

Report

Economics vs. Nonproliferation: US Launch Quota Policy Toward Russia, Ukraine, and China

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“The Satellite Industry Association [SIA] believes the quotas have out-lived any legitimate trade purpose they may once have served and...now constitute a constraint on US access to commercial launch services...,” argues SIA Executive Director Clayton Mowry.¹ “The quota system continues to be an element in our nonproliferation goals,” responds Department of Defense Undersecretary for Policy Walter Slocombe.² Undersecretary of State for Arms Control and International Security John Holum emphasizes this point even more strongly, calling quotas “... the *most effective* single element and... the [one with the] greatest ability to influence [nonproliferation behavior]...”³ These statements raise the issue of the original motivation behind US quotas on commercial space launch contracts between US firms and Russia, Ukraine, and China. Originally, quotas were based on concerns about both economic competition and missile proliferation. Much of the technology in rockets for launching satellites can be applied to ballistic missiles, and excess ballistic missiles can be converted to space launch vehicles. Thus, the existing missile and space launch capabilities of these three nations made it possible to have concerns about both the spread of missile technology and new competition in the commercial launch market. Now, however,

economic and nonproliferation concerns have come into conflict with each other.

Recently, in June 2000, the Clinton administration decided to eliminate the quota for Ukraine, while for the time being keeping in place the quotas for Russia and China. The review of US launch quota policy in this report will suggest that quotas have, and have always had, both business and security dimensions. The United States introduced the quota system in 1988 as a strictly national policy that restricted launching of US commercial payloads aboard foreign rockets. Economically, the goal of the quotas was to protect the US launch industry from unfair predatory pricing for launch services by providers who did not have to operate in a market economy, starting initially with China and then extending quotas to Russia and Ukraine. From the security perspective, the Departments of State and Defense viewed the bilateral US space launch agreements as a tool for encouraging the three countries to behave responsibly with respect to nonproliferation. The launch pacts were a response to the reported cases of China’s exports of missile technologies to Pakistan, Russia’s exports of cryogenic rocket engines to India, and Ukraine’s alleged attempts to cut deals with China and Libya. Presumably the United

States assumed that the three countries would value the chance to profit from space cooperation with the United States and would thus refrain from exports of proliferation concern that could disrupt more lucrative legitimate deals.

The language of the agreements suggests that business motivations were always the primary driving force for introducing quota systems.⁴ The nonproliferation aspect of the deals was less obvious and remained in the shadows. Now that the agreements with China, Russia, and Ukraine are approaching their expiration dates, US aerospace businesses have come to perceive the quotas as a constraint, thus changing the economic motivation. In this situation, the nonproliferation motivations have surfaced and become a dominant factor. The US administration must make a crucial decision: either to keep the quota system as a tool in its nonproliferation efforts and thus be in conflict with the US satellite industry, or to yield to the industry's demands and modify its nonproliferation strategy. The findings of this report suggest that commercial and security developments over the last couple of years slowly but steadily are pushing the administration to abandon the quota practices, at least with respect to Ukraine and Russia.

Lifting Russia's quota has become a particularly thorny issue. The quota agreement with Russia will expire at the end of 2000, while the expiration date for the Ukrainian and Chinese agreements is the end of 2001. Neither China nor Ukraine has come close to breaching the quota ceiling, while Russia has. In appreciation of Kiev's good nonproliferation record and its partnership with Boeing, Ukraine has been relieved of launch quotas. Chinese nonproliferation behavior, on the contrary, has put launching of US payloads aboard Chinese rockets on hold, and consequently, put lifting the Chinese quota out of the question at least for now. For these reasons, this report will primarily concentrate on the issue of the Russian quota, although the Chinese and Ukrainian cases will also be addressed where appropriate.

This report's objectives are to present the two sides—business and security—of the US launch quota policy, to examine the evolution of this policy, and to evaluate its effectiveness. Structurally, it has three major parts: a historical overview of the issue; the US aerospace industry's approach; and the US government's security considerations. A concluding evaluation suggests the balance of forces favors a lifting of the Russian space launch quota.

