NEW CHALLENGES TO INTERNATIONAL SECURITY REGIMES:

THE CASE OF NONPROLIFERATION EXPORT CONTROLS

by

DMITRIY M. NIKONOV

(Under the Direction of Gary K. Bertsch)

ABSTRACT

With the collapse of the Soviet Union, the end of the Cold War and the advancing globalization multilateral export control regimes face increasingly complex challenges and run the risk of becoming less effective. Greater number of supplier states, different threat perceptions, interests and capabilities among regime members, greater role of non-state actors, increased economic interdependence, and new information technologies make controlling the transfers of sensitive goods and materials increasingly difficult. With the advancement of globalization this process is likely to accelerate. Suppliers of sensitive materials and technologies may want to consider alternative solutions to the proliferation problem, turning again to the original goal of international security and peace, and working to address the concerns and interests of those members of international community who now seek to develop weapons of mass destruction capabilities. Such demand-side approach may not only reduce the dangers of proliferation, but also improve the overall security situation in the world by building trust among nations.

INDEX WORDS: International regimes, International cooperation, Nonproliferation, Export control, International security, Weapons of mass destruction, Nuclear Suppliers' Group, Wassenaar Arrangement, Missile Technology Control Regime, Australia Group, Russia

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DMITRIY M. NIKONOV

B.A., Pyatigorsk State Linguistic University, Russia, 1993

M.A., Western Illinois University, 1998

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by

DMITRIY M. NIKONOV

Major Professor:	Gary K. Bertsch
Committee:	Jeffrey Berejikian
	John Duffield
	Loch Johnson
	Han Park

Electronic Version Approved:

Maureen Grasso
Dean of the Graduate School
The University of Georgia
May 2003

DEDICATION

To my wife Tatiana

who was always there to support, listen, read, correct, suggest, critique,

and bear with my bad moods and writer's blocks.

This would have been infinitely more difficult without you.

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Chapter I

Introduction

1. The Problem

The threat of proliferation of weapons of mass destruction (WMD) continues to be prominent on the U.S. foreign and domestic political agenda.[1] It became even more pronounced after the terrorist attacks on the United States in September 2001 because of the fears of a terrorist group acquiring and using WMD and with the revelations in 2002 about Iraqi and North Korean WMD programs. The WMD threat is addressed in at least two important and interrelated ways. The first is establishing, implementing and improving national nonproliferation measures, such as export controls, sensitive material protection, control and accounting (MPC&A), and technology transfer security policies. The second is creating and maintaining international nonproliferation regimes and arrangements, supporting and encouraging other states to adopt and uphold nonproliferation measures, and building consensus among regime members.

Recently, the academic and policy-making communities involved in issues of WMD proliferation have pointed out the apparent problems encountered by the international nonproliferation regime and its components.[2] In the 1980s, largely due to both Western and Soviet leniency, sensitive equipment and technologies were transferred to Iraq and contributed to its WMD programs. The decade of the 1990s saw the emergence of two new nuclear weapons states—India and Pakistan.[3] The debates prior and after the 1995

Review Conference, which indefinitely extended the Nuclear Nonproliferation Treaty (NPT), revealed much displeasure among non-nuclear states with the apparent lack of will on the part of the nuclear states to uphold Article VI of the NPT and work towards nuclear disarmament.[4] Significant differences arise among regime members as to what constitutes a violation of regime provisions, and in the interpretation of these provisions. This is particularly visible in the ongoing dispute between the United States and Russia regarding the latter's trade with Iran and India in nuclear and missile technologies.[5] Reports of attempted theft or diversion of WMD materials are abundant in the media, and are especially troubling in the height of the anti-terrorist campaign waged by the United States. Finally, outside of the regime, major suppliers of sensitive materials and technologies allegedly attempt to transfer them to states aspiring for WMD programs.[6]

Of particular concern is the part of the nonproliferation regime that deals with issues of controlling the trade and transfer of materials and technologies that could directly or indirectly contribute to WMD production. This part consists of a few multilateral export control arrangements (hereafter referred to as MECA), which are sets of semi-formal and informal non-binding agreements among state actors on coordinating their national export control policies in order to minimize the potential impact of proliferation on international security. There are four such arrangements: the Nuclear Suppliers' Group (NSG), the Missile Technology Control Regime (MTCR), the Wassenaar Arrangement (WA), and the Australia Group (AG).[7]

2. MECA Performance

There is a growing perception in the policy-making community that MECA are not performing as effectively as they could, and may require significant transformations. This perception has different supportive arguments, and has received considerable attention in policy reports, expert debates, and congressional hearings. The arguments and conclusions are summarized in Table 1.[8]

Table 1. Challenges of Multilateral Export Control Arrangements

- *Informality:* arrangements lack adequate organization, procedures, or enforcement mechanisms;
- *Leadership:* while many of the arrangements were established with U.S. leadership, its leading role has become less significant lately; conversely, U.S. is accused of using MECA to further its foreign policy goals;
- *Lack of universality:* some important material and technology suppliers are not members (e.g., China, India, Israel, Pakistan);
- *Lack of consensus:* there are disagreements about the target states and proscribed lists (e.g., disagreements between the United States and Russia, France, and some other key European states regarding Iran and Iraq);
- *Incompatible goals:* states' motivation for joining, and therefore expectations of, arrangements are dissimilar;
- *Incongruent response to WMD proliferation* (Israel, India, Pakistan as opposed to Iran, Iraq or North Korea);
- *Lack of adequacy:* greater number of state and non-state actors, economic interdependence, and new capabilities for information sharing make denying sensitive technologies very difficult.

At the same time, there are those who believe that the Arrangements have done reasonably well given their design limitations and increased membership. Particularly, some arrangements are believed to be performing better than others for the same reasons they are regarded as being not very effective—such as informality, consensus-based

decision-making, or absence of some key supplier states (for example, Russian absence from the Australia Group). The key arguments of the proponents of the arrangements are summarized in the following table:[9]

Table 2. Achievements of Multilateral Export Control Arrangements

- *Membership coverage:* most major supplier states participate in the arrangements; the membership expanded significantly after 1990 to include former Soviet republics, Eastern and Central European, and other states capable of exporting sensitive materials and technologies;
- *Issue coverage:* member states share comprehensive common lists of controlled items, which are regularly updated at policy and technical expert meetings;
- *Norm building:* MECA serve as regular discussion forums and information exchange on the issues of export control;
- *Facilitation of* bona fide *cooperation:* MECA have "no undercut" agreements, or policies that discourage members to use privileged information obtained in the course of information exchange to further national commercial interests.

In the years immediately following the end of the Cold War, multilateral nonproliferation efforts were expected to become more effective with the improved relationships between the former superpowers and the addition of new key suppliers of sensitive materials and technologies into export control arrangements. Memberships in all four MECA grew in substantial strides, with new states often attracted by side payments in terms of promised greater intra-MECA hi-tech trade and cooperation and the prestige associated with adherence to an exclusive group of nations. Such expectations of better performance were also supported by a number of theoretical assumptions about states' cooperative behavior and adherence to international norms. Rationalist-based theories (realism, neoliberalism) explain state cooperation through their need to enhance their security, for fear of sanctions, to reduce transaction costs of cooperation, or to obtain

economic gains from the incentives available in exchange for cooperation. Norm-based theories (e.g., constructivism) posit that states have their identities and behavior shaped in part by the international norm.[10]

The puzzling aspect of it is that despite the fact that new members joined the arrangements for a variety of reasons—such as expectations of side payments, participation in a consortium of like-minded nations, or the desire to expand hi-tech trade—there still remains a concern about MECA performance.

The stark difference in perceptions about MECA effectiveness may reflect a gap in both the attitudes towards the arrangements as control mechanisms as well as the misperceptions and misunderstandings with regard to their intended goals and objectives. While mid-level policy-makers, who are closely involved in the day-to-day operation of the arrangements, tend to evaluate their performance more favorably, senior-level decision-makers hold more critical views. The mid-level administrators, however, are much more familiar with MECA objectives because many of them have been participating in designing, negotiating and establishing these arrangements from the very beginning, and they have no illusions concerning their capacity to achieve a certain effect. Senior politicians, on the other hand, are little aware of export controls in general, have little appreciation of the fact that such policies are only one component of the overall nonproliferation effort, and are often blinded by the "Control" wording in the names of the arrangements to assume that they must provide effective barriers on the path of WMD-related proliferation.

In both cases, however, policy-makers at all levels recommend taking institutional measures to increase the effectiveness of MECA (although they may have completely

different measures in mind when they make such proposals). What is only beginning to be understood at the policy-making level, is that MECA may face a considerably greater challenge now, and increasingly in the future, from its increased membership and the global economic, political and technological trends. This study will offer several factors that the author believes might be instrumental in challenging the effectiveness of multilateral export control arrangements, discuss their relevance, and provide an outline of the mechanism by which they might have such an effect.

3. Performance Factors

The proposed factors are:

- **Factor 1: State Capacity**
    - *MECA performance may be affected because some states do not have sufficient resources to comply with MECA provisions*. Many new members are countries of the Eastern Europe and the former Soviet Union (FSU), which are undergoing significant economic and political change and do not have sufficient resources to implement effective national export control systems. Also, participation in an international organization (or several of them) is a prohibitive cost to some smaller states.
    - *MECA performance may be affected by the collusion between businesses concerned with export restrictions and corrupt government officials*. In such cases, strict export control measures are either poorly implemented, or poorly enforced.
- **Factor 2: State Willingness**
    - *The expected revenues of cooperation with undesirable entities may outweigh the costs of potential sanctions for violations of MECA provisions.* For example, Russia's defense industry suffers from constant wage arrears, lack of investment, and unemployment. Tens of thousands of FSU defense scientists are theoretically available for hire by any willing

party to share their knowledge and expertise. The governments, for both political and economic reasons, cannot afford stricter export controls.

- *MECA may not be as effective as they could be because member states have different threat perceptions.* New members may not place as high a priority on the threat of proliferation as other members (especially the United States and some other Western states).

- **Factor 3: Globalization**
  - *Post Cold War International Politics*.
    - The end of the Cold War created a number of new state and non-state independent players whose behavior had previously been under the strong influence of the superpowers.
    - The dissolution of the Soviet Union created new proliferation threats.
    - Technology flow reversal: while for decades after WWII advanced military technologies found their way into commercial applications, increasingly more hi-tech commercial technologies find application in the military—which makes advanced military technologies publicly available (spin-on vs. spin-off).
  - *Economic Interdependence*.
    - There are a greater number of suppliers of sensitive materials competing for customers.
    - Trans-national and multi-national corporations are becoming geographically diffused by opening numerous branches and expanding their presence in other countries; industrial assembly process requires parts and participation of producers from various world regions.
    - Individuals can travel and find employment worldwide easier, potentially carrying their sensitive knowledge and expertise with them.

- *New Information Technologies*. New information technologies (cellular telephones, Internet, etc.) make it more difficult to control intangible sensitive goods and information (technologies, know-how, expertise, etc.)

The goal of this project is to illustrate the current debate within the policy-making community about the performance of MECA, to argue that the current debate is often based on misplaced assumptions about MECA role and objectives, to offer potential factors that might explain why MECA may be performing less adequately than expected, and to provide an evaluation of the significance of these factors using appropriate techniques, and given a number of objective limitations. These techniques will include a combination of statistical analysis of the available data and the process tracing methodology that allows for a critical analysis of the decision-making process and state motivations, as well as of the mechanisms behind specific events and behavior.

The first chapter of the project presents the problem and the research question, introduces the multilateral export control regimes and arrangements, their achievements and challenges, and proposes the factors that might be affecting MECA performance.

The second chapter provides background information on the development of the arrangements over time and offers an in-depth look into their achievements and challenges.

The third chapter discusses in detail the potential factors affecting MECA performance (state capacity, willingness, and globalization), puts MECA in the framework of the literature on the effectiveness of international institutions, reviews the previous research on MECA and general institutional effectiveness, and proposes ways of exploring the impact of the factors by stating them in the form of hypotheses.

The fourth chapter presents and evaluates the methodology, data, and the sources of information, which will be used in the project.

The fifth chapter offers in-depth discussion of both statistical analyses and the case studies, and analyzes each proposed factor.

Finally, the sixth chapter discusses the findings, theoretical and political implications they suggest, and presents policy recommendations.■

Chapter II

Perspectives on Multilateral Export Control Arrangements

1. MECA: A Historical Milieu

Early attempts to control the proliferation and use of weapons of mass destruction (WMD) were made following World War I in the 1925 Geneva Protocol, which banned the use of chemical weapons in combat. It was not, however, until the first successful test of a nuclear device and the onset of the Cold War that the proliferation threat reached global strategic proportions. Already in 1946, the Baruch Plan was presented to the United Nations to promote international control of nuclear energy, and in 1957 the International Atomic Energy Agency (IAEA) was established to ensure the safe and secure operation of nuclear energy equipment and installations worldwide.

The United States, recognizing an immense strategic advantage that nuclear weapons offered, made a substantial effort to limit the chances of its emerging geopolitical rival, the Soviet Union, to gain a similar capability. Later, the Soviet Union became equally concerned when its former Communist ally, China, ideologically and politically broke up with Moscow—retaining the technology and the capability to produce a nuclear device that the USSR had previously supplied.[1] The United States soon realized that unilateral sanctions and export restrictions could not by themselves achieve this goal. At the same time, the countries of Europe, economically and politically rebuilt after World War II, were more inclined to trade with the Soviet Union than the United States was,

particularly in areas where they anticipated the most benefit—such as energy resources. Therefore, intentional or accidental transfers of sensitive materials or technologies were quite possible.

In late 1940s, mainly through the efforts of the United States, the Coordinating Committee on Export Controls (COCOM) emerged to include U.S. European allies and Japan. COCOM represented a classical example of a hegemonic international security regime driven primarily by the power of its dominant member. Its main goal was to restrict the transfer of advanced strategic items and technologies from the Western democracies to the Communist East.[2]

While COCOM was an example of an institution designed to address, in the words of Stein, the "dilemma of common aversion"[3] and goals of national security and strategic stability for a limited number of participants, several multilateral export control arrangements that emerged later were not entirely delimited by the geopolitical confrontation. Among such arrangements are the Nuclear Suppliers' Group, the Missile Technology Control Regime, the Australia Group, and the Wassenaar Arrangement—the latter created in 1996 and considered to be COCOM's post-Cold War successor. Although their goal is to limit proliferation of WMD technologies and materials, the underlying logic of collective action in these arrangements is different from that of COCOM. Whereas COCOM sought to limit sensitive trade for strategic and security reasons of its members only, and mainly the United States, most of the later arrangements recognize universal values of nonproliferation, international security, and peace.

Currently, MECA are a constantly growing group of states, the majority of which have gained membership in the post-Cold War period.[4]

Nuclear Suppliers' Group

The NSG was organized in 1974 to include a group of 15 industrialized nations-suppliers of nuclear materials and technologies. This was not the first attempt to establish some control on the transfer of nuclear technology. Earlier in 1971, a group of nuclear supplier states, members of the NPT, gathered to work out a common understanding on how to implement Article III.2 of the NPT, which mandates that nuclear states take effective measures against proliferation of nuclear weapons. Chaired by Professor Claude Zangger of Switzerland (whose name the ensuing Committee received), the countries established the so-called "Trigger List" of nuclear items that require the presence of the International Atomic Energy Agency (IAEA) safeguards in a recipient country for the transfer to occur.

It soon became evident that the Zangger Committee "trigger list" controlling the nuclear materials and equipment alone was not sufficient. The 1974 India's "peaceful" nuclear explosion demonstrated that the existing nuclear export restrictions could be evaded by a determined nation. In addition, France and Japan, important supplier states, were not signatories to the NPT and, therefore, were not bound by the limitations of the Zangger Committee's list. Concerned with the apparent loopholes in the current international nonproliferation mechanisms, the nuclear supplier nations negotiated and compiled an additional list of materials, equipment and technologies that could lead to the development of nuclear weapons by non-nuclear-weapon states. Unlike the Zangger Committee's "Trigger List," this NSG list covered the dual-use items that have both nuclear and other industrial applications.

The result of these efforts was that in 1978, the supplier nations established a more formal set of NSG guidelines that they would adhere to in their nuclear export practices. These Guidelines consist of two tiers of items. The first tier includes nuclear materials, reactors and their components, equipment for reprocessing and enrichment of nuclear materials, equipment for the production of heavy water, and any technology related to the above (the "Trigger List"). The presence of any of the above-mentioned items on an export license application automatically necessitates the adherence of the country of destination to the IAEA nuclear safeguards procedures. The second tier of items involves nuclear dual-use equipment and technologies that can contribute to the development of unauthorized nuclear cycle or nuclear weapons, but have other industrial application.

The Guidelines were published in 1978 as IAEA's Information Circular 254 (INFCIRC/254). Because the NSG had not established any special lines of communications, the intent of the member states was conveyed to the IAEA Director General through bilateral diplomatic notes. Similarly, all consultations among the member states were conducted on a bilateral basis, and the Group did not meet between 1978 and 1991 since no scheduled joint activities were either planned or presumed necessary.

There were several important factors that brought about the next informal meeting of the NSG members in 1991. During the 1991 Gulf War, it was revealed that Iraq had successfully developed a crude but viable nuclear weapons program, using mostly acquired dual-use technology and equipment secured through trade. The fact that these items had been obtained from a number of major industrial nations evading their export control mechanisms indicated the presence of significant unresolved problems within the

arrangement and international nonproliferation efforts in general.[5] The 1990 NPT Review Conference recommended that the supplier states now consider items not found in Article III.2, but still relevant to the nuclear cycle (such as tritium), and require of the recipient countries comprehensive IAEA safeguards before transferring any such items to them.

By the time the NSG gathered for its first plenary meeting in Warsaw in 1992, the Soviet Union collapsed leaving behind a number of potential nuclear weapons states, and troubling new threats of nuclear proliferation. The Warsaw meeting brought about a number of changes into the arrangement. The number of members, almost doubled from the original 15, made bilateral communications less efficient and required joint sessions. Regular plenary sessions became annual, with technical and working groups meeting on an ad hoc basis to discuss control lists, guidelines, information sharing, transparency issues, and so forth. Chairmanship is now assumed by the country hosting the plenary meeting for that year, with the Japanese permanent mission in Vienna serving as the point of contact for the NSG members.

Missile Technology Control Regime

As is the case with most multilateral export control arrangements, the MTCR is not based on a treaty or a formal agreement, and therefore has no legal binding effect on its members. It was conceived in 1983 during consultations within the framework of G7 states in an effort to coordinate controls over transfers of unmanned airborne vehicles and missiles capable of delivering nuclear weapons. In 1987 the MTCR was formed with the membership of the G7 nations (the United States, the United Kingdom, Canada, France, West Germany, Italy, and Japan), and later expanded, to now 32 countries[6] and three so

called “adherent” states (China, Israel, and Romania). After the formation of the Regime, members issued an invitation to all countries to adhere to the norms and principles of missile nonproliferation, without, however, formally inviting them to join the Regime. Since membership, in addition to obligations, entailed considerable benefits in trade in advanced technologies and the possibility of cooperation on international space projects, countries were put off by the apparent lack of offered incentives in exchange for compliance, and declined to adhere to new missile proliferation control standards. In 1993, a provision was introduced to include missiles and unmanned vehicles capable of carrying all WMD payloads, including chemical and biological weapons.

The essence and policies of the member states are expressed in the MTCR Guidelines, which state that the purpose of the regime is “to limit the risks of proliferation of weapons of mass destruction (i.e., nuclear, chemical and biological weapons), by controlling transfers that could make a contribution to delivery systems (other than manned aircraft) for such weapons.”[7] It is further proclaimed in the Guidelines that the Regime’s main purpose is not to impede technology transfers relevant to international cooperation on peaceful space exploration as long as it does not contribute to WMD proliferation. The Guidelines also explain specific procedures regarding the lists of relevant sensitive items, to which all MTCR member states adhere, and welcome any state to become a member as long as it commits to international nonproliferation efforts, has a viable and effective export control mechanism, and implements it successfully.

The lists themselves can be found in the Equipment and Technology Annex, which subdivides the items into two categories. *Category I* items include the most sensitive

equipment and technologies, as well as equipment of which they are an inseparable component. These items include missiles and missile systems with the capability of delivering at least 500 kg payload to a distance of at least 300 km, their major components and technology. Requests for exports of such items bear a strong presumption of denial because the items are directly applicable to the production and use of WMD, or can be easily adapted for that purpose. *Category II* items include missile hardware and technologies with lower technical characteristics, and components for their development. One exception is made for missiles capable of carrying smaller payloads to a distance of 300 km or greater, because they can be used for delivering chemical or biological warheads.

One of the latest MTCR developments is the French initiative to introduce the new International Code of Conduct. The proposal was discussed for some time, and the draft document was adopted at the October 2000 MTCR plenary meeting. The ICOC will be a legally non-binding agreement on confidence building and transparency measures, and is scheduled to take effect in 2002. MTCR encourages as many countries as possible to adhere to it. The main goal of the new Code is to provide further limitations on potential missile proliferation, at the same time allowing for greater cooperation in space exploration programs.

MTCR members meet at least once a year at three level meetings. At *plenary* (high) level meetings member representatives share intelligence information on suspicious procurement activities or plans, discuss policy issues, and lay out strategies to improve regime performance. *Technical* meetings consider revisions of the Annex in terms of technical characteristics of controlled items, and make recommendations on the necessary

changes. *Special* meetings are usually gathered for non-MTCR states and new members to share with them information on MTCR activities. Between meetings, all issues are dealt with by the current chair. Similarly to other arrangements, MTCR has no permanent executive body or secretariat, and all logistical ("point of contact") functions are performed by the French Ministry of Foreign Affairs.

Australia Group

During the 1980s war between Iran and Iraq, the latter resorted to the use of chemical weapons in combat, which once again raised to international prominence the issue of WMD proliferation and use. The concern was that Iraq's revealed chemical weapons capability was obtained with direct and covert assistance from a number of leading Western industrial nations, notably Germany, France, and the United States, as well as the Soviet Union. Most of the industrialized nations had already implemented some controls over transfers of chemical- and biological-related items and technologies, but these efforts were not uniform and could be evaded. To minimize the potential contribution to existing and future chemical and biological weapons (CBW) programs, Australia proposed in 1985 to harmonize the existing export control regulations, and the 15 initial members met in Brussels the same year.

The main purpose of the Australia Group is to ensure that transfers of certain chemicals, biological agents, and relevant equipment do not facilitate CBW programs. This is achieved through consultations among the members and harmonization of national export control regulations. The members realize that Australia Group's efforts do not substitute for the established international mechanisms to control the proliferation and

use of CBW, such as the 1925 Geneva Protocol, the 1972 Biological and Toxin Weapons Convention (BWC), and the 1997 Chemical Weapons Convention (CWC). Instead, the members' efforts aim at preventing inadvertent transfers of direct-use or dual-use equipment to countries that present proliferation risk.

Currently, Australia Group members use six common control lists to guide their national export control regulations. These lists include:

- Chemical weapons precursors;
- Dual-use chemical manufacturing facilities and equipment, and related technology;
- Dual-use biological equipment;
- Biological agents;
- Plant pathogens; and
- Animal pathogens.

Members gather regularly once a year for confidential meetings to discuss changes in control lists, share information, and consider new membership applications. All decisions are made on a consensus basis. The Embassy of Australia to Paris serves as the point of contact for all AG activities.

COCOM/Wassenaar Arrangement

It is commonly assumed that the Wassenaar Arrangement was the successor of COCOM, primarily because the former was negotiated and formed in the wake of the dissolution of COCOM between 1993 and 1996, with former COCOM members being at the core of the new membership group. There are, however, a number of factors that point out to a difference between the two arrangements.

COCOM was formed in 1949 as a result of the pressure exerted by the United States on its European Allies in order to minimize the risk of deliberate or accidental transfer of any item or technology that could assist the industrial and military potential of the Soviet

Union and the emerging Communist bloc. Therefore, COCOM had a clearly defined goal, a list of proscribed countries to which exports were restricted, and lists of items that had to be controlled. COCOM members also had a shared threat perception of the Soviet bloc, and therefore acted effectively and coherently to implement strictest controls, despite a number of cases of evasive behavior.[8]

After the end of the Cold War and the dissolution of the Soviet Union, it became clear that COCOM mechanisms had become obsolete, and a new, more inclusive, international forum was needed. In addition to many new states that appeared literally overnight, some of them, such as Russia, argued that they no longer represented a threat to international community, and that former COCOM trade restrictions had outlived themselves.

As a result of two years of negotiations, 33 members formed a new organization called the Wassenaar Arrangement on Export Controls for Conventional Weapons and Dual-Use Goods and Technologies, and signed the Initial Elements proclaiming the goals and objectives of the new arrangement. As stated in the Initial Elements, the purpose of the Wassenaar Arrangements is to "contribute to regional and international security and stability, by promoting transparency and greater responsibility in transfers of conventional arms and dual-use goods and technologies, thus preventing destabilizing accumulations."[9]

The Wassenaar Arrangement focuses on two basic components: conventional weapons and dual-use items. Emphasis on conventional weapons cannot be referred to here as 'control,' because member state obligations do not extend beyond sharing information on the already concluded defense trade contracts and *de facto* deliveries of

the supplies of conventional military hardware. During initial negotiations, some members—particularly the United States—proposed sharing such information *prior* to the contract signing, but this measure was quickly abandoned when others objected on the grounds that preliminary information sharing may hurt commercial interests of defense industries, giving some competitors unfair advantage in the process. The Wassenaar Arrangement however has a Munitions List of weapons and other military hardware, on the transfers of which members agreed to share information.

The dual-use control component is more advanced, with the List of Dual-Use Goods and Technologies consisting of nine categories and two annexes, covering a wide range of materials—the largest such list of all four MECA. In many cases, Wassenaar Arrangement dual-use list overlaps with control lists from other arrangements. Both, the Munitions and the Dual-Use lists are reviewed and amended as needed at planned meetings.

The Arrangement is more formalized in terms of actually having a Secretariat in Vienna, which serves as a point of contact and helps arrange plenary meetings, relay diplomatic communications, and address other logistical issues. Plenary meetings are conveyed once a year, with technical sessions gathering on an *ad hoc* basis. As of 2002, the Wassenaar Arrangement includes 33 member states and the European Commission as an observer.

Summary

Table 4 in Appendix 1 summarizes the operational and structural background for all four MECA. The informality of all four arrangements varies, but remains within the

limits of not having legally binding treaties or agreements as the foundation for any of them. Organizational structure is limited to one small secretariat and three points of contact (POC) for exchanging common information and logistics.

The practice of information sharing among the members reflects the trade-security dichotomy facing all of them. In all four cases, information on export license denials is shared, and on approvals—not (except for WA, where it is shared in aggregate format only). The reason for such a division appears to be that information on denials is seen as pertaining to security matters only, which allows fellow members to be aware of potential proliferation risks. Information on approvals, on the other hand, is seen as confidential commercial data, which can be used by competitors to their advantage.

MECA had good chances of becoming meaningful international institutions because they were designed to take into account a variety of motives for state cooperative behavior and compliance.[10] They address security concerns of some members at the same time attempting to accommodate the economic interests of others by offering advanced technology trade and other incentives. To achieve this balance, arrangement membership and compliance with the nonproliferation export control norms had to be made economically attractive to members who were less concerned with security. Hence, offers of increased economic cooperation and political support in exchange for compliance.

Some countries also wanted to become MECA members because they felt that they are (or should be) a part of a Western liberal democratic community of states. This is particularly true of some Eastern and Central European nations and former Soviet republics, which, after decades of Soviet domination, felt the urge of reestablishing their identity as liberal democracies. A large number of these countries hurried to join the

arrangements that are aimed at coordinating the behavior of suppliers of sensitive materials and technologies despite the fact that they could offer few or none of such items for sale. It is possible that their rationale for doing so was the concern for international security that could be achieved through all-encompassing nonproliferation measures. It is equally possible that their motivation for joining MECA was the prestige associated with the membership in an exclusive international "club," economic benefit of cooperation, or acceptance into other desirable international organizations.[11]

Most of the aspiring members were welcome within MECA because it was generally believed that inclusiveness benefited the nonproliferation goal more than limiting membership to clearly defined supplier states. All that was required of the members was the will, determination, and resources to establish a viable national system of export control and to harmonize it as much as possible with international standards, which MECA agreed on. After all, even if a country was not a significant producer of sensitive items, in the new globalized economy it could become a major transshipment point for their illegal transfer.

2. MECA Challenges

Informality. All four of the MECA have informal or semi-formal structure; this means that no treaty or other international obligation binds the activities of the members. A possible exception might be the NSG and the Australia Group: the former—because its members are bound by Article III of the NPT not to transfer nuclear materials to non-nuclear-weapon states; and the latter—because the Chemical and Biological Weapons Conventions have finally been negotiated and put in place, thereby, as some states argue,

removing the necessity of AG existence. However, neither NSG, nor AG members were in any way obligated to create a special arrangement to coordinate their export control policies and share information, other than by their intrinsic security interests.

The reasons for such informality are several. First, the issue of trade in dual-use items is sensitive to all states in terms of balancing their trade and security interests. Although all members proclaim adherence to the principle of nonproliferation, none wants to miss the opportunity of using trade in advanced equipment, materials and technologies to their benefit. Secondly, the diplomacy involved in the decision-making process and communication within the NSG is quite complex given the number of members, the disparity among them with regard to material wealth, power, security interests, and the level of engagement in international affairs. Decision-making under such circumstances would have been impossible because of unavoidable conflicts that could jeopardize the existence of an arrangement.

The potential problems stem directly from MECA informality. Without the formal obligation on the part of the members to implement NSG provisions, and lacking the necessary consensus and political will, it is impossible to establish effective organizational structures, procedures, and verification and enforcement mechanisms. Without such mechanisms, the effectiveness of the arrangement depends solely on the good will and common understanding of the member states.

Leadership. This weakness is a two-sided coin and manifests itself depending on how members view the role of the current leader in international affairs—the United States. One argument originates from the claim that the majority of the existing MECA have originally been established with either U.S. direct initiative or active involvement.

This is not surprising because the U.S.'s rise to international superpower status coincided with the onset of the Cold War and the need for coordinated export control policies. Such was the idea behind the creation of COCOM; the NSG and the MTCR were largely established to protect U.S. security interests at home and worldwide, although with the participation of the Soviet Union (NSG) and Russia's prompt accession to the MTCR soon after USSR's dissolution. The United States also spearheaded the new Wassenaar Arrangement to include former Eastern bloc adversaries because it could not afford to have a large number of suppliers of sensitive materials and technologies outside of the framework of international export control efforts.

The current lack of U.S. leadership in multilateral export control efforts is caused by a number of factors, not the least of which is the inability to formulate coherent domestic export control policy and failure to agree on, and pass, comprehensive national export control legislation.[12] As a result, the initiative in establishing the export control norms is steadily shifting towards the European Union,[13] with even such traditionally U.S-oriented countries as Japan adopting its "catch-all" policy closer to that of the EU than the United States.[14]

A different argument concerning MECA leadership problems is a shared perception among some regime members that the United States often uses MECA to further its foreign policy objectives at the expense of less powerful members, and tries to impose its national interests, threat perceptions, and security concerns on others.[15]

Lack of universality. Despite the fact that all MECA have experienced considerable growth in membership in the last decade, the absence of a number of key supplier states is still seen as a weakness. Among the most notable absences are China (although it

adheres to MTCR), India, Israel (also adheres to MTCR), Pakistan, and Russia, which is not a party to the Australia Group. In addition to these and several other suppliers, a great number of potential proliferation risks are represented by smaller states, which can serve as transshipment points for sensitive traffic.

Lack of consensus. Different threat perceptions and economic interests of arrangement members lead to frequent misunderstandings regarding the intended target entities of the coordinated export control efforts, or the priority of items that need to be controlled. The most often cited example is the cooperation of the Russian Federation with India and Iran on both nuclear and missile-related projects.

Russia, as a founding member (at that time being USSR) of the NSG, and one of the five officially recognized nuclear weapons states, is believed to have a moral obligation to follow the highest standard of nonproliferation consciousness. In reality, Russia is often accused of violating if not the letter, then the spirit of the NSG in the 1990s and early 2000 by providing nuclear assistance to Iran and India. The concerns regarding Iran are voiced most frequently by the United States because of the fear that Iran is using the project to advance its nuclear and missile weapons program. Cooperation with India is usually condemned by most arrangement members, but for a different reason. Although the general international security perceptions of India are more positive than those of Iran, India is not a signatory to the NPT and not a member of a single nonproliferation regime or arrangement, which makes nuclear and missile cooperation with it a direct violation of MECA provisions. In addition, India has recently conducted a series of nuclear weapons tests, causing its regional rival Pakistan to follow suit, and sparking fears of an imminent regional nuclear arms race and potential nuclear conflict. Therefore,

cooperation in such sensitive areas may create a dangerous precedent, which can be used by others to justify sensitive trade with countries outside of the international nonproliferation framework.

Russia's current nuclear cooperation with Iran dates back to 1995, when Russia decided to resume the construction of Bushehr nuclear power plant left over by Germany in late 1970s. For the struggling Russian economy, this project and the potential spin-offs generate billions of dollars in revenue—an argument that cannot be ignored by the economically strapped Russian government at the present time.[16] The U.S. opposition to Russian-Iranian cooperation is based on the assumption that Iran cannot be trusted with nuclear technologies because it is likely to use them to support its aggressive regional ambitions (particularly against Israel); and that it has a history of supporting terrorism. The Russian argument in favor of this cooperation has been well documented,[17] and boils down to a few points:

- Iran is a *bona fide* member of international community; accusations otherwise by the United States are not substantiated factually;
- Even if Iran were ever involved with known terrorist organizations in the past, there is no evidence to that effect presently; Iranian government's general trend towards democratization and better relationship with the West in the post-Khomeini years is a proof of that;
- Iran is an active member of the IAEA, complies fully with IAEA requirements, regularly submits itself to IAEA inspections, and has placed its nuclear program under full IAEA safeguards;
- Even if there were concerns with Iran using its nuclear energy program to develop WMD, the type of reactor being built at Bushehr, and therefore the equipment supplied cannot be used for producing weapons-grade fissile material;

- Finally, by cooperating with Iran on a peaceful nuclear energy program, Russia only follows the provisions of Article IV of the NPT, which require nuclear powers' assistance to non-nuclear states in developing atomic energy programs.

Incompatible goals. The argument behind this problem rests on the assumption that some recent MECA members joined them for reasons other than nonproliferation and international security. Whereas original members of COCOM, NSG, or MTCR shared clearly defined security concerns regarding the proliferation of WMD, some members that joined after the end of the Cold War have other interests in mind.

Most of the new members are small and medium-sized countries of Central or Eastern Europe and the former Soviet Union, which arguably, with the exception of Russia, have less concern for global and even regional security. The appeal of fewer trade restrictions, transfers of advanced technologies from major supplier states, and participation in a Western liberal security community may have played a major role in these countries' decision to join some or all MECA.

