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The Origins of COCOM:
*Lessons for Contemporary
Proliferation Control Regimes*

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Pragmatic steps toward ideal objectives



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Summary

The United States faces increasing dangers due to the proliferation of sensitive military technologies. However, efforts to control these technologies have been inconsistent and, at times, ineffectual. The shortcomings apparent in multilateral export controls threaten the ability of the United States to utilize its own military capabilities in regions of instability, while making such interventions more likely. The inconsistent application of controls also threatens the competitiveness of American business.

The fundamental constraint on the ability of the US to control the export of sensitive military and dual-use technologies results from the availability of alternative sources of supply. This fact, which was clearly demonstrated by the number of countries supplying technologies for the development of Iraq's missile program, for instance, would limit the effectiveness of any unilateral restraints on the part of the United States. According to US and UN officials, dangerous exports to Iraq by American commercial firms were only a fraction of those by other countries, especially Germany. However, the availability of alternative suppliers does not diminish the extent to which the export of American technology has contributed to the problem.

Despite these reported failures, the United States has had considerable experience in controlling technologies deemed to hold the potential to threaten its interests. The United States has attempted to control the export of sensitive technologies, together with its allies, since the end of World War II through the Coordinating Committee for Multilateral Export Controls (COCOM). These efforts have met with varying degrees of success.

The US experience in COCOM raises issues with regard to the scope of export controls, the policy goals behind them, the rationale to support those policies, and, fundamentally, the strategy used to implement them. The success of multilateral export control policy is dependent on the policies of our friends and allies, and on those of other supplier countries. The U.S. experience in CoCom also has illustrated the dangers of the politicization of export controls, the futility of unilateral controls, and the importance of common goals in the imposition of export controls. Even in periods of relative US strength, the position of the majority came to dominate. This does not, however, rule out the need for US leadership.

The imposition of multilateral export controls has been greatly complicated today by the absence of a single, relatively monolithic threat. The threat of ballistic missile proliferation, for example, comes from a variety of sources and the perception of that threat, within even the Missile Technology Control Regime (MTCR) countries, varies greatly.

Given the past experience of the US there appear to be at least four key elements for effective multilateral export control policy. First, creative US leadership is key to successful controls, but must also take into account the likely actions of the affected parties. Second, the goals of export control policies must be highly specific, clear, and agreed upon by the parties involved. Broad or ill-defined goals will undermine effective controls. Third, the internal political environment of the implementing parties must also

be accounted for so that realistic goals are set, neither beyond what might reasonably be expected, nor too limited as to be insignificant. Finally, export controls need to be implemented consistently. Member states must ensure that their implementing apparatus will act consistently, and that the parties to a multilateral export control regime will act in a coordinated and concerted manner. Some specific lessons derived from these elements follow.

- Implementation and enforcement need to be rationalized within and among member governments' responsible agencies.
- Harmonization of controls is the only guarantee of consistent application of controls.
- Export controls delay rather than deny technology acquisition.
- Export controls are a necessary but not sufficient mechanism to control technology transfers.
- Limited goals require selective and flexible controls to be effective.
- Unilateral actions on the part of supplier states will have minimal effect on proliferating states and may undermine existing controls.
- Other means of addressing the motivations of proliferating states need to be considered. Efforts to control, deny, or delay the acquisition of specific technologies, including both positive and negative incentives must be tailored to individual targets.
- Economic or technological interests may motivate some countries to control technologies of mass destruction when the alternative is less access to other needed technologies. The adoption of export controls to allow greater access to technology will likely prove an important incentive toward the development of export controls to counter proliferation. Export control regimes should not block access to technology but rather provide incentives to control select technologies so there might be broader access to other technologies.

For the short term, the United States will need to rely on supplier organizations like the MTCR, as well as bilateral contacts with non-adherents, to stem the flow of technology that contributes to proliferation concerns. The US should also acknowledge that interest in the acquisition of advanced military technologies can derive from legitimate security concerns. Until these concerns are mitigated, it is in the interest of the United States to encourage states to choose less destabilizing means for guaranteeing their security. In the longer term, the US needs to encourage states to resolve the underlying political problems that create the threats to their security where possible.

Preface

The Clinton administration, like those before it, is struggling to control the export of technologies that might contribute to the development of weapons of mass destruction and their means of delivery. At the same time, the executive branch can be expected to promote job-creating exports aggressively. These conflicting priorities makes effective export controls difficult to implement at home and tough to sell abroad. Yet multinational cooperation and coordination is essential if export controls are to stem the spread of destabilizing technologies.

The United States and its allies have had over forty years of experience in developing and implementing export controls in the Coordinating Committee for Multilateral Export Controls (COCOM). In this Stimson Center Report, John Henshaw draws lessons from the U.S. experience in COCOM, particularly from its formative period when both the controls and their multilateral framework were developed. The author shows how these lessons might be applied to the Missile Technology Control Regime (MTCR), and concludes with broader lessons of more general application.

We hope this study will help in the complex effort control technology transfers that contribute to the spread of weapons of mass destruction and their means of delivery. The author wishes to thank Mitch Wallerstein of the National Research Council of the National Academy of Sciences, Rick Cupitt of the Center for East-West Trade Policy of the University of Georgia, and Barry Blechman of the Stimson Center for their review and comments on the manuscript, and Jane Dorsey of the Stimson Center for her valuable production support. The author acknowledges responsibility for any errors, however.

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Contents

Summary	iii
Preface	v
The Origins of COCOM: Lessons for Contemporary Proliferation Control Regimes.....	1
COCOM	4
COCOM Organization.....	5
The Lists.	5
Exceptions.	6
Enforcement.	7
The Origins of COCOM.....	8
The Soviet Union and Technology Transfer.	8
The Origins of United States Export Control Policy.	10
US Leadership in COCOM.	13
The Goals and Implementation of US Export Control Policy.	15
Contemporary Proliferation Concerns: The Example Of Controlling Ballistic Missile Proliferation.....	21
The MTCR	23
Shortcomings of the MTCR	26
Implementing the MTCR within the US Government	26
Similarities and Differences Between COCOM and the MTCR.....	28
Applying The Lessons Of Cocom To Contemporary Proliferation Control Regimes.....	30
Lessons	33
Bibliography	37

**The Origins of COCOM: Lessons for
Contemporary Proliferation Control Regimes**

The Origins of COCOM: Lessons for Contemporary Proliferation Control Regimes

The United States faces increasing dangers due to the proliferation of sensitive military technologies. Although the US and its allies have sought to control the spread of such technologies for some time, the results so far have been mixed.

As we saw during the war in the Persian Gulf, Iraq was able to obtain sensitive military technologies from a variety of sources, including the United States. Iraq received technology and technical assistance for its missile programs alone from the Soviet Union, France, Germany, Brazil, Argentina, Egypt, and the United States. The situation is similar for other countries in the Middle East. The spread of missile technologies remains a serious threat to the stability of the region, as well as to other areas of potential conflict and, over the long run, to the United States itself.

Weakness in multilateral export controls threatens the ability of the US to utilize its own military capabilities in the region, while prompting regional instabilities that might make US intervention more likely. US access to oil and other strategically significant resources could be endangered by the presence of advanced military technologies in some regions. Moreover, US commitments to the preservation of democratic friends and allies could be made more dangerous and costly.

The evolving situation in the former Soviet Union presages further instability and even greater danger of the proliferation of destabilizing military technologies. Leaders of the Commonwealth of Independent States (CIS) have indicated recently that they are willing to sell not only technologically advanced finished products, but also the technological processes and data that could provide purchasers with the ability to build those finished products. This technology is apparently being offered to anyone with the ability to pay. It has been reported that scientists and engineers previously employed by Soviet military industries also are offering their services individually. US efforts to confront these problems, in part through assistance in the creation of International Science and Technology Centers in Russia and Ukraine, are unlikely to be adequate.

The fundamental constraint on the ability of the US to control the export of sensitive military and dual-use technologies is the availability of alternative sources of supply.¹ This fact, which was clearly demonstrated by the number of countries supplying technologies for the development of Iraq's missile program, limits the effectiveness of any unilateral restraints on the part of the United States. According to US and UN officials, dangerous exports to Iraq by American commercial firms were only a fraction of those by other countries, especially Germany.² However, the availability of alternative suppliers does not diminish the extent to which the export of American technology has contributed

¹ Dual-use technologies are those that have both civilian and military applications, and in the case of nuclear technology, those technologies that have both nuclear and non-nuclear applications.

² R. Jeffrey Smith, "Dozens of U.S. Items Used in Iraq Arms," *The Washington Post*, July 22, 1992, and "German Firms Primed Iraq's War Machine," *The Washington Post*, July 23, 1992.

to these problems. It has been estimated that up to 40 percent of the technologies employed in the Sa'ad 16 complex in Iraq came from US companies.³ The Sa'ad 16 complex had been used to develop a wide range of military hardware, including ballistic missiles and chemical weapons. Many of the companies involved received export licenses from the Department of Commerce. In fact, according to Representative Henry B. Gonzalez, Chairman of the House Banking Committee, about two of every seven export licenses approved between 1985 and 1990 "went either directly to the Iraqi armed forces, to Iraqi end-users engaged in weapons production, or to Iraqi enterprises suspected of diverting technology" to weapons of mass destruction.⁴ The unfolding controversy over US policy toward Iraq prior to the Gulf War illustrates the competing pressures on US policy. The US had an interest in controlling the spread of technology, but also had a perceived geopolitical interest in helping Iraq, to say nothing of the commercial interests of US companies.

Despite these reported failures, the United States has had considerable experience in controlling technologies deemed to hold the potential to threaten its interests. The United States, together with its allies, has attempted to control the export of sensitive technologies since the end of World War II. These efforts have met with varying degrees of success, depending to a great extent on the perception of threat, both in the United States and among its allies at the time. The Export Control Act of 1949 gave the Executive Branch authority to control exports that was unprecedented in peacetime; previously it had such legal authority only in times of war or national emergency. The US Government generated export control lists, and exports of items on those lists either were prohibited or required licenses from the Department of Commerce or the Department of State. And, shortly thereafter, the United States developed a parallel regime with its allies, the Coordinating Committee for Multilateral Export Controls, which came to be known as COCOM.

The United States and its allies were relatively successful at the outset in controlling the export of items on the COCOM lists to the Soviet Union and Eastern Europe. However, as the lists underwent periodic review, they began to reflect the expanding trade ties of the West Europeans with the East and a perception among most COCOM members of a diminishing threat. China, for example, has been granted special treatment under the COCOM controls since the early 1980s. In recent years, the number of items on the list have been shortened considerably, particularly with the 1991 "Core List" governing trade with the East today. And presently, the United States is in the process of a fundamental review of its policies as a consequence of the changed circumstances in Eastern Europe and the former Soviet Union.

A major reorientation of COCOM took place during the summer of 1992. At the June High Level meeting, COCOM members agreed to major changes in telecommuni-

³ See Congressional Testimony of W. Seth Carus, Washington Institute for Near East Policy, Subcommittees on Arms Control, International Security and Science, and on International Economic Policy and Trade of the House Foreign Affairs Committee, July 12, 1989.

⁴ "Dozens of U.S. Items Used in Iraq Arms," *The Washington Post*, July 22, 1992, and "German Firms Prime Iraqis War Machine," *The Washington Post*, July 23, 1992.

cations controls and, more importantly, to *increase* access to previously controlled technology by the newly independent republics of the former Soviet Union and the countries of Eastern Europe by way of a new COCOM Cooperation Forum.⁵ The forum is also to address proliferation concerns in these countries.

Further changes are likely. In fact, Poland, Hungary, and Czechoslovakia were accorded special status as early as February 1990. Since that time Hungary has been formally "deproscribed," and Poland and Czechoslovakia are in the process of becoming similarly classified.⁶ China, on the other hand, which had been accorded special status in the 1980s, has been frozen in this status because it has not made similar progress with regard to democratic reforms and human rights.

In exercising a leadership role in the development of COCOM controls, the United States benefitted from a unanimity of view within the government that was very unusual. This unanimity of view gave the Executive Branch considerable leeway to develop and implement the export control regime.

The United States' ability to persuade other nations to adhere to COCOM constraints is explained variously. One view emphasizes the leverage resulting from massive US aid to Europe immediately following World War II, as well as the Europeans' desire for continued access to US technology, as the motivating factors behind Europe's willingness to enter into a relatively strict system of controls. As US aid diminished and the level of indigenous technology available to the Europeans advanced, their interest in following the United States' lead in COCOM lessened, and they generally began to take a more pragmatic and trade-oriented view. An alternative interpretation holds that the Europeans were motivated by their own perception of the threat from the East, particularly after it was reinforced by North Korea's invasion of South Korea. When the threat to Europe no longer appeared imminent in the mid-1960s, the Europeans no longer took an interest in directly confronting the Soviet Union through a broad-based system of export controls.