HISTORICAL OVERVIEW

The United States made the pioneering decision to apply free market principles to the space launch industry in the mid-1980s, when the government allowed US companies to launch their satellites aboard European-built rockets. That decision provided US satellite manufacturers with greater flexibility in scheduling launches and put an end to their dependence on any one family of US-built expendable launch vehicles (ELVs). This new policy, however, had to adjust in the late 1980s to the potential threats posed by the entry into the market of launch providers from China, and subsequently, in the early 1990s, from Russia and Ukraine. While using European-built rockets, mainly the French Ariane family of ELVs, was considered "healthy" competition for domestic rocket builders, unregulated use of Chinese, Russian, and Ukrainian boosters could have disrupted the entire space launch services market. These three countries, while having well-developed missile industries and space programs, at that time all functioned as non-market economies with very cheap labor costs at their state-run enterprises. They did not have to meet normal market prices and could hence offer high-quality launch services at very low prices. Moreover, in the launch market then there was less demand and more supply, compared to 2000, and adding Chinese, Russian, and Ukrainian rockets could have created a glut of supply and depressed the prices further.⁵

Thus, the launch quota system for the three countries became a compromise between the advocates of a greater variety of launch services and those who feared predatory pricing in the market.⁶ The quota system has two major elements: first, the number of foreign launches depends on the demand in the launch market; and second, launch services from non-market economies cannot be priced below a certain level. The six-year agreement the United States signed with China in 1988, which expired on December 31, 1994, allowed nine geostationary payloads. A second US-China agreement signed January 27, 1995, gives Beijing the right to launch 15 geostationary satellites through 2001 at prices within 15 percent of those offered by Western firms. A similar US agreement with Russia, signed in 1993, limited Moscow to nine geostationary satellites through the year 2000 at prices within 7.5 percent of what Western companies charge.⁷ The next in line was Ukraine.

At the November 1994 summit in Washington, Presidents Bill Clinton and Leonid Kuchma signed an "um-

rella” space agreement that served as the legal basis for negotiating the quota deal. Initially, the US government had planned to allow Ukraine to launch up to 22 geostationary satellites through 2001. Then it reduced the number slightly to 20 satellites, including a base number of eight satellites that could have increased to 12 if the market warranted, and another eight launches for the Sea Launch project. The Sea Launch venture, a project to launch rockets from a floating platform in the Pacific Ocean, is led by Boeing with participation from Russian, Ukrainian, and Norwegian companies.⁸ However, at the final stage of negotiation, the Sea Launch portion was increased, though not changing the total number of launches allowed to Ukraine. The final agreement signed by Ukrainian President Kuchma and US Vice President Gore on February 21, 1996, allowed Ukraine to sell up to five geostationary launches on its Zenith and Cyclone boosters through the end of 2001 and to add one launch if market demand grows. The agreement also allotted 11 launches to the Sea Launch venture with the possibility of three additional launches based on demand.⁹

The US launch industry’s mishaps at that time contributed to the US administration’s decision to grant Ukraine a launch quota, as well as to revise Russia’s quota. The number of US launch failures in 1995 was the highest since 1986, when the fatal space shuttle *Challenger* accident was followed in succession by multiple ELV failures, and industry customers responded by pointing to the need for safer and less expensive launchers.¹⁰ Yielding to pressure from Russia, which felt discriminated against because of a comparatively smaller number of permitted launches, the United States amended its deal in January 1996. It now allows Russia to orbit, depending on launch market conditions, at least 16 and as many as 20 commercial payloads through the end of 2000. Russian services are to be priced within 15 percent of the normal market price.¹¹

During the mid-1990s, many in the US administration and satellite-manufacturing industry predicted the quota system would be short-lived and considered the Ukrainian and Russian deals as the first part of a “transition policy.” That policy, according to an administration official, was defined as “Get Ukraine in, bring Russia up to parity with everybody else, and start working toward the elimination of quotas sometime past the turn of the century.”¹² The turn of the century, however, is marked with much less optimism about the final part

of this “transition policy” and with heated debate between US industry and the administration.

As was predicted, the worldwide market for telecommunications has grown dramatically, bringing an increased demand for launch services. The composition of launch demand has also changed. Government and military launch requirements no longer exceed those of the commercial community, comprising mostly wireless telephone and cable television companies. A few years ago, 10 geostationary launches per year were adequate to satisfy private satellite communications businesses. The average for 1999-2000 is about 30 launches, and experts predict an increase of up to almost 100 launches per year during the next decade.¹³ The shortage of launch capacity has forced satellite manufacturers and service providers to purchase not one launch at a time as they used to, but blocks of launches from numerous vendors to ensure their availability when needed. Russian, Ukrainian, and Chinese rockets are launching American and other nations’ payloads and are considered a big help in this tough situation. However, while non-US satellite manufacturers may use as many Russian, Ukrainian, and Chinese launchers as are available, the US satellite industry, when seeking launch providers and booking rockets years in advance, must abide by the allowed quotas.