The majority of behavioral complaints lie with Russia, primarily for its poor record in dealing with sensitive materials and technologies with countries such as Iran and India.

Incongruent response to WMD proliferation. A few countries outside of the nonproliferation regime may unofficially have WMD or pursue WMD programs. Among such countries had, until 1998, been India and Pakistan, who conducted a series of nuclear tests, putting an end to speculations about their nuclear status. Israel has neither officially denied, nor confirmed that it has nuclear weapons, but intelligence reports worldwide and leaks from the Israeli government suggest that Israel probably has up to 100–200 nuclear warheads with the missile capability of delivering them to all major regional capitals.[18] During the Gulf War, allied troops uncovered and destroyed the Iraqi

nuclear weapons program and severely damaged its chemical, biological, and missile weapons capability. North Korea has been reported to have crude nuclear and missile weapons programs, allegedly assisted by Pakistan, Iran and China.[19] Speculative evidence exists about WMD programs in Iran,[20] Libya, Syria, and Cuba.[21]

The response of the international community to these facts has been rather asymmetrical. India's and Pakistan's possession of nuclear weapons, while condemned and sanctioned initially, became later less relevant due to other pressing political, security, and economic goals of major countries. Israel's nuclear weapons program has never become a policy issue in the United States after the Kennedy Administration, mainly because of Israel's position as the U.S. strategic ally in the Middle East region and the U.S. domestic political pressures. Other countries from the list, which are believed to have WMD programs, are found on the U.S. State Department list of the so-called "rogue" states, and after September terrorist attacks—as members of the "Axis of Evil."

It is understandable that such assessments are not based on the fact of a country possessing WMD programs, or weapons systems—after all, many of the Western democracies either have WMD capabilities, or possess WMD. They are based on the belief that many of the "rogue" countries sponsor terrorism and present a threat to regional and international stability and security. The difference in attitudes, however, creates an impression of a double standard, which some states often use to de-legitimize Western-driven nonproliferation efforts. Too, the fact that WMD programs in all countries may be a source of proliferation only reiterates the point that even a single country acquiring WMD capability may ultimately undermine international peace.

Lack of adequacy. The 1990s were a decade in human history that resulted in a significantly different international environment. The end of the Cold War brought about new international political and economic realities. The breakup of the Soviet Union created in its stead 15 independent new nations, some of which possessed part of the USSR's industrial, scientific, and military potential. Former Soviet satellite states of Eastern and Central Europe, Asia and Africa for the first time became truly independent and could conduct their own foreign policy. Many international and nongovernmental organizations, whose activities were previously strictly delimited by the superpower rivalry, increased in stature and capabilities and became important players in international affairs. The increasingly transparent borders and more liberal national and international trade regulations produced attractive opportunities for businesses to seek new markets and expand to other countries, and for individuals to find employment in locations previously beyond reach, resulting in an unprecedented level of global economic interdependence. Finally, the revolution in telecommunications technologies created new opportunities for information sharing and the distribution of knowledge and expertise worldwide.

Summary. All of the above has had an effect on the international nonproliferation efforts that lead some experts to believe that MECA may not be performing to their full potential unless transformed and modified to face the new challenges. The arguments are as follows:

- new MECA member states, while on paper adhering to the principles of nonproliferation, may have different strategic political and economic interests and priorities, which may conflict with MECA objectives;

- international organizations (such as MECA) that are based on state compliance and the implementation of international standards on a national level, will become increasingly less effective when sub-state actors become capable of conducting sensitive trade and information sharing that cannot be controlled by the state;
- current MECA procedures and regulations, particularly related to the transfers of intangible goods (such as technologies and know-how), cannot control sensitive transfers, which use new means of communication;
- greater individual mobility may result in inadvertent or deliberate transfers of sensitive knowledge, and this possibility is not addressed by the current MECA policies and procedures.

3. MECA Achievements

Membership coverage. Just as opponents complain about the lack of MECA universal membership, advocates of the arrangements argue that they have been instrumental in attracting significant suppliers of sensitive materials and technologies to participate in this aspect of the nonproliferation effort. In addition to Russia (which some believe is more of a destructive presence within MECA than an asset), most major Eastern and Central European nations (such as Ukraine, Belarus, Poland, Czech Republic, Hungary, Romania, etc.) participate in some or all arrangements, as well as Argentina, Brazil, Turkey, and South Africa. China, although not an official member of any arrangement, informally claims to adhere to MTCR guidelines. This is a substantial achievement given the combined potential of all these states to be a source or a transshipment point for all categories of sensitive materials and technologies. MECA effectiveness is particularly evidenced by the membership of Brazil, Argentina, and

South Africa, all of which had at some point been developing WMD capabilities, but later reconsidered, wrapped their programs, and joined the arrangements as non-WMD states.

Issue coverage. MECA are largely coordinating mechanisms for states to standardize and harmonize their national export control systems. As part of this cooperative effort, member states developed comprehensive control lists for nuclear, chemical, biological, missile and dual-use items. The lists are regularly updated by MECA members at expert and policy meetings, and cover over 1,500 items. The lists are compiled by expert committees with representation from different fields of science and engineering, and are sometimes drawn from practical experiences. For example, the nuclear dual-use list, adopted by the NSG in 1992 was compiled on the basis of information obtained by the UN experts when they uncovered Iraqi nuclear program. As a result of the investigation, a number of Western companies were revealed to have supplied Iraqi-controlled front companies with highly sophisticated dual-use equipment that was later used for the program. Lists of such equipment served as a foundation for the NSG dual-use list because it was assumed that a covert nuclear program could require such equipment for successful development.

While most MECA officials recognize the fact that keeping up with the development of technologies and science is becoming increasingly difficult, it is nevertheless important that expert working groups attempt to keep the lists updated, covering most WMD-related materials and technologies.

Norm-building. Despite various inefficiencies, MECA are often praised for establishing and strengthening an international norm on controlling sensitive trade that could lead to WMD proliferation. This is particularly important given the sensitivity of

most member states to the issue of balancing trade and security interests. However, even with the existing differences among MECA members, the amount of elicited cooperation is impressive: there are agreed-upon procedures, regular meetings, updated and generally acceptable control lists, and information and intelligence sharing.

More important, however, is the process of instilling the understanding of the importance of nonproliferation efforts for international security among a growing number of states, with many of them joining in with other MECA members. While MECA are not legally-binding obligations for state members, as international treaties or agreements would be, by participating in MECA states implicitly recognize the importance of the issue and agree to share some responsibility for the outcome of their efforts. In addition, the stigma of violating an informal agreement and the damaged reputation may work almost as effectively as a threat of economic sanctions or other negative incentives. Even if some states have occasional lapses and urges to act against the spirit of the arrangement (as Russia, for example, often does), it is important that their actions are still restricted by MECA agreements, and it is unlikely that they would commit such violations blatantly and with disastrous consequences.

Setting international export control standards. In addition, MECA were instrumental in developing internationally-acceptable standards for export controls. One of the main functions of the arrangements is to harmonize national export control systems and their elements, such as control lists, licensing procedures, information sharing, or government-industry relations. Despite the inevitable criticism of the deficiencies, MECA were, for the most part, able to bring even some disagreeable members in agreement with the internationally-acceptable standards and practices.[22]

Facilitation of bona fide *cooperation.* One of the strengths of the arrangements is the agreed-upon "no-undercut" provision—a verbal agreement not to provide items to suspicious entities that have been denied by a fellow MECA member. The provision helps prevent some members from taking unfair advantage of the decision of another not to sell specific goods or services for the goals of national security or nonproliferation—thereby controlling the free-rider problem. The only exception is the Wassenaar Arrangement, which does not have such provisions. This situation is a result of the initial negotiating process in 1993–1996, during which Russia and in some cases France and Germany opposed to a special requirement to notify fellow member countries of an export transaction prior to such transaction taking place ("prior notification requirement"). The requirement was advocated by the United States, and was opposed on the grounds that the commercially sensitive information can be used by competitors to jump in and break the sale. Both Russia and France use WA control lists only as a reference, and not as official basis for their national export control systems.

Raising the costs of proliferation. One of the wide-spread misconceptions about MECA is their effect on proliferation of WMD and related technologies. Export controls are only one of many tools to control WMD proliferation, and aim only at the legal trade flow, licensed by states. Theft, smuggling, or other diversion of sensitive materials, are not the focus of their policies and procedures. Instead, export control policies are designed to limit the access of questionable importers to sensitive items and raise the cost of their acquisition by means of denying them the least expensive available options. As a result, potential importers are forced to turn to illegal and subversive means of acquisition, thereby making the discovery of such plans much more likely.

Summary. This account of Arrangements' challenges and achievements indicates that the performance and effectiveness of these institutions are in the eyes of the beholder, restating the old debate about the 'half-full' and 'half-empty' glass. There are numerous factors—both inherent within MECA and those that are part of the larger international environment—that have an important effect on their performance.

Multilateral export control efforts are at an important juncture at this time, trying to find their place in a world different after the 2001 terrorist attacks on the United States, amidst domestic debates in the United States about the new Export Administration Act and the role of multilateral control within its framework. Both MECA critics and advocates make very persuasive points, which makes the task of sifting through the arguments and separating the facts from conjecture appear even more appropriate now.■

Chapter III

Theory

1. Introduction

Before offering theoretical and empirical factors that might explain why MECA performance may indeed be jeopardized, a word is needed about the arrangements themselves and the suitability of applying generally accepted theories of international relations to them. International institutions, which are sometimes referred to as 'regimes,' are usually dealt with in the literature as cases for theories of international regimes. There are several definitions of international regimes; the most frequently cited definition offered by Stephen Krasner states that international regimes are "sets of implicit or explicit principles, rules, norms and decision-making procedures around which actors' expectations converge in a given area of international relations."[1] In other words, to qualify as a regime, an international institution needs to meet a number of requirements for the degree of institutionalization, norm sharing among the members, and norm and procedure enforcement.

However, there are different opinions on whether nonproliferation regimes and arrangements fit this category at all. Davis, for example, argues that

> The nonproliferation regime is more than an alliance, but less than an orthodox regime. In practice, it is an aggregation of multilateral, bilateral, unilateral, formal and informal arrangements aimed at stopping the spread of nuclear weapons. The regime comprises a redundant network of political, legal, technical, economic, military, and normative barriers whose cumulative effect is more than the sum of the parts.[2]

It is now generally accepted that multilateral export controls are distinct from other international regimes in three ways.[3] First, MECA are not treaty-based, and the bulk of sensitive trade that they regulate does not fall under any international treaty or agreement that binds state behavior. This is particularly relevant to the MTCR and the Wassenaar Arrangement. While the NPT, the CWC and the BWC explicitly prohibit free international trade in nuclear, chemical, or biological items, and the signatory states are bound by these regulations, there is no international binding agreement or treaty that regulates the trade in missile or dual-use items. What this means is that participation in MECA alone does not legally require of states to behave in any particular way different than if they had acted on their own.

Secondly, the arrangements are informal consultative mechanisms and have neither the authority by themselves to sanction any particular entity, nor issue or deny export licenses. All exports are carried out on the basis of national authority and legislation, and the decision to allow or deny a certain transaction rests solely with the national government.

And finally, the arrangements have no governing body save for small secretariats or semi-volunteer functions assumed by diplomatic missions of a few countries (Japan, Australia, and France) to coordinate plenary and technical meetings. Since all decision-making within MECA is consensus-based, bilateral exchanges among the members play a significantly more important role than formal meetings.

What the arrangements intend to provide is a forum to exchange information about potential countries and end-users of concern, agree on the lists of controlled items, and

coordinate national export control activities. The above-mentioned three factors lead one to conclude that the institutional effectiveness of these arrangements in regulating sensitive trade is minimal, and is a primary function of the strength of each country's national export control system, and the willingness and ability of nation-states to implement them. It is important, however, to understand the general motivations behind state participation in cooperative behavior, as well as the existing approaches to evaluating the effectiveness of international institutions.

2. Theoretical Background: Why Nations Cooperate[4]

The state cooperative behavior is usually explained from the position of two general theoretical approaches.[5] One approach assumes that states act as rational, individualistic, utility-maximizing units under the conditions of anarchy in the international system. This approach encompasses two main schools of thought: realism (neorealism) and neoliberal (rational) institutionalism. Another approach encompasses a cognitivist school of thought, which questions the assumption of rationality of state actors, and argues for a greater role of international norms and institutions in shaping state behavior.

Realism and *neorealism* interpret state actions in terms of security and power in a generally anarchic international system. States always view their actions as having an impact on their position among peers, and try to maintain a balance of power by means of sustaining their own capabilities, enhancing them through alliances with other states, or reducing the capabilities of their rivals.[6] Cooperation among them is a matter of convenience, and is quickly abandoned if the benefits that a state expects from such cooperation are smaller than those obtained by its rival.[7] Some realists argue that states

have an interest in nonproliferation cooperation: "From a classical realist perspective, the continuing threat of unchecked nuclear proliferation makes possible an unusual, even unique, degree of international cooperation."[8] In the same way as nuclear, one may argue that both chemical and biological proliferation threats should produce similar effects on international cooperation.

Neoliberal (rational) institutionalism argues that besides power and security, states seek to obtain material gains from their interactions with other states. In the absence of enforcement, institutions facilitate cooperation among states attempting to maximize their utility under the conditions of anarchy. Long-term cooperation, argue Keohane and Axelrod,[9] and later Keohane,[10] is quite possible among rational utility maximizers. Institutions change the payoff structure of a strategic game, thereby making defection disastrous and cooperation desirable, and increasing the impact of potential costs of defection through reciprocity. Regimes, in other words, institutionalize reciprocity and cooperation, and are mechanisms set up in order to reduce transaction costs of interstate cooperation.

The mechanism that translates gain-seeking aspirations of regime members into cooperation in the case of multilateral export control arrangements is not complex. MECA membership or adherence allows states to trade more freely in advanced technologies and other sensitive items, and to coordinate their trade policies in relation to the non-members. A number of the new members joined MECA anticipating various economic or political payoffs, including promises of increased trade in advanced technologies, support for membership in international economic and financial institutions, and lucrative contracts.

A variation of the above-presented theories also provides a competitive explanation of cooperation. Domestic pressure theory explains state's compliance in terms of the effect of political elites and domestic interest groups on the formation of foreign policy and state's identity and interest. The effect of these pressure groups is best understood in terms of their desire to have an impact on state's international commitments that directly affect their economic and political interests. Multilateral export control arrangements do exactly that.[11]

Finally, *cognitivism* breaks from rationalistic approaches in its most important assumption of rationality. It believes that neoliberal and realist theories of international politics operate on an oversimplified premise, which is "blackboxing" the decision-making process on the national level. States' foreign policy depends primarily on (1) their identities, and (2) what they believe to be in their interest in international relations. These two factors are stimulated by the endogenous beliefs and ideas that are held by individual decision-makers. Both identities and the perception of national interest may change as the beliefs and ideas change with increased knowledge.[12]

Weak cognitivists, similarly to neoliberals, subscribe to the basic assumption of rationality and utility maximization of state actors with the qualifier that states' perceptions of their utility may change with knowledge. Decision-makers increasingly require special expertise to deal with many complex technical issues that comprise modern international problems.[13] They also have to come to an agreement on the scope and nature of the problem that a regime must address. In this case, *weak* cognitivism attempts to supplement interest-based theories of regimes, and focuses on the appearance of epistemic communities, which alter the perceptions and opinions among decision

makers and lead them to pursue different foreign policies.[14] *Strong* cognitivists, on the other hand, argue for the existence of the international society of states structured by international regimes,[15] and believe that well-established and institutionalized norms have an effect on state behavior and institution building.

There has been a substantial amount of research recently to try and explain the rationale for new members to join, or for multilateral export control mechanisms to withstand the political calamities of the last decade. Many of such studies have found evidence that one of the more compelling reasons for the persistence of these regimes is the shared nonproliferation norm as a paramount goal among the community of like-minded member-states. Even in cases when new members sought participation in such regimes, their primary rationale for doing so was shown to be the desire to join the group of affluent liberal democracies, or to become socialized into what was believed to be an elite club of states.[16]

The recent concern with the effectiveness of export control arrangements indicates that these expectations may not be entirely valid. The liberal community (*cognitivist*) approach would expect states to participate in a cooperative behavior because their identity and norms are similar, or that they at least aspire to be part of the community, while in reality the problems that the regimes encounter may indicate a lack of norm-sharing.

Both realist and neoliberal approaches are similar in that they attribute rational gain-seeking qualities (be it power or profit) to effectively individual actors (states) in the international system. Weak cognitivists find themselves partly in this camp because of their adherence to the rationality principle. Strong cognitivists, on the other hand,

represent the norm-based, or "institution-centric,"[17] approach, arguing that "the behavior of states, like any social behavior, presupposes normative structures that must be analyzed in their own right."[18] These normative structures determine states' place in the international society and define the nature and process of their interaction with each other. International norms constitute the complex notions of international law, sovereignty and legitimacy, and cannot be reduced to simply "devices for problem-solving."[19] In addition to operating as imperatives that define the behavior of states, as rationalists argue, regimes also perform a constitutive function and are akin to the rules of a game—which by themselves do not force players to act in a certain way, but delimit the acceptable behavior and clarify the consequences of their actions, thereby making interaction possible.[20] Hence, the typology of potential theoretical explanations of state cooperative behavior is presented in Table 3. As is often the case, it is unlikely that a single explanation accounts for all variations in the state behavior.

Table 3: Typology of Theoretical Approaches to State Cooperative Behavior.

	(Neo)Realism	**Neoliberal Institutionalism**	**Weak Cognitivism**	**Strong Cognitivism**
Rationalist-Based	Cooperation enhances security; political incentives.	Cooperation occurs for fear of sanctions, expectations of economic gains.	Learning creates "epistemic communities" that make cooperation possible.	
Norm-Based				Cooperative structures delimit state behavior and make cooperation possible.

In his study of regimes, Krasner provides an important distinction between two basic regime components: principles and norms on the one hand, and rules and procedures on the other. The former, argues Krasner, provide "basic defining characteristics of a

regime," the foundation and the belief system that brought states together in the first place to form it. Any changes that occur within principles and norms are changes of the regime itself. Rules and procedures, on the other hand, only define the way states operate within the regime. Changes in rules and procedures are changes within the regime.[21]

The problems with regimes outlined above can similarly be subdivided into the same categories. Some of them, like lack of leadership and informality are problems within the regime, which affect the way regimes operate. Other problems, such as incompatible goals, lack of consensus, or incongruent response are problems of the regime because they illustrate the lack of sharing of norms and principles among regime members.

A third category of problems, which previously had been paid little attention to, is represented in the problem of lack of adequacy. The changes in international political, economic and information environments of the last decade lead the regimes, which were designed under very different circumstances, to perform inadequately. This category of problems, lacking Krasner's definition, may be called *problems outside of the regime*, or *problems of the regime environment*.

3. Theoretical Background: Evaluating Regime Effectiveness

A very early assumption for this project, based on a number of previous studies and reports, was that multilateral export control mechanisms have become less effective and are in urgent need of modifications. Given the difficulty in measuring MECA effectiveness directly, an alternative way to gauge it would be to poll the officials who spent years representing their governments in the arrangements and who obviously knew the most about them. However, after a preliminary poll was conducted, the majority of

the respondents disagreed with the assumption that the arrangements are becoming less effective, and indicated that, in fact, they were doing rather well under the circumstances.

This contradiction made no sense. How could the opinions of outside experts and government officials be so diverse? Were the experts wrong while pointing out the weaknesses and inadequacies of the arrangements, or were the government officials too biased to see the real picture? A few answers came to mind. First, MECA officials who answered the questions could have been partial: after all, people who worked on such an important issue as arms control and nonproliferation (some of them for many years) would be reluctant to admit, even in an anonymous survey, that the project of their life was not very successful. Secondly, given the sensitivity of the subject matter and the nature of the questions asked, some government officials may still have been wary of speaking their mind.

Although all this could have been true, and probably played its role in developing the mindset of the respondents, a third option seemed even more plausible: the advocates and the critics could have been describing two different phenomena. In other words, when critics urged measures for increased MECA effectiveness, they meant something else than those who believed that they were effective enough. But then, what do policy makers mean when they say that arrangements are more or less effective? Does this mean that they fail to control the transfer of sensitive materials and technologies adequately, or that institutional mechanisms do not perform well? Understanding the current debate about regime effectiveness may help answer these questions.

From its early development about 20 years ago, regime literature has undergone several conceptual changes, moving from the early debates about the possibility and

explanation of state cooperation and regime formation, to the effects of such factors as design or member compliance on regime longevity and survival, and to, recently, effectiveness.[22] The number of definitions of regime effectiveness is probably as great as the number of scholars studying them, ranging from general concept-formulating ideas, to variable-specific analysis, which attempts to bridge the gap of different theoretical approaches.

The issue of regime effectiveness is approached in the academic literature from several different perspectives. One assumes that a regime is as effective as its members' norm-sharing, decision-making and other rules and procedures. In other words, a regime's effectiveness is measured indirectly by assuming that if all the necessary regime components are in place and states comply with regime provisions, the intended objective of the regime is achieved. The emphasis here is on the "institutional" effectiveness of regimes.

Representing this approach, Young, for example, offers the specific variables that he believes determine regime effectiveness. He understands effectiveness as "a measure of the role of social institutions in shaping or molding behavior in international society."[23] Young's variables determining regime effectiveness (transparency, robustness, transformation rules, capacity of governments, distribution of power, level of interdependence, and intellectual order) are valuable in that they encompass the entire range of competing theoretical approaches to cooperative behavior of states (see discussion above).[24]

Table 4. Young's Variables Determining International Regime Effectiveness	
Transparency	*The effectiveness of international regimes varies directly with the ease of monitoring or verifying compliance with their principal behavioral prescriptions. The higher the transparency, the greater regime effectiveness.*
Robustness	*The effectiveness of international regimes is a function of the robustness of the social-choice mechanisms they employ. The more robust the social-choice mechanisms, the higher regime effectiveness.*
Transformation Rules	*The effectiveness of international regimes varies directly with the stringency of acknowledged rules governing changes in their substantive provisions. The more stringent the rules, the higher the regime effectiveness.*
Capacity of Governments	*The effectiveness of international regimes varies directly with the capacity of the governments of members to implement their provisions. The greater the capacity of governments, the more effective the regimes.*
Distribution of Power	*Sharp asymmetries in the distribution of power (in the material sense) among participants circumscribe the effectiveness of international regimes. The greater the economic disparity among regime members, the less effective regimes.*
Interdependence	*The effectiveness of international regimes varies directly with the level of interdependence among the participants. The higher the level of interdependence, the more effective regimes.*
Intellectual Order	*International institutions cannot remain effective for long after the erosion or collapse of their intellectual substructures. The greater the awareness and agreement of political, economic, and intellectual elites with regime's mission and goals, the more effective the regime.*

Recently, a new, growing body of literature posed a conceptually different question of whether regimes have an intended effect on their target environments, thereby emphasizing the "environmental" effectiveness of regimes. The term "environment" is partly intentional because most of the studies along these lines have been performed by scholars interested in the effectiveness of international environmental institutions.[25] The term, however, can be applied to all issue areas because regimes can have an effect not only on the natural environment, but also on trade, communication, security, and other environments.

Reflecting on the changing trend in studying regime effectiveness, Keohane, Haas, and Levy maintained that "truly effective international environmental institutions would improve the quality of the global environment,"[26]—a statement that spawned a number of strong attempts to develop methodologies for evaluating "environmental" regime effectiveness.[27] Hasenclever, Mayer, and Rittberger's understanding of regime effectiveness combines the two approaches to regime effectiveness and concerns two major points: (1) whether member states abide by the rules and regulations set out by the regime, and (2) whether the goals and objectives of the regime are achieved.[28]

Another recent development in the research on regime effectiveness focuses on the issue of member compliance as the determinant of effectiveness. There emerged two distinct schools of thought with regard to this phenomenon: one focusing on the enforcement component of regime norms, while the other—on the management solution. The enforcement component is rooted in the rationalistic approach to state behavior, arguing that in order to increase the likelihood of state compliance with regime provisions the regime needs to increase the cost of defection for non-compliant states through close monitoring and threat of sanctions. The management approach, on the other hand, emphasizes the normative decision-making structure on the part of states with regard to regime compliance. States, maintain the advocates of this approach, generally adhere to regime provisions and tend to follow the norm that they establish. Incidents of non-compliance are usually explained by the lack of capacity of member-states to implement regime provisions, misunderstanding, or ambiguity of the rules and procedures. Compliance may be improved by building state capacity, better interpretation of rules, and information sharing and transparency.[29]

A more radical solution to the problem of compliance is presented in the argument of legalization. The advocates of such a solution argue that legalizing the regimes—that is, institutionalizing them to a degree of legally-binding sets of regulations—will increase the member-state compliance. This solution is defined in terms of three factors: obligation (which means that member-states will accept the legally-binding prescriptions from the regimes), precision (which necessitates more detailed, better defined, and agreed upon regime rules and procedures), and delegation (which suggests delegating conflict-resolution and rule-enforcement functions to a mutually-agreed-upon body).[30]

All stages of this research program are important in helping understand the motivations of state behavior and, possibly, apply this knowledge to other areas. However, the recent emphasis on effectiveness adds meaning to the otherwise purely academic pursuit: do international institutions make a difference in world politics? Do states' efforts for cooperative behavior pay off in a cleaner environment, better trade, or greater security?

This distinction between institutional and environmental effectiveness helps better understand the polarity of opinions regarding MECA effectiveness, which exists among the experts and policy-makers. On the one hand, the arrangements are branded as mostly ineffective and failing to meet the expectations of policy-makers regarding their impact on WMD proliferation. On the other hand, a smaller group of researchers and government officials, especially those who directly participate in MECA activities, maintain that the arrangements have performed unusually well given their design limitations and initially stated objectives.[31]

It would certainly make great sense here to try and evaluate MECA effectiveness in terms of their impact on the state of global proliferation and international security—after all, this is the primary goal that all four arrangements proclaim in their mission statements or founding documents. The problem with this otherwise completely rational approach lies with the nature of the arrangements and their distinction from the conventional international regimes as mostly consultative mechanisms. MECA are only one component of a larger global nonproliferation regime,[32] and therefore cannot single-handedly achieve zero proliferation; they are only tools to help raise the barriers on the path of illegal and dangerous transfers of WMD-related materials and technologies. It would be therefore incorrect, apart from being virtually impossible, to measure MECA effectiveness by evaluating, say, the level of WMD proliferation: first, their goal is not to stop proliferation, but to raise its costs, and secondly, being but a small component of a larger nonproliferation regime, MECA effects cannot be realistically measured. Besides, measuring proliferation itself as a dependent variable is not feasible. Given the sensitivity of the data, and the difficulty of collecting it on a substantial scale sufficient for conducting some sort of analysis and generalization, the option of measuring the "level of proliferation" to assess the MECA effectiveness is not an option at all. Even if there were a possibility of conducting a thorough research and interview responsible government officials (who, let us assume, would divulge such information), it still would be very difficult to collect such data for a sufficiently long period of time to make a reliable test possible. Approaching the problem from the proliferation side—that is, evaluating the progress of some countries on the path of developing WMD—would not yield reliable results either. Many states that strive to acquire WMD capabilities may try to obtain such

items illegally (through smuggling, which is out of MECA jurisdiction), or develop them indigenously, which happens quite often.[33]

Another approach would be to assume that MECA institutional effectiveness (Krasner's principles, rules, norms and decision-making procedures) would be a good proxy of the overall effectiveness: i.e., if the institution has all the required mechanisms in place for discussing, agreeing on, implementing, and enforcing a norm, member-states will comply with its provisions. This approach is intuitively more feasible, save for two considerations. First, MECA design makes them extremely loose institutions with very little power assigned to the institution itself, or its main body (which most of MECA lack altogether). The majority of MECA members view the arrangements as consultative mechanisms designed to help states coordinate their national export control policies. Most members value MECA for the discussion and information sharing they allow rather than for the decisions they can make or impose. It is therefore technically inappropriate to use the term 'compliance' with regime provisions since no state undertakes a legal obligation to follow the recommendations or guidelines of the regime, and the latter are subject to national interpretation.

Second, globalization, as it is understood and presented in this project, makes the objective of MECA more difficult to achieve because it partially removes controlled items from under the control of states, thereby making state 'compliance' or 'noncompliance' less relevant to the level of proliferation. A regime may become less effective if its main object—such as targeted state behavior, the environment, or technology—is transformed in such a way as to require substantial re-conceptualization of regime objectives. International institutions, for example, aiming to reduce

environmental pollution devised a set of requirements for member states to achieve this goal. Among such requirements may be mandatory reduction in CO_2 emissions, re-forestation programs, or special regulations on sea-based oil transportation. If, however, new technologies or other factors fundamentally change the mode in which pollutants can enter the environment—such as new types of vehicle engines, which produce different emissions, or change the manner in which oil is transported across distances—a regime must adapt its provisions and re-think its strategy to maintain its objective, a cleaner environment. In the case of MECA, the mode of transfer of sensitive knowledge or items is changing in a way that allows such transfers to occur without violating (at least on paper) regime provisions, or bypassing national export control measures. An ideal type regime, therefore, in addition to having member compliance, must maintain its focus on a controllable target.

Despite its seeming narrowness, member compliance is an encompassing term. Whether a member complies with regime provisions depends not only on the enforcement mechanisms, but also on the sharing of norms and threat perceptions, correspondence of regime goals to member states' national interests, the availability of incentives, and the presence of adequate rules and procedures that make a regime viable.

All four export control regimes and arrangements state in some form that their main objective is to reduce the risk of proliferation of dangerous goods and materials for the sake of international peace and security. It is therefore essential that a regime must be able to adapt to new environments to ensure that what it controls is what needs to be controlled in order to attain these stated goals.

4. MECA: Factors Affecting Performance

As suggested in the previous section, a regime may become less effective in a number of cases. First, the nature of controlled goods may change so that they become difficult to control. In the case of multilateral export control arrangements, the revolution in information technologies makes it much easier to transfer sensitive technologies over the computer network without proper authorization. The state, in this case, to some extent loses control over information flows and as a result—capability to comply with export control regime provisions. Secondly, new international environment may make target entities (states, companies, etc.) disappear or change, which in turn requires changes in the regime's lists, rules and regulations. An entity, for example, may no longer present a threat, while a new entity must be included into a list of proscribed entities to address new proliferation concerns. Finally, economic interdependence and a dramatic increase in a number of suppliers of sensitive goods and technologies often present a challenge to an export control arrangement. In some cases, sensitive information and technologies are developed by civilian enterprises, which makes controlling their transfer much more difficult compared to the times when such information was developed and controlled by the defense sector. In addition, bearers of sensitive information (scientists, technicians and engineers) have a greater opportunity to change employment and to move globally, carrying their knowledge with them.

State Capacity

One of the consequences of the breakup of the Soviet Union and the end of the Cold War was the appearance on the international arena of a significant number of new

independent states. Among them was a large group of the former Soviet republics (15, including Russia) and several Central and Eastern European nations, which regained their full sovereignty. As a result of the political and economic reforms initiated in early 1990s in most of the countries, many began, or continued, experiencing serious crises, which included mass unemployment, high inflation, radical drops in GDP and overall living standards, political instability and wide-spread corruption.

The dissolution of the Soviet Union created for the international community an unprecedented risk of unchecked proliferation of WMD and WMD-related goods, materials and technologies from these states. The process of reforms coincided with the increased efforts on the part of the United States and European nations to promote nonproliferation policies, including the development of effective export control mechanisms in most of the newly established democracies.[34] As part of these efforts, the countries were encouraged to develop and adopt national legislation on nonproliferation export controls and related normative acts that would ensure their implementation.

It is very likely, however, that the political and economic difficulties that these countries were undergoing had an effect on their ability to develop and implement the necessary policies. Such an effect could manifest itself in two significant ways: the *lack of available resources* to develop and implement the necessary policies, and permeating *corruption*.

Availability of Resources. Apart from the legislative process, which arguably involves little or no cost,[35] a national export control system needs commitment of resources on the part of the state. First, it is the establishment of necessary government agencies (or the re-arrangement of the previous ones) to perform the main functions of

export controls—licensing of the exported goods, review and adoption of control lists, development of export control procedures for various subordinate offices and agencies, and industry outreach and assistance in establishing internal compliance mechanisms.

Secondly, government officials need to be familiarized with the new regulations and procedures, while customs officers and border guards around the country need to be instructed on the procedures and trained on the actual implementation of export control regulations: namely, to be able to recognize and identify a potentially controlled item, to make sure that appropriate documentation is accompanying the shipment, and to exercise good judgment and common sense in uncovering potentially fraudulent activities.

Thirdly, customs offices, warehouses and border checkpoints must be supplied with the necessary equipment for the detection of items and materials that usually fall under export control regulations—such as, for example, X-ray machines, radiation detection devices and portals, and so forth.

Finally, effective implementation of the new laws and regulations requires changes in the law enforcement practices and procedures, additional investigation and due process costs, and law enforcement personnel.

In addition to these national measures, membership in multilateral arrangements usually adds additional expenses, which may be prohibitive to some smaller states. Such expenses include participation of government representatives in annual MECA plenary and technical meetings, the hosting of official delegations, and information dissemination and sharing.

All these measures incur substantial costs to a country, depending especially on the length of its borders, the number of customs and border control facilities in it, its

capability in producing and exporting controlled items, or alternately its capacity as a transshipment point, the number of officials involved, as well as the number of arrangements (between one and four) that a country participates in. These costs, while by themselves not a determining factor in the effectiveness of the export control mechanisms, are likely to have an effect on the country's ability to develop and implement the policy.

Corruption. The process of reform in many new independent states is often accompanied by wide-spread government corruption, which involves officials at all levels of decision-making, sometimes including the top leadership. Corruption is an acknowledged inhibiting factor in all areas of government activities, and especially in those that involve government regulation of private economic enterprise and trade.

Exports provide almost exclusive opportunities for many private businesses to generate revenues during severe economic crises in a country, when population purchasing power drops and the government has little money to purchase goods and services from domestic producers. At the same time, government employees and officials at all levels seek to enhance their usually nominal incomes by engaging in "mutually beneficial" relationships with private businesses, providing their services or protection in exchange for material goods. This situation often leads to collusion among government employees and officials and private businesses.

Customs service usually represents the weakest link in the export control system for a number of reasons. First, its officials are more prone to corruption given the stark difference between their insignificant salaries and the pressures exerted on them by

exporters or importers to push their commodities through the checkpoints with minimal or no tariffs.

Secondly, on the other hand, customs service is put under substantial pressure by the government to push the flow of goods and services through the border in order to generate revenues from tariffs and fees. In many transitional economies, trade represents a large proportion of the overall revenues generated for the budget, sometimes reaching as high as 25 percent.[36] This fact causes customs officials to be less careful in implementing export control regulations and at the same time assures them that the government is likely to turn a blind eye on any deliberate or unintended violations.