The experiences of the Nuclear Non-Proliferation Treaty (NPT), the Chemical Weapons Convention (CWC), and the Missile Technology Control Regime (MTCR) illustrate the problems and prospects for contemporary multilateral export control regimes. The COCOM experience can help to illuminate the strengths and weaknesses of these regimes.

Today, there is relative unanimity of purpose with regard to curtailing the spread of nuclear, chemical, and missile technologies, especially as a result of the Gulf War. Within the Executive Branch, however, important policy differences regarding implemen-

⁵ In addition to COCOM's weekly meetings at which licensing decisions and notifications are made, periodic High Level meetings are held. Attended by senior diplomats, major policy decisions are made and policy differences are ironed out at these meetings. During the run-up to the 1992 meeting, the very necessity of continuing COCOM was questioned by some members.

⁶ Czechoslovakia has since divided into the Czech and Slovak Republics and their status remains unclear.

tation are reflected in the different priorities given to export controls by the relevant Executive departments.

There has been considerable debate between the Department of Defense, the Department of State, and the Department of Commerce as to how controls, especially those on dual-use technologies, should be implemented. The debate reflects, in part, the different missions of those departments. The Department of Defense is interested in national security in its broadest sense, and thus tends to be concerned about exports that might advance the military capabilities of potential adversaries. The Department of State is interested generally in the quality of US relations with other nations and is therefore sometimes reluctant to deny requests for desired technologies. The Department of Commerce is naturally sensitive to business interests and therefore also is reluctant to deny sales. While these interests are not mutually exclusive, they do create competing pressures on US policies and their implementation. Such pressures reflect the dual nature of US export policy. The policy attempts to promote exports generally, while at the same time restricting selected technologies to protect national security. This natural tension in the aims of policy is the reason for the difficulty of creating and implementing a consistent, effective export policy.

To understand what might contribute to the success of a coherent export control policy aimed at arresting or at least slowing the proliferation of nuclear, chemical, missile and associated technologies, this monograph reviews the past implementation of export controls, both unilaterally by the United States and multilaterally.

The monograph addresses the current problems facing the United States in the articulation and implementation of its unilateral and multilateral export control policies; looks at the example of the US experience in COCOM to assess its relevance to contemporary policies; assesses the objectives of the US and its allies in the COCOM regime; and, finally, determines what lessons might be drawn from the COCOM experience that have specific application to contemporary non proliferation regimes and to multilateral export and proliferation control policies generally.

COCOM

Over the past forty-three years COCOM has developed an organizational framework that has allowed it, with varying degrees of success, to perform the multilateral export control function for which it was developed. This organizational framework has included the development of control lists, allowances for exceptions, and national enforcement mechanisms. An understanding of the period during which these mechanisms were initially developed is crucial to the creation of any future regimes, for the history of COCOM shows, with some precision, what has made these mechanisms successful or has hindered their development.

The issue of what role technology transfer may have played in the Soviet Union's military and economic development is particularly relevant given our increasingly global economy and its propensity for technology transfer. Second, we must consider the origins of export controls and what effect these origins may have had on their implementation and effectiveness. Third, we must examine what role U.S. leadership may have played in the successes and failures of these controls. Finally, an understanding of the goals of

export control policy is crucial for determining the extent to which technology transfer can realistically be controlled, as well as the means required to do so.

These considerations have particular relevance to the development of new multilateral export control mechanisms today, and we can learn a great deal about organization and implementation by studying the development of COCOM controls.

COCOM Organization

COCOM is an informal agreement between the United States and its NATO allies (except Iceland), together with Australia and Japan, to control exports to what had been the Warsaw Treaty countries and to China. COCOM today controls strategic exports to the newly independent republics of the former Soviet Union, Albania, Bulgaria, the former Czechoslovakia, Poland, Romania, Mongolia, North Korea, Vietnam, and the People's Republic of China (PRC). The newly independent republics of the former Soviet Union, notwithstanding their likely inclusion in the new COCOM Cooperation Forum, are, in the eyes of COCOM, the inheritors of the Soviet Union's position as the target of COCOM's controls. Recently Hungary has been "deproscribed," and the former Czechoslovakia and Poland are in the process of having their status changed.

COCOM is an abbreviated form of the name of its operational or functional body, the Coordinating Committee for Multilateral Export Controls. The agreement does not have treaty status. The Coordinating Committee acts to coordinate the export control policies of the member countries with respect to specific goods identified on COCOM lists, to resolve differences of interpretation, and to provide for exceptions to the controls. COCOM decisions are made on the basis of unanimity. Because COCOM has no official treaty status, member countries must enact legislation consistent with the COCOM's goals and provide for its enforcement unilaterally.

COCOM provides a forum through which to achieve agreement on strategic criteria for controls; to formulate detailed lists of embargoed commodities and technical data; and to coordinate efforts to achieve effective enforcement of the embargo.⁷

The Lists. COCOM export control policy is based on three lists: the International Atomic Energy List, the International Munitions List, and the International Industrial List or International List. The first two lists are relatively straightforward as they deal directly with nuclear and military technology. The International Industrial List covers dual-use technologies and items not included on the other lists. Under the "strategic" criteria agreed to by COCOM in 1978, these included items designed specially, or used principally, for development, production, or utilization of arms, ammunition, or military systems; unique technology that, if acquired, would be of significant assistance to an adversary's military capability; and materials, equipment, and technology that might contribute to such a capability by allowing adversaries to overcome their military deficiencies sooner than would reasonably be expected.⁸ The items included on the list

⁷ For technical descriptions of the operation of COCOM controls, the author has relied upon, among others, Evan R. Berlack and Cecil Hunt, *Coping with U.S. Export Controls 1990* (Washington, D.C.: Practising Law Institute, 1990).

are subsumed under such broad categories as “computer equipment and measuring instruments,” which are further defined by technical parameters. The individual national control lists of many of the participating governments include most of the International Industrial List entries. Originally, items included on the International List were reviewed every three years. Today, reviews have become continuous, with one quarter of the International List under review at any given time. The development of the “Core list” in 1991 dramatically shortened the list of technologies to be controlled.

Exceptions. Items on the International List may be subject to exceptions. There are five levels of COCOM exception procedures that, depending on the level of the technology and its potential impact on military capabilities, require COCOM member agreement. These are:

- Administrative Exception Notes (AEN), where approval depends on specified technical characteristics;
- Notification, where COCOM must be notified in advance, but is not required to approve the export;
- The “forty-five day” procedure, where COCOM must make a short turnaround decision on a license application;
- Favorable consideration, where COCOM will grant exceptions on a case-by-case basis;
- And general embargo, where COCOM must unanimously approve the exception.⁹

The exceptions referred to as AEN appear as notations in the list itself. Goods covered by AEN may be licensed to an embargoed destination if the technological capabilities or characteristics of the goods fall below or outside the parameters specified in the note. In the case of sales subject to an AEN, only after-the-fact notification to COCOM is required.

There are also different advisory notes requiring notice and/or review. Goods requiring only COCOM notification are not controlled by the United States. In cases where an exception is requested that is not covered by an AEN, it is termed a “General Exception” case and submitted to COCOM under the rule of unanimity.

In the 1980s, when China no longer appeared to pose the kind of threat to the West it once had, COCOM implemented a general easing of restrictions on trade with the PRC.

⁸ See, for example, Panel on the Future Design and Implementation of U.S. National Security Export Controls, Committee on Science, Engineering, and Public Policy, National Academy of Sciences, *Finding Common Ground: U.S. Export Controls in a Changed Global Environment* (Washington, D.C.: National Academy Press, 1991), 65; and Panel on the Impact of National Security Controls on International Technology Transfer, Committee on Science, Engineering, and Public Policy, National Academy of Sciences, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition* (Washington, D.C.: National Academy Press, 1987), 97.

⁹ Richard T. Cupitt, “The Future of CoCom” in Gary K. Bertsch and Steven Elliott-Gower, eds., *Export Controls in Transition: Perspectives, Problems and Prospects* (Durham, N.C.: Duke University Press, 1992), 235.

The changes were embodied in what were termed "China Notes" to the COCOM lists. The notes described the levels of technology that could be exported to China. These levels were termed the "China Green Line," and technology below this line was to be freely available to China without reference to COCOM. However, following the Tiananmen Square crackdown, China appeared to have lost its privileged position. While the eastern European nations and the newly independent republics of the former Soviet Union have been granted greater access to telecommunications technology, for instance, China's status has not changed.

Enforcement. In addition to member countries' enforcement legislation, enforcement harmonization and cooperation takes place within COCOM. One form of enforcement cooperation is the Import Certificate/Delivery Verification (IC/DV) system to deter diversion of exports away from COCOM and other cooperating countries. Import Certificates require the importer to state that it will receive the goods and that they will not be reexported without the importing government's approval. A Delivery Verification form must be presented together with evidence of entry of the goods for certification by customs authorities. The DV form is then passed from the importer to the exporter, and from the exporter to its licensing authority. While the IC/DV system does not constitute an enforcement mechanism, it assists with national enforcement efforts.

Third country cooperation (TCC) is also important. COCOM-like controls on trade to third countries are difficult to maintain, but they have worked once third countries realize that it is in their own best interest to maintain access to COCOM country technologies. However, the effectiveness of third country cooperation depends on each country's ability to enforce relevant controls and only applies to COCOM targets. Provisions have been made for non-COCOM member governments (Austria, the PRC, Finland, Hong Kong, India, Ireland, Singapore, South Korea, Sweden, Switzerland, Taiwan, and Yugoslavia) to track COCOM-controlled items and to help enforce restrictions on their exports.

In 1988, COCOM members developed a "Common Standard" on licensing and enforcement, the adoption of which would make possible license-free intra-COCOM trade. US legislation passed in 1988 ended the requirement for a validated license to countries implementing an effective control system consistent with the principles agreed to in COCOM. Such a "common standard" is essential to the process of European integration that relies on the free movement of goods within the EC.

The Export Administration Amendments Act of 1985 established in Section 5(k) a special category for countries with export control regulations and enforcement mechanisms similar to those of COCOM countries. The designation is desirable because it grants benefits distinct from those accorded to other non-proscribed countries. These benefits include an enhanced distribution license, permissive reexport exceptions, the broad general license available to COCOM countries (G-COCOM), and the general license for intra-COCOM trade (GCT).¹⁰

¹⁰ Panel on the Future Design and Implementation of U.S. National Security Export Controls, *Finding Common Ground*, 67.

Third country cooperation remains an important mechanism for encouraging countries to implement effective export control policies. It is in this spirit that the new COCOM Cooperation Forum is being founded. The forum includes most of the former and current target nations of COCOM controls and has as its purpose to significantly widen access by those countries to advanced Western goods and technology; to establish procedures for ensuring against diversion of these sensitive items to military or other unauthorized uses; to assist the new states to develop their own systems of export controls; and to cooperate further on matters of common concern on export controls.¹¹ COCOM's focus is now both to control sensitive technologies bound for the former "Eastern Bloc," but also to assist these countries in developing their own export control mechanisms that will allow them *greater* access to western technology. The use of export controls to allow greater access to technology will likely prove an important incentive toward the development of export controls to counter proliferation.

The Origins of COCOM

The history of COCOM is important in understanding the role that technology transfer played in shaping the Soviet Union's economy and military capabilities and what impact US and allied export controls may have had on them. In some ways, the Soviet Union's dependence on Western technology and its relatively low level of technological development, especially in the immediate postwar period, mirrors that of some countries in the Third World today.

The Soviet Union and Technology Transfer. It has been estimated that prior to World War II the Soviet Union had almost no economic ties with the former central European countries and that trade with the industrialized countries of the West had shrunk to one percent of its GNP.¹² The war greatly stimulated the Soviet economy, however, and according to some analysts the industrial capacity of the USSR was greater after World War II, despite war damages, than it had been in 1940.¹³ How was the Soviet Union able to acquire the necessary technologies and increase its industrial capacity during and immediately following such a costly and debilitating war?

Despite the economic and political division of Europe, the period from World War II until 1953 was marked by the USSR's wholesale adoption of Western technologies. Technologies were acquired through lend-lease, reparations, confiscation of German assets, and, less significantly, through trade. Lend-lease and the "Supply Protocols" brought \$1.25 billion worth of modern American industrial equipment into the Soviet economy,¹⁴ 50 percent of which had reconstruction potential equaling one third of Soviet pre-war industrial output.¹⁵ Even Stalin acknowledged the considerable assistance that

11 Statement by Margaret Tutwiler/Spokesman, U.S. Department of State, June 2, 1992.

12 Franklyn D. Holzman, *International Trade Under Communism: Politics and Economics* (New York: Basic Books, 1976), 67; cited in Eugene Zaleski and Helgard Wienert, *Technology Transfer between East and West* (Paris: OECD, 1980), 43.

