

## *Viewpoint*

---

# Reforming the Multilateral Export Control Regimes

---

MICHAEL BECK

*Dr. Michael Beck is the Assistant Director of the Center for International Trade and Security at the University of Georgia. He currently heads a research project at the Center to evaluate the effectiveness of national export control systems.*

The use of export controls to regulate the supply of major conventional arms systems and materials associated with weapons of mass destruction (WMD) has long been a central component of nonproliferation efforts. But how well are US and multilateral efforts to control the export of advanced weaponry and sensitive dual-use technologies working? Iraq's ability to purchase key components for its WMD, Iran's alleged procurement of sensitive weapons technologies from Russian companies, and reports of China enhancing its nuclear weapons and missile capabilities through acquisition of US technology suggest that international export controls are weak.<sup>1</sup> Moreover, the multilateral export control regimes (i.e., formal or informal institutions) established to stem the proliferation of nuclear, chemical, biological, and advanced conventional arms appear ill-prepared to deal with the challenges of globalization and increased technology trade in this century.<sup>2</sup> These nonproliferation export control regimes, which include (see Table 1) the Missile Technology Control Regime (MTCR), the Australia Group (AG), the Wassenaar Arrangement (WA), and the Nuclear Suppliers Group (NSG), are in desperate need of reform and enhancements. If the United States and other countries fail to act quickly to address existing shortcomings of the interna-

tional technology control regimes, important nonproliferation tools will be lost.<sup>3</sup>

In this viewpoint, I first address the inherent challenges of coordinating technology and weapons export policies multilaterally. Pointing to several fundamental weaknesses with the current export control regimes, I argue, in particular, that the regimes suffer from a lack of member consensus on the actors that present a proliferation threat, from informal and ambiguous provisions, and from problems of legitimacy. In addition, the regimes are in need of increased transparency and provisions for greater information sharing. Finally, I offer suggestions for reforming these regimes. Although there are limits to what the United States can do in coordinating international export controls, I argue that leadership and innovative thinking can yield export policies that better respond to the security challenges posed by globalization and an uncertain international environment.

### **THE CHALLENGE OF CONTROL EFFORTS**

Establishing international regimes to slow and to prevent the transfer of sensitive technology and weapons systems involves dealing with several inherent obstacles.

Table 1: *International Technology Control Regimes*

Regime	Year est.	Country Membership	Goal/Purpose	Items Controlled	Secretariat/ Point of Contact (POC)
Nuclear Suppliers Group (NSG)	1977	35 states: Argentina, Australia, Austria, Belgium, Brazil, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Republic of Korea, Latvia, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, South Africa, Slovak Republic, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States.	To prevent the proliferation of nuclear weapons through controls on nuclear and nuclear-related material, equipment, and technology.	Two control lists. Part I: Source materials and special fissionable material, non-nuclear materials, and related technologies. Full-scope safeguards condition of supply. Part II: Nuclear-related dual-use items. Controlled to all states.	Japanese consulate in Vienna serves as POC. Annual plenary held along with working group meetings.
Missile Technology Control Regime (MTCR)	1987	32 states: Argentina, Australia, Austria, Belgium, Brazil, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Russian Federation, South Africa, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States	To control exports of missiles capable of delivering weapons of mass destruction, as well as the relevant technology.	Category 1 items: complete systems (capabilities: at least 500-kg payload to a range of 300 km), specially designed production facilities, and subsystems—strong presumption of denial. Category 2 items: complete rocket systems (capabilities: at least 300-km range) and rocket components, materials, and technology (such as propellants, propulsion components, and launch equipment)—supply conditional.	Annual plenary and monthly POC meetings in Paris. Expert meetings on ad-hoc basis.
Australia Group (AG)	1985	30 states: Argentina, Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Republic of Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovak Republic, Spain, Sweden, Switzerland, United Kingdom, United States	To control chemical substances and biological agents and related equipment that could be used in the production of chemical and biological weapons.	Chemical precursors, biological agents, and related dual-use equipment. Control lists for chemical weapons precursors, dual-use chemical manufacturing equipment and technology, plant and animal pathogens, dual-use biological equipment.	Meets semi-annually. Australia chairs AG meetings at Embassy of Australia, Paris. No permanent secretariat. Working groups.
Wassenaar Arrangement (WA)	1996	33 states: Argentina, Australia, Austria, Belgium, Bulgaria, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Republic of Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Russian Federation, Slovak Republic, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States	To promote transparency and responsibility in transfers of conventional arms and dual-use items, and to prevent transfers of arms and technology to states and regions of concern.	List of dual-use goods and technologies (Tier 1—Basic, Tier 2—Sensitive, Sub-set Tier 2—very sensitive). List of munitions (7 categories). All controls and policies implemented on basis of national discretion.	Secretariat based in Vienna. Plenary meetings held at least once a year and chaired by a participating state on the basis of annual rotation. Working groups on ad-hoc basis.

First, much of the sensitive technology trade to be controlled is dual-use (having both a civilian and a military application). Therefore, export-licensing officials must make a risk assessment and determine the likelihood that the end user in the importing country is going to use the purchased technology for civilian use, or instead divert it to a WMD program or to an undeclared military end use. Iraq, for example, was able to acquire much of the technology for its weapons program by establishing front companies and brokers who purchased the desired equipment for allegedly “commercial uses.”

Second, the number of international exporters of sensitive dual-use technologies is growing, making the task of coordinating multilateral controls more challenging.<sup>4</sup> China, Israel, Turkey, and Ukraine are examples of relative newcomers to the ranks of technology and arms suppliers. Compounding this problem, trends of globalization may mean that companies in one country are financing sensitive dual-use technologies designed in another country, and assembled in yet a third country.

Third, the ubiquity of such technologies in a global economy makes them difficult to track and control. Consequently, it is difficult to maintain sovereignty over technology.

Fourth, competition among international technology suppliers also makes policy coordination difficult. Exporters in the United States and other countries frequently lobby for relaxed export controls, insisting that foreign competitors will fill orders if they are denied the sale. In other words, the current shortcomings of the export regimes are used as an argument for further loosening or abandoning multilateral technology controls on all but the most sophisticated technologies. From an industry perspective, such opposition is understandable. Although export controls only apply to a small percentage of total exports, they can have a significant impact on the earnings of some technology sectors and high technology companies. Moreover, controlling technologies that are widely available on international markets becomes counterproductive because a state seeking the technologies will eventually find a supplier.