Thirdly, dealing with customs officials usually involves one-on-one contacts, and is much easier for potential suppliers of sensitive goods and materials than dealing with, for example, licensing officials in the government. The process of licensing sensitive exports usually involves an interagency review and a number of officials at different levels, which by default makes offering bribes much more difficult; offering a bribe to a single customs officer, on the other hand, presents little risk of exposure because of lack of evidence to prove an offer.

Finally, customs personnel usually lack knowledge and training in identifying potentially controlled items, and have little appreciation of the consequences that their actions may have if a sensitive item is used for undeclared purposes.[37]

Thus, corruption is a more serious factor in determining policy existence and effectiveness than resource availability, mostly because it can render all attempts on the part of the government to develop and enforce the policy highly doubtful. Together, however, both factors are likely to be significant inhibitors of effective export control

mechanisms on the national level, particularly in smaller countries, and multilateral cooperation on the international level.

State Motivation

In addition to the direct costs of developing and implementing a viable national system, export controls have an indirect opportunity cost of lost potential contracts and revenues. For a country with a struggling economy and falling living standards, it is difficult to make a case for the need to control sensitive exports of goods and materials, especially if such exports can generate substantial revenues, provide thousands of jobs, and bring more social stability. There is even less pressure to adhere to nonproliferation export control standards if a member country has different perceptions about the nature and source of the threat that a potential trade in sensitive items can generate.

Political and Economic Costs. A number of new MECA member states, such as Russia, Ukraine, Kazakhstan, Belarus, and several Eastern and Central European countries, are important producers of goods, materials and technologies related to weapons of mass destruction. The majority of these states inherited, after gaining independence, their share of the former Soviet military-industrial complex. Many of these industrial facilities in the past employed hundreds of thousands workers, technicians and engineers, who now face the possibility of unemployment, lack of wages, and uncertain retirement prospects because their governments, formerly the sole source of funding, have presently no need and little or no funding to make new orders.

These factors are a powerful incentive for a country to shirk on its commitment to nonproliferation export controls for at least two reasons. First, from an economic

perspective, a country may not be able to afford to lose revenues from potential sales of sensitive items. The majority of such items are hi-tech defense-related equipment (weapons, hardware, and weapons' system components), dual-use industrial equipment, materials and technologies, or sensitive raw and processed materials (nuclear, radioactive, or chemical)—all of which are expensive on the world market and generate high demand. Another consideration are the so-called intangible technology transfers—knowledge and expertise possessed by individual scientists, experts and engineers that can be transferred to a potential destination of concern through personal contacts, joint projects, presentations at international conferences, and other forms of scientific and professional exchange. Unable to provide sufficient domestic demand for these types of commodities, governments are hard pressed to either openly allow such exports in violation of their export control commitments, close their eyes on such violations by specific enterprises, or attempts to find loopholes in the current national regulations and international obligations to further specific projects or trade practices.

Secondly, the need to keep defense industry workers employed and salaried has political significance for the governments. Although rudimental and ineffective, democratic institutions are slowly taking root in most of the former Soviet and Warsaw Pact states, and elections and political campaigns on national and regional levels are becoming more important. Therefore, keeping the population happy in heavily industrialized regions should be a priority for the politicians—to ensure re-election, and for the government—to avoid social tensions and further instability. Trade in weapons-related and other sensitive items must be a valuable (if not the only) means of achieving this goal.

Divergent threat perceptions. The expansion of all multilateral export control arrangements, and the transformation of some of them (COCOM into WA) in the 1990s, brought into the framework of international nonproliferation efforts countries that used to be the target of the very same export control mechanisms in the past. Despite the political and economic changes in these countries and their closer ties with the Western democracies, the likelihood is very high that some of them retained at least in part the perceptions and loyalties of the Cold War period, which makes their threat perceptions and assessment of the nature of the threat different from those of some established Western democracies. This could be especially true in countries that experienced little or no rotation of political and economic elites since late 1980s–early 1990s.

These divergent threat perceptions may be a problem for the multilateral export control mechanisms given their informality, lack of structure, consensus-based decision-making, and absence of clearly defined target entities. In fact, these divergent perceptions may be one of the causes of all of the above: at least one arrangement (WA) was negotiated and established with full participation of the new members, such as Russia; others (NSG, MTCR, AG) were created by mostly like-minded states or groups such as the G7.[38] Threat perceptions may have similarly changed among some older MECA members as a result of the end of the Cold War and the increased international cooperation overall.

Globalization

Few phenomena are receiving as much academic, policy and media attention as globalization, which has become a focal point of discussions, and both advocacy and

resentment. Being an encompassing phenomenon, globalization has many meanings and definitions depending on the subject of discussion or the issue area.[39] Many observers would still agree that the general understanding of globalization usually emphasizes three main components: (1) the rapid and unprecedented reduction in restrictive barriers imposed previously by sovereign states on the movement of people and goods, (2) growing economic interdependence among national economies and industries alike, and (3) the development and rapid expansion of new, less expensive, and vastly superior technologies, equipment, and means of communications.

What makes the process of globalization even more powerful is the reinforcing nature of all three components. Each component facilitates the acceleration and expansion of the other two: reduced barriers create additional opportunities for trade and movement of capital, goods, and labor; economic interdependence creates even greater opportunities for economies to lower the costs of production by increasing specialization and finding cheaper labor, sources of raw materials, and more lucrative markets; while at the same time new technology and communication capabilities create additional opportunities for the thriving of the other two components. Globalization therefore is a sum much greater than the inputs provided by its constituting components.

The intended impact of globalization on the effectiveness of multilateral export controls is determined by the fact that export controls are tools for trade regulation, and as such are affected by the changing political, economic and technological environment as described above. They are also, however, tools to achieve strategic and security objectives of states. The effect of globalization on multilateral export controls is therefore manifesting itself in both political and economic issue areas.

Post-Cold War international politics. The end of the Cold War resulted, among other, in the appearance on the world scene of a number of new independent state and non-state actors. This fact, I argue, has an effect on the performance of multilateral institutions such as MECA in the following ways. First, the breakup of the Soviet Union and of several Eastern and Central European states (Czechoslovakia, Yugoslavia) created a significant number of new members of international community, bringing the total number of world countries from 166 in 1990 to 192 in 2002 (almost a 16 percent increase). Several of these new states contributed to the membership of multilateral export control arrangements, potentially increasing the uncertainty factor in making MECA consensus-based decisions, changing policies and procedures, and hampering logistics. Even new states that are not members to any arrangement have a potential of becoming an important point of origin or transshipment for items and technologies that need to be controlled.

Secondly, after the collapse of the bipolar international system, a greater number of states obtained the opportunity to formulate and implement independent foreign policy—which previously had been nearly impossible because of the overwhelming pressure brought by the superpowers on their satellite and allied states.

Finally, both the significance and number of non-state actors (international organizations, regimes, sub-state and supra-state structures) have dramatically increased in the 1990s. All these non-state entities are reducing the role of state in international relations by assuming some functions and responsibilities previously attributed to states only, or taking responsibility for managing new functions and addressing new

challenges—such as international trade, law, environmental, or telecommunication regulations.

These changes have a direct impact on the performance of multilateral export controls as informal, consensus- and non-treaty-based institutions. MECA's main goal is to facilitate states' coordination of their *national* export control policies. As the previously state-only functions are becoming shared by non-state entities, the relevance of *national* export control policies is likely to decrease—thus making MECA in their present state less relevant as well.

In addition to the added uncertainty, the greater number of countries also generated a higher risk of proliferation of WMD materials and technologies after the end of the Cold War, particularly from the former Soviet republics. A combination of the size of the former Soviet nuclear and military-industrial complex, the dispersal of their various components among a number of countries, and inadequate ability to control them on the part of the new states make the proliferation threat very tangible, or, according to at least some estimates, "the greatest threat the world has faced in the nuclear age from the proliferation of weapons of mass destruction."[40]

Economic Interdependence. In addition to the impact of the increased number of state and non-state actors on the effectiveness of nonproliferation export control efforts, the increase in global economic interdependence also has an important role. Producers of hi-tech industrial and defense equipment increase in number and size and become more geographically diffused by opening branches and affiliates around the world. Some increasingly complex production processes can no longer be performed not only by single companies, but sometimes, single countries without engaging in some sort of cooperation

with counterparts worldwide.[41] The more pronounced global division of labor dictates the industries to diversify their suppliers, which causes a greater risk of uncontrolled proliferation through the companies' internal channels.

The rapid rate and magnitude of global economic activity and integration are exceedingly at conflict with the governments' efforts to control sensitive trade and transfers. First, although the majority of producers realize the need to control strategic goods and services to prevent the proliferation of WMD, they argue that export controls are nevertheless too restrictive. The range of clearly defined items on export control lists, which are directly linked to the development and production of WMD, is relatively small compared to the lists of dual-use goods and services, which constitute the bulk of export license applications in most industrialized countries. In addition, the rate at which new materials and technologies are developed exceeds the ability of governments to promptly identify them and classify them as either requiring controls or not.

Secondly, for both political and economic reasons, the traditional flow of advanced and hi-tech goods and technologies has been reversed. Whereas in the past advanced technologies were considered by most states a matter of national security and were therefore funded and developed by designated defense research institutes and labs with all proper security precautions, the changes in the international environment after the end of the Cold War diminished the importance of security considerations. The initial flow of advanced technologies from the defense and into civilian consumer sector created sufficient saturation of the markets with hi-tech consumer household equipment, thereby generating an even higher demand, now on civilian hi-tech industries to provide even more and better technologies. This high demand coupled with the reduced cost of

developing and producing hi-tech equipment (which by itself is a result of the growing economic interdependence)[42] urges industries to be constantly on the cutting edge of research and development of new technologies. As a result, civilian industries have now become a more effective and efficient producer of highest quality equipment and technologies—a situation wisely used by the governments to obtain better quality and less expensive equipment and technologies for defense purposes.

And thirdly, lowered barriers to the movement of labor created much greater opportunities for bearers of sensitive knowledge and information (scientists, engineers, technicians) to travel, find employment outside of their country, and participate in international scholarly exchanges, conferences and workshops. The number and percentage of foreign students has also increased, particularly in fundamental sciences:

> This trend was especially pronounced in the natural sciences and engineering, where the share of doctorates earned by U.S. citizens (including naturalized citizens) dropped from 70 to 56 percent over the past 25 years. For all of S&E, including the social sciences and psychology, the U.S. share fell from 74 to 61 percent.[43]

New Information Technologies. One of the greater challenges faced by multilateral export control efforts is the rapid development and expansion of new information technologies throughout the world. Some of these technologies have been in use for decades before (such as fax machines or telephones), but within the last ten years, their number and availability have expanded both numerically and geographically, allowing individuals to communicate with greater ease. Other technologies have begun developing only recently, and have experienced an almost exponential growth in the last decade. Among such technologies are advanced computers and computer networks, consumer-grade encryption technology, Internet, and cellular and satellite telephones and imaging.

These new means of communication allow for much easier intangible technology transfers (ITT). Whereas previously the transfer of sensitive goods and especially technologies and know-how involved the physical transfer of paper charts and drawings, computer disks, tapes, or other forms of information media, new means of communication allow for instant, hard to control transmission of a vastly greater volume of information virtually anywhere in the world. [44]

These new means of communication also greatly simplified and reduced the cost of personal contacts via telephone and especially electronic mail and file transfer. These means of communication are also much more difficult to control and monitor given their volume and the absence of legal foundation for doing so,[45] which increases even greater the potential for incidental or deliberate transfer of sensitive technologies or information worldwide.

Summary

The factors proposed above are by no means exhaustive in explaining possible problems in the performance of multilateral export controls. Their selection from a number of other potential explanations was determined by the nature of the current academic and policy discussions and efforts to evaluate MECA effectiveness by a number of both government and non-governmental researchers, and to offer policy recommendations for improvements.[46] Many of these recommendations address exclusively MECA's policy and procedural deficiencies (Krasner's *problems within the regime*), mentioning briefly the factors presented here. It is the argument of this work that, policy and procedural issues notwithstanding, the changing global political,

economic and technological environment has created substantive problems to MECA (Krasner's *problems of the regime*) and presents an even greater challenge to international efforts to control the flow of strategic goods and services. Identifying these challenges and examining the exact mechanism of their effect on the performance of multilateral control institutions is important for ensuring that these efforts achieve their desired outcome.

The next chapter will discuss the methodology, information, and data used to evaluate the theoretical propositions outlined above.■

Chapter IV

Methodology and Data

The principal goal of this project is to present and examine the information that can help understand the critical factors and demonstrate their proposed impact between the independent and dependent variables. Elaborating on the propositions made in the previous section, the current chapter will present a research design, state the research questions in the form of hypotheses, and suggest and evaluate the relevant information and data.

1. Methodology

Examining the significance of the three factors that are proposed to have an impact on the effectiveness of multilateral export control arrangements will require a multi-dimensional approach. While both quantitative and qualitative methodologies for hypothesis testing have their advantages and disadvantages, a strong and fitting combination of the two is believed to be most useful here. The nature of the hypotheses also determines the appropriate methodology for their testing, which will be taken into consideration. However, given a potentially limited number of cases and the lack of available information due to the sensitivity of the subject matter, a sufficiently rigorous quantitative methodology may not be applicable, at least to some hypotheses.

Quantitative analysis will therefore be used whenever it is possible and advantageous, while the bulk of hypothesis evaluation will require case studies and qualitative analysis.

Van Evera provides a good review of case study methodologies and conditions for their use.[1] Case studies usually employ one, or a combination of three basic methodologies: *controlled comparison* (or better known as J. S. Mill's "method of difference" and "method of agreement"), *congruence procedure*, and *process tracing*. The behavior of members of international regimes is a process that is a function of a number of variables, many of which may fall under the domain of different theoretical approaches. Therefore, for the purpose of this project, the latter methodology, process tracing, is the most appropriate because it (1) allows the researcher to trace the process of decision-making of a number of different-level actors; and (2) allows for testing for the presence of different motivational characteristics in the decision-making process, i.e., for the validity of different theoretical approaches applied to decision-making.

The proposed three explanatory hypotheses can be briefly summarized in the following **statement**:

***H*$_{MECA\ Performance}$**: *The effectiveness of multilateral export control arrangements (MECA) is a function, among other, of*

*(1) the member-state **capacity** to establish and implement a viable export control system;*

*(2) the member-state **motivation** to accept the nonproliferation goal as superior to all other economic and political considerations, resulting in a* bona fide *implementation and enforcement of export control mechanisms; and*

*(3) the accelerating process of **globalization**, understood here as:*

(a) the post-Cold War international political system;

(b) economic interdependence; and

(c) new information technologies.

Note that the first two explanatory factors pertain to the state level of analysis, whereas the third factor is a broader phenomenon, pertaining to the international system overall.

An elaboration on the proposed relationships, including their substance, components, and the hypothesized effect on MECA performance, is presented in Table 5.

Table 5. Factors Affecting MECA Performance

Factor	Substance	Effect
State Capacity	Availability of resources	Lack of resources prevents governments from establishing and implementing a viable export control system.
	Corruption	Corruption hampers governments' efforts to develop, implement, and enforce an XC system.
State Motivation	Opportunity cost of export controls	Revenues of cooperation with sensitive entities outweigh the costs of potential sanctions; making export controls an unavoidable hindrance, which can be bypassed if necessary.
	Political consequences	Governments may need the political benefits that sensitive cooperation may provide, such as greater public support, less social tension, and achievement of certain foreign policy goals. Under such circumstances, export controls have a lesser priority.
	Different threat perceptions	Threat perceptions of some new MECA members differ from those of others, leading to disagreements on the source and nature of proliferation threat.
Globalization	Post-Cold War international political system	The end of the Cold War resulted in the appearance of many new states, more independent foreign policies of former satellites, and a greater role for sub-state and supra-state actors—all of which reduces the relevance of state-based MECA.
	Economic interdependence	Greater availability of sensitive goods, technology flow reversal, and greater labor mobility make export controls more difficult to implement.
	New information technologies (IT)	New IT make transferring sensitive knowledge via modern communication lines fast and hard to detect—making such intangible exports hard to control.

Although the main thrust of this project is to evaluate how the three above-presented factors may affect the performance of multilateral export controls, the latter cannot be defined as a solid entity. The matter is complicated by the fact that MECA performance is itself a product of different inputs. On the one hand, it is a function of members' national export control systems: MECA is only as effective as their members' inclination and efforts to control sensitive trade. On the other hand, performance is delimited by the outside environment: how well are MECA designed and suited to operate in the current international political and trade environments and address contemporary threats.

This distinction forces the researcher to approach the task of evaluating the role of the three components in MECA performance from two directions. On the one hand, the state-centric level of analysis requires an evaluation of the impact of state-specific factors on the performance of international institutions. In other words, the first two factors, state capacity and state motivation, concern the issue of member compliance with regime provisions, be it the physical ability to institute and maintain the national policies in accordance with regime requirements, or setting of, and adhering to, certain priorities, which put the goals and objectives of all regime members outside the existing national economic and political interests. The effect of globalization and its three proposed components, on the other hand, needs to be explained from a systemic perspective. The next three sections will lay out a path for tackling each factor individually.

2. State Capacity

Design. The State Capacity factor effect lends itself more readily to quantitative measurement because of the numeric nature of information comparison and the

availability of the necessary data. The dependent variable (DV1) for measuring this factor is the level of a country's export control system development. The independent variables are the available resources (IV1), and the level of corruption (IV2). As proposed above, the higher the amount of available resources, the more developed the export control system in a given country. And conversely, the higher the rate of corruption, the less developed the export control system will be. Thus, the hypothesis concerning the State Capacity factor can be formally restated as follows:

> $\boldsymbol{H_{State\ Capacity}}$: *Member-state capacity to develop and implement an export control system relates positively to the amount of resources available to them (IV_1) and negatively to the level of corruption in them (IV_2).*
>
> $DV_{State\ Capacity} = IV_{1\text{-}Available\ Resources} + IV_{2\text{-}Corruption}$

The model would have been more complete if alternative sources of funding for export control development and implementation could be identified, measured and factored in. Among such sources could be assistance provided by foreign countries for such purposes; for example, the United States provides Russia with assistance, advice, equipment, and training for licensing and customs officials, and exporters' representatives.[2] Similarly, the European Union has a program of assisting future EU members in developing their export control systems, because they are required to have such systems in place to qualify for EU membership.[3] Unfortunately, there are no practical means of collecting and measuring such information for a significant number of cases necessary for a meaningful quantitative comparison. In addition to the direct U.S. export control assistance to Russia, which can be measured and reported, a number of U.S.-based nongovernmental organizations receive government contracts and grants from

private foundations to assist Russia and the NIS countries in their export control efforts.[4] Such indirect assistance can hardly be measured and is of little utility here.

Data. As proposed previously, this factor consists of two major components, each of which has to be evaluated separately regarding its proposed effect on MECA performance. The first component, *availability of resources* (IV_1), represents the sheer volume of funds available to the governments to design and establish an export control system. Such availability can be measured directly, by comparing resources allocated by governments for export controls with the level of development of their export control systems. This option is certainly preferable to all others. However, government data on budgetary allocations for export controls are not easily found, both for reasons of information sensitivity, and simple absence from public records. In many cases such information can also be buried under various budgetary allocation items, which are difficult to detect even if they are available. The best proxy of such data, which is readily available from a number of sources, would be country GDPs. Their comparison to the level of the countries' export control system development would provide the necessary evaluation of the effect.

The GDP data is available widely, with figures compiled by the U.S. Central Intelligence Agency in its annual World Fact Book,[5] or by the Organization for Economic Cooperation and Development (OECD), considered to be the most reliable. Both sources are available online.

A potential problem with using availability of resources as the measure of states' ability to establish and implement export control is in distinguishing the actual *capacity* (material funds available for policy design and implementation) from the state *will*. The

idea behind such concerns is that the level of export control development depends not so much on the available funds, as on the willingness of governments to allocate them for that purpose. Governments, as the argument goes, usually command significant resources measured in sheer volume, so, allocating the necessary funds is really a reflection of priority than actual availability.

Although this is a very valid concern, the physical availability of resources is nevertheless a measurement of its own. It is not a secret that governments prioritize budgetary allocations for various policies, depending on a whole range of factors, both political and economic. The fact whether a country is having national elections, economic crisis, a natural disaster, or a new government with a different foreign or economic policy agenda, may determine the place of export control funding in the giant list of other priorities. While there is no feasible way to delineate the priority from the availability effect on the governmental decision-making, this does not diminish the role of resource availability as a factor: political and economic prioritizing notwithstanding, the fact whether a country has more or less funds to design and implement certain policies is still an important determinant of their existence and success.

Measurements of the second component determining state capacity to establish export control systems, *corruption* (IV_2), are carried out often, and by a number of organizations. The problem with such measurements is that many of them are performed mostly on a national level, and therefore are hard to apply to a cross-national analysis because of different methodologies and time frames. This study requires an extensive, methodologically rigorous, cross-national evaluation of corruption, preferably by an objective international organization.

One of the most authoritative studies of global corruption trends is performed annually by Transparency International, a non-governmental research organization, which operates through its International Secretariat and more than 80 national Chapters to raise awareness of the damage caused by corruption, promote international cooperation against it, and advocate relevant policy reform. One of the products of the studies is the annual Corruption Perception Index (CPI), which is compiled by country on the basis of the perceptions of business people, academics and risk analysts about the level of corruption in a given country. The Index ranges from 0 (highly corrupt) to 10 (highly clean).[6]

Finally, the measure of the *level of export control system development* (DV) has been designed by the Center for International Trade and Security at the University of Georgia several years ago for a number of countries. The composite index consists of standardized measures for ten components that are believed by most experts to be essential for an ideal export control system. These components are:[7]

1. *Licensing system/legal framework*: the legal bases for controlling strategic exports and institutions for reviewing export licenses.
2. *Control lists*: lists of goods, services and technologies that are subject to control, including missile, nuclear, chemical, and biological categories and conventional weapons.
3. *Interagency Process*: the process whereby various government agencies interact in the review of export licenses and export control policy. Many experts feel that it is important to have multiple agencies involved in making decisions in order to have policies and/or licensing decisions that balance competing interests.
4. *Customs Authority*: the involvement of an agency charged with monitoring the movement of strategic articles across borders and inspecting shipments.

5. *Regime Adherence*: refers to the participation of nation states in the multilateral control regimes, including the Nuclear Suppliers Group, the Australia Group, the Missile Technology Control Regime, and the Wassenaar Arrangement on dual-use technologies and conventional weapons.
6. *Catch-all Clause*: the legal basis which prohibits companies from circumventing nonproliferation export controls. Companies are not to ship or export items if they have "reason to believe" that the items will be used for unauthorized military uses or for making weapons of mass destruction.
7. *Information Sharing/Gathering*: to be effective, information regarding export violations and sensitive end-users must be gathered and shared. Governments must inform exporters about legal requirements and compliance.
8. *Verification*: this element consists of the legal bases, agencies and procedures that relate to ensuring that licensed items are actually used by the government agency or business to whom the sale was made (the end-user), and at the location and for the purpose designated in the license. This may involve pre-license checks, import certificates, delivery verifications, and post-shipment checks.
9. *Training*: An effective system requires officials with adequate political and technical training to assess risks associated with technology and arms exports.
10. *Penalties*: an effective system imposes both civil and criminal penalties on those who violate export laws.

The list of ten components was developed by the Center researchers, who then polled a group of internationally recognized experts on export controls to assign weights to each component measure based on its perceived importance in the overall export control system. A 72-item questionnaire was then developed and distributed among export control and other relevant officials in each studied country to obtain information and evaluation of each element. On the basis of these questionnaires, each element in a country's national export control system was assigned a weighted score; the scores were

added to obtain a country score for its export control system development based on a 100-point scale. Pooled results for all studied countries are fully represented in Table 5 of the Appendix I.

The CITS index measures the level of development of a country's export control system compared to an *ideal type*, rather than offering a measure of export control *effectiveness*. This limitation does not affect the importance of the index as it relates to the research question at hand: both, resource availability and corruption are factors determining the state capacity to develop and implement export control policies (i.e., how well developed, not how effective, they are).

Expected Findings. The data will be analyzed using the ordinary least squares (OLS) simple regression procedure. As posited previously, the level of a country's export control system development (DV) measured in CITS index should correlate positively with the level of available resources (IV_1) measured in GDP information for each country, and negatively with the level of corruption (IV_2) measured in CPI index terms.

3. State Motivation

Assessing the impact of state motivation on MECA performance is more difficult than measuring state capacity for at least two reasons. *First*, in addition to alternative political and economic considerations, which may deter some states from following the MECA-specified export control procedures, other states may have different threat perceptions, which determine what target entities present the greatest concern to a state and, therefore, how diligently export control policies are implemented and enforced there. In addition to this state-specific problem, variations in threat perceptions prevent

consensus-based MECA from effective policy-making and implementation due to the continued disputes and accusations of violations—which constitute a regime problem.

Second, quantitative comparisons, which were useful in evaluating state capacity, are not practical in the case of state motivation. Economic and political pressures, both domestic and international, are hardly quantifiable phenomena: although the value of potential domestic economic losses due to export restrictions can be estimated, guesswork and data ambiguities would still prevent us from making convincing and useful comparisons with the economic benefits received as a result of adherence to the multilateral export restrictions. These factors, as well as the difficulty in quantifiable comparison of states' threat perceptions, make case study a more useful methodology for evaluating the validity of the second hypothesis. The rich contextual information, or a "thick description," in the words of Clifford Geertz,[8] presents in this case a greater opportunity to reveal the nuances and intricacies of policies that produce the effects under examination.

The proposed second hypothesis suggests that state motivation for adhering to the goal of nonproliferation and compliance with the provisions of multilateral export control mechanisms depends on (1) the attractiveness to a given country of benefits of potential cooperation with an undesirable entity compared to the incentives offered as a side payment for cooperating on export controls; (2) the domestic and international political benefits that sensitive trade with undesirable entities may offer to a given country, compared to the similar benefits of cooperation on export controls; and (3) threat perceptions that a given country may or may not share with the rest of MECA members. Or, put formally:

$H_{State\ Motivation}$: *Member-state motivation for compliance with MECA export control standards depends on the cost ratio of export control adherence vs. maintaining sensitive cooperation with undesirable entities (IV_1), the ratio of political benefits of adhering to export control practices vs. maintaining sensitive cooperation with undesirable entities (IV_2); and the level of sharing perceptions regarding proliferation threat with other members (IV_3).*

$DV_{State\ Motivation} = IV_{1\text{-}XC\ Opportunity\ Costs} + IV_{2\text{-}Political\ Factors} + IV_{3\text{-}Shared\ Threat\ Perceptions}$

Opportunity Cost of Export Controls. Given the number of enterprises and facilities involved in trade in controlled materials and technologies, and the sensitivity of the data concerning their trade patterns and volumes, there is hardly a direct way of collecting and analyzing such information in quantities sufficient for a meaningful statistical analysis. The most practical way of gauging the effect of compliance with export control provisions is by presenting a state-level of analysis case, following the process-tracing methodology, which would shed light and trace a consistent national policy, lack thereof, or ways in which entities successfully evade it, in pursuit of cooperation in WMD-related or dual-use items with countries or other entities that present a viable security threat to other MECA members, or if such pursuits come in conflict with the MECA provisions. The choice of state-level as opposed to industry- or facility-level of analysis is determined by the fact of states being units of membership in multilateral export controls.

In essence, the case should demonstrate that a MECA member willfully enters into cooperative military-related agreements with a state or other entity of concern because it deems the cost of compliance with export control provisions too high compared to the benefits from cooperation with such undesirable entities. Similarly, if such cooperation is carried out without direct official participation or authorization of the central government,

but is nevertheless tolerated and protected by the authorities, or encouraged on an unofficial level, it would constitute a viable case in support of the original thesis on one of the potential weaknesses of multilateral export controls.

Preliminary research, interviews and contacts with a number of government officials from MECA member-states indicate that in most instances, such cooperation is carried out by Russia with a number of countries about which several MECA members have expressed concern. Of particular concern are reports about Russian nuclear and missile cooperation with Iran and India, which ranges from alleged breaches of the spirit of the arrangements, to direct violations of specific provisions. These reports and instances, as well as the background information on the status of Russia's economy and defense industry will be presented in the next chapter as evidence in support of the original thesis.

Political Factors. The setting for presenting the evidence for the above-mentioned factor is also useful for evaluating the importance of political factors, both domestic and international, on a country's adherence to, and implementation of export controls. Russia's military and nuclear cooperation with Iran and India presents two important cases in which a MECA member-state willfully engaged in questionable contacts with non-members, in part in pursuit of certain political goals, or under pressure of political circumstances. The case will also include the analysis of Russia's domestic political situation at the time of the initiation of cooperation with Iran and India, its position on important international issues, and the evolution of its foreign policy and national security doctrine in the 1990s.

The case of Russia is important and appropriate for at least two reasons. First, Russia, as the successor state of the Soviet Union, carried with its new status all

international treaty and other obligations of its mother state. The Soviet Union was an active founding member of the Nuclear Suppliers' Group on the one hand, and the target of the COCOM at the same time. Russia, at this juncture, finds itself, at least formally, in one camp with its former adversaries, and proclaims its adherence, at least formally to all main principles of nonproliferation and international security.

Second, Russia is also one of the world's principal suppliers of all types of weaponry, WMD and dual-use equipment, hardware, materials, technologies, and know-how. Demonstrating that a MECA member-state can sustain extensive trade contacts with potential target states of the arrangements, without any, or very few breaches of the main principles of the agreements, shows the extent of the problem with the arrangements themselves.

Shared Threat Perceptions. The utility of the Russian case for demonstrating the importance of this factor on the overall MECA performance is also high. Russia's participation in some of the arrangements was made possible under the assumption that it is sharing, or would eventually share, the security concerns with other members, and abide by the provisions agreed upon by them.

The fact of Russia's participation in nuclear programs with, and alleged missile assistance to, countries that other MECA members believe present a risk of proliferation and a threat to regional and international security is a direct indication that the initial assumptions of shared threat perceptions among MECA members is not valid. Although the Russian case will be used as the primary source of evidence, other pieces of information pertaining to the hypothesis at hand will be used where appropriate.

4. Globalization

The proposed effect of globalization on multilateral export controls is a three-pronged phenomenon. The argument proposes that the primary determinants of how well MECA perform are (1) the changed international environment as a result of the end of the Cold War, (2) the growing economic interdependence, and (3) the proliferation of new information technologies.

This statement can be formally expressed in the following relationship:

> ***H*** $_{Globalization}$***:*** *MECA performance as it is affected by globalization is a function of the post-Cold War international political system (*IV_1*), the growth of economic interdependence (*IV_2*), and the increased availability of new information technologies (*IV_3*).*
>
> $H_{Globalization} = IV_{1\text{-Post-Cold War Politics}} + IV_{2\text{-Economic Interdependence}} + IV_{3\text{-New Information Technologies}}$

The difference between testing this hypothesis and the previous two is the switch to a different level of analysis: from state-level to international system-level.

Post-Cold War Political System. The effect of the end of the Cold War on all international institutions, and not only MECA, is primarily in the increased number of state and non-state actors. Greater number of state actors has an impact on multilateral export control in two ways. First, it reduces the ability of consensus-based institutions, such as MECA, to perform effective decision-making, and this proposition is very well reflected in the current debates surrounding the arrangements. Secondly, an overall growth in the number of state actors increases the unpredictability of interstate relations, and creates additional opportunities for parties pursuing sensitive materials and technologies to obtain them via third states, which can serve, unbeknownst to them, as transshipment points.

In addition, greater number of non-state actors (sub-state, supra-state) play a more important role in the world devoid of global geopolitical rivalry, and therefore of strictly divided spheres of influence, of the two superpowers. Of particular concern is the recent visible growth and activation of various radical religious, ethnic, or other partisan organizations that often resort to terrorism to attract attention to their cause. Intelligence communities and advocacy groups worldwide have expressed concern that such organizations may obtain materials, components, and know-how to develop and deploy WMD much easier now, with the considerably relaxed controls on the transfers of such materials after the end of the Cold War.

The effect of the changed international political environment can, perhaps, be best illustrated by a cumbersome process of establishing new institutions, such as the Wassenaar Arrangement.

Economic Interdependence. This factor consists of three components, each of which has an effect on MECA performance, and will be analyzed separately. Over the last decade, the availability and range of sensitive goods and technologies have increased through both a numerical and a geographical expansion of the supplier base. An increasingly greater number of companies worldwide are engaging in scientific and technological research, development, and manufacturing, primarily because this has become less expensive, more profitable, and highly in demand. In addition, this growing number of suppliers has also created a much more complex network of production processes, with suppliers of parts for a single product located worldwide.

As a result of such expansion, and the scientific and technological advances made by the consumer sector of the economy, the flow of technologies has been virtually reversed:

whereas before cutting edge research was funded and performed mostly for military purposes, the military now finds it less expensive to outsource and commission such research and manufacturing in the civilian sector. One of the reasons for that is that the military is constantly under pressure from the government to reduce the cost of R&D and manufacturing (which can now be accomplished—a comparison with only too recent public outrages with hundreds of dollars paid for small tools by the Pentagon comes to mind).

Finally, individuals now have become more mobile in choosing and pursuing careers worldwide. Companies with subsidiaries and affiliates move their employees between the branches to expose them to other experiences and familiarize them with all stages of the production process. The end of the Cold War allows now for much greater opportunities for scientists and engineers to find employment abroad, where the demand for their knowledge and services is the highest. And software engineers and other high-tech specialists use new information technologies to provide services on a global scale, and to be "virtual" employees of any company.

New Information Technologies. Showing the impact of the new information technologies on multilateral export control performance will involve two stages. The first task is to demonstrate with factual evidence the scope and rate of new information technology development and increase over the last years. The second task is to find and provide evidence on whether and how these new technologies are, or can be, used to transfer or obtain sensitive information, technologies, or know-how, bypassing the existing export control policies.

The first task can be achieved by analyzing a number of sources of information and data that evaluate the pace of globalization, usually concentrating on the development of information technologies across the countries and regions of the world. One such authoritative study is the A.T. Kearney/Foreign Policy Magazine Globalization Index,[9] which employs trade, foreign direct investment, volume of telephone calls abroad, and the number of Internet service providers to gauge the globalization exposure by country.

The International Telecommunications Union also issues a report on the status of usage of telephone traffic, by country, region, and world. The most recent report was put out in 2002, and provides data from 1995 through 2001, making some over-time comparisons possible. The report provides data for the number and growth in main telephone line subscribers, and on mobile telephone users, including growth figures for all categories.