13 Anthony C. Sutton, *Western Technology and Soviet Economic Development* (Stanford, Ca: Stanford University Press, 1974), 345; cited in Zaleski and Wienert, *Technology Transfer*, 39.

14 Sutton, *Western Technology*, 14; Zaleski and Wienert, *Technology Transfer*, 39.

15 G. Warren Nutter, *The Growth of Industrial Production in the Soviet Union* (Princeton, N.J.: Princeton University Press, 1962), 214; cited in Zaleski and Wienert, *Technology Transfer*, 39.

Soviet heavy industrial enterprises received from the United States at the time.¹⁶ The acquisition of Western technology, and especially US technology, during and after the war was vital to the Soviet Union's industrial and technological development, but also illustrated the absence of an indigenous technological base.¹⁷

During the period of 1945-1953, technology ceased to flow eastward as it had, except for reparations and confiscations from countries occupied by the Red Army. A growing political division between East and West resulted from a series of events, including the Prague Coup and the Berlin Blockade, that were perceived in the West as proof that the Soviets intended to gain absolute domination of the countries of Eastern Europe and, eventually, Western Europe as well.

Soviet political dominance and isolation of Eastern Europe was matched by economic isolation of the Eastern bloc. The political isolation of the East made it easier for the USSR to dominate Eastern Europe economically: "[The] stern political and military measures required to accomplish this objective [of forging a bloc] were matched initially by dramatic economic measures."¹⁸ These measures made clear that the Soviets had the intention of going-it-alone. The Marshall Plan, originally envisioned as being open to all European countries, was rejected by the USSR, which went on to form the Council for Mutual Economic Assistance (CMEA), also known as COMECON, in January of 1949. The purpose of COMECON was to "establish wider economic cooperation between the countries of the People's Democracies and the USSR . . . with the task of exchanging economic experience, extending technical aid to one another, and rendering mutual assistance."¹⁹

It was in the context of these political, military, and economic divisions that the West instituted a system of restrictions on trade with the Eastern bloc. The Export Control Act (discussed below) and COCOM did not force the Soviets and their allies to internalize their trade, but was rather a response to the perception that they posed serious threats to Western security, including threats of economic warfare. The US and its allies, at the time, attempted to reform and liberalize the system of trade, but were denied by an intransigent Soviet Union and Eastern bloc. The Soviet Union's isolation ultimately hurt its own economic, industrial, and technological position vis-à-vis the West and would ultimately lead to a reversal of its behavior, as the Soviet Union lacked the indigenous technological base to maintain its isolation. By 1953, however, the die had been cast for decades to come.

While the Soviet Union benefitted from both wartime and immediate postwar technology transfers from the West, Germany, and the zones under its control, the subsequent economic and political division of Europe curtailed many of these sources. US and allied export controls, when combined with the Soviet Union's self-imposed

¹⁶ Sutton, *Western Technology*, 3; Zaleski and Wienert, *Technology Transfer*, 40.

¹⁷ While the assertion that Western technology was the most important factor in Soviet technological development is contentious, it clearly played a significant role.

¹⁸ Holzman, *International Trade*, 125; Zaleski and Wienert, *Technology Transfer*, 43.

¹⁹ Michael Kaser, *COMECON*, 2nd ed. (London: Oxford University Press, 1967), 12; cited in Zaleski and Wienert, *Technology Transfer*, 41.

isolationism in the period from 1949 to 1953, were relatively successful in stemming the flow of strategic and other goods and would appear to have significantly retarded the economic and military development of the USSR during this period. The brief history and relatively backward state of the Soviet Union's technological infrastructure, including its dependence on Western technologies and its relatively low level of indigenous technological development, made concerted allied action in COCOM more effective. In areas of the Third World with comparable relative levels of technological sophistication, there maybe potential for successful concerted action by suppliers to stem the flow of destabilizing military technologies.

The Origins of United States Export Control Policy. United States export control policy was born out of a system of wartime controls, but such controls are ill-suited to a peacetime environment because of contradictions between the ultimate goals of the respective controls and the strategies implemented to achieve them. In wartime, controls are implemented as a part of a broad economic and military strategy that has as its goal the defeat of an enemy. The controls required for this purpose are broad and relatively inflexible. In peacetime, however, goals are necessarily more selective, and the inability to mobilize society's total resources necessitates that they be pursued more flexibly. The US has found throughout the period of COCOM's existence that in order to achieve limited goals its policies needed to be both more selective and much more flexible. Similarly, in a regime such as the Missile Technology Control Regime (MTCR), for example, which has as its goal the denial or delay in the acquisition of specific technologies, narrowly defined, different controls and a different implementation process are required.

The origins of modern United States export control policy can be traced to the Trading with the Enemy Act of 1917. The Act states, in part, that "during the time of war or during any other period of national emergency declared by the President," the President is authorized to prohibit any kind of economic activity with designated "enemy" countries or nationals of those countries.²⁰ Subsequent legislation such as the International Emergency Economic Powers Act has been used when there has been no other export control legislation in force, as was the case until recently, or when the President has found it necessary to impose controls for foreign policy purposes.

The Neutrality Acts of the 1930s were, in part, attempts to keep the US out of potential war in Europe and Asia by disallowing sales of munitions and supplies to warring nations. The National Defense Act passed in 1940 to impose controls consistent with US policy in World War II similarly proscribed the export of munitions, at the President's discretion. The pertinent section of the National Defense Act of 1940 reads:

Sec. 6. Whenever the President determines that it is in the interest of national defense to prohibit or curtail the exportation of any military equipment or munitions, or component parts

²⁰ Gary K. Bertsch, *Controlling East-West Trade and Technology Transfer* (Durham, N.C.: Duke University Press, 1988), 5. See also Trading with the Enemy Act of 1917, C. 106, 40 STAT. 411, October 6, 1917.

thereof, or machinery, tools, or material, or supplies necessary for the manufacture, servicing, or operation thereof, he may by proclamation prohibit or curtail such exportation, except under such rules and regulations as he shall prescribe. Any such proclamation shall describe the articles or materials included in the prohibition or curtailment contained therein. In case of the violation of any provision of any proclamation, or of any rule or regulation, issued hereunder such violator or violators, upon conviction, shall be punished by a fine not more than \$10,000, or by imprisonment for not more than two years, or by both such fine and imprisonment...²¹

As the Cold War heated up after World War II, and particularly when the Berlin Blockade made clear the ideological and strategic threat posed by the Soviet Union, the US Congress enlarged on this precedent by passing the Export Control Act of 1949.

The new legislation imposed controls that went beyond the “emergency” controls envisioned in the Trading with The Enemy Act. The new peacetime export control system would rely on selective export licensing to “protect national security and to foster foreign policy objectives.”²² In the words of the Act,

Sec.2. The Congress hereby declares that it is the policy of the United States to use export controls to the extent necessary (a) to protect the domestic economy from the excessive drain of scarce materials and to reduce the inflationary impact of abnormal demand; (b) to further the foreign policy of the United States and to aid in fulfilling its international responsibilities; and (c) to exercise the necessary vigilance over exports from the standpoint of their significance to the national security.²³

The export controls described in the act “operate via a licensing system which controls shipment of specific goods and technologies to countries with interests perceived to be adverse to those of the United States. The Act was passed to ensure that nothing of military, strategic, and for a period between 1962-69 ‘economic’ significance was exported to communist countries.”²⁴ The Act essentially carried the controls embodied in the National Defense Act of 1940 into the postwar period.

As the Secretary of Commerce testified in defense of the ECA,

The responsibilities assumed by the United States in enacting the Foreign Assistance Act of 1948 have only emphasized the impor-

²¹ 76th Congress, 3rd Session—Chapter 508—July 2, 1940, National Defense Act of 1940 (54 Stat. 703), United States Statutes at Large (Washington, D.C.: U.S. Government Printing Office, 1941), Sec. 6.

²² Bertsch, *Controlling East-West Trade*, 5.

²³ Export Control Act of 1949, Chapter 11—Public Law 11.

²⁴ Bertsch, *Controlling East-West Trade*, 5.

tance of export controls. For some time now, it has been our general practice to fix individual country quotas upon the basis of need. Moreover, since March 1, 1948, we have had under individual licensing control, shipments of practically all commodities to all European and certain related destinations. This enables us to keep United States exports to Europe within ECA-approved [Economic Cooperation Act of 1948] programs. It is also being used to give a priority, in effect, to the requirements of the participating countries over those of other European countries.²⁵

While the primary concern in the Export Control Act was to relieve commodity scarcities in the United States and certain European countries, allowing, generally, no shipment of selected materials to a nonparticipating country in Europe to be licensed until the requirements of the participating countries had been met, the act also made possible the close scrutiny of shipments of industrial materials which may have had direct or indirect military significance. To quote again from this legislative history: "In light of the growing concern of democratic nations over the policies of the Eastern European nations, it is quite clear that our national security requires the exercise of such controls to complement export controls over arms, ammunition, and implements of war which are administered by the Munitions Control Board and the State Department."²⁶

The Export Control Act was administered by the Department of Commerce, which had previously administered controls during World War II to ensure availability of supplies for the allied war effort. The Act preserved the President's flexible powers to control and license, and it provided improved enforcement and control mechanisms such as interdepartmental review (Sec. 4(a)) and mandatory consultation with export trade representatives (4(b)).²⁷

The classification of an export determined whether it received a "general" or a "validated" license for export. An exporter could sell non strategic commodities to certain countries within the scope of a "general" license, which required no formal application procedures and was simply a classification placed on the item by the exporter. Most exports to the Soviet Union and other communist countries fell within the category of mandatory controls and required a "validated" license. All goods covered by the "validated" licensing procedures required the exporter to apply formally for a license which was reviewed by the Department of Commerce prior to shipping the goods in question.²⁸

²⁵ U.S. Code Congressional Service, 81st Congress, First Session 1949, Vol. 2, "Legislative History of the Export Control Act of 1949". The Secretary went on to describe the legislation as in furtherance of Section 112 (g) of the Foreign Assistance Act. Section 112 (g) of the Foreign Assistance Act reads, in part, "no export shall be authorized pursuant to the authority conferred by Section 6 of the Act of July 2, 1940 (54 Stat. 714) [The National Defense Act of 1940], including any amendments thereto, of any commodity from the United States to any country wholly or partly in Europe which is not a participating country . . . unless such export is otherwise in the interest of the United States."

²⁶ U.S. Code Congressional Service, "Legislative History of the Export Control Act of 1949," 1096.

²⁷ See the Export Control Act of 1949, Chapter 11—Public Law 11, February 26, 1949.

²⁸ Gary K. Bertsch, "US Export Controls" in Gary K. Bertsch and John R. McIntyre, eds., *National Security and Technology Transfer* (Boulder, CO: Westview Press, 1983), 127.

US Leadership in COCOM. After a postwar attempt by England and France to form a system of bilateral treaties governing export controls collapsed,²⁹ the US and its European allies organized the Coordinating Committee for Multilateral Export Controls. COCOM greatly strengthened the unilateral efforts of the US and its allies to restrict transfers of strategic goods to the USSR and the nations it occupied. This multilateral mechanism made possible closer coordination and cooperation among the Western allies in restricting the flow of technology to the East. Discussions in the new forum led to the development of lists of items subject to multilateral export controls. The lists were used to guide member governments in the execution of their national export control policies, but did not, however, actually replace national, unilateral lists.

To persuade its allies to participate in COCOM, the United States, and specifically the US Congress, established sanctions in the Cannon Amendment to the Supplemental Appropriations Act of 1951 and, more importantly, in the Mutual Defense Assistance Control Act of 1951, more commonly known as the Battle Act.³⁰ Named for its chief sponsor, Congressman Laurie C. Battle of Alabama, the Act, subject to certain exceptions, called for the termination of military and economic aid to countries engaging in trade with countries that threatened the security interests of the United States, including the Soviet Union and countries under its domination. In this way, the Congress attempted to assert a legislative role in the multilateral enforcement of export controls, an area that had been generally recognized to be under the purview of the President. The tension between Congress and the Executive created by this legislation was to mark all subsequent export control legislation.

Congress had passed the Act out of concern that the controls mandated under the Export Control Act lacked the power of enforcement internationally. Even under the Act, the President was left with discretionary powers as to enforcement. The President, in fact, was to grant blanket exemptions for most of the European allies throughout the decade. While the dominant position of the United States after the war allowed it to influence alliance policies, the United States increasingly bowed to alliance pressures throughout the 1950s. By the 1960s, the resurgence of the Western European and Japanese economies, changes in the communist bloc, an increased interest within the Soviet bloc to trade with the West, and the period of *détente* led to reassessments of both the communist threat and alliance relationships.