Finally, unlike during the Cold War, economic concerns are no longer secondary to national security concerns. Instead, economic prosperity has become increasingly synonymous with national security both in the United States and other countries. For example, US Under Secretary of Commerce William Reinsch stated

that US export control policy is now “...based on the reality of economic globalization and the realization that, as a result, our national security is a direct function of our economic health and security.”<sup>5</sup> This growing importance of technology exports to the health of Western economies represents an additional challenge to efforts at coordinating technology controls; states and, most importantly, corporate interests want to ensure unfettered access to international markets. The fact that national security has become tied to and inseparable from economic well-being also means that the notion of balancing military versus economic interests in the area of export controls is less relevant.<sup>6</sup>

## **CURRENT PROBLEMS OF THE EXPORT CONTROL REGIMES**

The international export control regimes suffer from several different shortcomings related to the institutions themselves, the environment in which they operate, and the national policies of member countries. Although the regimes vary in their ability to meet nonproliferation goals, with the Wassenaar Arrangement clearly being the weakest, most suffer from a combination of problems and face common challenges. Until these weaknesses and issues are addressed through reform or the creation of new institutions, the export control regimes will be unsettled institutions.

### **Whom to Target? The Lack of Consensus on Proliferation Threats**

The greatest problem with international export controls is the lack of consensus among regime member states concerning the proliferation threat. Creating a consensus about threats is not currently the task of the regimes; however, without such a consensus, the regimes will be much less effective. Most members of the various export control regimes agree that North Korea, Iraq, and Libya—and any state subject to UN sanctions—are states that should not be supplied high technology and advanced weaponry, but beyond this, consensus breaks down.<sup>7</sup> For example, many European states and Russia do not share the US view of Iran as a “pariah” country that should be the target of technology controls. Regime members also do not agree on how to respond to India and Pakistan and their willingness to challenge the nuclear Non-Proliferation Treaty (NPT).

The export control regimes have also had difficulty in responding to what some experts believe is a grow-

ing threat from terrorists and other sub-state actors. Aside from Osama Bin Laden's network and Aum Shinrikyo, there are very few terrorist groups that have struck sufficient fear to bring about changes in multilateral policy. Moreover, if terrorist groups operate using front companies in non-threatening states, they are likely to encounter few barriers to obtaining important components for a chemical or biological weapons program.

In some ways the lack of multilateral consensus on the proliferation threat should not be a surprise given an uncertain international environment. Even within the United States, there is now a debate on how to respond to alleged Chinese efforts to gain access to US nuclear and missile technologies through civilian cooperation. Some analysts and policymakers believe that China is increasingly emerging as a military threat and that any technology trade with China is dangerous. However, at the same time, industry representatives note the importance of China as a trading partner, while less pessimistic analysts argue that engaging China through trade will encourage changes that make China less likely to pose a threat. This domestic uncertainty about the future of relations with China, Russia, and other states makes it difficult for the United States to lead efforts at reforming export controls.<sup>8</sup>

While US allies do not always agree on how to control WMD proliferation, the problem pales in comparison to their inability to find consensus on how to avoid destabilizing conventional transfers. Multilateral efforts within the Wassenaar Arrangement to prevent conventional weapons transfers to regions of concern have had minimal success. The Middle East, one of the most unstable regions, continues to purchase the largest share of international arms (39.5 percent), mostly from Wassenaar member countries.<sup>9</sup> The difficulty of coordinating policy in this area stems in part from lucrative and intense international competition among arms suppliers and the fact that conventional weapons, as Kenneth Dursht asserts, "are viewed as a necessary means of enabling states to meet legitimate defense needs."<sup>10</sup> Even if an arms sale appears destabilizing to nearly all members of the Wassenaar Arrangement, some governments simply contend that the sales are to legitimate governments that are exercising their right to self-defense under Article 51 of the United Nations Charter. In addition, coordination of policies is complicated by the fact that several Wassenaar members, most notably Russia, Ukraine, and Bulgaria, inherited considerable arse-

nals of surplus weapons that they will sell to almost anyone. Despite US concerns, these states have sold small arms and even tanks and MiG-29s to fragile and war-torn African states such as Ethiopia and Eritrea. Finally, many Wassenaar members have failed to restructure their defense industries, resulting in overcapacity and pressures on governments to support even dubious sales in order to keep companies afloat.<sup>11</sup>

The current plight of the Wassenaar Arrangement differs markedly from its Cold War predecessor, the Coordinating Committee for Multilateral Export Controls (COCOM), which was a manageable-sized institution of allies seeking to limit the Soviet Union and its allies' access to strategic goods and technologies. Although COCOM regime members debated the extent of controls, with the United States advocating a more extensive control list, there was agreement on the need for controlling exports to the Soviet bloc.<sup>12</sup>

### States Joining for the Wrong Reasons

Achieving consensus among "traditional allies" on how to coordinate export controls has been complicated further by the expansion of export control regimes to include states that may not rank the goal of preventing weapons proliferation to specified rogue states as highly in their policy priorities. Although the Soviet Union was an original member of the NSG and announced in 1990 that it would observe MTCR guidelines, it was not clear whether export restraint by former Soviet-bloc states could be expected after the Soviet break-up. As a result, the NSG and MTCR decided to extend membership to include Russia, Ukraine, and other states of Eastern Europe. While the motives for extending membership are understandable, these expansions further erode the cohesiveness of the regimes and call into question the assumptions made by officials that these regimes are comprised of "like-minded" nations concerned about proliferation.<sup>13</sup>

Richard Cupitt and Igor Khripunov, for example, warn that the decision to include new members with differing security interests in the NSG threatens to undermine the effectiveness of the institution.<sup>14</sup> While in theory a regime that includes all the major technology and weapons suppliers is better than one that excludes them, Russia and many of the other states of Eastern Europe joined the nonproliferation technology control regimes for the trade benefits that stem from membership, rather than because of a shared concern in controlling weap-

ons proliferation.<sup>15</sup> Russia and Ukraine are the most visible cases of countries joining a regime for side-payments rather than a shared desire to meet core security objectives.<sup>16</sup> For example, both sought MTCR membership as a way to ensure access to the space launch market and Western technologies. However, they are not alone. Brazil and Argentina also sought to join the MTCR because of the incentives that stem from membership in the export control cartel. According to a spokesperson for Brazil's Foreign Ministry, "By joining the MTCR, we have obtained a passport that will give us access, without reservations, to technologies mastered by other countries."<sup>17</sup> Harald Müller notes that Hungary and Poland were motivated to develop nuclear export controls by the "...attraction of the European Union and the need to gain full access to Western markets and technology."<sup>18</sup>