The second task requires collecting evidence and reports on the use of modern means of communications to transfer sensitive technologies or know-how. Such reports are often published in the media, or are subject of investigation by the government agencies—and therefore can be readily available.■

Chapter V

Data Analysis and Case Studies

1. Introduction

This chapter will summarize and analyze the available data to evaluate the proposed relationship between the performance of the four multilateral export control arrangements, and

- the state capacity to comply with them and implement the mandated policy changes,
- state motivation and willingness to adhere to MECA provision, sometimes at the expense of other political and economic benefits, and
- globalization, understood here as the growing economic interdependence, increased number and rapid expansion of information technologies, in the setting of the post-Cold War international political system.

The first section of the chapter presents the statistical analysis of the relationship between member-state capacity to develop and implement export control and the level of development of their export control systems.

The second section will present a case study of Russia's (a member-state of the NSG, the MTCR, and the WA) cooperation with Iran and India on their nuclear and missile programs, which is presented as evidence of lack of motivation on the part of a state to adhere to the policies it believes are less important than providing employment for its struggling defense industry, or pursuing certain foreign policy goals.

The third section will demonstrate the potential effect of globalization on MECA performance, by tracing the development of MECA after the end of the Cold War and the effect of a much larger membership comprised in large part of the former Soviet and Eastern and Central European states on MECA decision-making. It will also present a case for increased economic interdependence, consisting of the analysis of the U.S. government experience of dealing with an increased supplier base and technology flow reversal for its national defense effort. Finally, analysis will follow, substantiated by media and intelligence reports, of the effect that the new information technologies may have on the success of multilateral export control policies.

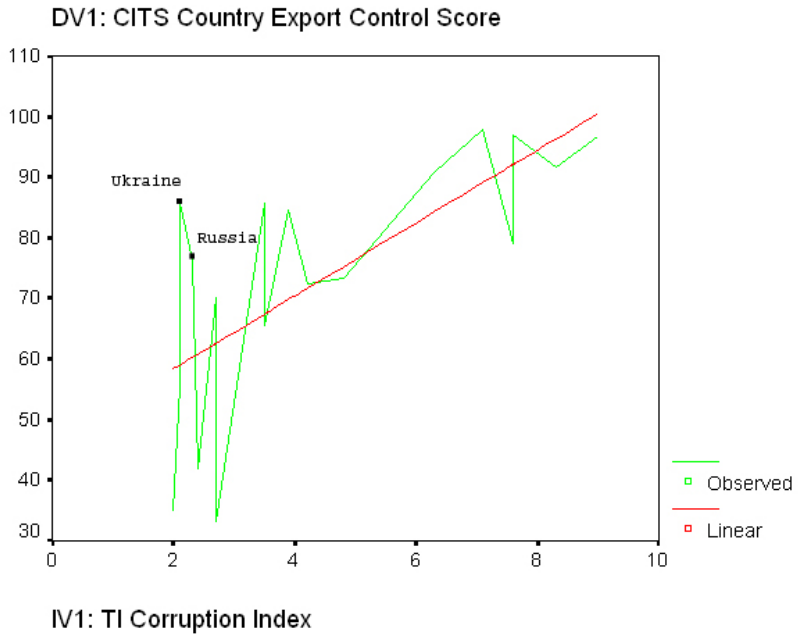
2. State Capacity

Evaluating the effect of state capacity on the performance on multilateral export control arrangements involves the use of data for two independent variables, availability of resources and corruption. The main dependent variable (MECA performance) is represented here by a proxy variable, the measurement of the development of a country's export control system. One of the main components of MECA performance is member-state compliance, represented in their ability to establish and implement a national export control system. The index of national export control system development indirectly approximates measuring MECA performance, or at least a major component of it.

Completing a preliminary data analysis using SPSS statistical software package by mapping out a scatter-plot of data values for the dependent variable (CITS' national Export Control Scores) and the independent variables (TI Corruption Index and country GDP) revealed a non-linear pattern, which prompted further consideration of the

explanatory model. Consider, for example, the actual data chart with the predicted linear relationship:

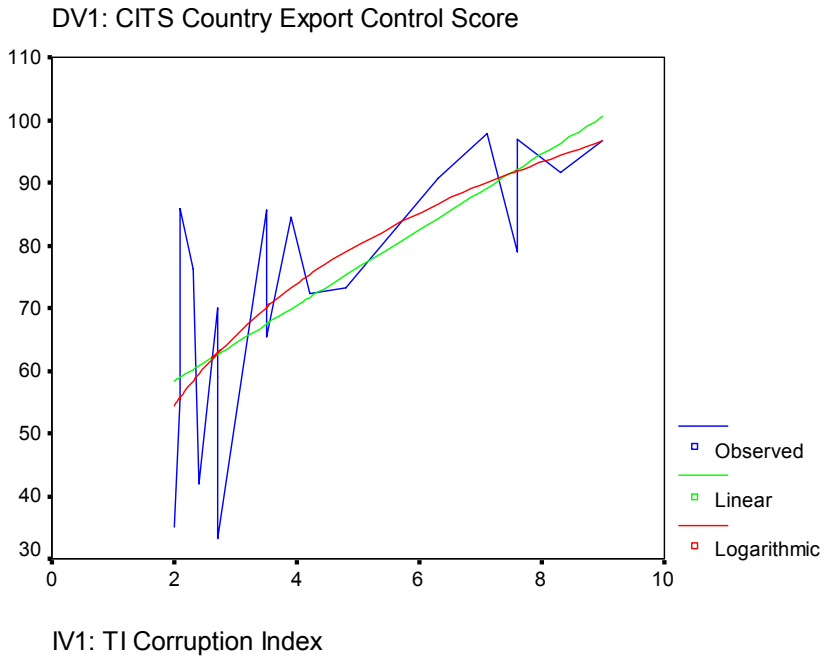
Chart 1



As we can see, variation in export control development among the countries with more corruption (lower TI corruption score) is much higher than among states with less corruption (higher TI corruption score). As the level of corruption decreases (higher TI score), variation in countries' export control system scores decreases as well—thereby suggesting a non-linear relationship, which actually seems more plausible than a simple linear relationship: as the level of corruption in a country decreases, the level of bureaucratic and industry's covert opposition to export control restrictions there decreases to a point when it has little or no impact on the level of a country's export control development, thereby making variation in the XC scores much less.

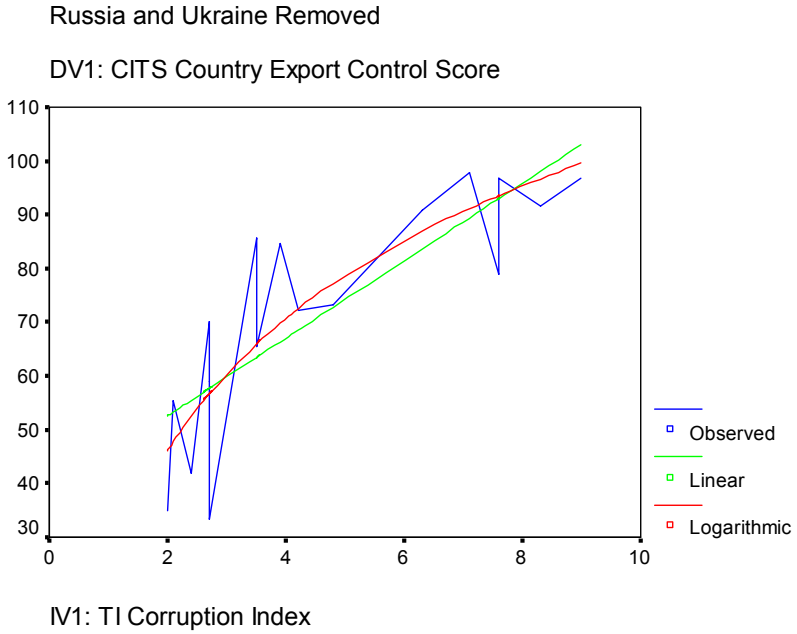
This proposition is supported by the fact that comparing the linear and non-linear relationships, represented in the next graph, reveals a better-fitted model in form of a logarithmic function.

Chart 2



In addition, the outlying positions of Russia and Ukraine (see Chart 1) make this variation even greater. The two countries' level of export control development may not be entirely beneficial in understanding the relationships in this diagram; as noted above, foreign, particularly U.S. assistance has helped propel Russia's and Ukraine's export control scores to those higher than of many states with much less corruption. Performing the analysis with cases of Russia and Ukraine removed from the equation shows a much stronger and more significant relationship, as seen on the following chart:

Chart 3



A logarithmic function generally represents a model known in economics as the "diminishing marginal returns," in which a return on investment grows at an increasingly slower rate, becoming practically unchangeable as the level of investment reaches a certain level. Statistical data presented below also support this claim. For the purposes of simplification, data for the independent variable were transformed using the logarithmic function in order to be able to employ a linear regression technique. The statistical results presented below show a more significant relationship, and a higher level of explanatory power of this model.

Variable	Beta	R^2	t-value	Significance
Corruption	.708	.501	4.131	.001
Log. Corruption	.723	.523	4.320	.000

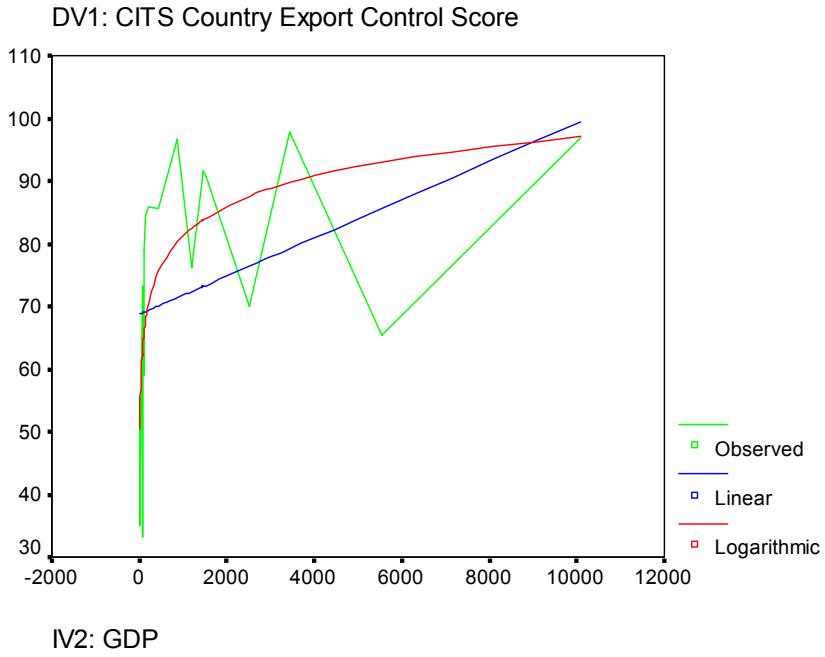
For the Corruption independent variable, which is already highly significant, all results are slightly improved with the introduction of the logarithmic function into the

equation. The standardized coefficient (beta) improves from .708 to .723, with the percentage of variation in the dependent variable (R^2) rising from 50.1 to 52.3.

A similar relationship can be seen in the next two graphs, which compare the linear and non-linear (logarithmic) relationships between the export control development and the availability of funds (GDP). The model fit is greatly improved when a non-linear relationship is introduced: as the availability of funds reaches a certain amount, the level of export control development has a tendency to slow its growth and remain above a certain level. The following statistical data and charts support this claim.

Chart 4

Chart 5



Variable	Beta	R^2	t-value	Significance
GDP	.381	.145	1.701	.107
Log. GDP	.689	.475	3.918	.001

The improvement for the GDP independent variable is much more significant. Whereas the linear relationship shows a small and insignificant degree of the model explanatory power (beta = .381, R^2 = .145, and t-value = 1.701), the introduction of the logarithmic function improves the overall model fit and the significance. The beta coefficient almost doubles, the R^2 increases almost three-fold, and the relationship becomes highly significant at the .1% level.

The analysis of the multivariate regression model, using both independent variables at the same time also reveals a significant improvement in the model. The comparison results of the linear multivariate and non-linear multivariate models using the logarithmic function are presented in the table below:

Model	Beta	Adj. R^2	t-value	Significance
GDP	.144	.654	.774	.450
Corruption	.656		3.525	.003
Log. GDP	.499	.519	2.453	.026
Log. Corruption	.425		2.876	.011

Although the overall model fit for the linear multivariate regression is significant (F = 8.632), the results for each independent variable are worse than in the bivariate models. Overall, the results for the logarithmic Corruption independent variable are slightly less, but still highly significant at .011 level, whereas the results for the logarithmic GDP variable are dramatically improved from being insignificant to being highly significant (.450 and .003, respectively). The adjusted R^2 is slightly smaller for the logarithmically-transformed model than for the linear model (.519 and .654, respectively), which can be explained by the dampening effect of the Log. Corruption variable.

Overall, the analysis reveals that the presented model is a good predictor of the variation in the export control scores, explaining about 52 percent of the variation. It is also clear that the level of corruption is a better predictor of the country's export control system development than its GDP level.

Since the effectiveness of multilateral export controls is a function, among other, of member-states' national export control system development, this analysis makes a strong case to suggest that a country's capacity to develop and implement such a system is a significant factor in determining the effectiveness of the arrangements.

3. State Motivation

Case 1: Russian-Iranian Cooperation

Russia's recent involvement in Iran dates back to the days of the Islamic Revolution in 1979, when the Muhammad Reza Shah Pahlavi's regime, vigorously supported by the United States, fell to a popular radical Islamic revolutionary movement. The Soviet Union, which previously could not engage in Iran due to the U.S. presence and the Shah's openly (with a few exceptions) pro-Western orientation, received a chance to step in. Initial Soviet assessments of the revolution were enthusiastic despite the fact that it carried a pronounced religious Islamic flare.

However, it soon became evident that the new government in Iran was equally unlikely to yield to the Soviet diplomatic overtures, despite several attempts. The soon following Soviet invasion in Afghanistan put an end to any such hopes: although Iran was not a voiced opponent to the Soviet presence in Afghanistan (fearing to step in the same league with the United States), neither was it happy with the fellow-Muslim nation falling to the infidels. The relations between the USSR and Iran became even more strained with the ensuing Iran-Iraq war between 1981 and 1988, in which the Soviet Union took a pronounced pro-Iraqi stance and provided Saddam Hussein's regime with weaponry and diplomatic support.

Following the end of the war, the Soviet withdrawal from Afghanistan in 1988, and USSR's collapse, many political obstacles to Russian-Iranian rapprochement disappeared, and relationships became more pragmatic. Russia's interests mostly revolved around issues of its southern border security in the Caucasus and Central Asia, and the fate of the newly discovered deposits of Caspian Sea oil, in which several major

Western powers, particularly the United States and the United Kingdom, expressed considerable interest. Battling Western plans to build an alternative oil pipeline from Baku to Çeyhan in Turkey, thus bypassing the Russian territory, Russia needed all the political leverage in the region it could muster. Maintaining good relationships with Tehran was also important for Russia's Southern Tier security, with a number of Islamic fundamentalist groups seeking to penetrate former Soviet republics of Uzbekistan, Tajikistan, Kyrgyzstan, and Turkmenistan, and the continued military operation in Chechnya, in which Islamic fundamentalists have reportedly played an important role. It appears Russia was successful in ensuring Iran's non-involvement into what potentially could have been a difficult geopolitical situation in both, Central Asia and the Caucasus. In addition, Russia, pragmatically anticipating an imminent thaw in Western relations with Iran, was able to secure a competitive advantage in Iran, both politically and economically, especially in the face of the continued U.S. anti-Iranian foreign policy.

The growing partnership with Russia is also beneficial to Iran. Throughout the 1990s, especially after the passing of Ayatollah Khomeini, Iran managed to elect a more moderate government, which made several important moves towards easing fundamentalist restrictions on the society and to a rapprochement with the West. Russian ties oftentimes remained the main link of communication between Tehran and the West, which suited all parties involved. Having been embargoed by the United States from obtaining important advanced materials, hardware and technologies, Iran also found in Russia a major supplier thereof. Although the cooperation between Russia and Iran became comprehensive in many respects, it mostly involves Russian transfers of weapons systems and military hardware, and a thriving nuclear program.

These are the aspects of the cooperation that pose the greatest concern to the United States and the West, and are claimed to be in violation of, if not the letter, than the spirit of the MECA trade control policies.

Nuclear Cooperation. Russia became closely involved in nuclear cooperation with Iran in 1995, with the decision of the Iranian government to resume the construction of two nuclear reactors in the city of Bushehr on the Persian Gulf Coast. The construction of the Bushehr nuclear power plant was initiated in 1974 by a West German company, Kraftwerk Union (KWU), but was never completed due to the changed political situation and the war with Iraq, during which some of the already built facilities at Bushehr were damaged by the Iraqi air-raids.[1] In mid-1980s and after the war with Iraq, Iran attempted to resume the construction with the help of West Germany, but both times, the West German government declined the offer. At the time of German withdrawal from the project, the two reactors were estimated as 50% and 70% completed, with no critical equipment yet delivered or installed.

In January 1995, Russia was invited by the Iranian government to resume construction of the nuclear power plant, and a contract worth $800 million for the completion of the first reactor was signed soon afterwards. Instead of completing the German-built pressurized-water reactors (PWR), Russia opted to build its own pressurized light-water reactors over the period of 55 months.[2] The construction hit several snags during its course. In addition to continued U.S. pressure to scrap the entire project for reasons of proliferation concern, the Russian side (represented by the Ministry of Atomic Energy, MINATOM) soon found out that Iran failed to do the site preparation for the resumption of the construction. In addition, in 1998, Ukraine announced that,

Carnegie Endowment for International Peace, *Deadly Arsenals* (2002), **www.ceip.org**

under U.S. pressure, it was canceling its participation in the project, which entailed the manufacturing of steam turbines for the power plant. Undaunted by the obstacles, Russia re-negotiated the contract to account for additional work, found a replacement subcontractor for the turbines, and re-affirmed its commitment to the completion of the project as scheduled. With anticipated delays, the first phase of the project should be launched in 2003-2004. The 317-ton reactor has already been manufactured and was delivered to Iran in late 2001. Russia's JSC Izhor Works and two St. Petersburg facilities, Electrosila and Leningrad Metal Works are participating in the Bushehr project.[3]

In addition to the current contract in Bushehr, Russia, through its nuclear technology company Tekhnopromeksport, recently announced an agreement to build up to 15 additional reactors in Iran in the next ten years. Among them are two more reactors at Bushehr, two at Ahvaz near the Iran-Iraq border, four at Tabas and Ramin, and two—at Shahid Muhammad Montazeri.[4] The decision was a part of a more general cooperative intergovernmental resolution, which also included projects in oil and gas field development in Iran, metallurgy, telecommunications, and aviation.[5]

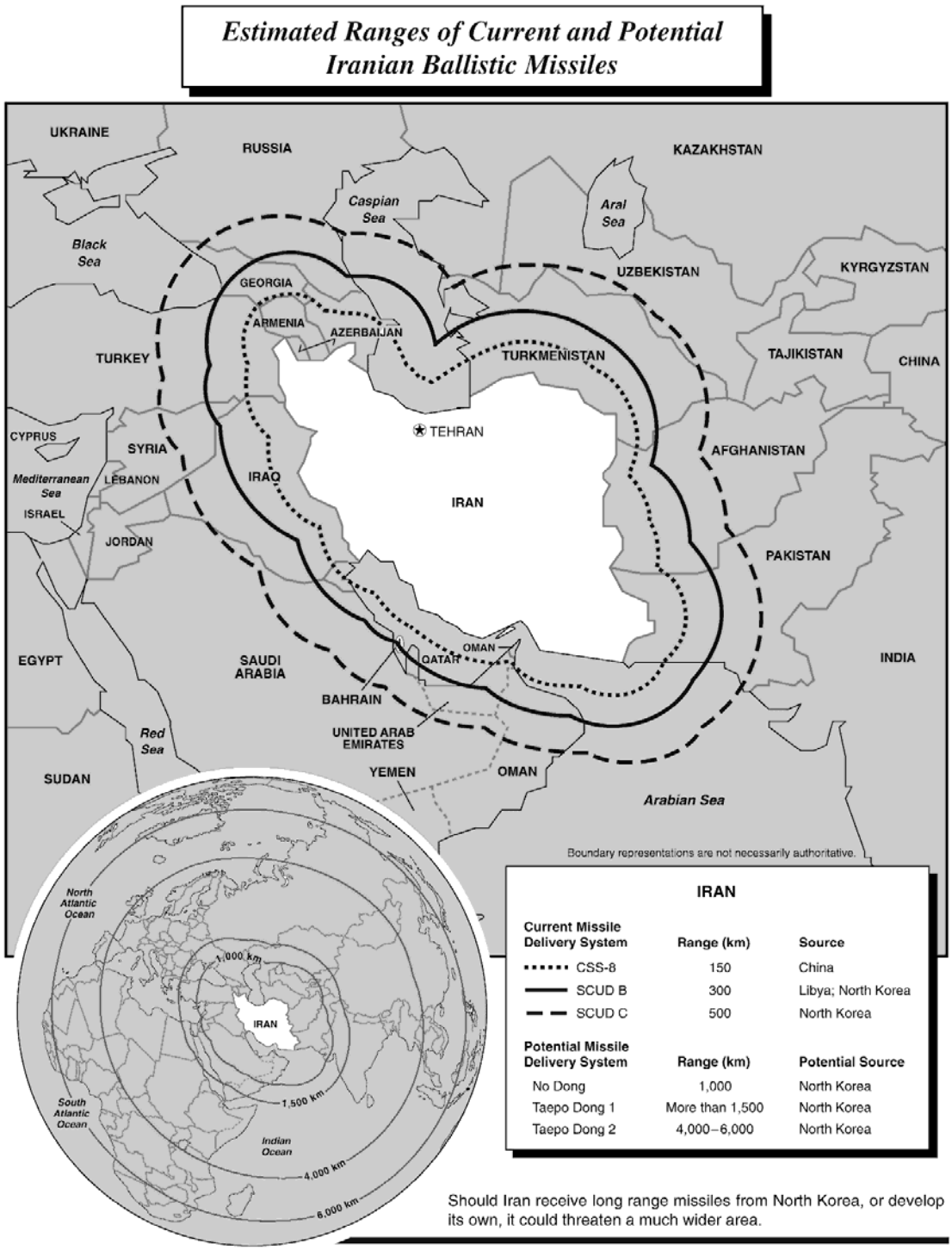
Missile Cooperation

Russia's missile cooperation with Iran ties neatly into the flourishing broad military-technical cooperation between the two countries, which began in the early 1990s and by 2000, reached the volume of $5 billion, making Iran Russia's third largest weapons customer. During these years, Russia sold to Iran three Kilo-class diesel submarines, 24 MiG-29 and 12 Su-24 fighter bombers, 422 T-72 tanks, 413 BMP-2 infantry fighting vehicles, SA-5 and SA-6 surface-to-air missiles, and other items.[6] Additional

conventional weapons contracts were to be signed and implemented in mid-1990s, but the constant U.S. pressure, coupled with some financial difficulties faced by Iran, persuaded the Russian leadership to reconsider. In late 1994, Russian President Boris Yeltsin agreed to put a halt to Russian-Iranian military cooperation, and Vice-President Albert Gore and Prime-Minister Victor Chernomyrdin signed a confidential agreement to that effect in 1995, in which Russia pledged to fulfill the existing contracts with Iran before 1999 and not to sign new ones.[7]

In 2000, shortly prior to the U.S. Presidential elections, Russia unilaterally withdrew from the Gore-Chernomyrdin agreement, making it public in the process, and forcing vice-president Gore to respond to domestic criticism over the appropriateness of such agreements, which indirectly tolerated proliferation behavior and put the U.S. security at risk. Russia further took steps to revamp overall trade and military-technical cooperation with Iran,[8] which culminated in the spring 2001 visit from the Iranian President Mohammed Khatami to Russia to sign the relevant agreements.[9] As a result, according to the Russian official estimates, the volume of overall trade between the two countries reached $1 billion in 2001, compared to $603 million in 2000.[10] However, early in 2001, Iranian ambassador to Moscow Mehdi Safari announced that Iran intended to buy from Russia about $7 billion worth of arms in the next several years.[11]

Early Iranian missile program and acquisitions are tied more directly to Libya, China, and North Korea than Russia. During the Iran-Iraq war, Iran procured from them a number of Soviet-made Scud-B missiles and their variants,[12] while Iraq was using 800 similar missiles directly supplied to it by the Soviet Union. In addition, an undisclosed number of North Korean-built Scud-C missiles were also delivered to Iran in 1992.[13] A



number of Nodong ballistic missiles were also supplied by North Korea; and up to 150 of them were to be transferred later, but the United States managed to persuade North Korea to cancel the deal. Nevertheless, Iran managed to develop its own operational ballistic missile, Shahab-3 (800-900 mile range, 1,650 lb payload) on the basis of Nodong

technology. In 1999, Iran announced the development and testing of Shahab-4, a larger and more powerful missile (1,200 mile range, 2,200 lb payload) derived from the Soviet-made SS-4 technology, which was supposed to be used exclusively for satellite launching. Finally, in 2000, Iran announced plans to build the longer-range Shahab-5 missile, capable of delivering small payloads to the U.S. territory.[14]

Table 6. Select Iranian Ballistic Missile Programs[15]

Missile	Type	Range (km)	Payload (kg)	Engine	Status
Nodong	MRBM	1,300	1,000	Liquid	
Shahab-3	MRBM	1300-1500	750	Liquid	In Development
Shahab-4	MRBM	2000	1000	Liquid	In Development
Zelzal-1	SRBM	100-150	?	Solid	Produced since 1991
Zelzal-2	SRBM	350-400	?	Solid	-
Zelzal-3	MRBM	1000-1500	?	Solid?	-
Two unnamed programs	ICBM?	5,500/10,000	750	?	In Development, Unconfirmed

Iranian efforts to develop a successful missile program have encountered some obstacles, the thrust of which was the lack of know-how and special materials needed to produce missile fuselages, fuel, and engines, such as special steel and graphite materials, and devices and technologies for sophisticated guidance systems. According to a number of reports, some of which quoted U.S. intelligence information, China was one source of these materials and technologies, providing special steel for missile fabrication, telemetry equipment for missile testing, and training for Iranian engineers on inertial guidance techniques.[16]

Another available source for missile materials and technologies was Russia. Beginning in 1996, Russia became the focus of U.S. accusations of missile proliferation to Iran, indicating that "Russian entities have provided Iran's missile programs with training, testing equipment, and components including specialty steels and alloys, tungsten coated graphite, gyroscopes and other guidance technology, rocket engine and

fuel technology, laser equipment, machine tools, and maintenance manuals."[17] The accusations featured a number of Russian facilities, which allegedly provided Iran with training, technologies and equipment for its missile programs. Among these facilities were Glavkosmos, Russia's government-owned space-technology marketing agency, NIIGrafit, an aerospace material research institute, Polyus, a guidance technology developer, and two educational institutions: the Moscow Aviation Institute, and the Baltic State University.[18] Overall, the U.S. State Department listed 20 Russian entities suspected of transferring missile technology to Iran.[19]

The accusations have received varied response on the part of the Russian officials, who initially denied any suspected missile transfers to Iran in violation of the MTCR provisions. However, forced to respond to the mounting allegations and evidence, provided by the U.S. and Israeli governments,[20] Russian officials admitted in 1997 that some transfers might have taken place without the consent of the government.[21] Official investigations have been launched to determine whether illegal transfers have occurred.

Case 2. Russian-Indian Cooperation

Russian-Indian strategic partnership dates back to the early 1970s, when, with the ascent of Indira Gandhi to the Prime-Minister position, the Soviet-Indian ties received a substantial boost. The Soviet Union used its cooperation with India for both, economic and political purposes. On the economic front, India could supply the USSR with the desirable consumer goods, such as foodstuffs and textiles, in which the Soviet Union began to feel a considerable shortage. Boosted by the "petrodollar" influx during the 1970s' oil crisis, the Soviet Union was only too eager to augment its meager variety and

poor quality of goods available for the population. In exchange, the Soviet Union provided conventional weapons and some consumer goods as part of its overall effort to engage third-world, especially non-aligned countries.

On the political front, a bourgeoning cooperation with India could offset the disadvantage the USSR had in the Asian continent after the political break-up and military stand-off of the late 1960s with China, and the U.S.' shrewd move to quickly anchor itself in the region via its Chinese "ping-pong" diplomacy, and the later strategic reliance on Pakistan to offset the Soviet expansion in Afghanistan. In addition, good relationships with India, one of the principal members of the Non-Aligned Movement (NAM) were important for USSR's efforts to maintain its clout in the third-world.

India was equally interested in Soviet support for the same reasons: to offset the strengthening Chinese position on the continent, and to contain what it believed to be aggressively-minded Pakistan. As a result, in 1971, CPSU General Secretary Leonid Brezhnev and Prime Minister Indira Gandhi signed the overarching Treaty on Friendship and Cooperation, which was renewed 22 years later, in 1993, during Russian President Yeltsin's visit to New Delhi. Overall, the Treaty provided a framework for a mutually beneficial political, economic, cultural, and academic cooperation between the two countries during the 1970s and 1980s.

After the collapse of the Soviet Union, Russia for several years struggled to maintain old strategic ties throughout the world, mainly because of the economic and domestic political difficulties and uncertainties, and also as a result of the decidedly pro-Western, neoliberal slant in Russian foreign policy of the early 1990s. The "honeymoon" period of Russian-Western (particularly U.S.) relations came to an end in mid- to late-1990s,

especially with the onset of the U.S.-led NATO operation in the former Yugoslavia; a period, which at the same time saw the backlash of conservative forces in the higher level of Russian political establishment, culminating in the nomination of Yevgeniy Primakov as Foreign Minister in 1996, and then as Prime Minister in 1998. The resurgence of the conservative forces was partly a result of popular frustration with the course of economic reform, economic crisis of 1998, but mostly of a wide-spread disillusionment in the Western intentions towards Russia, which failed to materialize in any substantial cooperation with visible and palpable results for the population.

In addition, the backbone of the Soviet and Russian industry, its military-industrial complex, has finally exhausted its reserves, while the government had little or no resources to maintain the level of orders capable of keeping the industry afloat. The need to seek customers for advanced weapons systems and other sensitive cooperation abroad was more urgent than ever. For the Soviet Union, and then Russia, India has been one of the largest customers of conventional weapons, with contracts for all types of weapons reaching several billion dollars every year.[22] Indian armed forces continue even now to be equipped primarily with Soviet and Russian-made weapons systems: about 60 percent of the Indian army's hardware, 70 percent of the navy's and 80 percent of the air forces' equipment were produced in Russia.[23]

It was at this time that Russia intensified its cooperation in the Middle East and the Asian continent, popularizing the idea of the Russia-China-India strategic triangle, and accelerating its efforts to forge relationships with the three countries to replace the tumbling relations with the United States, satiate its domestic push to revive the former

geopolitical and global strategic stature, and compensate for the growing U.S. hegemony. Both, India and especially China also saw the benefit of such prospects.

The political course towards closer ties with its Eastern and Southern neighbors changed little after the transition in Russia's leadership in 1999. The administration of President Putin pursued with even greater consistency a more pragmatic foreign policy, making strategic advances both on its Western and Eastern fronts by maintaining high level of relationships with the West and making several important concessions, such as dropping its fierce opposition to NATO enlargement, acquiescing to the virtual annulment of the 1972 ABM Treaty by the United States, and allowing the United States to use Central Asia as the launch pad for its military operation in Afghanistan. At the same time, Russia successfully continues to rebuff all U.S. efforts to limit its cooperation with undesirable countries, such as Iran, Iraq and North Korea, or cease military-technical, nuclear, and allegedly missile assistance programs in India and China.

As evidence of that, Russian President Putin visited India in 2000, heading a 70-member delegation, to sign a Declaration on Strategic Partnership and a large number of cooperative agreements, including military and technical contracts. The established bilateral intergovernmental commission on military-technical cooperation worked on the sidelines of the summit to conclude weapons contracts amounting to the sale of 310 T-90 Russian battle tanks, part of which are to be co-produced with India, technology lease to manufacture 140 Su-30MK fighter aircraft, the sale-for-refurbishing of Admiral Gorshkov aircraft carrier and 24 MiG-29K aircraft to base on it, and a supposed lease of up to four Tu-22M Backfire bombers capable of delivering nuclear weapons.[24]

In addition to the "defence and military-technical cooperation in a long-term perspective," the declaration also announced future cooperation on peaceful use of nuclear energy and outer space.

Nuclear Cooperation. India first exploded its first "peaceful" nuclear bomb in 1974, mostly as a countermeasure to the Chinese nuclear weapons program, followed by two tests in May 1998 as a show-of-strength intended for Pakistan, and an overall gesture reaffirming the country's economic and scientific potential.[25] The country's civilian and, as it turned out, weapons nuclear programs began in 1960, with the Canadian CIRUS reactor supplied to help India with its nuclear energy and research. Although Canada insisted that the reactor be used for civilian purposes only, India used it to produce enough plutonium to deploy its first weapon in 1974. After building two heavy-water 540 MW power reactors at Tarapur with the help of the United States in 1969, and completing an indigenous Dhruva reactor in 1985, India was capable of producing several kilograms of plutonium per year, accumulating as much as 290 kilograms by 1991, and almost 400 by 1995.[26]

Surprisingly, Soviet- and then Russian-Indian nuclear cooperation did not begin until 1988, when the Soviet Union agreed to build two 1,000 MW VVER-type light water reactors at Kudankulam. Until that time, all equipment, technology, and know-how that existed in India had been either supplied by Western nations, or indigenously developed. No official agreement was signed between India and the USSR regarding the Kudankulam NPP at that time, negotiations on the technical part of the project began in 1998, and no work at the site has been done until 2002. In the meantime, Russia supplied low-enriched uranium as fuel for the Tarapur NPP.[27]

According to some sources, during President Putin's visit to India in 2000, the two countries signed a secret memorandum of understanding on cooperation in peaceful nuclear energy projects,[28] and among the set priorities was the preparation and signing of the Kudankulam power plant contract. In November 2001, India and Russia signed the Memorandum on the Basic Principles of Cooperation for the Construction of the Kudankulam Nuclear Power Plant. Finally, February 12, 2002, Russia's ZAO Atomstroieksport and India's ICAEL signed the formal contract, which specified that the project is to be completed within 68 months from the beginning of construction in May 2002. Russia agreed to supply principal large-scale NPP equipment, such as the reactors, turbines and the steam generator. All construction and installation is to be performed by the Indian side under supervision of the Russian specialists. Participants on the Russian side include Moscow-based Atomenergoproekt Research Institute, which developed the design for the NPP, Hydropress Design Bureau, which developed VVER-1000 reactors, and the Kurchatov Institute, which will oversee the scientific component of the project. Numerous Russian subcontractors will also contribute, including Uralmash, Izhor Works, and Leningrad Metal Works.[29]

The importance of such contracts is immense for Russia's defense and nuclear industry. As a result of the Kudankulam NPP project, over 300 Russian enterprises with tens of thousands of workers will be employed for over five years. Such projects, this one worth by some estimates between $1.5 and $2 billion dollars, provide the bulk of revenues generates by the few remaining competitive Russian industries.[30] The Russian officials announcing the signing of the Kudankulam project were proud and excited about the future prospects for nuclear cooperation with India, as India's ICAEL chair Veejay

Kumar Chaturvedi noted that India's internal demand for nuclear power will reach 100,000 MW in the next ten years, which means that more contracts with Russia may be signed in the future.[31] Such possibilities were discussed during President Putin's visit to India in 2000. In addition to the contracts for constructing nuclear power reactors, Russian and Indian scientists cooperate on a number of fundamental scientific projects, including nuclear physics.[32]

After the 1992 adoption of the revised guidelines by the NSG, which Russia agreed to abide by, no contracts on the supplies of nuclear equipment, materials and technologies could be signed with countries that had not placed their nuclear energy programs under full-scope IAEA safeguards.[33] The only exemptions from this requirement were the agreements that had been concluded prior to the adoption of the new guidelines (the so-called "grandfather" clause), or essential deliveries of fuel or other materials for maintaining safe operation of a nuclear power plant.