Indeed, the Korean Armistice in 1953 had led some Europeans to begin to question the comprehensive controls of COCOM, subsequently forcing the United States to agree to changes in the COCOM lists in 1954 and 1958. Even after the COCOM lists were relaxed, however, the US itself continued to use the Export Control Act to pursue more restrictive controls on exports by its own nationals.

²⁹ Bertsch, "US Export Controls," 127.

³⁰ The Mutual Defense Assistance Control Act of 1951, Chapter 575—Public Law 213, October 26, 1951.

The 1960s brought about a period of closer trading relations between Western and Eastern Europe. Despite periods of tension, the United States developed a new appreciation at the end of the decade for the role that positive economic interaction might play in influencing Soviet policy and behavior. In 1969, the United States passed the Export Administration Act that reflected these new realities. While the 1969 Act addressed traditional concerns over the availability of certain materials and the potential for some exports to contribute to the military capabilities of an adversary, it also dealt with the concern that, "the unwarranted restriction of exports from the United States has a serious adverse effect on our balance of payments; and [that] the uncertainty of policy toward certain categories of exports has curtailed the efforts of American business in those categories to the detriment of the overall attempt to improve the trade balance of the United States."³¹ The concern over the potential detrimental effect of the controls upon the US trade balance, and US business interests generally, was new to the 1969 Act.

The attempt to bring into balance the need to encourage trade and to restrict certain exports has come to dominate the debate over export controls. The recent reports of the National Academy of Sciences on this subject have been particularly emphatic on this point. They express explicit concern over how export controls have affected American competitiveness in world markets.³² The need to make the licensing process more efficient also was addressed in the 1969 Act, as was the need for input from private industry. Most importantly, the 1969 Act provided that exports would not be restricted if they were freely available from other sources, as determined by the President.³³ There was an implicit realization that the period of unilateral US restraints more tightly circumscribed than those of its allies needed to come to a close.

The 1979 Export Administration Act attempted to reconcile the goals of the 1969 law with the realities of its implementation, which were continuing to evolve. The legislation, once again, tried to improve the efficiency of the licensing process and provided for periodic review of the items being controlled. It was noted at the time that items subject to the licensing process often experienced long delays, making US suppliers unreliable and forcing some to abandon some markets altogether.³⁴

Further, the Defense Science Board had recommended a new approach to controlling exports in the "Bucy Report" (1976). The report called for the identification of technologies critical to military research and development that would preserve technological lead time and, consequently, military advantage. All other technologies presumably could be traded freely. It was noted in the legislative history of the 1979 Act that

31 Export Administration Act of 1969, Public Law 91-184; 83 STAT. 841.

32 Panel on the Impact of National Security Controls on International Technology Transfer, Committee on Science, Engineering, and Public Policy, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition*; see also, Panel on the Future Design and Implementation of U.S. National Security Export Controls, Committee on Science, Engineering, and Public Policy, *Finding Common Ground: U.S. Export Controls in a Changed Global Environment*.

33 Export Administration Act of 1969.

34 U.S. Code Congressional Service, 96th Congress, First Session, 1979, Vol. 2, "The Legislative History of the Export Administration Act of 1979," 1149.

this “critical technologies” approach, having been recommended in 1976, had not been implemented.³⁵

By the 1970s, changes in the level of technological sophistication in the Soviet Union and the quality of its relations with the West, and specifically with Western Europe, led to, if not always better relations, at least relations between perceived equals. These relations tended to include broader economic interaction than before and a more thorough integration in the global economy. While that integration helped shape the Soviet Union’s role in the world from that time on, it no longer represents a useful analogy for the model proliferation regimes we are trying to identify in this monograph. What follows is an explication of the (at times differing) goals and perceptions of the US and the Western Europeans in the COCOM regime and how they influenced the regime’s success.

The Goals and Implementation of US Export Control Policy. The motivations of the parties to a multilateral export control regime can determine the effectiveness of that regime, and at various times there have been important differences among the parties, and even within the US Government, over what the goals of COCOM ought to be. Similarly, there have been differences over how the US might have influenced other members, and how the parties to the regime, together, may have influenced Soviet behavior. These differences have been examined in the literature of COCOM and illustrate the competing influences on export control practices and policies.

United States’ policy rationales for export controls have included the use of controls as “bargaining chips, the denial of advanced technology to the East, delaying the acquisition of critical technologies related to weapons systems, assuring fair return to the home country on the technologies sold by Western firms to the East, their use as a signaling device—as a symbolic tool to express pleasure or displeasure with a target country’s policies, and, finally, as an insurance policy against the possibility of war.”³⁶ The United States, at times, has even held the ambitious objective of the outright denial of a technology to the Soviet Union. The allies generally have viewed the goals of COCOM as being more narrowly confined to delaying acquisitions of critical technologies by the East. This difference in goals created conflicts between the allies and the US and, as a consequence, sometimes lessened the effectiveness of these regimes.

At the core of the dispute are so-called dual-use technologies. While the United States and its allies have usually agreed upon the need to restrict the export of commercial products and technologies that may have direct military significance to the East, there has often been conflict within COCOM over the need to control dual-use items. Despite the general consensus on the need for controls on militarily significant or “strategic” goods, such issues as the scope of the control list on dual-use technologies, the interpretation of control parameters, and the implementation and enforcement of controls have remained areas of contention. These conflicts sometimes caused COCOM to be an ineffective instrument of policy, turning it into a source of friction among the allies.

³⁵ U.S. Code Congressional Service (1979), “Legislative History,” 1149.

³⁶ Gary K. Bertsch and John R. McIntyre, “US and Alliance Export Control Policies” in Gary K. Bertsch and John R. McIntyre, eds., *National Security and Technology Transfer*, 121-122.

In the eyes of some observers, the effectiveness of COCOM depended largely on the role of the United States and its leadership. The United States has been described as the “conscience of COCOM,”³⁷ leading by its example, providing the strategic justification, obtaining the compliance of non-COCOM suppliers, and providing discipline within COCOM by checking other countries’ political and institutional inclination to promote, rather than control, exports.³⁸

Michael Mastanduno argues that while the US has been inconsistent and, at times, capricious, in exercising export controls in a multilateral context, it has played an important leadership role.³⁹ He argues that US goals were broader than simply stopping militarily significant exports. At different times, the US has used COCOM to gain leverage on Soviet foreign, and even domestic, policies. From the start, however, the Europeans had problems with such an ambitious view of COCOM’s potential leverage, denying even a theoretical linkage between export control rules and the internal behavior of the Soviet government.

To minimize conflict within COCOM, the United States over time had to lessen the administrative and economic burdens of the control system by agreeing to progressively decontrol items considered less critical and by responding to export licensing requests of other COCOM members in a timely and predictable manner. The informal structure of COCOM left virtually total discretion in the hands of member governments for enforcement. As the burdens of enforcement increased, incentives to faithfully enforce the rules diminished. Overly comprehensive controls strained resources and provided excuses for non enforcement by those governments that were ambivalent in any event. The US was required to be firm in enforcing the rules at times, but at other times was forced to be more accommodating. When the United States failed to recognize or to play its appropriate role, it contributed to the decline of the effectiveness of COCOM.⁴⁰

Over the years, United States export control policy itself has been fragmented. US controls have often been implemented inconsistently and unevenly by the responsible agencies, and the government has often been insensitive to the cost of controls.⁴¹ This has sometimes made US ability to lead and to promote the realization of its interests in COCOM more difficult.

In short, the effectiveness of COCOM has been tied to the quality of US leadership. The tendency in US policy has been to respond to what US policymakers considered adverse Soviet behavior with economic punishments, and to behavior they considered beneficial with economic rewards, without consideration for consistency in the application of controls. This inconsistency has worked to the detriment of American and foreign business interests. Consistent policies and, even more, consistent implementation of

37 Michael Mastanduno, “CoCom and American Export Control Policy,” in *East-West Trade and the Atlantic Alliance* (London: Macmillan, 1990), 192.

38 Mastanduno, “CoCom and American Export Control Policy,” 192.

39 See Michael Mastanduno, “The Management of Alliance Export Control Policy: American Leadership and the Politics of CoCom,” in Bertsch, ed., *Controlling East-West Trade*, 241-279.

40 Michael Mastanduno, “CoCom and American Export Control Policy,” 193.

41 Mastanduno, “CoCom and American Export Control Policy,” 193.

policies, also require a consensus that often has not existed among the Executive departments responsible for export control policy. These problems have caused the business community to become alienated from the process and to react with hostility toward the controls. There have been frequent complaints by many businessmen that the process has discouraged trade because of inadequate foreign implementation of controls and because of complications, delays, and other difficulties in filing for licenses (this over and above business' general aversion to any licensing system whatsoever). What led to the US's approach to COCOM that has alienated both its allies and its business community?

An often harsh critic of US policies during the Cold War, Gunnar Myrdal, has asserted that the "embargo policy was a preordained failure."⁴² He stated further that the United States' embargo policy was

pressed on her West European political and military allies and, with varying degrees of compliance, upon the whole non-communist world. The scope of the intended restrictions and diversions of international trade increased steadily until 1953, when financial aid from the US had petered out and the military aid under the NATO arrangements had assumed more modest dimensions.⁴³

Gunnar Adler-Karlsson, the author of an influential study on COCOM in 1968, agreed. He recognized the implicit US threat to deny aid to allied governments in the early 1950s as the main lever with which West European governments were persuaded to cooperate with the embargo policy. Both Myrdal and Adler-Karlsson believe that the allied consensus on export control policy would never have crystallized without the implicit threat of the denial of aid.

Myrdal goes on to suggest that US export policies were actually welcomed by the leaders of the USSR because they served as an "almost incontrovertible argument for consolidating the Communist bloc."⁴⁴ While it is arguable that US export policies had some effect in hardening the other camp, they were hardly responsible for the kind of causal relationship Myrdal describes. With regard to US influence over its European allies, even Adler-Karlsson admitted that while the US Congress imposed some strong conditions, and while the Europeans were responsible for some clear violations, the US never cut off aid. If the US had such influence, it was never used explicitly.

A second theory declares Western export controls a failure but cites wholly different reasons. Anthony Sutton, for one, believes that the West lacked the resolve to impose

⁴² There are at least two theories of what motivated the West, and especially the United States, in developing and implementing its post-war export control policies. These theories are described in Gunnar Adler-Karlsson, *Western Economic Warfare 1947-1967: A Case Study in Foreign Economic Policy* (Stockholm: Almqvist Wiksells, 1968) and Anthony C. Sutton, *Western Technology and Soviet Economic Development* (Stanford, Ca.: Hoover Institution Press, 1974), respectively.

⁴³ Gunnar Myrdal, in Gunnar Adler-Karlsson, *Western Economic Warfare*, xi.

⁴⁴ Gunnar Myrdal, xii.

strict controls and turned a blind eye to the role that Western technology played in the development of Soviet technical capabilities. Sutton argues that, "by far the most significant factor in the development of the Soviet economy has been the absorption of Western technology and skills . . . [T]echnology transfers are the lifeblood of the Soviet industrial process."⁴⁵ He goes on to state that the Soviet system was incapable of technical innovation. Sutton has produced perhaps the most comprehensive description of Soviet technical development during this period, and the data do suggest a significant impact of Western technology despite efforts to control exports.⁴⁶

There is a third view which falls somewhere between those of Adler-Karlsson and Sutton. Michael Mastanduno, for example, argues that in the early postwar period the creation of the liberal international economic order was characterized by free movement of goods and capital across borders and by stable exchange rates. These developments were contradicted by the US strategy of denying the benefits of economic exchange to the USSR, Eastern Europe, and the PRC. At the time, the Executive Branch of the United States Government was faced with few domestic constraints in its exercise of foreign policy powers. It had the support of Congress, the acquiescence of the business community, and was relatively unified in its approach to these problems. The Executive Branch had a wide variety of policy instruments and benefitted from a widespread perception of the close relationship between economic controls and military security.

For the US strategy to remain successful, however, the continued cooperation of the allies was required. By some accounts, multilateral export controls reflected American preferences only for the relatively brief period from 1950 to 1953; following that time, the less stringent position of the allies became dominant. American policy had to be adjusted to accommodate those preferences, even in this period of undisputed American hegemony,⁴⁷ which in turn raises the question of American dominance in the controls process.

From this perspective, economic coercion was not an effective instrument. Executive Branch officials recognized this and sought to separate the issues of aid and trade despite congressional efforts to force linkages. They thought denial of economic or military aid to allies for violations, or prospective violations, of export controls was not realistic. US interest in alliance overshadowed its ability to coerce its allies to comply with American preferences with regard to East-West trade.