The problem with allowing states that do not share common security goals to join the export control regimes stems from these states' ability to exploit ambiguities arising from the informal nature of the regimes. Regime membership enables them to rationalize almost any dual-use export to all but the most sensitive of states. For example, Russia signed a nuclear agreement with Iran, insisting that this was legitimate because Iran is in good standing with the International Atomic Energy Agency (IAEA); and it attempted to "grandfather" a nuclear cooperation agreement with India.<sup>19</sup> Russia's inability to control and sanction companies involved in missile trade represents another problem.<sup>20</sup> In addition, China has failed to meet commitments to the United States to adhere to the MTCR, instead transferring sensitive missile technologies to Iran, Pakistan, and North Korea.<sup>21</sup> Again, these problems might not arise if the regimes were actually comprised of "like-minded" nations sharing common security concerns and a common understanding of the need to deny particular states sensitive technologies and weaponry; even informal institutions could be sufficient to enable states to coordinate their export control policies if those states shared similar perspectives. Alternatively, a situation in which states join because of side-payments or incentives offered by the United States would not be problematic if the regime rules were strengthened such that proposed exports could be vetoed and violations identified.

### **The Informal Character of the Regimes**

Given the lack of consensus among supplier states as to the nature of the proliferation threat and how to deal

with it, however, the existing informal structure of the multilateral export control regimes becomes problematic. Because the regimes are agreements whereby member states implement regulations and license sensitive items on the basis of "national discretion," licensing decisions are not always consistent across member states. In a system based on national discretion, one might find that a US supplier is denied an export license for a controlled item or technology to an Indian end user, while a French company is granted such a license.

The result of such "undercutting" is, of course, understandable resentment from the business community. Therefore, industry representatives generally argue that controls be implemented multilaterally and uniformly or not at all. Even the mere prospect of unilateral sanctions or multiple standards being used in making decisions on whether to grant or deny an export license incites industry resentment and raises concern over competitiveness. In late 1999, the US aerospace industry became alarmed when Germany's DaimlerChrysler Aerospace ordered its engineers to avoid US parts "at all costs" because of uncertainties and delays in the US export licensing process.<sup>22</sup> This ability of member states to decide on how to implement and enforce export controls within the framework of the Wassenaar Arrangement differs markedly from the Cold War COCOM regime, which allowed member states to veto proposed exports of other states.<sup>23</sup>

Another problem rests with the often ambiguous nature of regime provisions.<sup>24</sup> A regime is effective to the extent that its members comply or abide by regime provisions. However, in the case of the export control regimes, the regime guidelines are often so vague that disputes can arise over what exports are contrary to regime provisions. For example, the Nuclear Suppliers Group guidelines set forth a "nonproliferation principle" whereby supplier states are called upon to only authorize exports of sensitive nuclear items when they are "satisfied that the transfers would not contribute to the proliferation of nuclear weapons."<sup>25</sup> While the NSG does have a "trigger list" of sensitive items, there is no list of countries that are blacklisted. Moreover, the provision calls upon member states themselves to make risk assessments about the likelihood that an export will be diverted to unauthorized military uses.

While ambiguity allows for consensus, it can also be a source of conflict. Although Russia does not deem its nuclear exports to Iran to be problematic or a proliferation risk, the United States does. Moreover, the NSG's

nonproliferation principle may run counter to Article IV of the NPT, which states, "All the Parties to the Treaty undertake to facilitate, and have the right to participate in, the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy."<sup>26</sup> Regime language, as well, can be a source of confusion for export control officials seeking to introduce national legislation as they must interpret rather vague concepts such as "specially designed" technology.

Even if such ambiguities were somehow eliminated (which would be extremely difficult given political and technical constraints) and it was possible to identify violations, the regime provisions do not include punishments for non-compliance by member states. Thus, if member states were to export weapons-related items to the most sensitive end users, there are no formal provisions for expelling or sanctioning these members. In other words, countries agree to enforce their multilateral export control commitments at the national level, but there are no procedures for penalizing a country that fails to enforce its export control laws and regulations or a country that does not enforce them in a manner deemed adequate by other members. The informal and consensus-based nature of the regime also means that correcting this problem will not be easy.

Despite the lack of a multilateral enforcement mechanism, the United States, the traditional leader of the nonproliferation control regimes, frequently turns to unilateral incentives and sanctions to ensure that Russia, Ukraine, and other states join in blocking sensitive transfers and comply with regime provisions and broader nonproliferation norms.<sup>27</sup> For example, in 1993 the United States induced Russia to forgo the transfer of cryogenic technologies to India in exchange for cooperation in space. The United States argued that the deal contradicted Russian obligations to adhere to the MTCR. In other cases, the United States simply argues that exports violate vague "international norms" or are imprudent. In 1997, the United States successfully persuaded Ukrainian officials to pull out of a commitment to supply a gas turbine for Iran's Bushehr nuclear reactor by promising them compensation.<sup>28</sup>

These cases of unilateral measures, in part, reflect the lack of enforcement provisions within the regimes. Although US efforts aimed at coercing compliance sometimes succeed, as in the two examples cited, often they fail. One of the more publicized failures surrounds the

unwillingness of Russia to abandon its nuclear cooperation with Iran. And even when the US does succeed, its unilateral measures prove costly both politically and economically.

### Legitimacy Problems

In addition to the costs associated with "carrot and stick" approaches, US efforts to induce compliance with vague regime provisions and US-interpreted norms governing technology trade contribute to a legitimacy problem. In particular, unilateral sanctions foster perceptions that the regimes and export controls, in general, are little more than US tools designed to achieve political and economic objectives. If other regime members joined the United States in sanctioning, such accusations could be more readily dismissed. However, absent a multilateral response, accusations will continue to flourish that the United States is dictating its will rather than upholding international norms. These charges that the regimes are US economic and political "instruments" are occasionally heard from US allies, but more forcefully in Russia, especially with regard to the MTCR. Victor Mizin, of Russia's Foreign Ministry, has given one expression of these concerns:

The MTCR in the future will most likely be influenced to the greatest degree, on the one hand, by the desire of companies to put their rocket production into world markets, and on the other hand, by the political orientation of the American administration. In each specific case the decisions will be made depending on the status of relations between the United States and one country or another, as a result of which the MTCR is becoming a powerful political-economic tool of American foreign policy.<sup>29</sup>

The legitimacy of the export control regimes is also challenged by developing countries, which charge that the regimes are being used by the United States and its allies to maintain a monopoly on technology, inhibit development in poor nations, and prevent the emergence of commercial rivals.<sup>30</sup> For example, some countries have alleged that MTCR members are attempting not only to prevent missile proliferation but also to deny others the opportunity to develop legitimate space-launch capabilities.<sup>31</sup> The Non-Aligned Movement has argued that the Australia Group is part of a Western scheme to retain industrial supremacy and control global markets.<sup>32</sup>

This view that the regimes are “colonial holdovers” and US economic and political tools means that emerging supplier states are sometimes hesitant to embrace export controls.