Russia is using these exemptions to justify its continued work on the Kudankulam NPP (which it claims was finalized in 1998, before the NSG adopted the new guidelines) and on the deliveries of nuclear fuel for the Tarapur NPP (because these are believed to be needed to maintain adequate safety at the plant). The United States, however, opposes these transfers arguing that the Kudankulam contract cannot be "grandfathered" because it was not actually concluded formally, no payments had been exchanged and no work had been performed at the site. The United States also disagrees that the supplies of low-enriched uranium fall under the NSG safety exemption.[34]

Missile Cooperation. India has both a successful space and ballistic missile programs, which are largely indigenous, but rely somewhat on the rocket engines and

technology from Russia. India launched a number of satellites since the first one in 1980, using a Soviet launch vehicle, and as recently as 2001, when it put a heavy geostationary satellite into high orbit, using its own SLV equipped with Russian engines.

India's attempts to build a successful space program began in the 1980s, particularly with the negotiations with the Soviet Union to provide essential equipment and technologies for the rocket engines capable of delivering a 2.5 metric ton payload into orbit. The main objective of the program was, with the help of the indigenously designed Geosynchronous Satellite Launch Vehicle (GSLV), to enter into the very lucrative global markets of satellite launches and imagery. So far, only the United States, Russia, China, the European Union, and Japan are capable of performing such launches, and operate actively on the market of satellite imagery for both commercial and intelligence purposes.[35]

The negotiations led to a 1991 contract with the Soviet Union, which was to deliver fully-assembled cryogenic accelerator blocks (CAB) and the know-how for their indigenous production. In 1992, India renewed the contract with Russia to buy a liquid fuel (hydrogen/oxygen) KVD1/KVD7.5 Russian-made engine developed in the 1970s; Russia also agreed to provide the delivery, assembly and testing of CAB ground support systems.[36] Russia's Salyut and Khrunichev enterprises were two main contractors, with a permanent headquarters set up at the site of missile production and testing, and a permanent staff of a minimum 50 and a maximum of several thousand specialists and engineers present at all times.

However, beginning in 1992, the United States began expressing concern over the transfer of cryogenic engines and especially technologies to India, which, the argument

went, could use it to greatly enhance its ballistic missile program. Such a development could not only pose a threat to regional stability in the Subcontinent, but also was a violation of the Missile Technology Control Regime provisions.

Neither Russia, nor India were at the time members of the MTCR, but Russia planned to use its space industry, one of the few remaining competitive and cash-earning components of its economy, to enter the global market of satellite launching. In addition, Russia found it increasingly difficult financially to maintain its space program afloat, especially the Mir orbital space station, and probed ways to join the emerging international consortium to build the International Space Station.

Concerned about the possibility of uncontrolled WMD proliferation from Russia, the United States insisted that Russia adhere to the MTCR guidelines, and made it a condition for its admittance into the ISS project and the opening of the U.S. satellite launching market, one of the largest in the world. Russia's continued assistance to India on its space program, however, was a major obstacle on the way of Russian adherence to, and later joining the MTCR. Using the combination of sticks and carrots, and the predominantly pro-Western orientation of the Russian government, the United States managed to pressure Russia into reneging on the contract, and, as a compromise, agreed to allow the supply of seven Russian cryogenic engines to India without transferring the technology for their production.[37] After intense negotiation in Moscow in July 1993, Russia agreed to renegotiate the contract with India and adhere to the MTCR guidelines beginning November that year. The United States, as promised, began negotiations on broad U.S.-Russian space cooperation, including the launching of satellites and cooperation on the ISS. The United States also agreed to include India into such

cooperation if it adheres to the MTCR, and announced that it would welcome Russia's application for MTCR membership in the near future.[38] As a result of this continued cooperation, India was able to develop and successfully launch a GSAT-1 satellite, using a GSLV with Russian-supplied cryogenic engines, in April 2001.[39]

In addition to the space program, India has developed a successful ballistic missile capability, with the currently deployed Prithvi capable of delivering initially conventional and now nuclear payloads to a distance of 150 and 250 kilometers respectively, and the Agni with the distance of 2,000 kilometers.[40] Overall, the majority of India's ballistic missiles are still under development, with only Prithvi-1 being fully deployed and counting several dozens of specimens.[41] The Agni, which was developed and tested several times during the 1990s, was shelved, but recently resurrected as Agni-2 project, after the Pakistani successful test of its 600-kilometer Hatf-3.[42]

Table 7. India's Ballistic Missile Arsenals and Development Programs[43]

Type	Nomenclature	Number
SRBM	Prithvi-1	12-75
SRBM	Prithvi-2	under development
SRBM	Prithvi-3	under development
IRBM	Agni-2	unknown
IRBM	Agni-3	under development
ICBM	Surya	under development

Discussion

Threat Perceptions. Russia's nuclear and missile cooperation with Iran and India is at the core of the problems faced by two of the MECA discussed in this study: the admittedly more stable and effective Nuclear Suppliers' Group, and the more ambiguous and controversial Missile Technology Control Regime. The opposition of some MECA members, especially the United States, to Russian nuclear cooperation with Iran is based

on the assumption that Iran is likely to use the obtained nuclear technologies and know-how for developing nuclear weapons. The principal arguments, presented by the United States focus on the general propensity of Iran to be of threat to both regional and international security, particularly through its anti-Israeli foreign policy, known history of militarized disputes, suspected WMD programs, and alleged support of terrorist organizations. Therefore, supplying Iran with nuclear and missile equipment and technologies, even within the limits allowed by MECA and other international provisions, carries with it a disproportionate level of risk compared to the potential economic benefits that such exchanges may bring. Given its known reserves of fossil fuel, Iran, some believe, has no justifiable need for a nuclear energy program. Even if Russian direct assistance and the Bushehr NPP do not directly involve transfers of WMD-related materials, equipment and technologies, chances are that Iran may use the presence and expertise of Russian scientists and engineers in attendance at the site to augment its nuclear weapons research and capability.

In the area of missile cooperation, the United States argues that supplying Iran (a non-member of MTCR) with medium-range ballistic missile technologies by one of MTCR members is a direct violation of the regime provisions, which cannot be tolerated. The United States, therefore, strongly opposes any Russian nuclear and missile cooperation with Iran, and regularly makes a case for this position before the Russian government and other members of multilateral export control arrangements.

The Russian response to these complaints varies according to the nature of the accusation. Addressing its nuclear cooperation with Iran, Russia makes several arguments:

- Iran is now a *bona fide* member of the international community, a non-nuclear-weapon state, signatory to the NPT;
- accusations by the United States and other states that Iran is developing a nuclear weapons program are not substantiated factually;[44]
- even if Iran were ever involved with known terrorist organizations in the past, there is no evidence to that effect presently; until the fall of the Taliban regime in Afghanistan, Iran was a known opponent of the regime and worked with other nations to contain its influence;
- a moderate wing in the Iranian government makes concerted efforts towards democratization and better relationship with the West in the post-Khomeini years;
- other members of the international community share this more pragmatic view of Iran and make efforts to pursue trade and other relations with it;
- in essence, Iran is no worse, but certainly better than many other regimes in the Middle Eastern region, with which the United States maintains friendly relations;
- Iran is an active member of the IAEA, complies fully with IAEA requirements, regularly submits itself to IAEA inspections, and has placed its nuclear program under full IAEA safeguards;
- even if there were concerns with Iran using its nuclear energy program to develop WMD, the type of reactor being built at Bushehr, and therefore the equipment supplied cannot be used for producing weapons-grade fissile material;
- as IAEA member and NPT signatory in good standing, Iran has every right to develop a peaceful nuclear energy program, and Russia has the right to provide such assistance;
- finally, by cooperating with Iran on a peaceful nuclear energy program, Russia only follows the provisions of Article IV of the NPT, which require nuclear powers' assistance to non-nuclear states in developing peaceful nuclear energy programs.

Russia also argues, and sometimes finds support for that position in the West, that it is better to cooperate with Iran in the nuclear sphere openly and ensure that all safeguards requirements are met, and that Iran does not divert the obtained technologies and know-how to its weapons program.[45] An alternative to that would be Iranian efforts to try to find illicit means of obtaining the same nuclear technologies—this time without proper oversight on the part of the Western states.

With regard to the U.S. objections to Russia's nuclear cooperation with Iran, Russia often recalls a similar situation, when it had yielded to the U.S. pressure to cease the nuclear energy project with North Korea, after which the United States stepped in to take over the construction of a similar reactor. Thus, argues Russia, the U.S. rhetoric is based not so much on the concern for nonproliferation and international security as the pure commercial component of such cooperation. Similarly, the United States, while currently unable for political reasons to engage directly in Iran with commercial projects, in the meantime makes every effort to limit the Russian presence there.

With regard to the missile cooperation with Iran, Russia is in a much weaker position: the alleged transfers of SS-4 technologies, guidance systems and relevant equipment, which were uncovered in 1997, directly violate the MTCR provisions. Instead of defending its right to trade with Iran in any items they wish, or arguing that the Iranian ballistic missile program is not a threat to regional or international security, the Russian government officially disavows any connection with the accused exporters, and claims that the transfers, if in fact they had taken place, were carried out bypassing the official channels, and that the only accusation against the Russian government that can be advanced is a failure to sufficiently enforce the national export control policies.[46] In any

case, the official representatives usually promise an investigation into the U.S. complaints, and sometimes even report one or two convictions.[47]

What is more curious, however, is that Russia's seemingly bogus excuse for its inability to control the sort of trade some private enterprises are engaged in may in fact be true. Given the disarray of the political power at the federal level, and the vastly divergent political and economic interests among several key political groups, especially in the early- and mid-1990s, it is not surprising that underhanded dealings of some companies, which had the right "support" at the top, might have gone through despite the official position, which favored cooperation with the West and adherence to nonproliferation norms. Such divergent groups could be found in both the legislative and the executive branches, and went up as high as the top members of the Russian political establishment.[48] This phenomenon is more of a rule than an exception, and testifies to the poor capacity of the Russian government to implement its international agreements even when it wants to.

With regard to India, the effect of Russian nuclear and missile assistance to it on multilateral export controls and the reaction from other regime members are different. On the nuclear cooperation, the NSG openly disapproves of any Russian or other, transfers to any state, which is not a signatory to the NPT and has not signed an agreement with the IAEA on the full-scope safeguards; and India has done neither. In general, Russian sales of cryogenic engines for the Indian space programs are tolerated as long as they are final (as had been previously agreed upon), and no related technology or know-how is transferred along with them.

The difference in rhetoric, however, concerning Russia's cooperation with Iran and India is stark, and reflects very well the issue of different threat perceptions within the MECA. The United Sates, whose engagement with Iran has been rather emotional ever since the 1979 hostage crisis leaves no opportunity to remind Russia on a regular basis of its disapproval of Russian-Iranian missile, and especially nuclear cooperation. Conversely, such demands and warnings bear a shade of formality when applied to Russian cooperation with India, even given the fact that the latter is not a signatory to the NPT and does not subscribe to the full-scope IAEA safeguards.

The primary reason for such differences in reaction appears to be in the different threat perceptions, first between the United States and Russia regarding Iran, and second, within the United States regarding Iran and India. For Russia, Iran is an important southern neighbor, strategic and economic relationships with which are essential for maintaining security along Russia's southern borders, containing Islamic fundamentalist movements in the Caucasus and Central Asia, and resolving the highly contended issue of the Caspian Sea and its resources. From the economic perspective, conventional weapons sales and legal nuclear cooperation with Iran provide billions of dollars of revenues for Russia's defense and nuclear industries, which employ hundreds of thousands of people. Iran has no territorial or other disputes with Russia, and unlike Turkey or Saudi Arabia, for example, made no attempts to spread its influence within Russia's traditional spheres of influence in the Caucasus and Central Asia, using its close religious or ethnic affinity with the local population. Iran therefore presents no threat to Russia, both in the short- and long-term. On the other hand, there is every reason for Russia to stay engaged in Iran at this stage in view of the imminent revival of Western interests in this country in the

near future;[49] this necessity is even greater as it becomes clearer that the days of the Saddam Hussein's regime in Iraq are numbered, and that Russian interests in Iraq will not be a priority for the new government, whatever it may be.

For the United States, on the other hand, Iran is a rogue state, governed by a radical fundamentalist regime, which supports regional terrorist organizations, does not accept the existence of Israel, and has active WMD programs. The United States views Iran as capable of hosting or initiating an assault on Israel, thereby defeating the U.S. interests in the Middle East and the Persian Gulf, harboring a belligerent, globally-networked terrorist organizations, such as Al-Qaeda, or developing an effective nuclear, chemical, and biological capability, which can threaten the U.S. armed forces in the region; or a ballistic missile capability, which can directly target the U.S. territory. Therefore, any trade or assistance agreements with Iran that can be even remotely used to enhance its WMD capability are strongly opposed by the United States.

Perceptions of India are more equally distributed among most of the MECA members, which is supported by the fact of a much milder reaction to all reports of potential proliferation activities there on the part of Russia or any other state. Russian nuclear cooperation with India is disapproved, but tolerated as long as Russia manages to present a face-saving justification for it in the form of the "grandfather" clause. Russian missile assistance does not present a significant problem, mainly because it is limited to the strictly specified transfers. And many major suppliers of conventional weapons flock to provide India with the latest designs they can offer, and hope to win a share of the predominantly Russian market.[50]

Such a radical difference in perceptions regarding a potential target of export controls among the members of a supposedly nonproliferation norm-based institution is disturbing, and indicative of a serious problem. The United States and Russia are not the only MECA member-states who have different opinions about Iran, or other states of concern; they rather represent the opposite poles of the entire spectrum. Some of the members have reservations about Iran, but nevertheless support the Russian position, which states that since Iran is not under a UN embargo, is a member of all relevant treaties and agreements, and is in good standing with the international community, there should be no reason to provide nuclear assistance to it, as stipulated by Article IV of the NPT. Other MECA members generally follow along the line of the U.S. position, but are baffled by the absence of the hard evidence about Iran's threatening plans and programs.

The most important implication of such divergent threat perceptions is the continued stalemate within MECA in its decision-making, and the inability to agree on the set of targets of export control policies and the appropriate response to violations. This stalemate will continue as long as there is no clear consensus as to whether MECA provisions are to be applied automatically, regardless of the state-recipient of sensitive materials or technologies—and in that case, Russia cannot be reprimanded for its nuclear cooperation with Iran; or that member-states should come to an agreement on a clearly defined list of target entities—which is extremely unlikely to happen given the current membership in all four MECA.

Political Goals. The Russian nuclear and missile cooperation with Iran and India has both domestic and international political goals. On the domestic front, Russia is able to quell the otherwise inevitable political difficulties that could manifest themselves in the

form of social unrest due to lack of employment and poor living conditions from the large number of employees of the defense and nuclear sector. The numerous coal-miner strikes of the early- and mid-1990s provided an important lesson for the government not to take such possibilities lightly.

The conservative political backlash of the second half of the 1990s and the economic crisis of 1998 in Russia were a sign that the time of economic liberalism and pro-Western foreign policies was gone. The Balkan crisis and the ensuing U.S.-led NATO military operation in the former Yugoslavia left both the Russian public and the political establishment deeply disillusioned with Russia's relationship with the West, especially the United States, and the unfulfilled promises of closer cooperation, greater involvement in Western institutions, and a real geopolitical role in exchange for the lost superpower status.[51] A public opinion poll conducted in 1999, after the end of the NATO operation in Yugoslavia reveled that a decreased number of respondents of all age groups believed that cooperation with the West was beneficial for Russia, and more people believed that it was more harmful, compared to a similar poll a year before. At the same time, more than half of the Russian respondents believed that cooperation with countries of Asia (such as China, India, or Japan) was more beneficial than harmful for their country.[52]

Yevgeniy Primakov, the newly appointed Foreign Minister, and later the Prime Minister, made assertive attempts to materialize this shift in attitudes and policies by proposing and actively pursuing a closer cooperation with Russia's traditional allies in the East and South, such as China, India, Iran, Iraq, and North Korea. An academician, expert in Middle Eastern and Asian affairs, former head of the intelligence service, and one of the few remaining heavyweights from the Soviet political establishment, Primakov

had enough clout and powers of persuasion to convince the ailing President Yeltsin to go along the new political line. Primakov's famous mid-air turn-around during his flight to Washington to discuss the peace process in Yugoslavia upon hearing the news on the commencement of the NATO air strikes on Serbia represents almost literally the turn-around in the course of the Russian foreign policy.[53]

It was becoming very obvious for Russia that it was now too weak and insignificant a country for the United States to seriously treat it as a power player. Weak both politically and economically, with the crumbling armed forces, Russia was, in the words of one Western columnist "too sick to matter." The only remaining viable component of the former awe and glory were the still numerous nuclear forces, and the potential to provide a host of rogue states around the world with the similar capability.

This statement is not to suggest that Russia was seriously considering a potential nuclear "yard sale;" it still realized the global security consequences of such irresponsible actions. The mere possibility and hint of such actions, however, could become for Russia an important bargaining tool where all other measures of persuasion failed. Therefore, engaging in cooperative projects with countries of concern for the United States appears to have become for Russia an important tool of its foreign policy, and one of the very few remaining at that.

This tool alone, however, could not have survived for long under constant U.S. pressure to terminate such cooperation without a number of other options or significant benefits. In addition to the political weight in international affairs, military and technical cooperation with the former traditional partners also brought the much needed resources to both replenish the IMF loan-dependent country's skimpy financial resources, help

employ hundreds of thousands of defense industry workers, scientists and engineers, and provide funds to continue, although at the basic level, research and design work there.

Opportunity Cost of Export Controls. The example of Russia's nuclear and missile cooperation with Iran and India illustrates the value and importance of the revenues received from such projects for maintaining the viability of the Russian nuclear and defense sector. The political and economic collapse of the Soviet Union had the most dramatic effect on the country's military-industrial complex, (MIC) which depended exclusively on government contracts and had little or no experience of marketing and selling its products, both on the domestic market and outside the country. As a result of the economic reform and the overall sharp decline in the gross domestic product and budgetary allocations, the defense sector lost almost 80 percent of funding from the Russian government.[54]

To realize the impact of such drastic change, one only has to recall the importance and place of the defense industry in the Soviet Union. Built from scratch on largely indigenous technologies, materials, and know-how, at the expense of hundreds of thousands of lives and enormous effort, especially after World War II, the Soviet defense industry, which included space and nuclear sectors, was a source of pride for the entire population, and respect of the world. Only the industrial component consumed about 20 percent of the gross national product, and 15 percent of the industrial workforce.[55] Immediately prior to the collapse of the Soviet Union, the MIC engaged over 75 percent of the nation's research institutes and facilities, and employed almost 10 million workers and technicians.[56]

In addition to the military-related goods, the defense industry was the leading producer of complex consumer goods, such as a large share of civilian automobile and agricultural machinery, medical and photographic equipment, small boats and other vessels, consumer electronics and household durable goods, and even simple tools and utensils—all of which were a side show for the main line of military products.[57] At certain points in time, the Soviet MIC produced 100 percent of all TV sets and sewing machines, 97 percent of refrigerators and cassette recorders, 70 percent of vacuum cleaners and 60 percent of motorcycles.[58] During the 1980s, there was a persistent popular rumor that the main reason for the change in shape of glass milk bottles available at every grocery store was the fact that their main producer, an artillery shell factory, had recently had to switch to a different model of shells—which explained a different shape of bottles.

Perhaps not to the same degree, but these relationships are also very akin to those of some U.S. defense enterprises, such as Honeywell, GE, or Westinghouse, which in addition to being major defense contractors, also manufacture consumer products. In addition to that, many Russian defense enterprises, especially outside the major cities, have been set up in remote locations to maintain the necessary level of secrecy, or, for many, to avoid being taken over by the advancing German forces during World War II. Therefore, for the thousands of workers and engineers employed there, the small town was the only place they lived in, and factory was the sole employer, and the entire social infrastructure was provided by it. In a way, this set up was similar to the early and mid-twentieth century U.S. factory towns, with a similar set of advantages, but also the same problems. The manager of such a facility would double as an unofficial mayor and city

manager, equally involved in the problem of supplying foodstuffs and consumer goods to the city's stores, as in fulfilling the government plan. The relationships between workers and management at such facilities were often built on trust, loyalty, and the bond of overcoming the difficulties of living and surviving together in a remote location, often under very hostile environmental conditions.

So much more difficult to endure for the defense sector employees were the feelings of betrayal and frustration when the political and economic reforms undertaken by the government left the industry in shambles. Life-long sacrifices and dedication appeared to be no longer appreciated and needed. The country was moving fast into the privatization stage, with defense facilities being ordered to quickly convert their production lines into manufacturing consumer goods, without proper investment, re-tooling, marketing research, re-training efforts, or social safety nets for the retiring older generation. Any existing facilities to produce consumer goods were not useful because the poor-quality goods used to be built previously in the Soviet competition-free planned-economy environment could not complete with the influx of cheap imports, which swarmed the market beginning in late 1980s–early 1990s.

There are very few success defense conversion stories from the early and mid-1990s; the majority of such stories are about large defense facilities, which possessed an entire production line for still extremely marketable items, and which managed to convert themselves quickly into holding or share-holding companies and avoid the devastation of the early 1990-s' Russia's business wars. Among such companies were, for example, Mikoyan and Sukhoi Design Bureaus (which produced MiG and SU fighter jets), some parts of the space industry such as the Khrunichev Institute (which produced rocket

engines), or a number of facilities of the nuclear sector, who could offer materials, parts, or systems for the nuclear energy sector.

For the rest of the facilities, it was touch-and-go situation. The dismal condition of the defense sector caused a public outcry. Wage arrears there reached months and even years, with people often still going to work every morning just to keep busy, and managers taking incredible risks of maintaining the work force without proper budget authorizations from the government, which were not coming anyway. By mid-1990s, the official unemployment levels for regions with high concentration of MIC facilities was 3–4 times higher than the national average, while the average salary was 40 percent lower than across the industry in general.[59] Demonstrations and marches of the workers, although still non-violent, occurred at an increasingly greater frequency, suicides were reported among both the regular employees, and the well-known nuclear scientists and engineers, and the pro-Communist opposition media used the situation to advance its agenda.[60] Scores of scientists and engineers left in pursuit of other jobs that could earn at least some living, but which had nothing to do with their skills and training—such as shuttle traders, taxi drivers, or street vendors.[61] An entire generation of scientists and engineers had been lost as graduates of the most prestigious universities and institutes in fundamental and applied sciences chose to pursue other careers fearing for their job security, or the brightest young students preferring degrees in economics or marketing to the initially planned physics ort chemistry.[62]

Under such circumstances, the government is hard pressed to secure all resources it can to both avoid massive social problems of unemployment and poverty, and the complete disappearance of the country's scientific and technical elite. As an immediate

remedy, the government pursued contracts with foreign entities to supply all marketable items and technologies that were available, including the latest hi-tech equipment, conventional weapons, nuclear reactors, and other items. Contracts such as the $800 million Bushehr NPP in Iran can keep thousands of workers employed for a number of years, easing for the government the task of coming up with the money to maintain the necessary level of orders. In addition, the financial schemes used to generate such contracts are extremely convenient for the government. In the case of the Kudankulam power plant, for example, India officially submitted only a fraction of the entire payment, about 15 percent, on which the Russian enterprises, given their low labor and production costs, can survive much longer. The remaining payments can either be in the form of converted part of national debt, as set up as a credit line with recurring payments, which ensure a steady flow of hard currency into the national budget, while the government pays for the manufactured goods and services in rubles.

In addition to different threat perceptions, the bare necessity of providing jobs and social security to millions of its workers, and the domestic and international political need to maintain the status and respect of a global nation with far-reaching security interests, make Russia one of the most visible "rogue" members of multilateral export control arrangements. This statement does not suggest that Russia does not care about proliferation, or that it does not fear that providing nations like Iran of China with its latest weapons systems may ultimately produce a significant security backlash. It simply means that Russia, devoid now of the former ideological imperatives, and learning pragmatic politics the hard way, simply cannot afford long-term strategic thinking, and sacrifice what little it has now for the security interest of its former enemy, the United

States. Comparing Russian non-compliance with some MECA provisions with the compliance of the vast majority of smaller states, which represent the arrangement, is a fallacy, because these smaller states have little to lose by subscribing to, and complying with, the nonproliferation norms. They have the luxury to do so because of the security guarantees provided to them, directly or implicitly, by the United States.

4. Globalization

The primary difference between the factor of globalization and those of the state capacity and motivation is the systemic, supra-state nature of the globalization phenomenon. The effect of globalization is pervasive and irrespective of the member-state capacity and inclination to develop and implement export control policies, or adhere to nonproliferation norms. Such aspects of globalization as growing economic interdependence and new information technologies are proposed to have an impact on the ability of international institutions, such as MECA, and national export control systems to effectively monitor and thus control the transfers of many sensitive, especially intangible goods. The effect of the post-Cold War international political system is in the increased number of state actors on the international arena, and the number of members in international regimes, both of which make the work of consensus-based institutions much more complex; and a greater number and more important role of non-state entities, whom states have difficulty to control.

The most fascinating aspect of globalization is the interdependence of the three components themselves. Both, economic interdependence and new information technologies benefited from the end of the Cold War and the resulting disappearance of

the ideological component from the realm of international economic relations. The end of the Cold War allowed a great increase in the amount and availability of free travel, and the opportunities for individuals to seek and find employment in many parts of the world, previously inaccessible to the outsiders.

Post-Cold War International Political System

One of the more enduring consequences of the collapse of the Soviet Union and the end of the Cold War was the emergence on the international arena of a large number of independent new players. There are three categories of such new players: the republics of the former Soviet Union and several other federated nations, which now have become independent states; the former members of the Communist Bloc, which were now free to pursue their own foreign policies and national interests; and an increased number of non-governmental organizations, which grew both in number and stature.

The Soviet Union, consisting of 15 national republics, including Russia, was officially disbanded on the New Year's Eve of 1991, as a result of the meeting of the three leaders of Russia, Belarus, and Ukraine in Belarus. The three republics, the original founding members of the Union, felt it was necessary, and in their power, to end the existence of one of the most powerful nations in history. Attempts to maintain a pretense of unity and continued coordination lasted only a short time, with all 15 former republics becoming fully independent nations, with all the due prerogatives and implications, whether they desired it or not.[63]

In addition to the political turmoil and a number of economic difficulties that this development had caused, it also created a significant problem for the international

community in the form of the vast stockpiles of weapons of mass destruction, technologies, and materials for their development, and related expertise and know-how. The first order of business, therefore, was for the international community to ensure that these stockpiles are safe and secure, and are concentrated, preferably, in the hands of one country—Russia. This was achieved, with considerable efforts, by mid-1990s, as the three other republics, still possessing their share of the Soviet arsenal, Ukraine, Belarus, and Kazakhstan, transferred it to Russia, usually in exchange for some economic or political incentive.

Even though the entire nuclear, chemical and biological arsenal was now concentrated in Russia, the remaining republics stills possessed, to a varying degree, technical expertise, knowledge, or materials that could be used for WMD development, and efforts had to be made to contain them.[64] The introduction of Russia, Ukraine, Belarus and Kazakhstan into some of the MECA was both a necessity and a calculated risk based on the assumption that it was better to have these suppliers engaged into an international institution in hopes that they would take steps to upgrade their export control efforts and adopt international norms, than have them outside the international framework.

In addition to the former Soviet republics, a large number of former USSR satellite states in Eastern and Central Europe and Southeastern Asia became free to pursue their independent foreign policies. The vast majority of the European states expressed immediate interest in gaining membership in the common European organizations and institutions, including NATO and the European Union. Realizing the potential consequences of having new member states within the now transparent to all trade EU,

other members insisted that the applicants must have effective national export control mechanisms and formally adhere to all multilateral export control norms. The influx of the Eastern and Central European members into MECA also significantly contributed to the overall membership. Although most of these states are compliant new MECA members, the sheer number makes consensus-based decision-making an exercise in diplomatic skill.

Overall, the number of world nations increased by 15 percent between 1989 and 2000. Not all of them are significant suppliers of WMD-related materials and technologies, such as Russia or other former Soviet republics, but all of them have a potential for becoming important transshipment points for such items, and therefore can play a potentially damaging role in implementing export control policies and standards.

In addition to the state actors, the new international political system also brought about a large number of international and nongovernmental organizations, and generally contributed to the greater role played by sub-state and supra-state entities. The former include both business and political entities, such as multi-national corporations and large companies, many of which now possess the economic capabilities of some states. Their effect on the performance of trade control mechanisms is mostly in their pervasiveness and expansion strategies, making them truly global players with interests in various parts of the world, and in their ability to affect political decision-making at the governmental level by lobbying their interests, which often clash with the objectives of nonproliferation export controls.

The sub-state actors with the political agenda, which can have an impact on the effectiveness of export controls are the growing number of radical and terrorist

organizations, pursuing the goals of ethnic independence, political objectives, or having a religious fundamentalist agenda.

The problems created by such sub-state entities for the multilateral export controls is that MECA are institutions regulating the trade practices of nation-states, and have little ability to exercise control over the activities of non-state actors. Ideally, states should be responsible for establishing and enforcing export control regulations on their territory, and ensuring that all entities subject to it comply. Given, however, the influence that these new sub-state entities exercise, it is very likely that the ability of some states to control their exports is effectively limited.

A number of international organizations and treaties, which existed before, but also new ones, enacted in recent years, present certain difficulties for MECA performance. For example, one is the issue with the Australia Group and the Chemical Weapons Convention, opened for signature in 1993, and presently signed by more than a hundred nations. Technically, the AG and the CWC pursue similar goals of limiting the proliferation of chemical weapons and precursors for their development. Critics of the Australia Group as an exclusive supplier cartel argue that the Group continues to exist in order to ensure the commercial interests of the major suppliers of advanced materials and technologies, and that the function of controlling chemical weapons proliferation is performed adequately by the CWC. Therefore, critics argue, there is no security justification for the existence of the Australia Group.

Economic Interdependence

This factor is one of the two forces, along with new information technologies, that is most often associated with globalization, and is often present in numerous definitions of the latter phenomenon. It is also one of the most visible, with hundreds of companies suddenly finding themselves competing on the global scale and having the opportunity to pick and choose among various locations to set up a factory or open an affiliate on the basis of that particular location's labor costs, availability and the advancement of infrastructure, tax incentives, levels of corruption of local officials, labor force education and skill, and the general cost of living.

The most relevant impact for this project of the greater economic interdependence is the proliferation of producers and suppliers of hi-tech, dual-use sensitive materials and technologies on the global scale, and the reversal of the original technology flow from the defense sector of the economy into the civilian consumer industry.

The United States, having the most advanced military in the world, allocating the largest amount of resources to maintaining it, and developing and possessing the latest technologies for military use, is, perhaps, the hardest hit by such a phenomenon. The problem became known to the government several years ago, and a special study was commissioned to investigate its causes, describe the implications, and offer recommendations.

The study was performed by the Defense Science Board Task Force, a Federal Advisory Committee established to provide independent advice to the Secretary of Defense.[65] The Undersecretary of Defense in his memorandum to the chairman of the Defense Science Board, requesting to form a task force for the study, formulated the

problems faced by the Department of Defense as a result of globalization in the following way:

> The industrial base serving the Department of Defense is undergoing the following transformations:
>
> - supplier companies, particularly the lower tiers, are increasingly located outside the US (includes both US and foreign-owned firms located abroad); and the identification of location is not always easily accomplished, particularly at the component or tool level;
> - supplier companies are increasingly owned, in part or in whole, particularly for lower tiers, by foreign entities and individuals (includes firms located both abroad and in the US); and identification of ownership is not always easily accomplished;
> - there is increased purchasing, particularly at lower tiers, including components and tools, of commercial-off-the-shelf (COTS) materiel;
> - supplier companies increasingly employ and are dependent on open network architectures and the global information infrastructure for the operation of the firm, including design, inventory, shipping, purchasing, and so on;
> - technical talent is increasingly trained and employed on a global basis, with a great deal of geographic and job mobility, and with increasing employment of "remote" work from anywhere on earth;
> - the subsystems and components that are purchased (e.g., software, microelectronics) have become so complex in the pursuit of higher performance and lower cost that, practically, they cannot be tested;
> - formerly defense-only technologies (e.g., night vision equipment, communication satellites) are now being developed and sold commercially, and on a global basis, and dual-use technologies/services once dominated by the US (e.g., space launch) are now often cheaper and more widely available outside the US.[66]

One of the consequences of the Cold War for the defense agencies worldwide was the push from the governments to reduce the cost of developing and introducing new weapons systems. For the United States, this push was necessitated by several developments. First, the U.S. defense effort before the end of the Cold War was geared exclusively at deflecting the strategic threat of a potential WMD conflict with the Soviet Union. Hence, the main focus was on developing and sustaining sufficient capability to meet this challenge. Given the vital strategic importance of the effort, no resources were spared to assist DOD and the defense industry in achieving this goal, which at some point caused the overflow of funding and certain irregularities, with excessive amounts of money being paid for R&D work of internal defense suppliers even for the basic tools and equipment. The end of the Cold War forced the federal government to reconsider its military budgets, and R&D projects as part of it.

Secondly, the economic stagnation of the late 1980s-early 1990s in the United States required additional measures to cut the expenses, including those of the military, to avoid the escalation of the already enormous national debt. And thirdly, the development of the hi-tech industry, which was now becoming capable of offering similar or better quality product design and manufacturing at a substantially reduced cost created additional options and an opportunity for the government to reduce the burden of the defense budget.

To achieve that, the Department of Defense was asked to seek additional or alternative suppliers for the development of the entire range of required hardware, equipment, and software, including the most sensitive and critical. As a result, the supplier base for the defense establishment became both commercialized and diversified.

Whereas before only a few principal and trusted defense contractors supplied a full spectrum of products, now the DOD was forced to select among a host of commercial producers and bargain for a better deal.