With allied cooperation a necessity, and coercive instruments thus neutralized, trade strategy was determined by the preferences of West European leaders, particularly the British and the French. In 1950, belief that military conflict was likely argued for a

⁴⁵ Anthony C. Sutton, *Western Technology and Soviet Economic Development*, xxv-xxx.

⁴⁶ Anthony C. Sutton, *Western Technology and Soviet Economic Development, 1917 to 1930* (Stanford, Ca.: Hoover Institution Press, 1968), *Western Technology and Soviet Economic Development, 1930 to 1945* (Stanford, Ca.: Hoover Institution Press, 1971), *Western Technology and Soviet Economic Development, 1945 to 1965* (Stanford, C.A.: Hoover Institution Press, 1973).

⁴⁷ Michael Mastanduno, "Trade as a Strategic Weapon: American and Alliance Export Control Policy," in John Ikenberry, David A. Lake, and Michael Mastanduno, eds., *The State and American Foreign Economic Policy* (Ithaca, N.Y.: Cornell University Press, 1988), 122-123.

shift to nuclear deterrence based planning. The strategy of maintaining a broad embargo no longer justified the political and economic costs. And the Europeans, accordingly, pushed for a revision of the multilateral export control system.⁴⁸

Mastanduno outlines three distinct export control strategies: tactical linkage, strategic embargo, and economic warfare. Tactical linkage is described as conditioning trade to the behavior of a targeted country. A strategic embargo permits most exports, except those that contribute significantly to an adversary's military capability. Economic warfare constitutes a comprehensive denial of exports with military applications, as well as those likely to contribute to economic growth and development.⁴⁹

Mastanduno suggests that by 1948 the strategy chosen by US officials resembled economic warfare. These officials viewed the relationship with the East as a long-term geopolitical struggle. It was perceived that the Soviet Union had a war economy, that war with the Soviet Union was inevitable, that while the Soviets were relatively autonomous, they were dependent on the West for items vital to military and industrial production. The economic lesson of World War II drawn by US officials was that the adversary must be met with economic, as well as military, containment.

Several factors contributed to this perception. US companies, unlike the Europeans, had no real stake in Eastern markets and remained skeptical about the benefits of trading with them. The political climate in the United States was one of extreme anti-communism and thus supportive of economic warfare. Congress generally agreed with the Executive and gave it the power to implement controls.⁵⁰ With the passage of the Export Control Act of 1949, the Executive, while committing the US to a liberal world economy marked by minimal government intervention, was simultaneously empowered by Congress to interfere with global trade.

The allies preferred the strategy of strategic embargo. They were motivated by economic considerations having to do with their traditional trading relationships with the East, especially in natural resources like coal, timber, and grain that could be paid for with manufactured goods. The Europeans also had a keener appreciation for the relationship between economic and military warfare. They did not want to appear to be threatening the Soviets, especially when their own defenses were weak and they were uncertain about the US commitment to their defense.

In the early 1950s, US export controls were divided into two lists. List 1A contained items of primary strategic significance under terms of the strategic embargo, including items of direct military utility and advanced technology. List 1B included items of secondary strategic significance under the terms of economic warfare, including items of general industrial significance. In November 1949, COCOM was formed, with the allies

48 Mastanduno, "Trade as a Strategic Weapon," 123-124.

49 Michael Mastanduno, *Between Economics and National Security: The Western Politics of East-West Trade* (Ph.D. diss., Princeton University, 1985), 32-71.

50 Mastanduno's arguments, which follow, are covered in detail in his chapter "Trade as a Strategic Weapon: American and Alliance Export Control Policy in the Early Postwar Period," in John Ikenberry et al., *The State and American Foreign Economic Policy*, 121-150.

accepting List 1A as the basis for controls. Deliberations and decisions were to be kept secret and informal. COCOM was not accorded treaty status, and compliance was to be voluntary. The regime was to be disassociated from NATO so as not to suggest an offensive posture. Indeed, some of the countries did not even formally acknowledge their participation. By 1951, however, at US insistence, a substantial portion of the 1B list also had been accepted for control. These lists became COCOM lists I and II. Mastanduno argues that broadening COCOM's controls to include both lists I and II created a condition of economic warfare.

In 1950 and 1951, Congress passed successive pieces of legislation, described above, explicitly linking US aid to Western Europe to full acceptance of export controls. During the period from 1950 to 1953, US economic assistance was far more valuable than East-West trade to the Europeans. However, the Economic Cooperation Administration had reservations about such cross issue linkage and feared that it might jeopardize COCOM altogether. Because COCOM was secret, Congress could not obtain detailed information about the allies' cooperation. Many in Congress remained isolationist, wary of President Truman's unilateral commitment to European defense.

In Mastanduno's view, the Battle Act allowed the Congress to reestablish its position in the foreign policy process. Though the Executive retained responsibility for implementing coercive legislation, the National Security Council granted a blanket exemption to NATO countries and Japan for the Cannon Amendment and later for the Ken Amendment. Exceptions to the Battle Act were granted to Denmark, Italy, the Netherlands, Britain, and France in 1952, and to West Germany, France, Norway, and Britain in 1953. How to deal with the Battle Act became a subject of discussion in COCOM. The threat of aid denial was not credible because of officials' distaste for coercion, their failure to impose sanctions, and their explicit collaboration with the allies to avoid sanctions. Export controls were part of a larger multilateral security effort which denial of aid would undermine.

According to Mastanduno, the turning point for the Europeans' acceptance of economic warfare was the outbreak of the Korean War. The war created a security crisis in Europe, and rearmament was the primary response. US military aid and troops were proof of US commitment to the defense of Europe. By this time the threat to cut off aid was even less tenable. Mastanduno states that it was the belief that the Soviets were preparing for war that lent credence to the view that the Soviet Union's economy was a war economy. At this point, economic considerations became secondary to military ones and consequently led to the Europeans' acceptance of the necessity to wage economic warfare. In January 1951, 175 new items were added to the COCOM lists. Economic warfare had become a complement to the military response to the Soviets.

By late 1953, the COCOM partners of the US, led by the United Kingdom, sought a dramatic liberalization of export controls. In 1954, the members agreed to reduce the control list by 50 percent and narrowed the criteria to more closely reflect a strategic embargo, focusing on items used primarily in military production. The United States was forced to change its position with regard to multilateral export control policy despite its dominant role, although US lists remained much more restrictive. US officials were constrained by their desire for political cohesion and military and economic strength in the still new alliance.

The beginning of the European economic recovery created a need for export outlets, and the Soviet Union and Eastern Europe represented such markets. US moves to restrict trade ran counter to its announced goal of a liberal trading order and did not make sense so long as products were available from European sources. Mastanduno describes this difficulty for the United States as a case where power-as-resources did not necessarily translate into power-as-influence.⁵¹

In Mastanduno's view, America's commitment to the alliance proved an important source of leverage to the smaller and less politically and militarily powerful states. To be implemented effectively, economic warfare requires not coercion, but an immediate threat to security. Export control policy's direct relationship to national security and its development in a crisis environment provided the Executive branch with sources of domestic strength normally associated with domestically "weak" states, as the US has been characterized by some scholars.⁵² The Executive branch was able to formulate a coherent policy and to overcome congressional opposition to the way the strategy was formulated internationally, but the situation did not allow the US to overcome international constraints, such as alternative sources of supply.

The future of COCOM remains uncertain, but the lessons of its early years remain important. Recent changes in COCOM are an attempt to rationalize its existence in a changed world. The changed situation in Eastern Europe, the uncertain situation of the Commonwealth of Independent States, and the evolving economic integration of Europe will all strongly influence its future, but the issues raised in its forty-odd years of existence remain real and will continue to arise in the implementation of future multilateral export control regimes. The issues identified in COCOM's history will affect not only the prospects for the regime itself, but also for other regimes intended to slow the proliferation of nuclear and chemical weapons, missiles, and dual-use technologies to developing countries. The next section describes one such regime intended to control missile proliferation. We conclude by examining how the lessons of the early years of COCOM might help to increase the likelihood of the success of these contemporary regimes directed at new kinds of threats.

Contemporary Proliferation Concerns: The Example Of Controlling Ballistic Missile Proliferation

Ballistic missiles pose a special threat to United States security interests. They are fast flying, difficult to detect and counter, and pose a threat of surprise attack. They can raise tensions and, even when the threatened state is well defended, encourage military commanders to put their forces on hair-trigger postures. It has been estimated that some 15 to 20 countries will likely have ballistic missile technology that can be armed with chemical, biological, or nuclear warheads by the end of the century.⁵³ Ballistic missiles clearly pose a world-wide threat, one that cannot be countered by the United States alone.

⁵¹ Mastanduno, "Trade as a Strategic Weapon," 148.

⁵² See, for example, Stephen Krasner, *Defending the National Interest: Raw Materials Investments and U.S. Foreign Policy*, 55-56; and Ikenberry, Lake, and Mastanduno, eds., *The State and American Foreign Economic Policy*, 11.

The technologies of ballistic missiles are at once relatively simple and straightforward, but also, at least for a time, beyond the reach of most Third World countries. Not far into the future, however, key technologies will no longer be beyond their reach.

United States security interests are threatened by the presence of destabilizing weapons in regions of potential conflict, in regions on which we are dependent for vital resources, and in areas where US friends and allies may be imperilled. Syria, Iran, Saudi Arabia, and Egypt all have missiles that can reach Israel, and Israel itself has an advanced ballistic missile capability. Iraq presumably has been disarmed of this capability. All of these countries, with the exception of Saudi Arabia, also have a chemical weapon capability.⁵⁴

Trends in the proliferation of ballistic missile technologies are disturbing. The know-how to build these weapons has spread. There is a growing demand for these missiles to deal with perceived threats to security, to enhance national prestige, and to foster economic development. These demands are complemented by the industrialized world's interest in gaining political influence in potential proliferating states, in gaining support for its industries, and in some cases by its desire for hard currency. The industrialized world has not accorded the same high priority to stopping missile proliferation that it has to chemical or nuclear proliferation.

Missile programs can be undertaken under the guise of other activities, especially the development of space launch vehicles. The problems represented by such dual-use technologies will continue to pose problems for the effort to stem missile proliferation. A regime designed to control proliferation should not impede legitimate peaceful trade, but at the same time it must take into account the possible diversion of dual-use technologies.

The technologies currently available to missile proliferators are such that their weapons are relatively inaccurate, making them more useful as terror weapons than as militarily significant weapons. Because of this inaccuracy, existing ballistic missiles in Third World nations are more suitable for use with mass destruction payloads—chemical, biological, and nuclear—than with conventional warheads designed to destroy military targets.

The United States policy in response to this threat has been to increase the political, diplomatic, and economic costs of buying, building, or selling these weapons and related technologies, to deny the sale or transfer of US missiles and their components, to delay the acquisition of missiles by new nations by increasing the time and the resources required to do so, to increase the international pressure on proliferating states, and to limit potential damage where it is not possible to deny or delay the spread of such

⁵³ Vincent DeCain, Deputy Assistant Secretary of State, Bureau of Political-Military Affairs, Testimony before the Subcommittees on Arms Control, International Security and Science, and on International Economic Policy and Trade of the House Foreign Affairs Committee, July 12, 1989.

⁵⁴ Testimony of Leonard Spector of the Carnegie Endowment before the Subcommittees on Arms Control, International Security and Science, and on International Economic Policy and Trade of the Committee on Foreign Affairs, House of Representatives, July 12, 1989.

weapons.⁵⁵ The Missile Technology Control Regime (MTCR), discussed below, is one instrument created by the US and its allies to achieve these ends. If implemented fully, it would delay the proliferation of ballistic missile technologies and perhaps make the acquisition process transparent enough to make the achievement of such capabilities more difficult and costly, both economically and politically.

The MTCR

For 30 years, the major industrial nations have sought to control the spread of nuclear weapons. By the 1980s, there was increasing international concern over the means to deliver these weapons. At the same time, US officials were alerted to the fact that US missile technology was being acquired through commercial channels. Export of this dual-use technology was first tracked by officials at the Arms Control and Disarmament Agency and led to the investigation of means to control missile technology proliferation. At the time, there were no US laws controlling dual-use missile-related technologies specifically, except those identified in the COCOM lists, and these were proscribed only to certain East bloc countries. The Department of Commerce did not have the authority to block these kinds of exports at the time, and this technology was freely available to many Third World countries. In November 1982, President Ronald Reagan signed National Security Decision Directive 70 calling for the investigation of means to counter the proliferation of ballistic missiles.⁵⁶ Four years of negotiations between the Group of Seven (G-7) advanced industrialized countries led to the drafting of the Missile Technology Control Regime.