Nonetheless, suspicions in the developing world that export controls are designed to limit economic development appear to be unfounded. On the contrary, only a small fraction of exports are subject to licenses and of those items that are subject to licensing, only a small percentage are denied. For example, the US Department of Commerce denied only 329 of the nearly 11,000 license applications that they received in 1998.<sup>33</sup> Moreover, the loudest criticism of the technology control regimes often comes from countries that are seeking technologies for WMD programs or advanced military equipment.<sup>34</sup>

### **Secondary Challenges: Inadequate Transparency and Information Sharing**

In addition to the problems posed by informal provisions, new members, and a lack of consensus regarding the focus of multilateral export controls, the regimes must also address the need for greater transparency and enhanced information sharing among regime members. This need for increased transparency stems from several factors. First, more transparency is required to meet the aforementioned criticisms of developing states regarding the intent of the regimes. If information is scarce concerning the goals of the regimes, non-members are more apt to assume they are threatening. Second, the public and the policy community are often in the dark about the objectives of the regimes and have heretofore overlooked the importance of coordinating technology control efforts. Third, industry must have a better understanding of the aims of multilateral controls and be given clear guidelines to follow. To ensure compliance, governments must be prepared to ensure that industry is aware of export control regulations and the costs of violating them. The challenge of informing industry about export controls is especially daunting in the United States, where regulations are complex and the number of exporters large. For the governments of Eastern Europe and the former Soviet Union, ensuring industry compliance with export controls is equally problematic given economic hardship that has spawned widespread corruption in both industry and government. Without greater international industry awareness, compliance with export controls will remain problematic.

The need for greater information sharing among member states must also be addressed. If export controls are to be implemented consistently, licensing officials in all member states should possess similar information on sensitive end users and previous license denials.<sup>35</sup> Despite this need for good intelligence, none of the regimes has an independent information-gathering and dissemination body, and information sharing among member states occurs infrequently thereby lengthening the time needed to identify the weapons acquisition efforts of suspect actors. Instead, it is up to regime members individually to gather information on their exports and to use national technical means to monitor other states' activities. Except for the Nuclear Suppliers Group, which has a computerized information-sharing network, information sharing only occurs at regular meetings and via diplomatic channels on a limited basis. Information sharing by Australia Group members, for example, occurs through diplomatic channels, which are viewed as more secure. Information sharing within the Wassenaar Arrangement consists of *post-facto* data on dual-use and arms shipments shared at annual meetings.

Moreover, Wassenaar members do not even have a list of proscribed countries that are considered problematic. The only countries that members can agree to target are those countries that they have already been sanctioned in the United Nations! If regime members can only agree to restate what has already been done in the United Nations, then some contend that this wastes time and money. Those countries that do have the national technical means to gather comprehensive intelligence, namely the United States, are often reluctant to share it, fearing that sources and methods will be leaked. Although these concerns are justified, they must be weighed carefully against the risks of failing to share information. Some smaller regime-member states complain that they simply do not have the resources to gather all the necessary information. Thus, in many cases, licensing decisions may amount to a very ill-informed gamble. The lack of “real-time” information sharing on licensing denials also increases the probability of “undercutting” and the likelihood that proliferators will not be caught.

### **NEW APPROACHES TO MULTILATERAL EXPORT CONTROLS**

The numerous problems facing export controls internationally might lead one to conclude that export con-

trols as a nonproliferation tool should be entirely abandoned. Such a conclusion, however, would be a mistake. Instead, new approaches to managing sensitive technology trade in a globalizing economy and an uncertain international environment are needed. Although export controls cannot stop a determined and well-funded proliferator, if properly implemented, multilateral export control regimes can help deter proliferation by raising the cost of proliferation, providing signals that countries are attempting to acquire WMD, and slowing efforts to acquire WMD. These regimes can also bolster the norms against WMD acquisition.

Admittedly, some of the problems surrounding export control regimes cannot be quickly and easily addressed. There are steps, however, the United States and other countries can take to address the need for more formal and transparent institutions that recognize current international realities. They can begin by addressing the need for a dialogue and sustained attention to this complex issue, considering a move away from denial of technology to verification of technology use, and possibly strengthening such efforts through more formal and rationalized institutions.

### Formalizing Regime Regulations

Institutions are effective to the extent that they lead states to behave differently than they would otherwise. The export policies of some states suggest that the informal export control institutions have not been that effective. Therefore, rather than expanding the membership of these weak institutions to include states that are not all that concerned with problems of weapons proliferation, members should instead first focus on enhancing and deepening the regimes. Increased numbers can handicap regimes because mistrust becomes more likely and collective action to punish defectors becomes more difficult.<sup>36</sup> The problem of increased numbers is especially challenging for the export control regimes because they make decisions by consensus and their guidelines are implemented on the basis of national discretion. Theoretically, the problem of increased numbers could be addressed by developing alternative institutional rules, such as voting rules, representation, and delegation.<sup>37</sup> This, of course, means moving away from a consensus-based system and changing the very nature of the regimes.

In order to deal with the problem of states joining only for the “side-payments,” it would also be advisable to

encourage *adherence* with regime provisions rather than advocate membership for countries seeking to join the export control regimes. Regime members should be certain that states have both the capability, and ideally, the willingness, to control technology to specified regions and states of concern before they are allowed to join. For example, Ukraine as an adherent is less harmful to regime cohesion and the nonproliferation cause than a Ukraine that becomes a member capable of blocking decisions.<sup>38</sup> Another option would be to have tiers of membership, with levels of access to technology corresponding to a state’s willingness to accept greater responsibilities and to agree to meet higher standards of export control.

