definition.

If training physicists in nuclear physics is technology transfer — or selling heavy water or small reactors — other countries are guilty.

China adheres to three principles. The recipient must report to the International Atomic Energy Agency and be inspected. Transfers by the recipient to third countries are not allowed. Technology for developing nuclear weapons is not to be transferred.

False accusations anger China. China has never exported nuclear weapons technology to Iraq, Iran, or Algeria.

Question: If China sells the M-9 missile to other countries, particularly in the Middle East, what kind of support will China provide that might allow another country to put an exotic warhead properly fused on top of it? What kinds of controls would you propose for that?

Hua: Chemical warheads are not effective if carried by ballistic missiles. We should concentrate our attention on nuclear warheads especially.

For Saudi Arabia, we had a crash program to develop a conventional warhead for that missile. We never want to encourage any country to develop nuclear warheads. The intention to develop nuclear capability appeared in Pakistan before it had ballistic missiles. Pakistan can deliver the warhead with commandoes.