On April 16, 1987, President Reagan announced a new policy to limit the proliferation of missiles capable of delivering nuclear weapons. The United States adopted the policy in common with the governments of Canada, France, the Federal Republic of Germany, Italy, Japan, and the United Kingdom. The seven governments formulated common guidelines, agreed to a common annex of items to be controlled, and agreed to control the transfer of equipment and technology that could contribute to nuclear-capable missiles. The President invited all other states to join the regime.⁵⁷ The MTCR applies to any unmanned, nuclear-capable delivery system which can carry a 500-kilogram payload a distance of 300 kilometers. The MTCR countries have agreed in the June 1, 1992 review to broaden these parameters to include other missiles as well.

The MTCR applies multilateral controls—similar to those of the nuclear non proliferation regime—to ballistic missile technologies. The MTCR enhances efforts to stem nuclear proliferation, as well as chemical weapons proliferation, by denying access to means of delivering those weapons rapidly. The MTCR consists of a set of export principles which outline two categories of technology to be controlled. There is a strong presumption of denial for those items deemed to constitute Category I, including complete rockets and missiles, major subsystems, production equipment, and production technol-

⁵⁵ Vincent DeCain, Testimony Before House Foreign Affairs Committee.

⁵⁶ Janne E. Nolan, *Trappings of Power: Ballistic Missiles in the Third World* (Washington, D.C.: The Brookings Institution, 1991), 28.

⁵⁷ Statement by the Assistant to the President for Press Relations, April 16, 1987, The White House, Office of the Press Secretary, Santa Barbara, California.

ogy. If a Category I item is approved for sale, binding commitments as to its end use must be undertaken. Category II includes the components that make up the items controlled in Category I. Transfers of Category II items are supposed to be considered on a case-by-case basis, and can be approved for export unless directed specifically to a missile project of concern. Like Category I items, approved Category II transfers require binding commitment as to end use and end user.

Like COCOM, the MTCR consists of a series of unilateral declarations coordinated on a multilateral basis that commit the parties to abide by the specified guidelines, and an annex of items that could make a significant contribution to missile programs. The declaration states that a signatory will not support the development of nuclear weapons delivery systems other than manned aircraft, including ballistic and cruise missiles, space launch vehicles, sounding rockets, target and reconnaissance drones, and other non-piloted vehicles which are capable of delivering a 500-kilogram payload a distance of 300 kilometers.

The MTCR includes a common set of guidelines to restrict the transfer of technology in order to limit the proliferation of such missiles, to increase regional stability, and to convey firm resolve to address this issue publicly. The Equipment and Technology Annex to the guidelines describes the two categories of items that will be transferred only in accordance with the regime, except as required by NATO and similar obligations.

Through export controls, *démarches* to foreign governments, and bilateral and multilateral discussions, the regime appears to have had a “significant impact in slowing down key missile projects.”⁵⁸ The MTCR has been described by Congressman Dante Fascell, chairman of the House Foreign Affairs Committee, as “an example in which quiet diplomacy aimed at US concerns on a clearly destabilizing aspect of regional arms races—that of ballistic missile proliferation—has met with limited success in the form of a common agreement.”⁵⁹

Among the successes of the MTCR in stemming proliferation counted by the US Government are: (1) stopping the Condor missile project, organized jointly by Argentina, Iraq, and Egypt; (2) retarding the missile programs of India and Pakistan; (3) impeding China’s sales of M-9 and M-11 missiles to Pakistan; and (4) important steps to improve enforcement legislation in Germany.

Missile control legislation amended to the 1991 Defense Authorization bill included authority for the executive branch to deny contracts to US and foreign nationals that were found to be violating the MTCR. No other MTCR country has similar legislation, however. Four public actions have been taken to date, against entities in China and

⁵⁸ James E. Hinds, Deputy Assistant Secretary of Defense for Negotiation Policy, Testimony before the Subcommittees on Arms Control International Security and Science, and on International Economic Policy and Trade of the House Foreign Affairs Committee, July 12, 1989.

⁵⁹ See comments of Chairman Fascell before the Subcommittees on Arms Control, International Security and Science, and on International Economic Policy and Trade of the Committee on Foreign Affairs, House of Representatives, July 12, 1989.

Pakistan, South Africa's Armscor, and, most recently, against Glavkosmos in Russia and ISRO in India. In November 1991, the Chinese agreed to abide by the MTCR guidelines if those sanctions were lifted, although there are indications that China may still be exporting missile technology contrary to the guidelines.

Today, the MTCR claims some 22 countries as adherents, although some of these countries have not amended their national legislation to reflect the MTCR guidelines. In November 1991, the MTCR members agreed to include in the guidelines all unmanned vehicles capable of carrying weapons of mass destruction.

In attempts both to improve the prospects for the MTCR and to restrain conventional arms transfers generally, there have been a profusion of initiatives in recent years. Foremost among these is the Enhanced Proliferation Control Initiative (EPCI). The EPCI requires the licensing of dual-use items that could contribute to chemical/biological weapons (C/BW) and missile proliferation and that are not presently on a control list but could be directed toward a project of concern. Such an approach suggests a new project-oriented control authority. Under the EPCI, licenses are required for shipments that the exporter "knows" are destined for sensitive C/BW or missile end-users. The Bureau of Export Administration (BXA) in the Department of Commerce recently published a list of destinations or projects where exporters are held responsible for such "knowledge." They are listed in Table 1. Because of its apparently intended vagueness, listing as an area of concern, for example, the entire Middle East, companies remain responsible for licensing all items to suspected end-users in these destinations or for these projects. The business community, not surprisingly, has contested these regulations as being unilateral in nature and overly burdensome.

Table 1
Supplement 6 to Part 778 of the EAR**

Countries/Region	Project
Brazil	Sonda III, Sonda IV, SS-300, SS-1000, MB/EE Series Missile, VLS Space Launch Vehicle.
China	M Series Missiles, CSS-2.
India	AGNI, PRITHVI, SLV-3 Satellite Launch Vehicle, Augmented Satellite Launch Vehicle (ASLV), Polar Satellite Launch Vehicle (PSLV), Geostationary Satellite Launch Vehicle (GSLV).
Iran	Surface-to-Surface Missile Project, SCUD Development Project.
Middle East	**
North Korea	No Dong 1, SCUD Development Project.
Pakistan	HATF Series Missiles.
South Africa	Surface-to-Surface Missile Project, Space Launch Vehicle.

* Countries, regions, and projects suspected for involvement in missile proliferation activities.

** Under section 770.2 of the EAR, the Middle East is defined to include Bahrain, Egypt, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Syria, United Arab Emirates, and Yemen.

^a "BXA Publishes Long-awaited Missile List," *Export Control News*, June 30, 1992, 15-16.

Shortcomings of the MTCR

There are a host of potential pitfalls in the current regime. Perhaps the most important requirement for the success of a suppliers' agreement like the MTCR or COCOM is gaining the participation of all significant manufacturers—the most significant impediment to stemming proliferation. The uncertain situation of the new states of the former Soviet Union, which had agreed to limited adherence to the regime, and the PRC's only qualified participation are significant areas of concern. North Korea, an important supplier of missile technology to third world countries, also does not participate—an important problem.

Some twenty Third World countries have acquired, or are developing indigenously, the capability to build ballistic missiles; four of these countries have developed suborbital rockets. The technical ability of many of these countries to design and build missiles represents another impediment to the regime. Argentina, Brazil, Egypt, India, Iran, Iraq, Pakistan, and the two Koreas are capable of obtaining the physical elements necessary to construct ballistic missiles. They presently lack design skills, advanced engineering, managerial experience, and manufacturing confidence. They will likely attain these and, in the short term, can rely on foreign consultants.⁶⁰

A further limitation is that the MTCR is an agreement in principle only and includes no means of enforcement. The agreement simply provides a common set of guidelines for national policies and provides for consultations in cases of uncertainty. The MTCR relies on the consent and good will of the signatories and national bureaucracies for enforcement. In the recent case of the transfer of booster rocket technology from Russia to India, for example, the US was the only MTCR country to impose sanctions.

The MTCR also does not reduce the military incentives which prompt Third World nations to acquire ballistic missiles. They remain cheaper than aircraft and are less vulnerable when carrying out their missions. Category II restrictions on manufacturing are difficult to enforce and potentially could be easily circumvented. Some have suggested that the regime could be strengthened by formalizing the agreement into a treaty, creating an international secretariat, changing national laws, or by increasing enforcement efforts, intelligence sharing, and sanctions.⁶¹ Such a formalized structure for this and other proliferation regimes will be considered below.

Implementing the MTCR within the US Government

The interagency review process for missile technology exports includes the Missile Technology Export Committee (MTEC) which reviews cases of exports to non-MTCR countries and is chaired by the Department of State. The Missile Trade Analysis Group (MTAG) reviews missile technology exports to MTCR member countries. Both the MTEC

⁶⁰ Chairman Fascell of the Subcommittee on Arms Control, International Security and Science, July 12, 1989.

⁶¹ See, for example, *Finding Common Ground: US Export Controls in a Changed Global Environment*; and Representative Sam Gejdenson, Chairman, Subcommittee on International Economic Policy and Trade, House Foreign Affairs Committee, Hearing of July 12, 1989.

and the MTAG include Defense Department offices (Joint Chiefs of Staff, Office of the Secretary of Defense, and the Defense Technology Security Administration), and Department of Commerce, Department of State, ACDA, each of the intelligence agencies, Customs, and, on an ad hoc basis, Department of Energy and NASA.

An NSC directive in December of 1990 established time lines for the process. If no consensus is reached in 90 days, the case is moved to the Advisory Committee on Export Policy (ACEP) which is chaired by Commerce at the assistant secretary level, though in practice deputies constitute the committee, which meets once a month. The ACEP includes Commerce, State, Defense, Energy, and ACDA and works by majority vote. The Export Administration Review Board (EARB) is a cabinet-level group that seldom meets, but which is supposed to resolve differences not successfully arbitrated at the ACEP level. The presidential directive factored the ACEP and the EARB in the dispute resolution process. The President is the final arbiter for disputes not settled by the EARB.

Each of the responsible Executive agencies has a role to play in the review of missile technology exports. In the past, however, the differing missions of the departments have led to internal conflicts over enforcing controls. Significant energy has been spent resolving these internal disputes rather than implementing effective controls.

The Department of Commerce controls the export of goods and technology under the Export Administration Act (EAA) of 1979 to protect the domestic economy from excessive drain of scarce materials and to reduce the inflationary impact of foreign demand. Under Section 6 of the EAA, Commerce controls a variety of exports including chemical precursors, biological agents, and nuclear-related items. The MTCR did not add any new items to the US control list, except for technical data. When possible, Commerce imposes these controls on a multilateral basis. Under the EAA, Commerce regulates exports of dual-use items.⁶² Military items are controlled by the State Department through the International Traffic in Arms Regulations issued pursuant to the Arms Export Control Act (AECA).

The Department of Commerce is the licensing agency for all dual-use technologies, and can approve or deny exports. Prior to the MTCR, Commerce did not have authority to deny exports to the non communist world on missile proliferation grounds. The dual-use items that Commerce controls are generally COCOM International List items controlled under the EAA and sometimes the IEEPA, to be considered on a case-by-case basis. International Munitions List items are generally controlled by the Department of State under the AECA. It has been estimated that of all applications that arrive in Washington relevant to the MTCR, only ten to twenty percent come to Commerce as dual-use exports; most go to State as strictly military items.⁶³

⁶² Currently, the EAA has lapsed and controls are implemented under the International Emergency Economic Powers Act. Legislation to reauthorize the EAA is pending. At the time of publication, the House and Senate have named conferees to resolve differences between the two versions of the bill. Some version of the bill should pass in the current session of congress, although there will likely be major changes in the administration of export controls given the change of administration in 1993.

⁶³ Testimony of James M. LeMunyon, Deputy Assistant Secretary of Commerce for Export Administration before the Subcommittees on Arms Control, International Security and Science, and on

There are four determinants for Department of Commerce license approval of MTCR-related license requests: (1) whether the item is covered by the MTCR Annex; (2) whether it is going to a country of concern; (3) whether it is going to a project of concern; and (4) whether the export would make a "significant contribution" to a missile technology program. If such a determination is made, it is then referred to the State Department together with a notation of Commerce's intent to deny. If the item is determined not to make a significant contribution but is directed to a project of concern, it is also referred to the State Department with a request for a recommendation. If the item would make a significant contribution, but not to a project of concern, or to a country of concern, it is also referred to the State Department to secure assurances from the country in question that the item will not be diverted for military purposes.⁶⁴

The responsibilities of the Department of Defense include responding to threats posed by ballistic missiles from a military and strategic perspective, providing technical assessments regarding missile proliferation, coordinating government-to-government defense cooperation with US missile non proliferation policy, and integrating, as part of the interagency process, the technical, intelligence, and policy aspects of missile proliferation.⁶⁵ There is no statutory requirement for the Department of Commerce to refer requests for exports of dual-use, missile-related technology to the Department of Defense for review. The Department of Defense has asserted that there were Commerce-licensed, dual-use exports to Iraq, in particular, that contributed to Baghdad's missile development. While they have not asserted that the exports violated the MTCR guidelines, they pointed out that some licensed, dual-use exports, especially computers, contributed to those programs. The Department of Defense has stated that regulation of such dual-use items ought to be expanded to cover a broader range of technologies destined for countries of concern.⁶⁶ Some of these concerns were taken into account in the development of the President's Enhanced Proliferation Control Initiative (EPCI), discussed above.