It is also time to consider developing more tightly binding agreements or including more rigid control arrangements within the framework of treaties. Even the existence of supporting treaties—the NPT and the Chemical and Biological Weapons Conventions—may explain why the NSG and the Australia Group are more effective than the MTCR and the Wassenaar Arrangement.<sup>39</sup> Another way to strengthen the regimes is to ensure that licensing decisions will be made using similar information and consistent criteria. Moreover, regime members should discuss ways to determine what constitutes a violation of regime provisions and how they will respond collectively to a member state’s or company’s failure to uphold export control regulations. Efforts at strengthening the regimes should also entail greater information sharing on end users in an effort to create consensus on what end users are problematic, and expanded communication between enforcement agencies. If one or two member states continually block such efforts (e.g., France and Russia in the Wassenaar Arrangement), the United States and other states that see a need for enhanced controls might consider launching new institutions without their participation.

The idea of merging all of the proliferation control regimes into one institution should also be revisited.<sup>40</sup> There are several reasons why combining the regimes merits renewed consideration. First, the existing international control lists are not harmonized and there are overlapping controls.<sup>41</sup> Second, for newcomers to export control, developing knowledge of four regimes, each with their idiosyncratic operating procedures and language, is far more difficult than coming to grips with one regime governing all weapons and dual-use trade. Third, the cost to smaller countries of participating in



and staying abreast of four regimes is significant; a unified regime would simply be more efficient and cost-effective.<sup>42</sup> Travel time and diplomatic efforts would also be reduced if all export control officials gathered at one site annually to address important issues of multi-lateral export control and to review existing control lists.

One merger option would be to turn the existing regimes into working groups that would be charged with list management, while the combined regime would have a secretariat that would promote unified licensing procedures and address issues of information sharing on end users, proliferation acquisition patterns, and denial notifications.<sup>43</sup> The secretariat could also have a staff for monitoring trends in technology trade, thereby allowing member states to better understand the demands of industry and the emergence of new technologies. The key would be to blend the existing institutions into one without weakening existing international controls or ending up with a regime on par with the Wassenaar Arrangement, the weakest of the institutions. The membership in the existing export control regimes is virtually identical, as well, which reduces problems that existed during the COCOM era.

Combining the export control regimes presents numerous diplomatic hurdles that could take years to implement. In the immediate future, continued attention should be given to enhancing transparency and information sharing among regime members and increasing informal channels of interaction. Each of the regimes should work to ensure that all members have adequate access to timely information and intelligence for making responsible licensing decisions. The potential gain from this information sharing most often outweighs the risks of revealing sources. There must be assurances however that member states will adequately protect shared information on end users, front companies, and middlemen. To aid in information sharing on end users and licenses, more resources should be targeted at developing secure computer networks. The NSG international nuclear information-sharing system could serve as a model for the other regimes.<sup>44</sup>

Regime members must also better inform others of license applications and license "denials" in order to reduce the risk of "undercutting." Without greater confidence that other member states and their companies are playing by similar rules, industry advocates will argue that export controls are simply resulting in lost sales. Fortunately, pending US export legislation calls on the

administration to address the problem of undercutting.<sup>45</sup> "No undercut provisions," which prevent suppliers in one state from exporting technology that was not licensed for export in another state, should be central to all the regimes in order to avoid industry accusations that export controls are not multilaterally implemented. Member states should be formally obliged to deny export licenses when other regime members have denied license applications for analogous items. Exceptions to this rule should only be allowed under limited and well-defined circumstances.

### From Denial to Verification

The realities of the global economy and the lack of international consensus on the nature of the proliferation threat suggest that the United States and other regime member states should consider moving away from a strategy of technology denial towards a strategy of monitoring technology transfer and technology end use.<sup>46</sup> Currently, the regimes and their member states lack the necessary intelligence about activities within states to make this transition rapidly. However, as national technical means become more sophisticated, the probability of WMD proliferation activity being detected increases.

Verification of technology use would also benefit from more on-site post-shipment inspections. At present, only the United States regularly carries out post-shipment verifications to ensure that exported items are being used for licensed civilian purposes.<sup>47</sup> However, it might be possible to incorporate inspection teams into the frameworks of the existing regimes. Despite the high cost and sensitivities associated with on-site inspections, they offer a way to protect against unauthorized diversions. Measures to verify or to require information on end use, as opposed to denying transfers, would also help to address charges that the regimes are designed to impede third-world development. Moreover, post-shipment verifications would be no more intrusive than those to be conducted under the Chemical Weapons Convention (CWC).<sup>48</sup> As verification measures become more sophisticated and treaties, such as the CWC, become universal, there will be much less need for technology denial strategies.

Regime members should also devote more resources to the development of remote monitoring technologies as a way to limit the likelihood of technology being diverted to weapons uses. The miniaturization of Global

Positioning Satellite (GPS) systems offers one possibility for monitoring the location and movement of some controlled items, such as machine tools. And the emergence of new software and Internet security devices allow for companies and possibly enforcement officials to monitor and restrict the transfer of controlled technical data via the Internet, and to deal with other “intangible technology transfers.” Regime members could also condition technology trade on a willingness to provide access to sites where technology is to be used.<sup>49</sup>

### **The Need for Leadership**

Export controls in general, and the regimes in particular, suffer from a lack of sustained, high-level policy attention both at the domestic and international levels. To rectify the problem, the United States and other interested countries should initiate a dialogue on reforming multilateral export controls. One possibility is to augment the ideas initiated at an international conference on export controls organized by the US Department of Commerce in the fall of 1999 in Oxford, England. This event brought together export control representatives from 22 nations, three multilateral export control systems, and four non-governmental and academic institutions to discuss improving national and multilateral systems. Among the recommendations, were calls for greater list harmonization, enhanced inter-regime communication, and consistent guidelines for controlling the transfer of intangible technologies. This conference could become part of a larger dialogue or initiative on reforming export controls for the 21st century and serve as a focal point for international experts.<sup>50</sup>

While international dialogue at a high level can help generate political momentum for strengthening the regimes, there is a need to establish an international working group of technical and political experts to develop detailed options for strengthening and reforming multilateral controls. This group could offer more specific proposals for addressing current multilateral problems, such as the lack of timely information sharing among regime member states and the need for greater transparency. This working group might also help present options for meeting emerging export control challenges, such as the transfer of sensitive information via the Internet, and provide suggestions on efficiently merging regimes and rationalizing control lists. Finally, this group could help to give export control policy issues the

sustained attention they require to serve nonproliferation objectives without impeding legitimate commerce.