This also led to a situation reflected in the extended quote from the DSB Report above. Whereas previously, the Department of Defense was relying exclusively on its internal research and development (IR&D) for the most sensitive equipment, materials and technologies, it now found itself commissioning and contracting for these items from the commercial sector, which offered both, better quality and prices. This phenomenon created considerable problems for the defense establishment, which has to maintain the security of all sensitive materials and technologies developed for the DOD, but finds itself unable to do so, because such items are normally not produced for DOD exclusively, and are available to all users. In addition, DOD not only finds it difficult to maintain the exclusiveness of the technologies it obtains from the commercial sector; it finds it virtually impossible to ensure that these items are designed and structured securely enough to assign to them a certain level of security clearance. Due to the complex design and sophistication of these items, DOD cannot keep up with the required expertise for its personnel to perform the tests.

The security is also compromised by the fact that the majority of commercial suppliers are now companies with partly or full participation of the foreign capital, or are physically located outside the United States, making it extremely difficult for DOD to enforce security regulations, or apply technology transfer policies on such companies. The fact that developers of software applications can be located throughout the world, offering their services from remote locations aggravates the situation even more.

This example illustrates the changing nature of the international economic environment as part of globalization, especially as it pertains to the trade and transfer of security-related items and technologies, offering an analogy to the problems faced by the multilateral export control arrangements and national export control systems alike. These problems are made even more complex with the development and use of new information technologies.

New Information Technologies

Although new information technologies are often associated with the Internet and other computer networks, it is not limited to these phenomena alone. Critical changes in the way information is created and exchanged encompass traditional means of electronic communications, such as telephone and fax. The dramatic reduction in time and especially cost at which the transmission can be generated and completed make this means of communication still one of the most available, if not advanced, in the world. Still, the advances in data storage, computer and network technologies created an information revolution, with implications akin to the industrial revolution and the introduction of the steam generators and internal combustion engines.

Advancements in Telecommunications. Although the technological revolution in telecommunications began over 100 years ago, with the introduction of telephones, faxes, and later television sets, it experienced the most significant growth in the last 20 years, with the introduction and commercialization of digital and fiber-optic technologies and the dramatic drops of cost for international telephone calls and fax messages: suffice it to

say that the price of a three-minute phone call between New York and London dropped 1,000 times between 1930 and 1999, from nearly $300 to $.30, in 1996 prices.[67]

The availability of regular telephone services has also increased dramatically, growing by 5.8 percent globally between 1995 and 2001, with the largest increases in the developing world (Africa—6.8 percent, and Asia—12.1 percent).[68] Telephone is still the preferred means of personal communication, especially in the developing world, where Internet access and cellular telephones are not readily available yet, or two costly for mass consumption. Although the number of cellular telephones in some countries grows much faster than the number of available main telephone lines, this is probably more an indicator of the slow growth of the number of main lines than of the mass availability of cellular telephones.

The number of cellular telephone subscribers in Europe alone increased exponentially, from slightly over 23 thousand in 1980, to more that 156 million in 1999, and grew by 60 percent on average between 1995 and 1999.[69] The same number grew more than ten times for the world, from about 90 million subscribers, to almost 950 million.[70] Still, there are about twice as many main telephone line subscribers in the world than cellular customers.[71] Not only are telephone lines becoming more pervasive, conversations are becoming increasingly less expensive, even in the latest decade. In Europe, for example, the international outgoing telephone traffic grew sevenfold between 1980 and 1999, from 5 to more than 35 billion of minutes.[72] The per minute cost of a telephone call from the United States to Russia was almost $4 in 1990; it was as low as $.025 in 2002.[73] A new phenomenon, satellite telephones, makes communication even more advanced and usable, with the small receiver connecting directly to a geostationary

satellite network, making the device operable anywhere in the world without the need to remain in the local cellular service provider area.

Even more significant than the expansion of personal communication over the telephone in recent years was the emergence and fast proliferation of global computer networks. Conceived and developed by the U.S. Department of Defense as the means to connect U.S. research institutions and the defense establishment for the purposes of facilitating the information exchange, the Internet became an unparalleled global phenomenon, bringing an entirely different, real-time information medium to millions of people, and revolutionizing personal communication, information exchange, and trade to achieve truly global proportions.

What distinguishes the capabilities of the Internet from all other means of communication is the ability to transmit large quantities of information almost instantaneously to a designated receiver with no loss in quality, and only minimum errors; the speed of communication is limited only by the capacity of the network cables and the connection speed of computer communication devices, modems and network adapters. Such transfers can be carried out anonymously, with little control from the government or other oversight agencies. In fact, the only Internet oversight authorities existing in the world today simply establish and designate Internet address suffixes for individual sites based on the nature of the information they present: the most widespread .com suffix signifies that the content provider offers commercial services; .gov suffix indicates a U.S. federal government agency; .edu—an educational institution, etc.

Whereas initially, in the early 1990s, the Internet communications were largely conducted in the form of electronic text messages, the shift to digital cable and fiber

optical networks made the content much more diverse and rich, allowing real-time audio and video communication and the use of advanced graphics.

All this, however, could not have happened without the popularization and mass production of personal computers, which provide the software and hardware for the transmission, reception, and decoding of the Internet content, in addition to many other useful services, such as mass data processing and analysis, spreadsheet operations, design, and increasingly many more. Personal computers, similarly, experienced an exponential growth in popularity and performance since the early 1990s, and a similarly impressive drop in cost, making them much more available to an average consumer as a household item akin to a television set or a radio.

Advances in microchip technology made personal computers much more diverse, but also much smaller than before. Microchips are installed in a number of small personal communication devices, such as cellular telephones, or personal electronic organizers, making them capable of creating, transmitting and receiving Internet content—thus virtually eliminating the need for a personal computer for personal over-the-Internet communications.

Data storage also experienced substantial improvements in the decade of the 1990s, with the today's hard drives of personal computers offering thousands of times more storage space than the most advanced mainframe computers 20 years ago; the advances in digital data storage offer now an opportunity of storing gigabytes of information on a small compact disk, which can be used as the now seemingly obsolete floppy disk.

The new information hardware and technologies have become now so advanced that they are subject to national export control regulations in most countries. The problem is

that the rate of their advancement is so high that regulations do not keep up with them: computers that were considered high performance and suitable for the use in military-related simulations a year ago may very quickly become a main stream household item, available at any electronics store. Exporters of computer hardware find export control regulations very cumbersome, but more importantly—useless—because the computers that are not allowed for export are freely available from a foreign supplier, and often at a smaller price. The same goes for the software component, particularly developed for security purposes: modern mainstream operating systems offer 128-bit encryption, which is still considered an export-controlled item by the U.S. Department of Commerce.

Effect on Export Controls. All these technological advances offer previously unavailable opportunities for information development and transfer, and create significant problems for both the national and multilateral export control efforts. These new opportunities concern mainly the transfer of intangible items, such as technologies, expertise, and know-how, and present a security threat mainly because such intangible items can be transferred via the modern means of communications with little or no control, anonymously, and with great speed and accuracy. Whereas before, a "mole" in a secret defense facility spent hours and days copying the designs of a new submarine and then secretly had to meet with his handler to deliver the bulky paper folders personally, risking exposure—all is needed now is a blank CD, a computer, and an Internet connection at home. Even photocopying the designs is hardly required any more, because they are developed and stored in the electronic format.

The example above is, of course, an extremity, especially since export control policies do not deal with industrial or military espionage, but only with legal trade in

sensitive items. The example, however, illustrates a point that as long as the difficulty of information transfer is reduced to a cost of several dollars, and the repercussions may never catch the culprit, there is a great possibility that a person with access to sensitive information may use this opportunity for personal gain, or more out of despair, as the case with the Russian defense industry workers demonstrates.

That new means of communication can be and are widely used by all parties both willing to supply and obtain all kinds of information, including sensitive, is illustrated in the following case of a U.S. software developer.

Improved computer software and hardware make duplicating and distributing information very easy. This development became an issue with the increased illegal copying and distribution of copyrighted materials, such as music, video and computer software, which became widely available for sale in countries with poorly developed and enforced copyright laws, such as Russia or China. They ultimately became available on the Internet on the peer-to-peer basis—meaning that a PC user may, based on mutual consent, browse other PC users' computer hard drives and download information he or she is interested in over the Internet. Such cases were made public in late 1990s, with the music and entertainment industry filing suits against individuals and peer-to-peer software developers for lost revenues as a result of copyright infringement.

The part of this phenomenon, which rarely receives media attention, is that no software is immune from illegal copying and network distribution, even that with the most sophisticated copy protection. Scores of computer hackers, skillful and ingenious individuals who pride themselves in cracking the codes of the most sophisticated security

software, sometimes just for the fun of it, are more than happy to take on another challenge.

A recently released report described a U.S. developing company, which produces sophisticated software that can be used in nuclear weapons design and other sensitive simulations. The software sells for about $12,000, and is subject to export control regulations, but company employees were able to find an offer for a copy for a meager $200 from a Chinese vendor, with full instructions on how to install and crack the encryption for the software, with a crack file offered alongside the copy. The software from this company, as well as from 120 other companies offered alongside, could be downloaded in only a few minutes after submitting a payment. Company management reported the situation to the Departments of State and Commerce, but received a sympathetic, but useless response. One of the former senior U.S. export control officials complained that he had difficulty resolving such issues during his tenure in office because of the inability to prosecute such actions abroad, and the lack of means to stop them from occurring in the future.[74]

What is disturbing, however, is that not only this software is widely available, it is also available anonymously and at a fraction of its normal cost—which makes obtaining it problem-free for the purchaser, and virtually undetectable. Company employees reported that they used to receive purchase requests for their software from Iraq, but since it became available on the Internet, the requests stopped.[75]

This case illustrates only a fraction of the potential, or perhaps current, use of the Internet that willing parties can engage in. Other modern means of communication are equally available to the least desirable subscribers, such as terrorist and other radical

organizations, who maintain their Internet Web-sites, which popularize their agenda. The rare screen shots of Osama bin Laden, currently the most wanted individual on earth, often portray him speaking on a satellite telephone, undoubtedly consorting with his associates worldwide with equal ease from the mountains of Afghanistan and the streets of Islamabad. And during the recent Fall 2002 massive hostage crisis in a Moscow theater, a large group of Chechen hostage-takers was constantly in conference, according to the reports of the Russian Federal Security Service, with callers from Saudi Arabia, Qatar, and UAE, and appeared to be receiving instructions from them.[76]

If security services throughout the world—admittedly the most capable organizations with means to enforce a wide range of political decisions—have difficulty controlling the availability of the modern means of communication to such organizations and individuals, chances are even smaller that very amorphous international institutions designed to coordinate state efforts to control sensitive materials and knowledge—which the terrorist organizations greatly desire—can perform their task any better.

5. Conclusions

This study evaluated the effect of three factors on the performance of multilateral export controls. The effect of the state capacity factor, in terms of the availability of resources and the level of corruption, was shown on the member-states' ability to establish and implement a viable export control system—an important component of the multilateral effort. Thus, availability of resources plays a significant role in the state's ability to comply with MECA provisions; all assistance that other members may provide for the development and improvement of some states' export control systems will likely

yield positive results. Similarly, more effort is needed to combat corruption in order to be able to realistically expect some MECA members to comply with regime provisions.

It was also shown, with the example of Russia, that some member-states follow significantly different motivational structures with regard to MECA participation and compliance, which has an adverse effect on the MECA's ability to effectively control transfers of sensitive goods, materials and technologies. The example of Russia presents MECA members with a serious dilemma: will international efforts to control proliferation benefit from a more like-minded membership and effective decision-making at the expense of disengaging important suppliers of sensitive items, such as Russia; or is it preferable to find a place for all willing parties at the consensus table, risking diluting the nonproliferation norm to the least common denominator, but emphasizing the process rather than the goal?

In addition to different threat perceptions, some members have other pressing political and economic imperatives, which affect the priority that they place on adhering to international export control standards. The Russian case shows how domestic pressures to maintain employment and livelihood of hundreds of thousands of workers, the need to keep afloat an important sector of industry, and the potential political implications of the social problems force the government to opt for questionable contracts with the less desirable states instead of pursuing cooperative agreements with Western nations.

Finally, globalization was shown to have a significant impact on the ability of MECA as institutions, and their member-states, to control transfers of sensitive items. Greater number of eligible states results in the increased MECA membership, which is detrimental for the decision-making within consensus-based organizations with members

having divergent security interests and veto power. Economic interdependence increases labor mobility and diversifies the supplier base of sensitive items, with the help of the new information technologies, which also provide new means of communication and data transfer that are not presently controlled by the regulating agencies.■

Chapter VI

Theoretical and Policy Implications and Recommendations

This study has both theoretical and practical implications. Theoretical implications concern mostly the applicability of several theoretical approaches, described above, which offer competitive explanations to the problem of state participation in, and compliance with, international institutions. Practical implications focus primarily on the potential solutions to the problem of MECA effectiveness and performance, which may include recommendations on both, the institutional level, and on the practical steps that can be taken at the national foreign policy level. Such recommendations, however, should be made in the context of the current debate and analysis in the academic and policy-making communities regarding these arrangements.

This study would have been much more persuasive and beneficial if a more conventional hypotheses-testing of the proposed relationships could be conducted. Given the difficulty in measuring both, the dependent variable (MECA performance or effectiveness) and at least some of the independent variables, such a test could not be accomplished at this time. However, the value and importance of this work is in determining and presenting these factors as potential or even existing warning signs for the policy-makers to consider in making decisions about the future course of the nonproliferation policy, and international security in general.

1. Theoretical Implications

In addition to the main research question of this project—evaluating the effect of the three factors on the performance of multilateral export control arrangements, a second line of research was to determine to what extent the current academic literature on international cooperation and regimes is applicable to the study of MECA. Specifically, given a limited amount of attention devoted to the study of international security institutions, and export control mechanisms in particular, from the academic world, this project was also intended to apply, albeit in a limited fashion, the current theoretical discussion to explaining regime effectiveness, and make some assessment as to which theoretical approach may offer a better explanation of the situation with MECA performance.

Chapter III above outlined two broad schools of thought on explaining state cooperation in general, and such specific phenomena as international regime formation, their perseverance, and ultimately—effectiveness. The *rationalistic school of thought* assumes that states act on the international arena as individuals would under conditions of anarchy—that is, they act in terms of maximizing their security, and eventually provide themselves with as much utility in terms of resources as they see necessary. Thus, all state actions, be it conflict or cooperation, are viewed as subject to these basic preconditions: conflict is necessary for states to obtain additional power and resources and maintain their security; cooperation is possible if states need to offset the growing power of other states (threats) by building alliances with others, or to jointly generate as much utility as possible.

The *normative school of thought*, conversely, argues that there are more forces at play in international relations, including those that determine the level of inter-state cooperation. Without necessarily negating the rationalistic arguments, adherents of this school of thought believe that state behavior is determined more by the already existing norms and individual beliefs held by key decision-makers, and that international norms—generally acceptable rules of conduct among states—have an equally important role to play. In such a capacity, institutions either establish new international norms by the fact of their existence, by co-opting more states to adhere to them; or become the embodiment of the already existing norm. In all cases, international institutions act more as sets of norms rather than organizations, steering state behavior in a particular way.

The discussion presented in the above chapters, shows that both, adherents of the rationalistic and normative schools of thought, have valid arguments. In fact, the example of multilateral export controls may be a unique setting for demonstrating just that. Whereas students of environmental regimes often make arguments in favor of normative approaches to explaining state and institutional behavior with regard to efforts to maintain a cleaner environment, state cooperative behavior in trade regimes is better understood in terms of their desire to gain material resources as a result of cooperation, or reduce transaction costs of such cooperation. Similarly, cooperation on security matters is intuitively better understood from the point of view of states' security interests and power.

The nature, history, and evolution of export control arrangements represent almost in a quilted pattern the entire array and combination of motivational characteristics with regard to member participation and compliance. The most significant pattern, however, is

in the clearly visible changing motivational structure behind almost every arrangement. Whereas COCOM members, for example, complied with U.S. pressures to restrict their hi-tech exports to the Soviet bloc countries in part for reasons of their own security, at the same time also fearing a U.S. punitive reaction (a highly rationalistic explanation), only at the later stages of COCOM's lifecycle did the regime acquire some properties of a security community (as the cognitivists would explain it).[1] At all times, however, COCOM remained a relatively tightly-knit group of states pursuing a similar goal and having a common threat.

The Wassenaar Arrangement, on the other hand, while proclaiming similar objectives of controlling the transfers of advanced dual-use technologies, is now comprised of countries, which have very different goals. At the very core of dissolving COCOM and beginning negotiations on the new arrangement was the assumption that with the end of the Cold War the goal of nonproliferation, from a purely Western concern, would become a goal for all states, who rejoin the international system in a new independent, Communism-free capacity. Persistent complaints about weaknesses and inefficiencies with regard to the Wassenaar Arrangement are evidence of lack of agreement among the members about the security threat, and a greater concern for commercial profit from trade in advanced conventional weapons and dual-use items than for increased security. It is not surprising that policy-makers at all levels usually have fond memories of COCOM and the lack of political complexities, compared to the current squabbling surrounding the Wassenaar Arrangement.[2]

Similarly, the debate regarding the Russian nuclear cooperation with Iran illustrates the problems surrounding the Nuclear Suppliers' Group after the Cold War. With both

the United States and the Soviet Union at the core of the NSG, sharing, despite their geopolitical rivalry, the nonproliferation goal, even questionable transfers of nuclear technology would have been highly improbable. Problems with compliance (particularly with regard to Russia), which presently haunt the Missile Technology Control Regime would have also been impossible at the early stages of the Regime's life, in late 1980s, when it consisted of similarly-minded G7 states. And a number of officials representing their countries in the Australia Group unambiguously indicated that one of the reasons this institution had so far faced few difficulties, and was actually able to adopt and implement consensus-based decisions, is the absence of Russia from its membership.[3]

The early 1990s efforts by the United States and other Western nations to work out an agreement with some countries so that they could participate in export control regimes were based on the assumption that even if these new members did not fully share the security concerns and threat perceptions of the West, they could be attracted to adhering to common international norms by the potential political and economic benefits. The intent of such designs was to engage the most important suppliers of sensitive items regardless of their primary motivation, hoping that they would eventually become socialized into sharing the norms and goals of the institutions.

The current status of MECA and the disputes among the key members surrounding some questionable transfers indicate that the original designs are not living up to their expectations. There are two explanations and scenarios for the future with this regard: either the situation will continue to deteriorate to the point that any participation of countries like Russia becomes virtually meaningless; or that the current estimates of the

problem are premature, and that there simply has not been enough time for the process of "socialization" and acceptance of norms by new members to complete its course.

It is clear at this point that the current MECA members can be separated into at least three groups according to their motivations to participate in the regime. First, the United States, as the only remaining superpower with global strategic and economic interests, facilitates multilateral export control activities primarily for reasons of its national security and interest. This statement is supported by the fact of the immense pressure within the United States to relax export restrictions in the face of the increased global availability of controlled items and the inability to control many of them in the current economic and technological environment. Second, the Russian Federation and a group of other countries, who have become members recently, participate in such arrangements because of the offered incentives, and partly to maintain its status as a global power. Domestic economic and political pressures and different threat perceptions prevent such countries from embracing the nonproliferation objective and complying with regime provisions fully. Finally, there is a relatively large pool of smaller states who are attracted into MECA in part by the incentives and in part by their national security objective, but who also appear to share the basic norm of nonproliferation.

Whereas one would think that such an intertwining scheme of motivations for an international institution is a good thing, the system strikes one as being very unstable. For an institution with a clearly defined security objective to have members who constantly have to weigh the incentives for cooperation or defection on their obligations is detrimental, especially if the incentive structure itself is unstable and cannot be guaranteed. Maslow's hierarchy of needs may offer a good analogy in this case: as long

as the security and livelihood concerns are not addressed, norm sharing is unlikely to happen among differently-situated states. One may argue that nonproliferation IS a security goal, and therefore should be the top priority to all members. While not debating the overall validity of the point, it is also clear that states with little or no present security threats, or with threats unrelated to the issue of proliferation, will put it among the secondary, or even tertiary priorities.

2. Existing Analysis and Recommendations

There has been a substantial amount of attention devoted recently to the multilateral export controls on the part of both governmental agencies and research organizations, particularly as the issue of controlling strategic and WMD-related goods and technologies came to the forefront of the international efforts to combat terrorism. The majority of evaluations, which go along the lines of this project, point to several problems faced by these international institutions. The primary thrust of the recommendations, however, lies mostly in the field of institutional and procedural reform and change.

The Stimson Report. One of the earlier reports was commissioned in 1999 under the direction of the 106 U.S. Congress, which tasked the Department of Defense to "convene a Study Group of senior-level executive branch and congressional officials, as well as outside experts, to develop the framework for a new effective, COCOM-like agreement that would regulate certain militarily-useful goods and technologies[4] on a multilateral basis."[5] The Study Group included current and former officials at the Departments of Defense, State and Commerce, current and former members of Congress, defense analysts, industry representatives, and experts from the Washington-based Henry L.

Stimson Center and the Europe Program of the Center for Strategic and International Studies.

The Report established that "the system of controlling the export of militarily sensitive goods and technologies is increasingly at odds with a world characterized by rapid technological innovation, the globalization of business, and the internationalization of the industrial base, including that of defense companies," and concluded that "the current approach to controlling militarily relevant trade has failed to keep pace with changing international conditions."[6]

The proposals put forth by the Study Group focus primarily on the reorganization and transformation of the Wassenaar Arrangement, as an institution, admittedly, fraught with the inherent deficiencies. The Report specifically proposed *three major recommendations*:

1. Over the short-term, maintain and improve the Wassenaar Arrangement and other multilateral arrangements; over the medium- to long-term, seek to merge the existing multilateral regimes into a single, maximally effective body, beginning with those focused on preventing WMD proliferation.
2. In the interim, work to establish a new supplemental framework for coordinating multilateral export controls based on harmonized export control policies and enhanced defense cooperation with close allies and friends.
3. Seek simultaneous reform of the U.S. export control process.[7]

The GAO Report. Another recent study of MECA problems and strategies for their improvement was conducted by the U.S. General Accounting Office in 2002, in anticipation of the new review of the multilateral export control arrangements and the U.S. participation in them, ordered by the President. GAO's Report to Congressional

Committees assesses the weaknesses of the four MECA and identifies obstacles to strengthening them. The Report points to two significant MECA weaknesses:

1. Lack of information sharing among the members regarding export licensing.
2. Delayed harmonization of national export control systems in line with the MECA changes.[8]

The Report also mentions consensus-based decision-making, lack of enforcement mechanisms, and the growing supply of dual-use items as the primary obstacles to strengthening export control regimes. GAO's primary recommendations for improving performance, however, are limited to MECA institutional factors:

1. Information sharing practices among the members need to be improved.
2. Regime changes (such as updated control lists) need to be implemented into national export control systems more promptly.
3. Member states need to work to identify organizational changes that could help reform regime activities.

Two studies manage to identify environmental challenges to MECA effective performance in addition to their institutional problems. The first is the report prepared by the Defense Science Board (DSB) Task Force on Globalization and Security for the U.S. Department of Defense in 1999. The second study is a report of the Center for International Trade and Security at the University of Georgia, evaluating the effectiveness of multilateral export control arrangements, which was prepared in 2002.[9]

The DSB Report. The primary objective of the DSB report was to evaluate the impact of globalization, economic interdependence and new information technologies on the DOD's military preparedness, specifically by addressing issues of diversified supplier base, commercial availability of advanced materials and technologies, and controlling sensitive transfers. The report recognizes the dilemma facing the defense establishment,

between the urge to resist globalization challenges, attempting to restrict the inputs and outputs of military technologies and know-how on the one hand, and an alternative strategy of embracing and taking advantage of globalization while at the same time taking full security precautions, on the other.

With regard to MECA, the Report's concern revolves primarily around the Wassenaar Arrangement and its weaknesses compared especially with the focused implementation of its predecessor's (COCOM) provisions during the Cold War:

> The lukewarm success of COCOM's successor, the Wassenaar Arrangement, is testament to the difficulty of multilateral technology controls in the post-Cold War era. Wassenaar's lack of strong central authority and its dearth of explicit target countries is a reflection of the times—the absence of a single large threat and lack of agreement over the nature and seriousness of the smaller threats. This inherent weakness has complicated its development and made it more difficult to achieve consensus among the expanded (from COCOM) membership on which states to which they should control exports. With the exception of a few unanimously-targeted pariah states (namely, Iraq, Libya, Iran and North Korea), for which it has been a reasonably effective control mechanism, Wassenaar is proving, in the words of one observer, little more than a "paper tiger."[10]

The DSB recommendations focus on the utility of stringent export controls on dual-use items in general, in the presence of their imminent globalization and uncontrollability. Tightening unilateral dual-use controls, DSB argues, will only harm U.S. producers without reaching the intended goal of supporting international security, because the attractiveness of the U.S.-offered dual-use items and technologies is not in their uniqueness, but in high quality and attractive prices. Should excessively stringent

export controls undermine this desirability of dual-use goods for foreign customers, they will be quick to seek—and find them—from the U.S.' current competitors, such as South Korea, Taiwan, China, or Singapore.

CITS Report. Perhaps the most comprehensive treatment of MECA effectiveness, obstacles to better performance, and recommendations for improvements can be found in the report put out in 2002 by the Center for International Trade and Security. On the basis of the previously designed methodology to assess the development of national export control systems, the researchers came up with a similar tool to look at the current status of multilateral export controls. After defining ten vital components to MECA institutional performance, a questionnaire was distributed among dozens of government officials and experts to gauge their assessment of the components. In addition, a number of interviews have been conducted to obtain substantive information and narrative context, not covered in the questionnaires.[11]

The major objective of the report was to explain and compare how the multilateral export control regimes operate, assess their effectiveness, and to make recommendations on how to strengthen their ability to impede weapons proliferation.[12] The report found that MECA indeed played a significant role in curbing the WMD proliferation threat, while at the same time facing serious external and internal problems, such as:

- the decision to accept new members that lacked effective export control mechanisms;
- divergent views among major suppliers about the nature of proliferation threat;
- poor adaptability to new proliferation concerns; and
- informal, and therefore ineffective, decision-making procedures.

The major recommendation of the Report is to negotiate and establish a new overarching arrangement to replace the four existing MECA, with corresponding changes in the decision-making procedures and regulations that would allow for a more effective regime to emerge. Realizing that negotiations and the formation process, even if initiated within the shortest possible period, may take an unpredictable course and time, the Report offers interim recommendations, including the following:

- efforts should be made to develop alternative decision-making procedures that would eliminated the current constraints imposed on MECA through their informality, consensus decision-making, and absence of high-level political support;
- pause the membership growth, which would help avoid aggravating the problem of divergent security interests and threat perceptions;
- put more high-level pressure on Russia as the principal member of most arrangements with poorest compliance record to discourage as much as possible non-constructive behavior;
- harmonize training for enforcement officials and standardize the necessary documentation to help customs officials monitor the trade in sensitive items;
- improve intelligence sharing by means of instituting such detailed information-sharing mechanisms that would accommodate both, business confidentiality and the need to monitor patterns of acquisition by non-members, at the same time helping domestic anti-terrorist track potential sources of concern;
- increase outreach activities to ensure better understanding of the MECA goals by both transit states and non-member suppliers;
- take steps to reconcile the current reservations of non-member states about the existence and goals of MECA in the face of the growing membership in formal nonproliferation treaties, such as the NPT, the CWC, and the BWC;
- promote wider security awareness and export control compliance among the exporters; and

- allow limited non-governmental participation in the otherwise opaque MECA meetings.[13]

Discussion. Although all four reviewed studies present their recommendations in a different way, the unifying element of their proposals is in the nature of the steps that are proposed to address the issue of low effectiveness of multilateral export control arrangements. With varying degree of specificity, all these steps propose institution-level actions, which would alleviate the current problems related to different threat perceptions, inefficient decision-making, lack of information sharing, and lack of universal, or at least one approximating it, membership.

These recommendations also share another common trait: they all are made under a pre-determined set of assumptions regarding the status of the international system as one which requires more stringent controls over a number of potentially dangerous goods, technologies and know-how. In essence, all the previously conducted studies recommend means of improving control over the *supply* of such items.

3. Policy Implications and Recommendations

The task of outlining potential policy implications and recommendations that would be of utility to decision-makers at the government level is complicated by a dilemma. On the one hand, it is obvious that efforts should be made to improve the existing institutional framework for controlling sensitive trade (mainly because the *status quo* reflects the current political realities and opportunities for arriving at the present agreement). On the other hand, evidence also indicates that at the current rate of change for the international political, economic and technological environment, policies that

attempt to limit the transfer of sensitive, and especially intangible, goods are likely to become less successful. In effect, the race to reform and modify supply-side institutions becomes a race against time and technological development.

Policy recommendations, therefore, will depend largely on the course of actions chosen by the decision-makers. If the current focus on the supply-side controls continues to be preferred as the principal tool for maintaining international security, and enjoy overwhelming support, then the set of recommendations to reform the existing regimes offered by the authors of some studies (such as the CITS report) would take precedent. The decision-makers, however, will have to be aware of a number of implications and limitations that such a course may have.

First, shared threat perceptions will continue to be a powerful determinant of the effectiveness and performance of any multilateral measures to achieve regional and international security. It is very likely that in the absence of a paramount security threat (such as the Soviet Union was for the Western democracies), the farther away from the end of the Cold War, the greater the incongruity will develop among the regime members about the nature and the origin of the threat.

Second, the pace of growing economic interdependence will continue to accelerate, despite the current global economic downturn. The reason for such a small impact is that interdependence changes the *mode* of conducting international business, and not the *cost*; if anything, the cost will likely go down even more. The current trends of diffusion of the supply base for all, even most sensitive manufacturing processes, will make attempts to control the trade and transfer of sensitive items (most of which are hi-tech, dual-use goods and technologies) even less successful.

Third, increasingly greater number of non-state actors will have a more significant impact on the global and regional security. The example of the terrorist act of September 11, 2001, is a good indication of the direction that the wide-spread anti-American trend may follow, and the means that may be used to inflict the damage. As the message of advocacy groups and nongovernmental organization on the grave danger of terrorist organizations using weapons of mass destruction is finally sinking in with the governments, it should become clearer for the policy-makers that efforts aimed at curbing the supply of materials and technologies for future terrorists cannot be successful by themselves. The example of the Nuclear Suppliers' Group is appropriate here: the NSG was established in view of the concerns that states' obligations under the NPT would not be sufficient enough to limit nuclear proliferation—therefore coordinated efforts to control exports of nuclear dual-use materials were necessary. Similarly, efforts to restrict the supply of sensitive materials by means of controlling their legitimate exports will become less effective.

An alternative course of actions, which may alleviate the impact of relying on supply-side measures, would be to again reassess the original goal of nonproliferation policies, including export controls: the preservation of international security and peace. The current set of measures to achieve this goal makes a number of assumptions about the current status of international affairs and the role of specific actors (states) in them. It is not a secret that the security alliance (or community) that several countries, including the United States attempt to build (in this case—in the form of multilateral trade control mechanisms) is currently aimed at several so called "rogue," "pariah" states, or "states of concern," even in the absence of specific, officially compiled international lists. Their

names, however, can be usually found on the primary list of such countries issued by the U.S. Department of State: Iran, Iraq, Libya, Syria, or North Korea find themselves on this list most of the time.

The assessment of the threat and of the available options should be realistic, though. The U.S. actions to combat terrorism in the aftermath of the September 11, 2001 attacks are often criticized for the simplicity of the message that they carry, which fails to account for the very legitimate reasons for the existence of radical ethnic or religious movements, and the terrorist organizations that they spawn. An increasing number of analysts believe that the United States should, in addition to the military action of eradicating international terrorism, make extra efforts to improve its image around the world to undermine the supply base for these radical and terrorist movements, whose ideology is often based on anti-Americanism alone.[14]

There is a similarity between the issue of combating terrorism and limiting proliferation in that both have a desired outcome (less terrorism compared to less proliferation), and are currently addressed by not sufficiently thought-out and consistent measures aimed at removing the effect rather than the cause of the problem. Just as the spread of terrorism is a backlash, in part, against the advancements of Western ideas and interests throughout the world, the cause of proliferation is in the need of some countries to obtain weapons of mass destruction, for a number of reasons. Not all of these reasons are illegitimate, and some of them may be addressed by measures other than denial of the supply of necessary materials and technologies, which, in addition to becoming an increasingly less effective measure, also generates resentment and hostility among the potential recipients. To say that only rogue, irresponsible states want nuclear weapons,

does not reflect the reality. Pakistan, and certainly India, can hardly be categorized as rogue states, despite the fact of their possession of nuclear weapons, and clearly belligerent intent towards each other, which presents an immediate regional and global threat. A large number of developing countries view supply-side control policies as benefiting the supplier states alone, and denying the much needed technologies for the development of the former. Even Iran, admittedly one of the core "axis of evil" states, has, according to some analysts, legitimate regional security concerns with regard to Iraq and Israel.[15]

Given the above discussion and the uncertainty of success for the measures to improve multilateral export controls due to the membership, environmental, and logistical reasons, an alternative strategy is needed. Measures to control the supply of sensitive items could be supplemented by strategies to address the security and other concerns of the countries that are seeking WMD or their components—in a way, a kind of "preventive diplomacy," a measure currently used to mediate and resolve ethnic conflicts throughout the world.

Studies indicate that the primary reasons for states to try to obtain WMD are considerations of security and prestige that come with the possession. Considerations of security are, perhaps, the most easily addressed by means of negotiating and signing agreements with such states on the part of the United States, the European Union, or other key international players on providing such countries with the security guarantees they require. Without judging the moral dimension of countries attaining prestige and stature by acquiring WMD, the issue can also be resolved by offering options to a country that seeks to enhance its international or regional standing in the form of membership in

international or regional organizations, ceremonial or formal positions for its leaders, or the ability to host international meetings and political, economic, and cultural events.

All these measures should, of course, be developed and applied based on the realities of the international system. There is no doubt that there are members of the international community whose determination to acquire WMD will not be shaken by any measure, except for the use of force. For such, traditional supply controls will continue to be necessary.