Similarities and Differences Between COCOM and the MTCR

COCOM and the MTCR share important similarities, as well as important differences, which make the long experience of COCOM useful to understanding the prospects for the MTCR. Table 2 identifies some of the areas in which they may be compared. These include their origins, enabling legislation, treaty status, the commodities controlled, enforcement mechanisms, meetings and review mechanisms, procedures for agreement on license review and dispute resolution, and internal US Government organization. While both the goals and the means employed to achieve those goals differ in the two regimes, their comparison provides some useful insight into the workings of the two regimes, as well as an understanding of what has made them successful and of their shortcomings.

International Economic Policy and Trade of the House Foreign Affairs Committee, July 12, 1989.

⁶⁴ LeMunyon, Testimony before House Foreign Affairs Committee.

⁶⁵ Testimony of James E. Hinds, House Foreign Affairs Committee, July 12, 1989.

⁶⁶ Hinds, Testimony before House Foreign Affairs Committee.

Table 2
Comparison of COCOM and the MTRC

	COCOM	MTRC
TREATY STATUS	No	No
COMMODITIES CONTROLLED	Broad to selective	Selective
ENFORCEMENT	National legislation	National legislation
MEETINGS	Weekly	Not fixed
REVIEW MECHANISM	Quarterly	Biannual
PROCEDURE	Unanimity	Consultation
DISPUTE RESOLUTION	Any member may veto license application	Consultation
US INTERAGENCY REVIEW ORGANIZATION	Policy Coordination Committee (PCC), Advisory Committee on Export Policy (ACEP), Export Administration Review Board (EARB)	Missile Technology Export Committee (MTEC), Missile Trade Analysis Group (MTAG), Advisory Committee on Export Policy (ACEP), Export Administration Review Board (EARB)
ORIGIN	1949	1987
LEGISLATION	Export Administration Act (EAA), Arms Export Control Act (AECA), Atomic Energy Act (AEA), International Emergency Economic Powers Act (IEEPA)	Export Administration Act (EAA), as amended, International Economic Powers Act (IEEPA)
COUNTRIES INCLUDED	Australia, Belgium, Canada, Denmark, France, Germany, Great Britain, Greece, Italy, Japan, Luxembourg, the Netherlands, Norway, Portugal, Turkey, the United States	Australia, Austria, Belgium, Canada, Denmark, Finland, France, Great Britain, Greece, Germany, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United States

As has been shown, COCOM emerged from an existing system of wartime controls. Its subsequent history was very much influenced by these origins. The regime was characterized by differences among members over the intent and the kinds of controls necessary to achieve those ends. When these differences were strongest, the regime was least able to control effectively what were commonly understood to be strategic technologies.

The MTRC, on the other hand, had its origins in the early years of the Reagan Administration. Like the period in which COCOM was born, ideological tensions were relatively high during this period, leading to increased concerns over the threat of ballistic missiles. Unlike COCOM, however, which included most Western industrialized states, only a relatively small number of potential missile suppliers negotiated the original MTRC, and they did not include several important suppliers, most notably the Soviet Union and China. Further, the US position of economic and military dominance *vis à vis* these other suppliers is not what it was with respect to the targets of COCOM in 1949.

Unlike COCOM, which initially sought to control a wide range of goods, the technologies defined in the MTCR as threatening were highly specific and the MTCR guidelines were therefore very selective in describing what technologies were to be controlled. The specific nature of the threat and the selective nature of the controls have allowed a consensus to be maintained.

Enforcement in both regimes is left to the individual countries. When extraterritorial enforcement has been attempted, disagreements have followed and the regime has suffered. Concern over enforcement can be traced to national legislation and different interpretations of the guidelines in the regimes. If the goals are clearly defined and agreed to, then common enforcement action should follow.

It was expected that MTCR adherents would modify relevant legislation to bring their laws into conformity with the new guidelines. This has not necessarily been the case. Although the US has followed the MTCR guidelines since 1987, relevant legislation was not modified until 1990. Ten of the countries that publicly declared support for the MTCR had not modified their legislation by the end of 1991. China, which had declared its intention to follow the MTCR guidelines in November 1991, may have sold missile technology to Syria and Pakistan as late as March or April of 1992 and possibly to Pakistan in 1993 as well.

With regard to license review, COCOM and the MTCR differ in that exceptions to the regime in COCOM are the subject of weekly meetings in Paris, whereas the absence of a similar review process in the MTCR has resulted in a lack of timely and regular intelligence sharing. In the MTCR, only members are responsible for adherence to the guidelines and their enforcement.

Although neither regime enjoys treaty status, the MTCR organization is even less structured than that of COCOM. Adherents are called upon only to agree to follow the MTCR guidelines in implementing their own national legislation. There is no formal organization or mechanism for consultation beyond the biennial reviews. Both COCOM and the MTCR reflect a trend away from negotiated treaties toward less formal agreements.

Paradoxically, it is the MTCR's looser structure and its high specificity that will likely contribute to its success in the long run; COCOM, on the other hand, has been the least successful at times of the least consensus and broadest embargo. The long-term success of the MTCR depends on the consensus of its adherents as to its goals and its means.

Applying The Lessons Of Cocom To Contemporary Proliferation Control Regimes

In assessing the lessons of the US experience in COCOM for US participation in contemporary proliferation regimes, one is struck initially by their fundamentally different circumstances. The former, evolving out of World War II, was imposed against a relatively monolithic Eastern bloc, and there was unanimity of purpose at least initially among the members of COCOM. Compounded with changes in technology, the differences in regimes would appear to prohibit analogy. However, problems and solutions emerged, especially as COCOM initially evolved, that have direct bearing on the prospects

for contemporary regimes. These include the crucial role of US leadership, the need to recognize that the process will necessarily be politicized, the need to pursue moderate goals, and lessons about the means employed to achieve those goals. There is a great deal of practical experience in COCOM, and it would be foolhardy not to draw on that experience in attempting to stem the proliferation of destabilizing technologies. COCOM is neither a panacea nor simply a Cold War relic. It has been the only effective multilateral restraint on conventional arms transfers.

The US experience in COCOM raises issues with regard to the scope of the controls, the policy goals behind them, the rationales to support those policies, and, fundamentally, the strategy used to implement them. In export controls, the success of US policy is dependent on the policies of our friends and allies, and on those of other supplier countries.

In the case of the MTCR, its informal nature paradoxically contributes both to its potential for success and for failure. On the one hand, its flexible nature makes it adaptable to a unique proliferation concern. In a regime like the MTCR, which came into being without resort to formal treaty, countries have shown that they are able to come to agreement on informal guidelines toward some common goal, and can adapt their national policies accordingly. However, such flexibility can lead to disagreement over the interpretation of those informal guidelines, and over the method of their implementation and enforcement.

Questions as to the consistency of the application of controls have been raised throughout the life of COCOM. At times when the US was insisting on strict enforcement, it was also the largest recipient of exceptions. The problem of consistency of application can be traced to the fragmented process within the US government. The lack of consensus within the Executive has led to problems in the licensing procedure and to inconsistent applications of controls. This was particularly the case in the Reagan Administration.

These problems also plague the implementation of the MTCR. In the case of MTCR-related sanctions imposed on North Korean and Syrian entities, for example, the Departments of State and Commerce had conflicting interpretations as to when the embargo was to take effect.⁶⁷ Differences between the Congress and the Executive have been readily apparent throughout the life of both regimes.

In a situation of commonly perceived threat, politics plays a lesser role in determining export control policy, while in periods of heightened ideological tension, the process of implementing export controls has tended to become highly politicized. Following World War II, the Western Powers' distrust of the Soviet Union, and of communism generally, was reinforced by North Korea's invasion of South Korea. Export controls were therefore commonly agreed upon as a necessary counter to that perceived threat. However, in the period that followed the Korean conflict, while ideological tensions in the United States remained high relative to those of Western Europe, there was an easing

⁶⁷ "State Imposes Missile Sanctions on North Korean, Syrian Entities," *Export Control News*, July 30, 1992, 6-8.

of export controls. The United States was unable to impose its view of the perceived communist threat upon Western Europe, and export controls were reduced. Any unilateral controls on the part of the US would have relatively little impact given the improved technical and industrial position of the Europeans.

Similarly, in the early years of the Reagan Administration when ideological tensions were relatively high, the perception of the Soviet threat differed in the United States and in Western Europe. Even after the Soviet Union's invasion of Afghanistan in 1979 and the imposition of marshal law in Poland in 1980, proposed responses to this apparent threat differed greatly in the US and Western Europe. The heightened ideological rhetoric on the part of the US called for the isolation of the Soviet Union through denied access to Western technology and credit. Most Western European leaders, on the other hand, for reasons ranging from physical proximity to the Soviet Union to philosophical differences with the Reagan Administration, still held to the belief prevalent during détente that Soviet behavior might better be modified by *increased* interaction with the West.

These differences came to a head with the much discussed Euro-Siberian oil pipeline built to carry oil from the Soviet Union to Western Europe. The US believed that oil technology, credit, and the revenues that such a venture would generate should be denied to the Soviet Union. The Western Europeans took the opposite view. In response, the US government took it upon itself to impose unilateral controls on the oil extraction and pipeline technology of not only US companies but also *foreign-owned* subsidiaries of US companies. This extraterritorial imposition of unilateral US controls angered the Europeans and, as had been the case two decades before, the US soon quietly backed down.⁶⁸

These two cases illustrate the dangers of the politicization of export controls, the futility of unilateral controls, and the importance of common goals in the imposition of export controls. Regardless of the US position, even in periods of relative US strength, the position of the majority came to dominate. When both the US and the Europeans perceived a common threat, relatively strong export controls were maintained. When, however, the threat was not commonly perceived, export controls were weakened, regardless of the unilateral views or actions on the part of the US. This is not to belittle the need for US leadership, however.

The situation has been greatly complicated today by the absence of a single, relatively monolithic threat. The threat of ballistic missile proliferation, for instance, comes from a variety of sources, and the perception of that threat, within even the MTCR countries, varies greatly. A case in point is the US-imposed MTCR sanctions on the Russian and Indian space organizations, Glavkosmos and ISRO. On the one hand, the Russian government feels it is being unfairly targeted for a sale it feels falls outside the MTCR guidelines, as the rocket motors in question are said to be used in a civilian space launch program. Both the Russians and the Indians have asserted that the real reason

⁶⁸ For a summary of the details of the pipeline dispute see Kenneth W. Abbott, "Defining the Extraterritorial Reach of American Export Controls: Congress as Catalyst," *Cornell International Law Journal* (Winter 1984) 82-90.

the US has imposed the sanctions is to protect its dominance in the commercial satellite launch business. The argument that the US restricts technology transfer to third country launch facilities to protect its own industry has been heard from several quarters, most notably from the Chinese government. Even so, the Russians have agreed to abide by the MTCR guidelines—the Indians have not—and the technology that the Russians sold to the Indians can certainly be used in missile programs. The Indians have, in fact, advanced missile programs underway.

Thus, while there appeared to be grounds for some action by all MTCR countries, only the US invoked sanctions. It could, of course, be argued that the US should indeed show such leadership because it is uniquely able to do so, having technologies that both of these countries want. If the US does not act now in response to what it perceives to be a clear violation of the MTCR, when will it?

But if history, and the experience of COCOM in particular, is to be our guide, then unilateral action on the part of the US does not appear to be the appropriate response. With regard to India, its adamant refusal to join the NPT and the MTCR suggests that it will continue with its nuclear and missile programs regardless of US actions. In the case of Russia, something other than sanctions might be suggested. Argentina was convinced to end its participation in the Condor II missile project by, *inter alia*, political pressure from the member states and the potential benefit of *increased* access to, and cooperation with, other countries' space programs. Such an analysis suggests that unilateral action on the part of the United States is not the best way to change the behavior of these two entities.