If the United States is to lead efforts at reforming export controls internationally, it must first work on getting its own house in order and determine how it wants to address technology and export policy in the current world order. This would involve passing new legislation to replace the current export control system, which is based on Cold War principles and often crippled by interagency feuding. New legislation could rectify problems with the US system of export controls and allow the United States to take a lead in addressing many of the problems with the regimes addressed in this viewpoint. In particular, the draft Export Administration Act calls upon the administration “to continue its active participation in and to strengthen existing multilateral export control regimes.”<sup>51</sup> Moreover, the bill sets forth standards for the multilateral regimes. The most important standards pertain to effective enforcement and compliance, effective implementation procedures, treatment of certain countries, harmonization of license approval procedures, and “undercutting.”

Just as multilateral controls have been weakened by a lack of attention, similarly US controls demand greater care. Although there has been a small group of experts in Congress and in the Clinton administration who understand the importance of reforming export controls both domestically and internationally, they remain too few and have been largely ignored. Part of the problem stems from the fact that issues of export control are complex and involve multiple interests, bureaucratic agencies, lists, and regimes that are not easily grasped by policymakers and their assistants who have limited time. Currently, export controls in the United States move on and off the agendas of high-level National Security Council and State Department personnel with the arrival and passing of technology transfer scandals, sometimes resulting in fragmented initiatives. Furthermore, the lack of understanding of export control issues in Congress means that its members are more susceptible to lobbying and to media headlines, with the result being knee-jerk legislation. One idea for correcting this neglect of export controls domestically would be to establish an informal export control policy consortium made up of government, industry, and non-governmental experts willing to give the issues the necessary attention that they require to remain responsive to emerging proliferation threats and economic globalization.

## CONCLUSION: THE CHALLENGES AHEAD

At the outset, I raised several challenges to the effectiveness of nonproliferation control efforts. Some of the challenges include economic globalization, lack of consensus on the nature of the proliferation threat, informality of regime provisions, and new member states with a greater interest in receiving side-payments than in reducing threats to global security. Although the problems impeding multilateral cooperation on export controls will not be easily addressed, I have argued that there are steps that can be taken. First, the United States must develop greater domestic consensus on realistic objectives for export policies by engaging industry, government, and academic leaders in a dialogue. This must be accompanied by more intensified international negotiation and study aimed at developing new multilateral approaches for managing sensitive technology and defense trade. Initial attention should probably aim at boosting the effectiveness of the Wassenaar Arrangement and the MTCR, as these are less well-supported and have weaker provisions than the other regimes.

Second, efforts in the short term should concentrate on “deepening” the regimes by formalizing and strengthening regime provisions before moving to expand regime membership to accommodate new members. In particular, for the most sensitive missile and nuclear items, the preferable option is not to expand already weak control regimes with ambiguous provisions. Instead, attention should be directed at formalizing and tightening regime regulations such that “violations” by a member state or one of its exporters are more objectively recognizable and subject to penalties. Countries outside of the regimes should be encouraged to introduce multilateral control lists into national legislation while efforts are made to restructure the regimes. The idea of merging the regimes into one, more coherent institution also merits revisiting as a way of reducing costs and focusing policy attention.

Next, governments must invest more in using technology to monitor technology transfers and use by recipients. The sooner member states recognize technology and arms acquisition patterns, the more quickly they can respond diplomatically and the better chance that consensus can be reached on threats. This also means that regime-member states capable of gathering and sharing information, especially the United States, must also be willing to share it.

Finally, member states should begin thinking about the possibility of moving away from denial-based regimes to verification regimes for some dual-use technologies. The political difficulties of building consensus concerning proliferation threats and trends towards growing numbers of international suppliers are unlikely to fade quickly; therefore, the best long-term option would be to create an inspection regime similar to that embodied in the CWC or some other more formalized monitoring arrangement.

Historically, international cooperation on export controls has faced major political and technical challenges.<sup>52</sup> The challenges of controlling and monitoring strategic technology and advanced weapons exports in the 21st century will be even greater than in the past. The key questions are whether or not the United States and its partners are able and willing to do what it takes to overcome the political challenges noted above, and whether governments can keep pace with economic globalization and the diffusion of technology that it entails. Certainly, US ability to coordinate international export controls hinges upon wider international developments and domestic political considerations. Currently, US leadership is called into question by perceptions of discriminatory application of controls and sanctions, and the perception of US willingness to bend nonproliferation norms, treaties, and commitments to serve national interests. The next administration faces the task of overcoming these international perceptions and building domestic political support for export control reform.

US efforts alone will not suffice. Effectively managing sensitive technology trade in a global economy will also require commitments from foreign partners that have been absent to date. No matter how much foresight goes into drafting US export legislation, the United States cannot coerce effective multilateral trade policies. Unfortunately, history tells us that complacency on these issues is often replaced with reactive measures only after weapons of mass destruction have found their way to dangerous actors.

<sup>1</sup> See *Report of the Select Committee on US National Security and Military Commercial Concerns With the People's Republic of China*, US House of Representatives, 105<sup>th</sup> Congress, 2nd Session, Report 105-851 (Washington: US Government Printing Office, 1999). On the threat of technology leaks from Russia, see *Proliferation Concerns: Assessing US Efforts to Help Contain Nuclear and Other Dangerous Materials and Technologies in the Former Soviet Union* (Washington, DC: National Academy Press, 1997).

<sup>2</sup> Regimes are defined by Stephen D. Krasner as the "principles, norms, rules and decision-making procedures" that govern the behavior of countries in various issue areas. See Stephen D. Krasner, "Structural Causes and Regime Consequences: Regimes as Intervening Variables," in Krasner ed., *International Regimes* (Ithaca: Cornell University Press, 1983), p. 2.

<sup>3</sup> On the role that export control can play in nonproliferation (as well as the limits of export control), see Kathleen Bailey, "Nonproliferation Export Controls: Problems and Alternatives," in Kathleen Bailey and Robert Rudney, eds., *Proliferation and Export Controls* (Lanham, MD: University Press of America, 1993), pp. 49-56; Roberts, "Export Controls and Biological Weapons: New Roles, New Challenges," *Critical Reviews in Microbiology* 24 (Fall 1998), pp. 235-254; US Congress, Office of Technology Assessment, *Export Controls and Nonproliferation Policy* (Washington, DC: GPO, May 1994), OTA-ISS-596. *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: DSB, December 1999), pp. 26-30; National Academy of Sciences, "Elements of a New Response: Multilateral Export Control Regimes," *Finding Common Ground: U.S. Export Controls in a Changed Global Environment* (Washington, DC: National Academy Press, 1991), pp. 118-137.