The benefit of developing additional measures to address the problem of proliferation may be enormous. In addition to offering at least a partial solution to the issue of globalization and its effect on controlling the transfers of technologies and know-how, these new measures may also offer a long-overdue reassessment of the global security structure based on finding consensus and common ground on important security issues, instead of piling problematic countries mindlessly into the cohort of the "rogue" or irresponsible states. The current prevalence and exclusiveness of supply-side controls is partly due to the fact that denying access is politically and logistically an easier procedure than rethinking strategies, re-shaping attitudes, and re-assessing the world order and one's place in it. But at least attempting to do all this may be a first step into the truly global, more secure world of the new millennium. ■

Appendix I: Tables and Figures

Table 1. Select Multilateral Nonproliferation Export Control Arrangements: 2000 Membership

Members	AG	MTCR	NSG	WA
Argentina	+	+	+	+
Australia	+	+	+	+
Austria	+	+	+	+
Belarus			+	
Belgium	+	+	+	+
Brazil		+	+	
Bulgaria			+	+
Canada	+	+	+	+
Cyprus	+		+	
Czech Republic	+	+	+	+
Denmark	+	+	+	+
European Union*	+		+	
Finland	+	+	+	+
France	+	+	+	+
Germany	+	+	+	+
Greece	+	+	+	+
Hungary	+	+	+	+
Iceland	+	+		
Ireland	+	+	+	+
Italy	+	+	+	+
Japan	+	+	+	+
Latvia			+	
Luxembourg	+	+	+	+
Netherlands	+	+	+	+
New Zealand	+	+	+	+
Norway	+	+	+	+
Poland	+	+	+	+
Portugal	+	+	+	+
Romania	+		+	+
Russia		+	+	+
Slovakia	+		+	+
Slovakia			+	
South Africa		+	+	
South Korea	+		+	+
Spain	+	+	+	+
Sweden	+	+	+	+
Switzerland	+	+	+	+
Turkey	+	+	+	+
Ukraine		+	+	+
United Kingdom	+	+	+	+
United States	+	+	+	+

Table 2. Typology of International Nonproliferation Regimes/Arrangements by Issue Area

Nuclear	Missile	Chemical/Biological	Conventional/Dual-Use
Nuclear Nonproliferation Treaty Comprehensive Test Ban Treaty International Atomic Energy Agency Zangger Committee Nuclear Suppliers' Group	Missile Technology Control Regime	Australia Group Biological Weapons Convention Chemical Weapons Convention Organization for the Prohibition of Chemical Weapons	COCOM Wassenaar Arrangement

Table 3. Multilateral Lists of Proliferation-Sensitive Intangible Transfer Items (Broadly Defined)*

Arrangement	List	All Categories (Items)	IT
Australia Group	Chemical Weapons Precursors	1 (54)	0
	Control List of Dual-Use Chemical Manufacturing Facilities and Equipment and Related Technology	10 (10)	0
	List of Plant Pathogens for Export Control Core & Awareness List	4 (9 controlled; 6 warning)	0
	List of Biological Agents for Export Control Core List and Warning List	5 (50 controlled; 21 warning)	0
	List of Animal Pathogens for Export Control	3 (17)	0
	List of Dual-Use Biological Equipment for Export Control	7 (7)	0
MTCR	Equipment and Technology Annex	20 (76)	1
NSG	Guidelines for Nuclear Transfers & Annex A (Trigger List)	7 (89)	0
	Guidelines for Transfers of Nuclear-Related Dual-Use Equipment, Material and Related Technology & Annex	8 (67)	4
Wassenaar Arrangement	Appendix 5 List of Dual-Use Goods and Technologies	9 (541)	9
	Munitions List	22 (196)	1
	Appendix 3 Specific Information Exchange on Arms	7 (7)	0

* All of the counts are preliminary. Intangible Transfers (IT) include goods, services, technology that involve the creation, modification, or transmission of data and knowledge. The counts for the items controlled for the NSG Dual-Use List differs from the often-used 70 items, probably a result of differing methods of counting sub-groups of items, including technology. This definition differs from and probably encompasses more IT technologies than the categories developed in the Technology Working Group.

Table 4. Multilateral Nonproliferation Export Control Arrangements: Basic Structures and Selected Procedures

Group	*Members*	*Budget Source*	*Secretariat*	*Plenary Meetings*	*Technical Meetings*	*Working Groups*	*List Review*	*Share Denials*	*Prior Notification, No Undercut Obligation*	*Share Approvals*	*Outreach Activities*	*Other Exchanges of Data*
AG	30	Australia	POC	Yearly	As needed	Yearly	Ad hoc, infrequent	Yes	Yes	No[1]	Regional seminars	Informal
MTCR	32	France	POC	Yearly[2]	Yearly	As needed	Ad hoc, rare	Yes	Yes	No	Special seminars[3]	Informal
NSG	39	Japan	POC	Semi-annual	As needed[4]	As needed	Ad hoc, rare	Yes[5]	Yes[6]	No[7]	Regional & special seminars[8]	DU, JIE[9]
WA	33	Mixed	Secretariat[10]	Yearly[11]	As needed	As needed	Formal, regular	Yes	No, but post-facto notification	Yes, in aggregate[12]	Planned	Informal

[1] Members share licensing data as State Parties in the CWC.
[2] Also holds a yearly-reinforced POC meeting.
[3] Special Transshipment seminars and workshops.
[4] Six in 1998.
[5] Real-time notification through an electronic system in operation.
[6] For dual-use items with an obligation not to undercut for three years.
[7] Since 1998, most members voluntarily share data on shipments of nuclear items through the IAEA.
[8] Special transparency seminars for all UN members.
[9] The Dual-Use Consultations and the Joint Information Exchange.
[10] Twelve full-time staff.
[11] Aggregate data exchanges twice yearly.
[12] Applies to Tier 2 dual-use items and munitions.

Table 5: Cross National Comparison of Export Control Systems Compatibility: 24 Countries, 1999–2002 (100 point scale)

Country	License	Lists	Intl. Regimes	Catch All	Training	Process	Customs	Verification	Penalties	Info. Sharing	Total Score
Armenia	14.82	15.16	1.60	0.00	0.00	6.22	7.89	1.49	1.41	1.30	**49.89**
Azerbaijan	7.50	15.16	3.21	0.00	0.00	0.00	7.89	0.00	0.00	1.20	**34.96**
Belarus	17.86	15.16	4.43	0.00	4.62	6.47	13.09	2.45	1.41	7.73	**73.22**
Canada[+]	17.86	15.16	7.65	2.87	6.94	8.3	15.78	7.81	4.3	10.04	**96.71**
China	14.82	10.00	2.21	0.00	1.48	6.88	9.15	2.89	2.83	3.76	**54.02**
Cuba	13.39	10.00	1.91	0.00	8.14	6.22	15.78	5.79	2.83	6.25	**70.31**
Czech Republic	17.86	15.16	7.34	2.87	4.62	7.88	7.89	7.28	3.56	10.04	**84.53**
France[*]	17.86	15.16	7.65	1.43	4.63	8.3	15.78	7.29	4.3	8.33	**90.73**
Georgia	5.89	10.15	0.00	1.92	5.18	4.15	10.57	1.49	1.41	1.25	**42.01**
Hong Kong	17.86	15.16	6.37	2.87	9.25	7.84	15.78	8.78	4.3	9.54	**91.72**
India	14.82	12.58	0.00	0.00	6.10	8.30	13.09	5.79	2.83	7.03	**70.54**
Japan	17.86	15.16	7.65	2.87	9.25	6.22	15.78	8.78	4.30	10.04	**97.92**
Kazakhstan	13.39	12.58	1.91	0.00	5.14	6.22	10.41	2.45	2.15	5.02	**59.26**
Kyrgyzstan	8.93	10.00	0.00	0.00	0.00	0.99	10.57	0.00	0.00	0.00	**30.42**
Moldova	14.82	15.16	0.00	0.00	2.05	8.30	10.41	2.89	1.80	0.00	**55.49**
Russia	14.82	15.16	7.33	1.43	6.10	6.88	10.41	6.76	2.83	4.51	**76.29**
South Korea	16.37	15.16	7.33	0.00	3.08	5.99	10.52	6.83	2.87	4.18	**72.33**
Taiwan	17.86	15.16	7.65	2.87	9.25	8.30	15.78	8.78	4.30	10.04	**88.51**
Tajikistan	0.00	0.00	0.00	0.00	0.00	0.00	7.89	0.00	0.00	0.00	**7.89**
Turkmenistan	0.00	0.00	0.00	0.00	0.00	0.00	10.57	0.00	0.00	0.00	**10.57**
Ukraine	17.86	15.16	7.65	1.43	4.62	8.30	13.09	5.79	3.56	8.33	**85.79**
United Kingdom*	17.86	15.16	7.65	1.43	9.25	5.56	15.78	5.88	4.3	8.73	**91.60**
United States	14.82	15.16	7.65	2.87	9.25	8.30	15.78	8.78	4.30	10.04	**96.96**
Uzbekistan	14.82	2.58	0.00	0.00	0.00	1.40	14.50	0.00	0.00	0.00	**33.28**

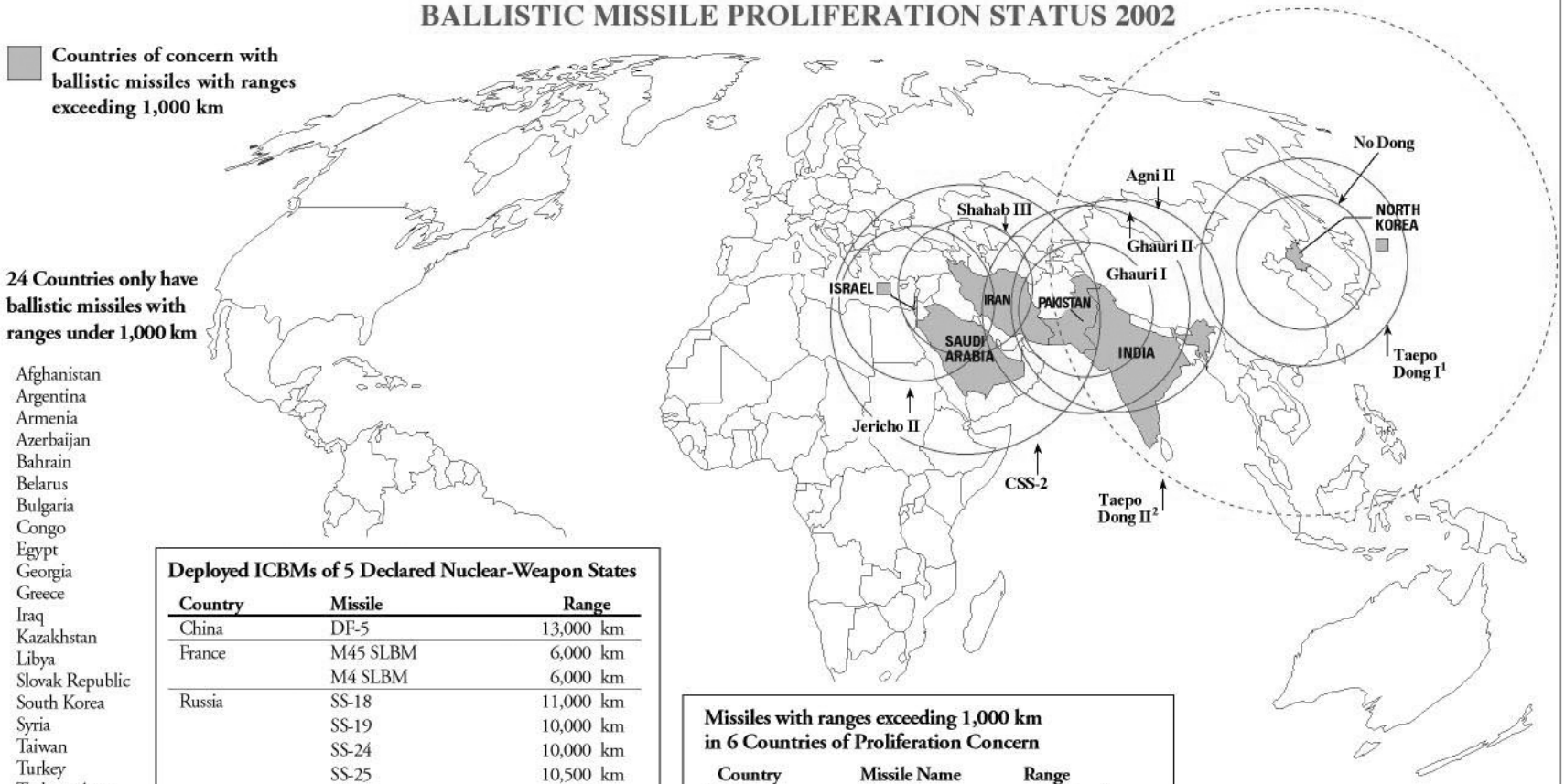
[+] Data collected in 2002.
[*] Data collected in 2000.

Table 6. Institutions Suspected by the Russian Government of Violating Export Control Legislation[*]

Name	Location	Main Activities of Products	Alleged Export Control Violations
Glavkosmos	Moscow	Management of commercial space projects	Not specified
Baltic Technical University	St. Petersburg	Advanced technical/scientific education in fields including radio-electronics, space systems, and laser technology	Alleged to have trained Iranian students in ballistic missile production technology
Grafit State Scientific Research Institute	Moscow	Graphite-based materials and composites; developed composites used in nosecone of Russia's Buran space shuttle	Shipped material used to coat ballistic missile warheads to Iran; material was intercepted in Austria en route to Iran
Polyus Scientific Research Institute	Moscow	Missile guidance systems and laser technology	Allegedly supplied missile guidance systems to Iran
Tikhomirov Instrument-Building State Research Institute	Zhukovskiy, Moscow Region	Surface-to-air missile systems and weapons control systems for military aircraft	Sent specialists to Iran via Tajikistan with false travel documents showing Tajikistan as their final destination
Komintern Plant	Novosibirsk	Radio and electronic equipment for surface-to-air missiles	Sent specialists to Iran via Tajikistan with false travel documents showing Tajikistan as their final destination
Russian Scientific and Production Center INOR	Moscow	Special alloys for space vehicles	Allegedly supplied Iranian Defense Industries Organization with special alloys, high-strength steel for missile casings, and metal foils for shielding guidance components
MOSO	Moscow	Transport services	Allegedly attempted to transport to Iran 22 metric tons of high-grade stainless steel suitable for manufacturing missile fuel tanks
Evropalas	Unknown	Unknown	Allegedly attempted to transport to Iran 22 metric tons of high-grade stainless steel suitable for manufacturing missile fuel tanks

[*] Adapted from Scott Parrish and Fred Wehling, "The Moscow Summit: Institutions Suspected by the Russian Government of Violating Export Control Legislation," Center for Nonproliferation Studies, Monterey Institute of International Studies, August 7, 1998. Available online at http://cns.miis.edu/research/summit/9firms.htm.

BALLISTIC MISSILE PROLIFERATION STATUS 2002



24 Countries only have ballistic missiles with ranges under 1,000 km

Afghanistan
Argentina
Armenia
Azerbaijan
Bahrain
Belarus
Bulgaria
Congo
Egypt
Georgia
Greece
Iraq
Kazakhstan
Libya
Slovak Republic
South Korea
Syria
Taiwan
Turkey
Turkmenistan
Ukraine
United Arab Emirates
Vietnam
Yemen

Deployed ICBMs of 5 Declared Nuclear-Weapon States

Country	Missile	Range
China	DF-5	13,000 km
France	M45 SLBM	6,000 km
	M4 SLBM	6,000 km
Russia	SS-18	11,000 km
	SS-19	10,000 km
	SS-24	10,000 km
	SS-25	10,500 km
	SS-27	10,500 km
	SS-N-18 SLBM	6,500/8,000 km
	SS-N-20 SLBM	8,300 km
	SS-N-23 SLBM	8,300 km
United Kingdom	Trident II/D-5 SLBM	7,400 km
United States	Minuteman II	9,650 km
	MX Peacekeeper	9,650 km
	Trident I/C-4 SLBM	7,400 km
	Trident II/D-5 SLBM	7,400 km

Missiles with ranges exceeding 1,000 km in 6 Countries of Proliferation Concern

Country	Missile Name	Range
India	Agni II	2,000 km
Iran	Shahab III	1,300 km
Israel	Jericho II	1,500 km
North Korea	No Dong	1,300 km
	Taepo Dong I	2,000 km[1]
	Taepo Dong II	5,500 km[2]
Pakistan	Ghauri I/No Dong	1,300 km
	Ghauri II	2,000 km
Saudi Arabia	CSS-2	2,600 km[3]

1. The sole test of the Taepo Dong I flew 1,320 km. Some experts speculate that an operational third stage and reentry vehicle would allow the Taepo Dong I to deliver a light payload over 5,500 km.

2. The Taepo Dong II has not been flight-tested. The 2001 National Intelligence Estimate of the Ballistic Missile Threat speculates that, with a lighter payload, it could have a 10,000-km range.

3. Saudi Arabia purchased CSS–2 missiles from China in 1987 and has never tested them. Experts question whether these missiles are operational.

Carnegie Endowment for International Peace, *Deadly Arsenals* (2002), **www.ceip.org**

Appendix II: Supplemental Information

Global Evaluation System (GES) Questionnaire
Elements of an Export Control System

Below is a list of 10 elements that contribute to an export control system. For each element there is a series of questions that generally elicit (a) policies; (b) institutions; and (c) behavior (in that order) concerning each element. To score your country- every question should be scored with a 1, 0, or 1/2 (1 being a positive answer, 0 being a negative answer, and 1/2 being a negative or positive answer with a caveat) in the blank following the question. You should then average the scores for each element and multiply the averages by the weights provided at the end of the questionnaire. Sum the weighted scores for each element for a total weighted export control system score. 7he perfect or ideal score is 100. In addition to our evaluations, we invite you to evaluate your national export control system and share it with us or with others in your government.

1. Licensing: exports
   re-exports
   - Are there export control laws, decrees, or regulations that:
     - provide authority to license sensitive goods?
     - provide authority to control re-exports?
   - Are there standard licensing procedures for:
     - the control of sensitive exports?
     - the control of re-exports?
   - Are licensing procedures actively at work for:
     - the control of sensitive exports?
     - the control of re-exports?

2. Lists
   - Do laws, decrees or regulations provide for the establishment of control lists?
   - Are there procedures and personnel responsible for control lists?
   - Are control lists created and maintained?

3. International Regimes: member/adherence
   - Does your country intend to become a member or adherent (in terms of policy) to the:
     - AG?
     - NSG?
     - MTCR?
     - WA?
   - Does your country have a bureaucracy for participating in the:
     - AG?

- NSG?
- MTCR?
- WA?

- Is your country a member or adherent to the:
  - AG?
  - NSG?
  - MTCR?
  - WA?

4. Catch-all

- Is there policy that provides a "catch-all" mechanism?
- Are there procedures for the "catch-all" provision?
- Are the procedures actively pursuing items that would fall under a "catch-all" provision?

5. Training: licensing officials
officials at points of entry
officials at other borders

- Are there provisions for training the following in areas of export control:
  - licensing officials?
  - officials at points of entry?
  - officials at other borders?
- Are there training procedures in place for:
  - licensing officials?
  - officials at points of entry?
  - officials at other borders?
- Are the following actually trained in the areas of export control:
  - licensing officials?
  - officials at points of entry?
  - officials at other borders?

6. Bureaucratic process**:** agency review
agency cooperation

- Are there policy provisions for:
  - inter-agency review of licenses?
  - inter-agency cooperation on licensing decisions?
  - technical reviews?
- Are there various agencies in place that:
  - review licenses?
  - cooperate on decisions?
  - are responsible for technical review?
- Do various agencies actually:
  - review licenses?
  - cooperate on decisions?
  - conduct technical reviews?

7. Customs Authority: border control
transit and transshipment

- Do laws, decrees or regulations provide authority to control:
  - borders?
  - transits and transshipments?
- Is there a bureaucracy in place, and functioning equipment available, to control:
  - borders?
  - transits and transshipments?
- Are there actual checks being made:
  - at borders?
  - of transits and transshipments?

8. Verification: IC/DV
end-use/end-user
pre-license/post-license

- Do laws, decrees or regulations provide authority for:
  - IC/DV?
  - end-use/end-user checks?
  - pre-license/post-license checks?
- Are there procedures for providing and checking:
  - IC/DV?
  - end-use/end-user?
  - pre-license/post-license?
- Are the following being conducted:
  - IC/DV?
  - end-use/end-user checks?
  - pre-license/post-license checks?

9. Penalties: criminal
civil

- Are there the following provisions for penalties for export violations:
  - criminal?
  - civil?
- Are there agencies or peoples responsible for conducting investigations and making arrests in correspondence with the following penalties:
  - criminal?
  - civil?
- Is there evidence of the following penalties being enforced with actual prosecution:
  - criminal?
  - civil?

10. Information: gathering—international/domestic
sharing—international/domestic

- Are there provisions for the:
  - gathering of information *internationally on:*

        - exporters?
        - export violations?
    - gathering of information *domestically on:*
        - exporters?
        - export violations?
    - sharing of information *internationally on:*
        - export control procedures?
        - exporters?
        - export violations?
    - sharing of information *domestically on:*
        - export control procedures?
        - exporters?
        - export violations?
- Is there a bureaucracy for the:
    - gathering of information *internationally on:*
        - exporters?
        - export violations?
    - gathering of information *domestically on:*
        - exporters?
        - export violations?
    - sharing of information *internationally on:*
        - export control procedures?
        - exporters?
        - export violations?
    - sharing of information *domestically on:*
        - export control procedures?
        - exporters?
        - export violations?
- Is information actually:
    - gathered internationally on:
        - exporters?
        - export violations?
    - gathered domestically on:
        - exporters?
        - export violations?
    - shared internationally on:
        - export control procedures?
        - exporters?
        - export violations?
    - shared domestically on:
        - export control procedures?
        - exporters?
        - export violations?

Overall Composite Score:
(Perfect Composite Score = 93)

Overall Weighted Score Elements	Avg. Score	Weight	Score
1. Licensing	_____	x 17.86	_____
2. Lists	_____	x 15.16	_____
3. Regimes	_____	x 7.65	_____
4. Catch-All	_____	x 2.87	_____
5. Training	_____	x 9.25	_____
6. Bureaucratic Process	_____	x 8.30	_____
7. Customs Authority	_____	x 15.78	_____
8. Verification	_____	x 8.78	_____
9. Penalties	_____	x 4.30	_____
10. Information	_____	x 10.04	_____
TOTAL			

(Perfect Weighted Score = 100)

MECA Survey Preliminary Results

Overall, 23 surveys were processed, with five responses for AG, five for WA, six for NSG, and seven for MTCR.

All MECA (total 23 responses)					
	Extremely	**Very**	**Average**	**Little**	**Not at All**
1. How adequate are MECA procedures for gathering information on sensitive end-users?		7 30.4%	12 52.2%	4 17.4%	
2. How adequate are the procedures for sharing important information in the arrangements?	1 4.3%	8 34.8%	11 47.8%	3 13.0%	
3. How transparent are MECA procedures and policies to the overall international community?	1 4.3%	9 39.1%	10 43.5%	3 13.0%	
4. How efficient are the decision-making procedures of the arrangements?		6 26.1%	12 52.2%	5 21.7%	
5. How effective are the means to evaluate the procedures and practices of the arrangements?		4 17.4%	12 52.2%	5 21.4%	2 8.7%
6. How appropriate are the control lists to the objectives of the arrangements?	2 8.7%	11 47.8%	8 34.8%	2 8.7%	
7. How well harmonized are the national export control systems in implementing the procedures and guidelines of the arrangements members?	2 8.7%	9 39.1%	9 39.1%	3 13.0%	
8. How well do the arrangements identify non-compliant behavior by member countries?		5 22.7%	7 31.8%	9 40.9%	1 4.5%
9. 1How well do the procedures and practices of the arrangements reflect current international security realities?	1 4.5%	7 31.8%	9 40.9%	4 18.2%	1 4.5%
10. Overall, how effective are the arrangements?		8 34.8%	12 52.2%	3 13.0%	

Several factors have been offered to explain why some governments find it difficult to comply with Australia Group provisions. Please, rank order (1- highest, 4 - lowest) the significance of these or other factors in terms of their ability to explain problems of compliance.

	Highest	**Above Average**	**Below Average**	**Lowest**
• governments lack resources to implement and/or enforce export controls;	7 30.4%	4 17.4%	10 43.5%	2 8.7%
• governments are unwilling to comply because of other pressing political or economic interests;	5 21.7%	6 26.1%	8 34.8%	4 17.4%
• governments have difficulty complying because of globalization (sensitive goods and technologies are difficult to control because of economic interdependence, increased number of suppliers, and new information technologies);	3 13.0%	11 47.8%	8 34.8%	1 4.3%
• other factor(s) (please, elaborate).	3 37.5%	2 25%	2 25%	1 12.5%

Australia Group (total 5 responses)

	Extremely	Very	Average	Little	Not at All
1. How adequate are AG procedures for gathering information on sensitive end-users?		1 20%	4 80%		
2. How adequate are the procedures for sharing important information in the Australia Group?		3 60%	2 40%		
3. How transparent are AG procedures and policies to the overall international community?		1 20%	4 80%		
4. How efficient are the decision-making procedures of the Australia Group?		1 20%	2 40%	2 40%	
5. How effective are the means to evaluate the procedures and practices of the Australia Group?			3 60%	2 40%	
6. How appropriate are the control lists to the objectives of the Australia Group?		5 100%			
7. How well harmonized are the national export control systems in implementing the procedures and guidelines of the Australia Group members?		3 60%	1 20%	1 20%	
8. How well does the Australia Group identify non-compliant behavior by member countries?			2 40%	3 60%	
9. How well do the procedures and practices of the Australia Group reflect current international security realities?		3 75%	1 25%		
10. Overall, how effective is the Australia Group?		2 40%	3 60%		

Several factors have been offered to explain why some governments find it difficult to comply with Australia Group provisions. Please, rank order (1- highest, 4 - lowest) the significance of these or other factors in terms of their ability to explain problems of compliance.

	Highest	Above Average	Below Average	Lowest
• governments lack resources to implement and/or enforce export controls;	2 40%	1 20%	1 20%	1 20%
• governments are unwilling to comply because of other pressing political or economic interests;	1 20%	1 20%	2 40%	1 20%
• governments have difficulty complying because of globalization (sensitive goods and technologies are difficult to control because of economic interdependence, increased number of suppliers, and new information technologies);	1 20%	2 40%	2 40%	
• other factor(s) (please, elaborate).			2 66.7%	1 33.3%

Missile Technology Control Regime (total 7 responses)

	Extremely	Very	Average	Little	Not at All
1. How adequate are MTCR procedures for gathering information on sensitive end-users?		2 28.6%	4 57.1%	1 14.3 %	
2. How adequate are MTCR information-sharing procedures?		1 14.3%	5 71.4%	1 14.3 %	
3. How transparent are the procedures and policies of the MTCR to the overall international community?		3 42.9%	3 42.9%	1 14.3 %	
4. How efficient are the decision-making procedures of the MTCR?		1 14.3%	4 57.1%	2 28.6 %	
5. How effective are the means to evaluate the procedures and practices of the MTCR?			5 71.4%	1 14.3 %	1 14.3%
6. How appropriate are the control lists to the explicit objectives of the MTCR?		2 28.6%	4 57.1%	1 14.3 %	
7. How well harmonized are the national export control systems of MTCR members?	1 14.3%	2 28.6%	3 42.9%	1 14.3 %	
8. How well does the MTCR identify non-compliance by member countries?		1 14.3%	3 42.9%	3 42.9 %	
9. How well do the procedures, lists, and practices of the MTCR reflect current international security realities?		1 14.3%	4 57.1%	2 28.6 %	
10. Overall, how effective is the MTCR?		1 14.3%	5 71.4%	1 14.3 %	

Several factors have been offered to explain why some governments find it difficult to comply with MTCR provisions. Please, rank order (1- highest, 4 - lowest) the significance of these or other factors in terms of their ability to explain problems of compliance.

	Highest	Above Average	Below Average	Lowest
• governments lack resources to implement and/or enforce export controls;	3 42.9%		4 57.1%	
• governments are unwilling to comply because of other pressing political or economic interests;	2 28.6%	1 14.3%	3 42.9%	1 14.3%
• governments have difficulty complying because of globalization (sensitive goods and technologies are difficult to control because of economic interdependence, increased number of suppliers, and new information technologies);		6 71.4%	2 28.6%	
• other factor(s) (please, elaborate).	1 50%	1 50%		

Nuclear Suppliers Group (total 6 responses)

	Extremely	Very	Average	Little	Not at All
1. How adequate are NSG procedures for gathering information on sensitive end-users?		1 16.7%	4 66.7%	1 16.7 %	
2. How adequate are NSG information-sharing procedures NSG?	1 16.7%	1 16.7%	4 66.7%		
3. How transparent are the procedures and policies of the NSG to the overall international community?	1 16.7%	2 33.3%	2 33.3%	1 16.7 %	
4. How efficient are the decision-making procedures of the NSG?		1 16.7%	4 66.7%	1 16.7 %	
5. How effective are the means to evaluate the procedures and practices of the NSG?		1 16.7%	4 66.7%	1 16.7 %	
6. How appropriate are the control lists to the explicit objectives of the NSG?		4 66.7%	2 33.3%		
7. How well harmonized are the national export control systems of the NSG members?	1 16.7%	2 33.3%	3 50%		
8. How well does the NSG identify non-compliance by member countries?		3 50%	1 16.7%	2 33.3 %	
9. How well do the procedures, lists, and practices of the NSG reflect current international security realities?		2 33.3%	4 66.7%		
10. Overall, how effective is the NSG?		3 50%	3 50%		

Several factors have been offered to explain why some governments find it difficult to comply with the NSG provisions. Please, rank order (1- highest, 4 - lowest) the significance of these or other factors in terms of their ability to explain problems of compliance.

	Highest	Above Average	Below Average	Lowest
• governments lack resources to implement and/or enforce export controls;	2 33.3%	1 16.7%	3 50%	
• governments are unwilling to comply because of other pressing political or economic interests;	2 33.3%	2 33.3%	1 16.7%	1 16.7%
• governments have difficulty complying because of globalization (sensitive goods and technologies are difficult to control because of economic interdependence, increased number of suppliers, and new information technologies);		3 50%	3 50%	
• other factor(s) (please, elaborate).	1 50%	1 50%		

Wassenaar Arrangement (total 5 responses)

	Extremely	Very	Average	Little	Not at All
1. How adequate are the procedures for gathering information on sensitive end-users for the Wassenaar Arrangement?		3 60%		2 40%	
2. How adequate are the information-sharing procedures for the Wassenaar Arrangement?		3 60%		2 40%	
3. How transparent are the decision-making procedures for the Wassenaar Arrangement to the overall international community?		3 60%	1 20%	1 20%	
4. How efficient are the decision-making procedures in the Wassenaar Arrangement?		2 40%	2 40%	1 20%	
5. How effective are the means to evaluate the procedures and practices of the Wassenaar Arrangement?		3 60%		1 20%	1 20%
6. How appropriate are the control lists to the explicit objectives of the Wassenaar Arrangement?	2 40%		2 40%	1 20%	
7. How well harmonized are the national export control systems of the Wassenaar Arrangement members?		2 40%	2 40%	1 20%	
8. How well does the Wassenaar Arrangement identify non-compliance by members?	1 20%	1 20%	1 20%	1 20%	1 20%
9. How well do the procedures, lists, and practices of the Wassenaar Arrangement reflect current international security realities?	1 20%	1 20%		2 40%	1 20%
10. Overall, how effective is the Wassenaar Arrangement?		2 40%	1 20%	2 40%	

Several factors have been offered to explain why some governments find it difficult to comply with Wassenaar Arrangement provisions. Please, rank order (1- highest, 4 - lowest) the significance of these or other factors in terms of their ability to explain problems of compliance.

	Highest	Above Average	Below Average	Lowest
• governments lack resources to implement and/or enforce export controls;		2 40%	2 40%	1 20%
• governments are unwilling to comply because of other pressing political or economic interests;		2 40%	2 40%	1 20%
• governments have difficulty complying because of globalization (sensitive goods and technologies are difficult to control because of economic interdependence, increased number of suppliers, and new information technologies);	2 40%	1 20%	1 20%	1 20%
• other factor(s) (please, elaborate).	1 100%			

Open ended question results:

1. Do you think the regime(s) have become more or less effective in the last 10 years?

More: 12 (75%)
Less: 4 (25%)

Some quotes:

- WA has adapted to new realities and the amount of information exchange has increased;
- More effective in general, however some proliferators have become self-sufficient.

2. What measures do you think can be done to improve/maintain the effectiveness of the regime(s) (Respondents' quotes)?

- Short of International Code of Conduct (MTCR) little can be done because missile proliferation takes place with non-member countries;
- Strengthen de facto incentive system to help foster compliance;
- Perception of U.S. as leader of the regime discredits them to rest of the world and many members. Regimes should not be U.S. foreign policy tools.
- More information exchange, transparency (WA). Include small arms and light weapons. Reduce the number of non-sensitive goods from lists—"smaller garden, higher fences" effect.
- More adequate and timely information sharing using secure communication systems;
- Procedures to address noncompliance;
- Bilateral assistance on guideline implementation and peer review of national export control systems;
- Ensure Russian compliance with MTCR (India, Iran cooperation);
- Unify missile nonproliferation efforts (ICOC, Russian "Global Control System" proposal, UN global missile nonproliferation treaties proposal);
- Enforcement (NSG). Coordinate end-user controls;
- Catch-all mechanisms should be adopted and improved by all members (MTCR, NSG);
- Fewer controlled items but stricter rules (WA). Balance arms and dual-use component. Renew Initial Elements; if some countries cannot accept—they should leave;
- Stricter guidelines and rules for AG;
- Avoid using regimes as foreign policy tools.

3. Studies have highlighted the impact of several factors on the performance of international institutions. Please, rank order the importance of the following factors for the effectiveness of the regime(s) on a scale of 1 (most important) to 5 (least important).

	Most Important	Somewhat Important	Average	Less Important	Least Important
Transparency to international community	1 6.3%	6 37.5%	3 18.8%	2 12.5%	4 25%
Ability to respond to changes in international environment		1 6.3%	5 31.3%	10 62.5%	
Leadership by one or more countries	1 6.3%	3 18.8%	3 18.8%	3 18.8%	6 37.5%
Agreement among members regarding threats	6 17.5%		1 6.3%	2 12.5%	7 43.8%
Availability of incentives for member governments	4 25%	5 31.3%	4 25%	3 18.8%	

Country Statistical Data: (% do not total to 100 because of missing data)

Population

Less 10 million—	31.3 %
10-50 million—	50%
Over 50 million—	12.5%

GDP

Under $100 billion—	12.5%
$100-500 billion—	37.5%
Over $500 billion—	25%

G8 Membership

Non-member—	81.3%
Member—	12.5%

WTO Membership

Non-member—	6.3%
Member—	87.5%

Endnotes

Chapter I

[1] Letter of the President of the United States to the Congress, November 12, 1997; and interview with Undersecretary for Nonproliferation of the U.S. Department of State, January 30, 2002, http://www.usinfo.state.gov/cgibin/washfile/display.pl?p=/products/washfile/latest&f=02013001.plt&t=/products/washfile/newsitem.shtml

[2] The international nonproliferation regime consists of a number of formal and informal treaties and arrangements. See Appendix I, Table 1 for a comprehensive list of the international nonproliferation institutions, agreements, and arrangements. I will concentrate on four multilateral nonproliferation export control arrangements: the Nuclear Suppliers' Group (NSG), the Missile Technology Control Regime (MTCR), the Australia Group (AG), and the Wassenaar Arrangement (WA).