The four key elements for effective export control policy are illustrated in the above cases. Creative US leadership is key to successful controls, but it must also take into account the likely actions of the affected parties. The goals of export control policies must be highly specific, and understood and agreed upon by the parties involved. Broad or ill-defined goals will undermine effective controls. The internal political environment of the implementing parties must also be accounted for so that realistic goals are sought, neither beyond what might reasonably be expected nor so limited as to be insignificant. Finally, export controls need to be implemented consistently. Member states must ensure that their implementing apparatus will act consistently, and that the parties to a multilateral export control regime will act in a coordinated and concerted manner. Some specific lessons derived from these key elements follow.

Lessons

1) *Implementation and enforcement need to be rationalized within and among member governments' responsible agencies.* The US government either needs to consolidate its export policymaking and licensing mechanisms in one agency, as suggested by a National Academy of Sciences report in 1991 and Senator Jake Garn in 1992,⁶⁹ or more clearly delineate responsibilities between the reviewing and implementing agencies.

⁶⁹ *Finding Common Ground*; and Senator Jake Garn, *Congressional Record*—Senate, S.4826-S.4829, April 2, 1992.

Similarly, member governments of multilateral proliferation control regimes should expect that there will be reasonable uniformity of legislation, implementation, and enforcement among member governments. The incorporation of the MTCR guidelines and control lists in national legislation represents a step in the right direction.

2) *Harmonization of controls is the only guarantee of consistent application of controls.* Harmonization of controls internationally will be an important step toward building on the successes of the existing multilateral export control regimes. The experience of the European Community, as it attempts to harmonize the export control policies and laws of its member states under Article 223 of the Treaty of Rome, will provide important lessons for the United States and other important suppliers as they work to harmonize their controls as called for by the five permanent members of the United Nations Security Council in October 1992. All supplier agreements are imperfect, however. They depend on mutual interest and reciprocity, and can obviously break down over differences in view among partners.

3) *An international structure can serve to rationalize disparate international policies and regimes.* There have been suggestions that some sort of overarching non proliferation structure is necessary, possibly a "super COCOM," to coordinate and rationalize the disparate existing regimes in terms of their membership, targets, and goals. There is concern, however, that expanding or integrating the regimes into a super COCOM would diminish the members' capacity for concerted action and would carry with it too much of COCOM's ideological baggage. Such a strategy would create what one State Department official termed a "mini United Nations, that would require a security council-like organization, or sub-group composed of [something like] the existing membership, to act." However, COCOM's effectiveness over the years suggests that such a structure may be useful.

4) *Export controls delay rather than deny technology acquisition.* Because controls are realistically only able to delay, rather than deny, the proliferation of destabilizing technologies, and because the emergence of new suppliers will likely lead to the proliferation of such technologies over time in any case, it will be necessary to explore possible demand-side restraints and other confidence- and security-building measures. In the mean time, the expectations placed on export controls should be limited to *delaying* the transfer of sensitive technologies.

5) *Export controls are necessary, but insufficient, mechanisms to control technology transfers.* They are only a part of a broader effort to guarantee security. It will be necessary to create new security arrangements to deal with the legitimate security concerns of the developing world as an adjunct to controls. These might include regionally based cooperative security arrangements, confidence-building measures, and the like.

6) *Countries with a low level of technological development and a high degree of dependence on Western technology are most susceptible to supplier restraints.* The similarity between the Soviet Union in the immediate postwar period and the developing world today suggests that there may be a relationship between how COCOM controls affected the Soviet Union's postwar development and how proliferation controls like the MTCR may affect developing countries. A country with a relatively low level of technological development, and, thus, with a high degree of dependence on Western sources of

technology, will likely be strongly influenced by concerted action by these states, despite any declared policy of independence. Conversely, countries such as India with a higher level of technological development and a higher degree of independence will be less likely to be influenced by export controls, especially if they are not widely endorsed.

7) *Limited goals require selective and flexible controls to be effective.* If the goals of export control policy are limited in nature, e.g. delaying or denying the acquisition of ballistic missile technology, the nature of the controls must be highly selective and flexible. It is unlikely that the broader goal of economic war can be sustained in peacetime in any case. Similarly, the absolute denial of technology is a less realistic goal than delaying the acquisition of that technology.

8) *Unilateral actions on the part of supplier states will have a minimal effect on proliferating states and may undermine existing controls.* Unilateral action on the part of the United States in implementing controls will have relatively little impact on a potential proliferator with access to alternative sources of supply. Indeed, unilateral action or overt pressure on members could even retard progress because of the perceived inefficacy and inefficiency of such controls. In short, congressionally mandated responses to perceived violations, which are by their nature unilateral, may impede progress toward the very goal they seek to achieve.

9) *Conversely, the leadership of the United States is required for the success of such a regime.* The US must influence multilateral policy by example and remain watchful that others follow that lead. The United States has a substantial capacity to reward and punish—through access or denial of access to US markets and technologies.

10) *End use and reexport arrangements developed in COCOM, for both members and cooperating states, could have direct application.* Both the import and delivery certification measures developed in COCOM, as well as reexport provisions, will be useful in proliferation control regimes.

11) *Provisions for non adherents must be made.* Additionally, further work with cooperator governments (those not party to but which accept the regimes' general guidelines) is necessary. Arrangements with non adherents may be more useful than trying to include all emerging suppliers. "*Common Standard*" provisions should be broadened to have application outside the COCOM context. The "Common Standard" can serve as a model for export control mechanisms within the member states of proliferation control regimes, as well as those outside the regimes.

12) *Other means of addressing the motivations of proliferating states need to be considered.* Efforts to control, deny, or delay the acquisition of specific technologies, including both positive and negative incentives must be tailored to individual targets. States are driven by a variety of motivations to acquire military technologies. Primary among these, of course, is some perceived threat to their security. However, there are a number of other possible motivations including the enhancement of national prestige, the ability to acquire technology to develop their domestic economies, and the fostering of diplomatic relations with technologically superior patrons. Efforts to control technologies should be tailored to take into account these motivations; in short, we must also consider the individual countries' perceived needs.

13) *Economic or technological interests may motivate some countries to control technologies of mass destruction when the alternative is less access to other needed technologies. The adoption of export controls to allow greater access to technology will likely prove an important incentive toward the development of export controls to counter proliferation. Export control regimes should not block access to technology but rather provide incentives to control select technologies so there might be broader access to other technologies.* In the period preceding the drafting of the Chemical Weapons Convention (CWC), for example, a core group of countries, led by Pakistan, perceived it to be in their interest to agree to the provisions of the CWC to avoid more onerous, unilateral controls that might be imposed if no agreement were reached. In this way, adherence to proliferation regimes can increase access to wanted technologies while denying more dangerous ones.

The United States should conduct a more thorough and coordinated review of technologies that might contribute to the proliferation of destabilizing technologies to ensure that they are not exported to countries and projects of concern, and we should encourage others to do so. As proliferators become more sophisticated, the intelligence services of the supplier countries will increasingly be relied upon to trace the sources for programs of concern.

For the short term, the United States will need to rely on supplier organizations like the MTCR, as well as bilateral contacts with non adherents, to stem the flow of technology that contributes to proliferation concerns. The US should continue to encourage other supplier countries to enter the MTCR and other proliferation regimes.

The US should acknowledge that the interest in the acquisition of advanced military technologies can derive from legitimate security concerns. Until these concerns are mitigated, it is in the interest of the United States to encourage states to choose less destabilizing means for guaranteeing their security.

In the longer term, the US needs to encourage states to resolve the underlying political problems that create the threats to their security wherever possible. Where such resolution is unlikely, we should encourage cooperative security arrangements, the use of confidence-building measures, and other regionally based measures.

Bibliography

- Adler-Karlsson, Gunnar, *Western Economic Warfare 1947-1967: A Case Study in Foreign Economic Policy*, (Stockholm: Almqvist Wiksells, 1968).
- Baldwin, David A. and Helen V. Wilner eds., *East-West Trade and the Atlantic Alliance*, (New York: St. Martin's Press, 1990).
- Berlack, Evan R. and Hunt, Cecil, *Coping with U.S. Export Controls 1990* (Washington, D.C.: Practicing Law Institute, 1990).
- Bertsch, Gary K., *Controlling East-West Trade and Technology Transfer: Power, Politics, and Policies*, (Durham, N.C.: Duke University Press, 1988).
- Bertsch, Gary K., *East-West Strategic Trade, CoCom and the Atlantic Alliance*, (Paris: Atlantic Institute for International Affairs, 1983).
- Bertsch, Gary K. and Steven Elliott-Gower, Eds., *Export Controls in Transition: Perspectives, Problems and Prospects*, (Durham, N.C.: Duke University Press, 1992).
- Bertsch, Gary K. and John R. McIntyre, *National Security and Technology Transfer: The Strategic Dimension of East West Trade*, (Boulder, Co.: Westview Press, 1983).
- Carus, W. Seth, *Ballistic Missiles in the Third World: Threat and Response*, (New York: Praeger Publishers, 1990).
- Haass, Richard N., "Regional Order in the 1990s: The Challenge of the Middle East", *The Washington Quarterly*, Volume 14, Number 1, Winter 1991.
- Holzman, Franklyn D., *International Trade Under Communism: Politics and Economics*, (New York: Basic Books, 1976).
- Ikenberry, John, David A. Lake, and Michael Mastanduno, eds., *The State and American Foreign Economic Policy*, (Ithaca, N.Y.: Cornell University Press, 1988).
- Kaser, Michael, *COMECON*, Second Edition, (London: Oxford University Press, 1967).
- Krasner, Stephen, *Defending the National Interest: Raw Materials Investments and U.S. Foreign Policy*, (Princeton, N.N.: Princeton University Press, 1978).
- MacKenzie, Donald, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*, (Cambridge, Ma.: The MIT Press, 1990).
- Mahnken, Thomas G., "The Arrow and the Shield: U.S. Responses to Ballistic Missile Proliferation", *The Washington Quarterly*, Volume 14, Number 1, Winter 1991.
- Mastanduno, Michael, *Between Economics and National Security: The Western Politics of East-West Trade*, unpublished doctoral dissertation, Princeton University, 1985.
- Nolan, Janne E., *Trappings of Power: Ballistic Missiles in the Third World*, (Washington: The Brookings Institution, 1991).

_____. "The Global Arms Market After the Gulf War: Prospects for Control", *The Washington Quarterly*, Volume 14, Number 3, Summer 1991.

Nutter, G. Warren, *The Growth of Industrial Production in the Soviet Union*, (Princeton, N.J.: Princeton University Press, 1962).

Panel on the Future Design and Implementation of U.S. National Security Export Controls, Committee on Science, Engineering, and Public Policy, *Finding Common Ground: U.S. Export Controls in a Changed Global Environment*, (Washington, D.C.: National Academy Press, 1991).

Panel on the Impact of National Security Controls on International Technology Transfer, Committee on Science, Engineering, and Public Policy, *Balancing the National Interest: U.S. National Security Export Controls and Global Economic Competition*, (Washington, D.C.: National Academy Press, 1987).

Perry, Charles M. and Robert L. Pfaltzgraff, eds., *Selling the Rope to Hang Capitalism?: The Debate on West-East Trade and Technology Transfer*, (Washington, D.C.: Pergamon-Brassey's, 1987).

Spector, Leonard S., with Jacqueline R. Smith, *Nuclear Ambitions: The Spread of Nuclear Weapons 1989-1990*, (Boulder, Co.: Westview Press, 1990).

Sutton, Anthony C., *Western Technology and Soviet Economic Development, 1930 to 1945*, (Stanford, Ca.: Hoover Institution Press, 1971).

_____. *Western Technology and Soviet Economic Development, 1945 to 1965*, (Stanford, Ca.: Hoover Institution Press, 1973).

Tsipis, Kosta, *Arsenal: Understanding Weapons in the Nuclear Age*, (New York: Simon and Schuster, 1983).

United States Congress. "Missile Proliferation: The Need for Controls (Missile Technology Control Regime)". Hearing before the Subcommittees on Arms Control, International Security and Science, and on International Economic Policy and Trade of the Committee on Foreign Affairs, House of Representatives, One Hundred First Congress, First Session, July 12, October 30, 1989. (Washington: U.S. Government Printing Office, 1990).

U.S. Code Congressional Service, 81st Congress, First Session 1949, Vol. 2, "Legislative History of the Export Control Act of 1949".

U.S. Code Congressional Service, 96th Congress, First Session 1979, Vol. 2, "The Legislative History of the Export Administration Act of 1979".

Zaleski, Eugene, *Stalinist Planning for Economic Growth*, (Durham, N.C.: University of North Carolina, 1980).

Zaleski, Eugene and Helgard Wienert, *Technology Transfer between East and West*, (Paris: OECD, 1980).

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