<sup>4</sup> On patterns of technology dissemination and the challenges that it poses, see Michael Moodie, "The Challenges of Chemical, Biological, and Nuclear Weapons Enabling Technology," in Pericles Gasprani Alves and Kerstin Hoffman, eds. *The Transfer of Sensitive Technology and the Future of the Control Regimes*, (Geneva: UNIDIR, 1997), pp. 65-68.

<sup>5</sup> William A. Reinsch, "Export Controls in the Age of Globalization," *The Monitor: Nonproliferation Demilitarization and Arms Control* 5 (Summer 1999), p. 3.

<sup>6</sup> Richard T. Cupitt, *Reluctant Champions: US Presidential Policy and Strategic Export Controls* (New York: Routledge, 2000), pp. 228-230. As Cupitt notes, "If the study of export controls reveals anything, it is the need to see the relationship between power and plenty not as competitive and in constant need of balance, but as a symbiotic relationship between power and plenty."

<sup>7</sup> This does not mean that there is explicit language in regime documents targeting particular countries. Rather, there is an implicit understanding, according to most observers, that North Korea, Iraq, and Libya have or are pursuing WMD.

<sup>8</sup> For views on China in the trade and nonproliferation realm, see *Report of the Select Committee on US National Security and Military Commercial Concerns With the People's Republic of China* US House of Representatives, 105<sup>th</sup> Congress, 2nd Session, Report 105-851; Philip Saunders and Evan Medeiros, "Don't Push China on Proliferation," Op-Ed for *The Los Angeles Times*, November 18, 1999, p. 11; Bill Gertz, "Senator Ties China's Behavior to US Trade," *Washington Times* (Lexis-Nexis), March 4, 2000, p. A3; Bill Gertz, "Helms Demands Sanctions on China Over Missile Exports," *Washington Times* (Lexis Nexis), September 17, 2000, p. A3.

<sup>9</sup> "Lethal Business," *Financial Times* (London) (Lexis-Nexis), October 15, 1997, p. 17.

<sup>10</sup> *Proliferation and Export Controls: An Analysis of Sensitive Technologies and Countries of Concern* (London: Saferworld, 1995), p. 79. For challenges facing the Wassenaar Arrangement, see Kenneth Dursht, "From Containment to Cooperation: Collective Action and the Wassenaar Arrangement," *Cardozo Law Review* 19 (December 1997), pp. 1098-1103.

<sup>11</sup> Comments on the Wassenaar Arrangement from US State Department official (name withheld by request), personal communication, March 1, 2000.

<sup>12</sup> Gary K. Bertsch, 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. Despite conflicting interests over the extent of controls, Bertsch and Elliott-Gower noted that "COCOM's longevity in the face of these conflicting interests has been a function of the common perception in the West of the military threat that the Warsaw Treaty Organization poses, and a common security interest in reducing that threat by delaying its members acquisition of strategic technologies." Gary K. Bertsch and Steve Elliott-Gower, "US COCOM Policy: From Paranoia to Perestroika," in Gary K. Bertsch, Heinrich Vogel, and Jan Zieolnka, eds., *After the Revolutions: East-West Trade and Technology Transfer in the 1990s* (Boulder, CO: Westview Press, 1991), p.15.

<sup>13</sup> See prepared statement of Roger Majak, Assistant Secretary for Export Administration, US Department of Commerce, before the US Senate Committee on Banking, Housing and Urban Affairs, International Trade and Finance Subcommittee, Federal News Service, March 16, 1999.

<sup>14</sup> Richard T. Cupitt and Igor Khripunov, "New Strategies for the Nuclear Suppliers Group (NSG)" *Comparative Strategy* 16 (July-September 1997), pp. 305-315.

<sup>15</sup> See Gary K. Bertsch and Suzette R. Grillot, eds., *Arms on the Market: Reducing the Threat of Proliferation in the Former Soviet Union* (New York: Routledge, 1998). Most of the authors found that export control development in the former Soviet region was motivated by US assistance and cajoling.

<sup>16</sup> See John Baker, "Nonproliferation Incentives for Russia and Ukraine," *Adelphi Paper 309*, International Institute for Strategic Studies (London: Oxford University Press, 1997). See also, Scott A. Jones, "The Evolution of the Ukrainian Export Control System: State Building and International Cooperation," and Michael Beck, "Russia's Rationale for Developing Export Controls," in Bertsch and Grillot, eds., *Arms on the Market*.

<sup>17</sup> "Brazil Admitted to Missile Technology Control Regime," *BBC Summary of World Broadcasts* (Lexis-Nexis), October 14, 1995.

<sup>18</sup> Harald Müller, "Nuclear Export Controls in Europe: An Introduction," in Müller, ed., *Nuclear Export Controls in Europe* (Brussels: European University Press, 1995), p. 26.

<sup>19</sup> Gary K. Bertsch and William C. Potter, "Conclusion," *Dangerous Weapons, Desperate States* (New York: Routledge, 1999), p. 236.

<sup>20</sup> Fred Wehling, "Russian Nuclear and Missile Exports to Iran," *The Nonproliferation Review* 6 (Winter 1999), pp. 134-143.

<sup>21</sup> Media reports about such trade are widespread. See R. Jeffrey Smith, "Helms Pressures Administration to Punish China," *Washington Post* (Lexis-Nexis), February 9, 1996. See also, Stephen Holmes, "High-Tech Exports Cut-Off, Washington Penalizes China For Missile Technology Sales," *New York Times* (Lexis-Nexis), August 29, 1993, Section 4, p. 2.; Bill Gertz, "China Breaks Vow, Send N.Korea Missile Materials," *The Washington Times*, January 12, 1999.

<sup>22</sup> Vince Crawley, "Arms Export Controls 'Deliberately Stupid,'" *Defense News*, Vol. 20, November 15, 1999, p. 26. One of the concerns for foreign satellite makers is that using US parts would give US agencies the ability to interfere in licensing of the entire satellite.

<sup>23</sup> The single member veto was central to COCOM. See Dursht, "From Containment to Cooperation: Collective Action and the Wassenaar Arrangement." For a comparison of COCOM and its successor, the Wassenaar Arrangement, see Cassidy B. Craft and Suzette R. Grillot, "Transparency and the Effectiveness of Multilateral Nonproliferation Export Control Regimes: Can Wassenaar Work?" *Southeastern Political Review* 27 (June 1999), pp. 279-302.

<sup>24</sup> Language issued by the Nuclear Suppliers Group calling on countries to "exercise restraint" in the export of nuclear items is an example.