[3] India held its first "peaceful" nuclear explosion in 1974, and both India and Pakistan conducted several nuclear weapons tests in 1998.

[4] Article VI of the NPT states that "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a Treaty on general and complete disarmament under strict and effective international control."

[5] Conferences and symposia were put together to discuss the current state of the regime, and they culminated in the 1999 Carnegie International Nonproliferation Conference "Repairing the Regime," gathering over 450 experts, officials, academics, and journalists. The title of the conference suggests that the nonproliferation regime requires adjustments, and the conclusion was that although the regime continues to work, it is beginning to face serious challenges, which, if not addressed, may lead to its increasing malfunction and even collapse. See Dhanapala, Jayantha, "The State of the Regime," in Cirincione, Joseph, ed., *Repairing the Regime: Preventing the Spread of Weapons of Mass Destruction*, Routledge, New York, 2000, pp. 17–21.

[6] There are continued reports of China assisting Pakistan with its nuclear program, and Pakistan, in turn, attempting in the past to cooperate on the North Korean missile program. See Center for Nonproliferation Studies at MIIS (http://cns.miis.edu/research/india/china/mpakpos.htm) for more information.

[7] Other components that constitute the nonproliferation regime are the Nuclear Nonproliferation Treaty, the Comprehensive Test Ban Treaty, the Chemical and Biological Weapons Conventions, the Organization for the Prohibition of Chemical Weapons, the International Atomic Energy Agency, and a number of nuclear weapons-free zone treaties (such as the Treaty of Tlatelolco and the Treaty of Rarotonga).

[8] See, e.g., Cirincione, *Repairing the Regime: Preventing the Spread of Weapons of Mass Destruction*, esp. pp. 18–21, 205–211; or Beck, Michael, "Reforming the Multilateral Export Control Regimes," *The Nonproliferation Review*, Summer 2000; or Barletta, Michael, "Cross-Cutting Challenges to the Nonproliferation Regimes," *Occasional Paper*, Center for Nonproliferation Studies, Monterey Institute for International Studies, http://cns.miis.edu/pubs/opapers/op3/barletta.htm.

[9] See, for example, Cupitt, Richard T., "Multilateral Nonproliferation Export Control Arrangements in 2000: Achievements, Challenges and Reform," *draft paper*, Center for International Trade and Security, University of Georgia, Athens, GA, August 2000.

[10] For an overview of theoretical approaches, see, e.g., Keohane, Robert O., "International Institutions: Two Approaches," in Kratochwil, Friedrich, and Edward D. Mansfield, *International Organization: A Reader*, Harper Collins, 1994, pp. 50–57. Also see Hasenclever, Andreas, Peter Mayer, and Volker Rittberger, *Theories of International Regimes*, Cambridge University Press, 1997, pp 1–2.

Chapter II

[1] Nye, Joseph S., Jr., "Nuclear Learning and U.S.-Soviet Security Regimes," *International Organization*, 41, 3, summer 1987, p. 384.

[2] See, e.g., Bertsch, Gary K., Richard T. Cupitt, and Steven Elliot-Gower, "Multilateral Export Control Organizations," in Bertsch, Cupitt and Elliot-Gower, eds., *International Cooperation on Nonproliferation Export Controls* (Ann Arbor: University of Michigan Press, 1994), p. 34; or Mastanduno, Michael, "Trade as a Strategic Weapon: American and Alliance Export Control Policy in the Early Post-War Period," *International Organization*, vol. 42, issue 1, *The State and American Foreign Economic Policy* (Winter 1988), pp. 121–150; or see also Cupitt, Richard, *Reluctant Champions: U.S. Presidential Policy and Strategic Export Controls,* Routledge, New York, 2000, esp. pp. 71–72.

[3] Stein, Arthur A., *Why Nations Cooperate,* Cornell University Press, 1990, pp. 36–38.

[4] See Appendix I, Table 2 for current MECA membership.

[5] "The Arming of Iraq," a PBS investigative video showed how a number of European (particularly German) companies contributed to the Iraqi WMD program.

[6] See Appendix I for membership information.

[7] Quoted from the Guidelines at http://www.state.gov/www/global/arms/treaties/mtcr_anx.html.

[8] Cleverly, Michael, "The Problem of Technology Transfer Controls," *Global Affairs*, no. 4, pp. 110–125.

[9] WA Initial Elements, http://www.wassenaar.org/docs/IE96.html.

[10] Mitchell, Ronald B., "Regime Design Matters: Intentional Oil Polluters and Treaty Compliance, *International Organization*, 1994, 48 (3) pp. 425–58."

[11] For some Central or Eastern European countries, establishing export control systems that follow Western standards was made one of the conditions for their acceptance into NATO or the European Union. Drawn from an expert discussion at an international workshop "Multilateral Export Control Arrangements: Evaluating the Effectiveness," Washington, DC, August 1–2, 2002.

[12] At this point, the new Export Administration Act has been finally passed by the U.S. Senate, and is deliberated on by the U.S. House of Representatives.

[13] Jones, Scott, "An Enlarging Europe: Implications for EU Nonproliferation Export Controls," http://www.uga.edu/cits, August 2000.

[14] Cupitt, Richard, "Control Regime Working Group Paper," Center for Strategic and International Studies, http://www.csis.org/tech/cupitt.pdf, December 2000.

[15] Interviews with a number of MECA former and current officials cite such complaints as one of the reasons for current and potential MECA problems.

[16] In mid-2002, Russia signed another agreement with Iran intending to build five more nuclear reactors—putting to rest expectations of a breakthrough in the ongoing U.S.-Russian dispute regarding the matter of nuclear cooperation with Iran.

[17] "The Business of Russian Cooperation with Iran," Carnegie Endowment for International Peace Issue Brief, vol. 4, no. 06, April 6, 2001. See also Luongo, Kenneth N., "Improving U.S.-Russian Nuclear Cooperation," Russian-America Nuclear Security Advisory Council (RANSAC) publication, http://www.ransac.org/new-web-site/whatsnew/improving_nuc_coop.html; "The Russian Foreign Intelligence Service on the Nuclear Capabilities of Other Countries" (summarized from the March 31, 1995, issue of *Krasnaya Zvezda (Red Star)* Russian daily). *The Monitor: Nonproliferation, Demilitarization, and Arms Control*, vol. 1, no. 2, Spring 1995, Center for International Trade and Security, the University of Georgia, Athens, p. 6.

[18] Stevens, Elizabeth, "Israel's Nuclear Weapons—a Case Study, http://infomanage.com/ nonproliferation/ najournal/israelinucs.html.

[19] See reports at the Center for Nonproliferation Studies, Monterey Institute for International Studies at http://cns.miis.edu/research/korea/nuc/index.htm, http://cns.miis.edu/pubs/opapers/op2/index.htm, or http://cns.miis.edu/research/korea/msl.htm.

[20] "Iran's Ballistic Missile and Weapons of Mass Destruction Programs," Senate Governmental Affairs Committee hearing, September 21, 2000, http://www.fas.org/irp/congress/2000_hr/hr_092100.html.

[21] See Federation of American Scientists information, http://www.fas.org/irp/threat/wmd_state.htm.

[22] One of the best examples are the control lists. Many states, particularly those with rudimentary export control systems, use the MECA-developed lists as the basis controls, at times going to the excess of transplanting them verbatim, despite the fact that they produce or export few of the controlled items.

Chapter III

[1] Krasner, Stephen D., "Structural Causes and Regime Consequences: Regimes as Intervening Variables," in Krasner, Stephen D., ed., *International Regimes*, Ithaca, Cornell University Press, 1983, p. 2.

[2] Davis, Zachary S., "The Realist Nuclear Regime," *Security Studies*, vol. 2, no.3/4, Spring/Summer 1993, p. 86.

[3] These three distinctions were discussed in detail in Cupitt, "Multilateral Nonproliferation Export Control Arrangements in 2000: Achievements, Challenges, and Reform," *occasional paper*, Center for International Trade and Security, Athens, GA, 2000.

[4] The subtitle pays homage to Arthur Stein's similarly-titled book, which addresses the issues of state cooperative behavior.

[5] Hasenclever, Andreas, Peter Mayer, and Volker Rittberger, *Theories of International Regimes*, Cambridge University Press, 1997, pp 1–2. Or see also Young, Oran, and Gail Oscherenko, "Testing Theories of Regime Formation: Findings from a Large Collaborative Research Project," in Rittberger, Volker, ed., *Regime Theory and International Relations*, Clarendon Press, Oxford, UK, 1997, pp. 228–237.

[6] Morgenthau, Hans J., Kenneth W. Thompson, *Politics Among Nations*, Alfred Knopf, New York, 1985, pp. 4–17.

[7] Grieco, Joseph, *Cooperation among Nations: Europe, America, and Non-Tariff Barriers to Trade*, Ithaca, NY, 1990.

[8] Davis, "The Realist Nuclear Regime," p. 79.

[9] Axelrod, Robert, and Robert O. Keohane, "Achieving Cooperation under Anarchy: Strategies and Institutions," *World Politics*, v. XXXVIII, no.1 (October 1985), pp. 226–254.

[10] Keohane, *After Hegemony*, pp. 83–84.

[11] For a good summary of the domestic pressure arguments, see Cupitt and Grillot, "COCOM is Dead…" pp. 375–76.

[12] Hasenclever et al, pp. 136–139.

[13] Goldstein, Judith, and Robert O. Keohane, "Ideas and Foreign Policy: An Analytical Framework," *Ideas and Foreign Policy: Beliefs, Institutions, and Political Change*, Ithaca, Cornell University Press, 1993, pp. 3–30.

[14] See, e.g., Haas, Peter, "Do Regimes Matter? Epistemic Communities and Mediterranean Pollution Control," *International Organization*, v. 43, pp. 377–403.

[15] Bull, Hedley, *The Anarchical Society: A Study of Order in World Politics*, Macmillan, Basingstoke, 1977.

[16] See, e.g., Cupitt, Richard, and Suzette Grillot, "COCOM is Dead, Long Live COCOM: Persistence and Change in Multilateral Security Institutions," *British Journal of Political Science,* vol. 27, pp. 369–389; or Chafetz, Glenn, "The Political Psychology of the Nuclear Nonproliferation Regime," *The Journal of Politics*, Vol. 57, No. 3. (Aug., 1995), pp. 743–775.

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[18] Hasenclever, Andreas, Peter Mayer, and Volker Rittberger, "Interest, Power, Knowledge: the Study of International Regimes," *Mershon International Studies Review*, vol.40, suppl.2, October 1996, p. 210.

[19] Ibid. p. 211.

[20] See Dessler, David, "What's at Stake in the Agent-Structure Debate," *International Organization*, vol. 43, 1989, pp. 455–58; or Kratochwil, Friedrich, "Norms Versus Numbers: Multilateralism and the Rationalist and Reflexivist Approaches to Institutions—A Unilateral Plea for Communicative Rationality," in *Multilateralism Matters: The Theory and Praxis of an Institutional Form*, Ruggie, John Gerard, ed., 1993, p. 449.

[21] Krasner, Stephen D., "Structural Causes and Regime Consequences: Regimes as Intervening Variables," in Kratochwil, Friedrich, and Edward Mansfield, *International Organization: A Reader*, Harper Collins College Publishers, p. 98.

[22] Sprinz, Detlef F., "Research on the Effectiveness of International Environmental Regimes: A Review of the State of the Art," *Paper Prepared for the Final Conference of the EU Concerted Action on Regime Effectiveness*, Institut D'educació Contínua (IDEC), 09 – 12 November 2000, Barcelona, available at http://www.uni-potsdam.de/u/sprinz/pub.html.

[23] Young, Oran, "The Effectiveness of International Institutions: Hard Cases and Critical Variables," in Oran Young, ed., *The International Political Economy and International Institutions*, *Vol. II*, An Elgar Reference Collection, Brookfield, 1996, p. 152.

[24] Ibid, pp. 167–184.

[25] See, e.g., Cioppa, Tom and Hans Bruyninckx, "The Effectiveness of International Environmental Regimes: What About the Environment?" *a paper presented at the 41st Annual Convention of the International Studies Association, Los Angeles*, CA, March 14–18, 2000; or see Sprinz, "Research…"

[26] Koehane, Robert O., Peter M. Haas, and Marc A. Levy, "The Effectiveness of International Environmental Institutions," in *Institutions for the Earth: Sources of Effective Environmental Protection*, ed. Peter M. Haas, Robert O. Keohane, and Marc A. Levy, The MIT Press, Cambridge, MA, 1993, pp. 3–24.

[27] See, for example, Cioppa and Bruyninckx; Sprinz; Underdal, Arild, and Edward L. Miles, "Explaining Regime Effectiveness: Combining "Soft" and "Hard" Methodological Approaches," *SMA Working Paper Series 2001-03*, paper prepared for the 2001 Convention of the International Studies Association, Chicago, IL; or Andresen, Steinar, and Joergen Wettestad, "Case Studies of the Effectiveness of International Environmental Regimes: Balancing Textbook Ideals and Feasibility Concerns," Fridtjof Nansen Institute Report 19/2001, Lysaker, Norway.

[28] Hasenclever, Mayer, and Rittberger, "Interests…" 1996, p. 178.

[29] For a good discussion of these schools of thought, see Tallberg, Jonas, "Paths to Compliance: Enforcement, Management, and the European Union," *International Organization*, 56, 3, Summer 2002, pp. 609–643.

[30] Abbott, Kenneth W., et al, "The Concept of Legalization," *International Organization* 54, 3, Summer 2000, pp. 401–419.

[31] The Center for International Trade and Security has prepared a report on the effectiveness of multilateral export control arrangements. One of the conclusions was that MECA are facing unjustifiably high expectations on the part of high-level decision makers, especially in the United States, which is coupled with low understanding of the goals, design and procedures of the arrangements, and a generally poor understanding of export control objectives. For more details, see full report at the Center's web-site at http://www.uga.edu/cits.

[32] See Table 1 in the Appendix for details.

[33] India, Pakistan and Israel may be viewed as two examples of indigenous WMD development.

[34] The Cooperative Threat Reduction (CTR) program, co-sponsored by U.S. Senators Sam Nunn and Richard Lugar, was established in 1992 to provide US government assistance to the former Soviet republics to dismantle and utilize their nuclear weapons, help employ thousands of FSU nuclear scientists, and establish modern systems for protecting and accounting for of nuclear materials. As part of CTR, U.S. Departments of Energy, Commerce and State established programs to promote effective export controls in Russia and the NIS. In addition, private foundations, such as the Nuclear Threat Initiative, provide funding to assist WMD demilitarization programs in Russia.

[35] It could be argued that the legislative process requires some resources—preparation of the draft legislation by various agencies, parliamentary committee sessions to discuss it, deliberations, adoption, publication, development of new agency procedures and instructions, development or update of control lists, etc.

[36] Data for the Russian Federation.

[37] There is numerous anecdotal evidence of customs personnel failing to properly use, or even engage, special equipment installed at border checkpoints for detecting radioactive materials.

[38] Some researchers question the "like-mindedness" of the members of the earlier export control mechanisms, especially COCOM. See, e.g., Mastanduno, "Trade as a Strategic Weapon…"

[39] http://www.google.com/search?hl=en&ie=UTF-8&oe=UTF-8&q=defining+globalization.

[40] After the 1991 failed coup to oust Soviet President Mikhail Gorbachev, U.S. Senator Sam Nunn (D-GA) visited Moscow and discovered that during his imprisonment, President Gorbachev lost command and control of the Soviet nuclear forces. This fact and the impending breakup of the Soviet Union prompted Nunn and Senator Richard Lugar (R-IN) to introduce the Cooperative Threat Reduction legislation (the Nunn-Lugar Program) to help reduce the potential threat of uncontrolled proliferation of Soviet nuclear weapons. Further information can be found at http://ww.nti.org or http://www.defenselink.mil/pubs/ctr/.

[41] **The Airbus Industrie example**: The Airbus consortium is jointly owned by companies in four countries: France, Germany, UK, and Spain. Wings for the aircraft come from Britain, fuselage and cabin interior from Germany and France, empennage from Spain and Germany, cockpit is fitted in France, and the final assembly is performed in France and Germany. There are a total of 1,500 suppliers for the project in 27 countries. More than 35 percent of components for the consortium's aircraft are supplied from over 800 U.S. companies in 40 states. http://www.airbus.com/about/manufacturing.asp, http://www.airbus.com/about/procurement.asp. Numerous suppliers are located in the Asia-Pacific. Singapore Technologies Aerospace produces wing ribs and passenger doors for the A320, and engine mounts and thrust reverser doors for the A340. India's Hindustan Aeronautics Limited builds A320 passenger doors. This information is available at http://pacific.commerce.ubc.ca/keith/Lectures/mne2.html.

[42] Reduced cost of developing and producing advanced technologies and software can be attributed to the increased availability of highly skilled but less expensive labor (engineers, software developers, etc., from the former Soviet Union is just one example), and the ability to globalize the production process through specialization and the use of computer networks and other modern means of communication.

[43] Science and Engineering Indicators 2002: a U.S. National Science Foundation Report. Available online at http://www.nsf.gov/sbe/srs/seind02/c0/c0s1.htm#c0s1l3.

[44] ITAR-TASS Russian news agency reported, for example, that a specialized Internet portal was set up in Russia to facilitate communication and research between the Russian biotechnology labs with their foreign project partners. ITAR-TASS, 09/06/2002, http://www.itar-tass.com/ru/news.asp.

[45] Attempts are made by many private companies to institute some software controls and monitoring of the use of company electronic mail and Internet access by employees, and in many cases these attempts are successful. However, presently there are no limitations on the home-based communication capabilities of the same employees.

[46] Defense Science Board Report, Stimson Report, CSIS Report, GAO Report, CITS Report. See full citations below.

Chapter IV

[1] Van Evera, Steven, *Guide to Methodology for Students of Political Science*, Defense and Arms Control Studies program, Massachusetts Institute of Technology, Cambridge, MA.

[2] Export control divisions within the U.S. Departments of Commerce, State, and Energy all provide such assistance to Russia and the NIS countries, organizing conferences, workshops and seminars to raise awareness about nonproliferation objectives, develop relationships with concerned nongovernmental organizations, and train industry and customs officials in implementing export controls at all stages. UGA's Center for International Trade and Security has been involved in these activities for a number of years, and has witnessed U.S. government's efforts to that effect at all levels. For more information, see CITS Web-page at http://www.uga.edu/cits; or John P. Barker, Deputy Assistant Secretary of State for Nonproliferation Controls and Joseph M. DeThomas, Deputy Assistant Secretary of State for Regional Nonproliferation, "Testimony Before the Senate Foreign Relations Committee," Washington, DC, October 25, 2000.

[3] From the author's personal conversations with EU countries' export control officials at a CITS-sponsored workshop on strengthening multilateral export control arrangements, Washington, DC, August 2002.

[4] For example, CITS has been receiving funding from private foundations and the U.S. government for a number of years to carry out research, training, and conduct outreach activities, such as seminars, workshops and conferences, for Russian and the NIS export control researchers and officials.

[5] http://www.cia.gov/cia/publications/factbook/index.html.

[6] For a complete description of the project and the methodologies, see Transparency International's web site at http://www.transparency.org/cpi/index.html#cpi.

[7] *Global Evaluation of Nonproliferation Export Controls: a 1999 Report*, Center for International Trade and Security, University of Georgia, Athens, GA, 1999, and consequent updates. For most up-to-date information on national export control systems, see CITS web-site at http://www.uga.edu/cits.

[8] Geertz. Clifford, *The Interpretation of Cultures: Selected Essays*, Basic Books, Inc., Publishers, New York, pp. 3–30.

[9] http://www.foreignpolicy.com.

Chapter V

[1] "Russian Missile Technology and Nuclear Reactor Transfers to Iran," *Report for Congress*, Congressional Research Service, July 29, 1998. Available online at http://www.nti.org/f_wmd411/ f1b3_6.html.

[2] Hoffman, David. "Russia Expanding Role in Iranian Power Plant." *The Washington Post*, February 22, 1998, p. A30.

[3] "Russia Has Sent Nuclear Reactor to Iran," reported at NEWSru.com. Available at http://newsru.com/russia/16nov2001/iran2_print.html.

[4] "Kreml riskiert wegen Iran Streit mit den USA/Russia Risks a Row with the U.S. Over Iran," *Wirtschafts Woche Heute*, translated from German into Russian and available at http://www.inosmi.ru/print/154261.html.

[5] "Russia Intends to Sell Iran Five Nuclear Rectors," reported at NEWSru.com in Russian, available at http://newsru.com/world/ 29jul2002/iran3.html.

[6] Eisenstadt, Michael, "Russian Arms and Technology Transfers to Iran: Policy Challenges for the United States," *Arms Control Today*, March 2001, available online at http://www.armscontrol.org/act/2001_03/eisenstadt.asp?print; or see Cohen, Ariel, and James Phillips, "Countering Russian-Iranian Military Cooperation," *The Heritage Foundation Backgrounder*, No. 1425, April 5, 2001.

[7] Eisenstadt, "Russian Arms and Technology Transfers to Iran: Policy Challenges for the United States," http://www.armscontrol.org/act/2001_03/eisenstadt.asp?print

[8] "Russia Intends to Boost Trade and Economic Ties with Iran," Strana.ru report, in Russian, available at http://www.strana.ru/print/126693.html.

[9] Shaffer, Brenda, "Khatami in Moscow Boosts Russian-Iranian Arms Cooperation," The Washington Institute for Near East Policy, *Policy Watch #522*, March 5, 2001. Available at Columbia International Affairs Online at http://www.ciaonet.org/pbei/winep/shb01.html.

[10] Reported by Alexander Yakovenko, Russia's Ministry of Foreign Affairs official representative. See "Russia Intends to Boost Trade and Economic Ties with Iran," Strana.ru report.

[11] Shaffer, "Khatami in Moscow Boosts Russian-Iranian Arms Cooperation."

[12] About 100 Scud-B missiles and facilities for building them were provided to Iran by North Korea during the war with Iraq. Bermudez, Joseph, "Ballistic Missiles in the Third World—Iran's Medium Range Missiles," *Jane's Intelligence Review*, April, 1992.

[13] Katzman, Kenneth, "Iran: Arms and Technology Acquisitions," Report for Congress, Congressional Research Service, updated January 26, 2001, p.19. Available online at http://www.iraqresearch.com/RL30551_1/rl30551_1.html.

[14] Ibid, p. 7.

[15] Reported in "Russian Missile Technology and Nuclear Reactor Transfers to Iran," *Report for Congress*, Congressional Research Service. See above citation.

[16] Ibid, p. 15; or see Gertz, Bill, "China Assists Iran, Libya on Missiles," *Washington Times*, June 16, 1998, and "China Still Shipping Arms despite Pledges," *Washington Times*, April 15, 1999.

[17] Ibid, p. 7.

[18] "Statement by John Lauder, Director , DCI Nonproliferation Center to the Senate Committee on Foreign Relations on Russian Proliferation to Iran's Weapons of Mass Destruction and Missile Programs," October 5, 2000, available at http://www.cia.gov/cia/public_affairs/speeches/archives/2000/lauder.html.

[19] Reported in "Russian Missile Technology and Nuclear Reactor Transfers to Iran," *Report for Congress*, Congressional Research Service. Or see ITAR-TASS news agency report, July 15, 1998.

[20] In August 1997, Israeli intelligence services reported that Russia had provided Iran with vital materials and expertise for its ballistic missile program: "U.S. Engages Russia in Effort to Curb Missile Technology Sales to Iran," *Agence France Press*, August 25, 1997.

[21] "Russian FM Denies Any Involvement in Missile Sales to Iran," *Agence France Press*, October 26, 1997.

[22] According to some estimates, Indian defense contracts keep up to 800 Russian defense enterprises in operation. Khripunov, Igor, and Anupam Srivastava, "From Russia, a Muted Reaction," *Bulletin of the Atomic Scientists*, vol. 54, no. 4, July/August 1998. Available online at http://thebulletin.org/issues/1998/ja98/ja98khripunov.html.

[23] Ibid.

[24] Boese, Wade, "Russian-Indian Summit Firms up Conventional Arms Deals," *Arms Control Today*, November 2000. Available at http://www.armscontrol.org/act/2000_11/russiaindconv.asp?print.

[25] See Gahlaut, Seema, "Technology, Security and International Regimes: India's Options," *The Bharat-Rakshak Monitor*, vol. 2 (3), November–December 1999. Available online at http://www.bharat-rakshak.com/MONITOR/ISSUES2-3/gahlaut.html.

[26] Albright, David, and Mark Hibbs, "India's Silent Bomb," *The Bulletin of the Atomic Scientists*, September 1992. Available online at http://www.bullatomsci.org/issues/1992/s92/s92.albright.html.

[27] Information from the official site of Russia's Ministry of Atomic Energy, available at http://www.minatom.ru/presscenter/text.php?ssd=9009.txt; originally available at http://www.nuclear.ru.

[28] Wagner, Alex, "Russia, India Sign Secret Nuclear Energy Accord," *Arms Control Today*, November 2000. Available at http://www.armscontrol.org/act/2000_11/russindnuc.asp?print.

[29] Official press-release, Russia's Ministry of Atomic Energy, February 12, 2002 (in Russian). Available online at http://www.minatom.ru/presscenter/document/news/PRINT_news104.htm.

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[31] MINATOM press-release, February 12, 2002.

[32] "India Has Great Potential in Nuclear Technologies, Alexander Rumyantsev Believes," *ITAR-TASS News Agency report*, December 4, 2002. Available online at http://www.minatom.ru/about/ 2002/12_04.htm.

[33] "Statement on the Full-Scope Safeguards Adopted by the Adherents to the Nuclear Suppliers Guidelines," *IAEA INFCIRC/405*. Available online at http://projects.sipri.se/expcon/nsgfss.htm.

[34] Wagner, "Russia, India Sign Secret Nuclear Energy Accord."

[35] Rao, Radhakrishna, "Towards a Quantum Leap In Space," *The Tribune* (online edition), January 18, 2001. Available online at http://www.tribuneindia.com/2001/20010118/science.htm.

[36] "A Story of Indian Space Program," available online at http://www.geocities.com/indian_space_story/rocketgslv.html.

[37] "A Story of Indian Space Program."

[38] Scherr, Ed, "U.S., Russia Agree on MTCR Guidelines*," USIA Report*, July 16, 1993. Available online at http://www.fas.org/nuke/control/mtcr/news/930716-295365.htm.

[39] "India's Geosynchronous Satellite Launch Vehicle," *Strategic Affairs,* no. 0028, September 16, 2001. Available online at http://www.stratmag.com/issue2Sep-15/page03.htm. Originally available at http://www.aerospace-technology.com/projects/gslv/index.html.

[40] See Appendix I for an illustration.

[41] Statement of Robert Walpole, hearing on the "CIA National Intelligence Estimate of Foreign Missile Development and the Ballistic Missile Threat through 2015," before the Senate Subcommittee on International Security, Proliferation, and Federal Services, 11 March 2002. Available online at http://www.senate.gov/%7Egov_affairs/031102walpole.pdf.

[42] "Swaine, Michael D., and Loren H. Runyon, "Ballistic Missiles and Missile Defense in Asia," *NBR Analysis*, vol. 13, no. 3, June 2002, The National Bureau of Asian Research, p. 23.

[43] Ibid., p. 11.

[44] Western experts also point out that neither the United States, nor Israel, managed to produce public proof of the Iranian nuclear weapons program. See Jones, Peter, "Iran's Threat Perceptions and Arms Control Policies," *The Nonproliferation Review*, Fall 1998, pp. 46–49.

[45] "Russia Is the Best Guarantor of the Security of Iranian Nuclear Programs," Quoted in Strana.ru online news agency (in Russian), from Iranian IRNA news agency quoting a U.S. *Foreign Office* publication. Available online at http://www.strana.ru/print/154974.html.

[46] In 1998, Russia launched an investigation into the activities of nine organizations suspected of violating Russian export controls. Surprisingly, some of the organizations, which the United States and Israel believed participated in Iranian missile program, were not on the list. See The Moscow Summit: Institutions Suspected by the Russian Government of Violating Export Control Legislation. Center for Nonproliferation Studies, Monterey Institute of International Studies, August 7, 1998. Available online at http://cns.miis/edu/research/summit/9firms.htm.

[47] Unpublished interview with Sergei Yakimov, Head of the Export Control Department at Russia's Ministry of Economic Development and Trade.

[48] See, e.g., Moskvin, Vladimir, "Russian-Iranian Conundrum and Proliferation Concerns," *The Monitor: Nonproliferation, Demilitarization, and Arms Control*, vol. 5, no. 1–2, Winter-Spring 1999, Center for International Trade and Security, the University of Georgia, Athens, GA, p.9.

[49] At this time, the European Union has intensified its contacts with Iran and plans to negotiate and implement a trade agreement with it in the near future. From personal conversations with EU export officials during the seminar on MECA effectiveness in Washington, DC. August 2002.

[50] Recently, the United Kingdom, one of the U.S. staunchest allies with regard to nonproliferation, was revealed to have supplied a substantial amount of conventional weapons to India during its latest escalation of conflict with Pakistan

[51] The first signs of the shift appeared as early as 1994, immediately following the December 1999 parliamentary election and the defeat of the neoliberal parties. Goldman, Stuart D., "Russia's Emerging Foreign and Defense Policy," *CRS Report for Congress*, June 8, 1994.

[52] Fond Obschestvennoe Mnenie (Public Opinion Foundation) Report (in Russian), June 30, 1999. Available online at http://classic.fom.ru/obzor/o1054_1.htm.

[53] STRATFOR Inc. Report, October 16, 1998.

[54] "Military Industry Overview," Federation of American Scientists, available online at http://www.fas.org/nuke/guide/russia/industry/overview.htm.

[55] Ibid.

[56] Barabanov, V.A., "Problems of the Military-Industrial Complex: Current Status and Prospects," http://www.ovsem.com/user/spvpk/.

[57] "Economic Problems of the Russian Defense Industry," a publication of the Belarusian Virtual Library (in Russian), 1998. Available online at http://www.library.by/data/002/022/21/21.html.

[58] Barabanov, V.A., "Current Problems of the Military-Industrial Complex: Current Status and Prospects," http://www.ovsem.com/user/spvpk/.

[59] Ibid.

[60] Mesnyankin, P., "The Collapse of the Nuclear Center," *Zavtra Daily* (in Russian) no. 42 (255), October 20, 1998. Available online at http://www.zavtra.ru/cgi/veil/data/zavtra/98/255/42.html.

[61] For the situation in the nuclear sector, see, e.g., Khripunov, Igor, and Maria Katsva, "Russia's Nuclear Industry: The Next Generation," *Bulletin of the Atomic Scientists*, March/April 2002, especially pp. 53–54.

[62] A number of Russian scholars focused on this generational gap and the need to fill it in their conversations. From a personal conversation with a lab director at Perm University.

[63] Some republics were not ready for full independence—especially those of Central Asia—because they were very dependent on the central government for the infusion of funds and supplies of goods and

services. Liberation movements, which had appeared throughout all republics in the late 1980s, were less radical, and the political elites in them were content in staying in the Union in exchange for greater autonomy, especially in economic matters.

[64] Kazakhstan, for example, while devoid of nuclear weapons, was USSR's largest producer of uranium ore, and now has known resources of that commodity larger than those of Russia.

[65] "Final Report of the Defense Science Board Task Force on Globalization and Security," Office of the Under Secretary of Defense for Acquisition and Technology, Washington, DC, December 1999. Available online at http://www.acq.osd.mil/dsb/globalization.pdf.

[66] DSB Task Force Report.

[67] Quoted from *The Economist* in Friedman, Thomas L., *The Lexus and the Olive Tree*, Farrar Straus Giroux, New York, 1999, p. xvi.

[68] *Annual Report*, International Telecommunication Union, June 20, 2002.

[69] "Telecommunication Indicators in the Eurostat Area," Working Group Meeting, *Statistics on Communication and Information Services*, Luxembourg, February 1–2, 2001.

[70] *Annual Report*, International Telecommunication Union, June 20, 2002.

[71] Ibid.

[72] "Telecommunication Indicators in the Eurostat Area."

[73] Author's personal observation.

[74] Schwartz, John, "Black Market for Software Is Sidestepping Export Controls," *The New York Times*, December 2, 2002. Available online at http://www.nytimes.com/2002/12/02/technology/02PIRA.html?ex=1039838081&ei=1&en=907b21c50075101b.

[75] Ibid.

[76] Walsh, Nick Paton, "Chechen Rebels Phoned Gulf during Seige," *The Guardian*, December 5, 2002. Available online at http://www.guardian.co.uk/international/story/0,3604,853966,00.html.

Chapter VI

[1] See Cupitt and Grillot, "COCOM is Dead, Long Live COCOM: Persistence and Change in Multilateral Security Institutions."

[2] Note that the U.S. government agency, which commissioned the Stimson Report on reforming multilateral export controls, expressed an interest in developing "the framework for a new effective, **COCOM-like** (emphasis mine) agreement that would regulate certain militarily useful goods and technologies."

[3] Author's personal interview, August 2002.

[4] The reference probably applies to the dual-use goods, which can be used both in military and civilian applications. The Report's focus on the Wassenaar Arrangement supports this suggestion.

[5] "About the Report," *Study Group on Enhancing Multinational Export Controls for U.S. National Security: Final Report*, April 2001, The Henry Stimson Center. Available online at http://www.stimson.org/exportcontrol/pdf/finalreport.pdf.

[6] Ibid., "Executive Summary."

[7] Ibid., pp. 24–34.

[8] "Nonproliferation: Strategy Needed to Strengthen Multilateral Export Control Regimes," *Report to Congressional Committees*, United States General Accounting Office, GAO-03-43, October 2002. p. 9. Available online at http://www.gao.gov/cgi-bin/getrpt?GAO-03-43.

[9] "Strengthening Multilateral Export Controls: A Nonproliferation Priority," Center for International Trade and Security, the University of Georgia, Athens, GA, September 2002. Available online at http://www.uga.edu/cits/publications/regime_report.pdf.

[10] DSB Report, p. 26.

[11] See Appendix 2 for the results of the questionnaire.

[12] CITS Report, p. 9.

[13] CITS Report, pp. 17–22.

[14] See, for example, Brzezinski, Zbignew, "How to Deal with Anti-Americanism," *Moscow News* (in Russian), no. 35, 2002. Available at http://www.mn.ru/issue.php?2002-35-8; or Pollack, Kenneth M., "Anti-Americanism and the Roots of Middle Eastern Terrorism," *Council of Foreign Relations*, October 2001. Available at http://www.ciaonet.org/wps/pok01/.

[15] See Jones, "Iran's Threat Perceptions and Arms Control Policies."