<sup>25</sup> Carlton Thorne, ed., *A Guide to Nuclear Export Control* (Burke, VA: Proliferation Data Services, 1997).

<sup>26</sup> The Treaty is on-line at <<http://www.acda.gov/treaties/npt1.htm>>.

<sup>27</sup> This is especially true with regard to the NIS. The growing view among some in the United States is that major players are "free-riding," or taking advantage of those who abide by the regime. For insights on cooperation from game theory, see Andrew Kydd and Duncan Snidal, "Progress in Game

Theoretical Analysis of International Regimes," in Volker Rittberger, ed., *Regime Theory and International Relations* (Oxford: Clarendon Press, 1993), pp. 112-138.

<sup>28</sup> See Michael Gordon, "Ukraine Decides Not to Supply Key Parts for Iranian Reactor," *New York Times*, April 14, 1997, p. 12. "Ukraine Waffles on Iran Nuclear Plan," *Asian Times* (Lexis-Nexis), April 21, 1997.

<sup>29</sup> Victor Mizin, "Missile Technology Control Regime (MTCR) in Russia, United States," *Yaderny Kontrol* 3 (March 1995), pp. 12-17, in *FBIS-Central Eurasia*, November 1, 1995.

<sup>30</sup> Andrew Latham and Brian Bow, "Multilateral Export Control Regimes: Bridging the North-South Divide," *International Journal* 53 (Summer 1998), pp. 465-486. The authors provide a good overview of the developing world's critique of export controls.

<sup>31</sup> This argument is most often heard in Russia. Some complain that the conditions for joining the regime are forever changing depending on the whims of the US administration.

<sup>32</sup> Brad Roberts, "Export Controls and Biological Weapons: New Roles, New Challenges," *Critical Reviews in Microbiology* 24 (Fall 1998), pp. 235-248.

<sup>33</sup> See Department of Commerce, Bureau of Export Administration, *Annual Report 1998*, ch. 2, p. 16, <<http://www.bxa.doc.gov/PRESS/Publications/FY98AnnualReport.html>>.

<sup>34</sup> Professor Brahma Chellaney from India, for example, characterized the MTCR as a "surreptitious club of white countries that seeks to prevent the former colonial world from acquiring commercial technologies critical to economic development." Brahma Chellaney, "Nonproliferation: An Indian Critique of US Export Controls," *Orbis* 2 (Summer 1994), pp. 439-465.

<sup>35</sup> By "sensitive" I mean countries or sub-state groups that have or are suspected of having WMD programs.

<sup>36</sup> On problems stemming from increased numbers see Robert Axelrod and Robert Keohane, "Achieving Cooperation Under Anarchy: Strategies and Institutions," *World Politics* 38 (October 1985), p. 237.

<sup>37</sup> On dealing with larger numbers, see Miles Kahler, "Multilateralism with Small and Large Numbers," *International Organization* 46 (Summer 1992), pp. 681-708.

<sup>38</sup> This is not to advocate for the removal of Ukraine or others. Instead, the same mistakes should not be repeated.

<sup>39</sup> It is also important to note that the Australia Group's existence helped in pushing negotiations on the CWC, see Benoit Morel, "How Effective is the Australia Group," in Bailey and Rudney, eds., *Proliferation and Export Controls*, pp. 57-68.

<sup>40</sup> The idea of merging the regimes was recommended nearly a decade ago in a study by the National Academy of Sciences, *Finding Common Ground: U.S. Export Controls in a Changed Global Environment*, p. 131. See also Leonard S. Spector and Virginia Foran, *Preventing Weapons Proliferation: Should the Regimes be Combined?* Report of the Thirty-Third Strategy for Peace, US Foreign Policy Conference, The Stanley Foundation, October 22-24, 1992. The reasons why this initiative were rejected at the time have been partly been addressed with the dissolution of COCOM. Also see, Theodor W. Galdi, *Proliferation Export Control Regimes: Options for Coordination or Consolidation* (Washington, DC: Congressional Research Service, 1993).

<sup>41</sup> For example, there is overlap of lists between the WA and MTCR in the area of rocket system technology and equipment for making rocket motors. There is also overlap between the NSG list and Wassenaar in the area of machine tools and uranium enrichment equipment.

<sup>42</sup> In the area of export control, the problem of what Renée de Nevers calls "regime overload" is real; too many overlapping and related regimes create bureaucratic headaches and impose major costs. See Renée de Nevers, "Regimes as Mechanisms for Global Governance," Project on World Security (New York: Rockefeller Brothers Fund, 1999), p. 12.

<sup>43</sup> Licensing requirements would still vary depending on the sensitivity of the technology or military item. The idea would be to ensure that states were drawing on similar information and using similar practices in making licensing decisions.

<sup>44</sup> See the NSG press releases available at the SIPRI website, <[http://projects.sipri.se/expcon/atcontrol\\_menu.htm](http://projects.sipri.se/expcon/atcontrol_menu.htm)>.

<sup>45</sup> The draft Export Administration Act is on-line at <<http://enzi.senate.gov/eaafin2.htm>>.

<sup>46</sup> This is not a new idea. Janne Nolan and other experts have argued that technology denial strategies are becoming less tenable in a global economy. See testimony of Janne Nolan, US House, Committee on Foreign Affairs, *Need to Reform U.S. Export Controls: Hearing before the Subcommittee on Economic Policy, Trade and Environment*, 103rd Congress, 1st sess., June 9, 1993.

<sup>47</sup> The Commerce Department's Export Enforcement Safeguard Verification Division carried out approximately 346 post-shipment checks in 1998. Offices of the Inspectors General Report No. 99-187, "Interagency Review of the Export Licensing Process for Dual-Use Commodities and Munitions," June 18, 1999. A few other countries conduct post-shipment checks on rare occasions.

<sup>48</sup> Figuring out how to limit the cost of such inspections, especially to industry, would be most challenging.

<sup>49</sup> See Michael Moodie, "The Challenges of Chemical, Biological, and Nuclear Weapons Enabling Technology," in Alves and Hoffman, eds., *The Transfer of Sensitive Technologies and the Future of Control Regimes*, p. 69.

<sup>50</sup> Department of Commerce, *International Conference on Export Controls: Proceedings*, St. Hugh's College, September 28-30, 1999.

<sup>51</sup> See draft Export Administration Act, especially pp. 68-69.

<sup>52</sup> See Michael Mastanduno, *Economic Containment: CoCom and the Politics of East-West Trade* (Ithaca: Cornell University Press, 1992).