INDUSTRY PERSPECTIVE

There has always been a difference in the interests of the US space launch industry and satellite manufacturers with respect to the quota issue. When Chinese, Russian, and Ukrainian quotas were negotiated, US rocket manufacturers opposed the idea of admitting competitors into the market and feared that the domestic launch industry would be sacrificed to nonproliferation goals. Several US companies led by McDonnell Douglas, maker of the Delta series of launchers, Orbital Science Corporation, manufacturers of the Pegasus and Taurus rockets, and Lockheed Martin Corporation, producer of the Atlas rockets, opposed providing China, Russia, and Ukraine guaranteed slots in the marketplace.¹⁴ In September 2000, as the quota agreements are ending, US launch providers are calling for the quota system to be retained. In addition to their traditional fear that the three countries will provide launch services at a lower price, they are concerned that the US-Russian START treaties have made hundreds of intercontinental ballistic missiles redundant, and those could be converted into ELVs in

both countries. According to Oren Phillips, vice president of business development at Thiokol Propulsion, the excess capabilities represent about 25 years of market demand for small launchers if these ELVs are brought to the market without controls.¹⁵ Phillips argues that “An excess in launch vehicle supply in a market driven by national interests, a mix of market and non-market economies[,],...use of excess ballistic missile assets...and increasingly competitive satellite services market will lead to predatory pricing in the absence of some form of meaningful quotas or trade agreements.”¹⁶

Compared to the satellite industry, the rocket producers, however, have always been less influential. And their relative leverage has declined over the years. The US revenue from commercial space activities in 1999 was \$31.9 billion, or 46 percent of the global market, while worldwide revenue from commercial space activities totaled \$69 billion. Over \$30.7 billion—nearly 45 percent of the worldwide industry’s total revenue—was derived from satellite services. Commercial ground equipment manufacturing were the next largest segment accounting for \$15.9 billion, followed by satellite manufacturing, which totaled \$15.8 billion in revenue. Commercial space launch services were the smallest segment of the space industry, accounting for the remaining \$6.6 billion in revenue, less than 10 percent. From 1995 to 2000, the market for satellite services has grown by 134 percent, making it the driving force of the entire space industry.¹⁷

The US satellite industry strongly believes that the space launch trade agreements with the three countries should be allowed to expire without extension and that the quota system should be eliminated entirely. The industry applauded the US government’s decision to lift the quota on Ukrainian launches, which President Clinton publicly announced on June 5, 2000, during his visit to Kiev. Especially pleased was Boeing Space & Communication Co., Ukraine’s major partner in the Sea Launch venture, which is responsible for securing launch orders for the venture. Jim Albaugh, president of Boeing Space & Communications Group, commented:

We are pleased with the government’s action.... We believe it is the right policy, particularly in the light of Ukraine’s strong relationship with the United States. Ukraine has been a solid partner in our Sea Launch program and we look forward to continuing our commercial collaboration.¹⁸

The elimination of the Ukrainian quota has fueled discussions of lifting the Russian quota as well. In late June 2000, officials from the Office of the US Trade Representative met with counterparts from the Russian Aviation and Space Agency to discuss the issue. Following the discussions, statements by some Russian industry and government officials were so optimistic that the US administration had to issue a special response clarifying its position. The White House spokesman David Stockwell denied reports from the Russian Aviation and Space Agency that the Russian quota will be lifted in 2001. He stressed that the US decision would depend on how successfully Russia moved to stop proliferation of ballistic missile technologies.¹⁹

The US aerospace businesses have been strong supporters of the idea of eliminating Ukrainian and Russian quotas. They stress three major reasons why the quotas should be lifted:

- First, Russian and Ukrainian enterprises, partnering with US companies, have fully complied with pricing and restrictions on quantity contained in the space launch agreements. These agreements have allowed Russia’s Khrunichev and Energia companies and Ukraine’s Yuzhmash to transition to operations based on market principles. Thus, the major business objective of the quota system—to prevent disruptive pricing—has been reached.
- Second, the current demand for launch services far exceeds market projections, and consequently, exceeds provided quotas. The current quotas, as well as the possibility of introducing new ones, make uncertain the ability of satellite manufacturers, operators, and customers to meet their business plan timetables for deploying satellites, initiating services, and beginning the flow of revenue. Satellite-related businesses are reluctant to sign up for launches not covered by the quotas; this limits the choices and competition in the commercial marketplace.
- Third, partnering companies in Ukraine and Russia have not been engaged in illegal sales of missile technologies, and preserving quotas for nonproliferation reasons would be unfairly punishing the innocent. Moreover, industry representatives believe that space cooperation with the United States has accomplished US nonproliferation objectives in Ukraine and Russia. Thus, lifting quotas and expanding business activities would provide additional incentives for these countries to comply with nonproliferation norms,

whereas imposing new quotas and restricting business may lead to the opposite.²⁰

Cooperation between the US company Lockheed Martin International Launch Services (ILS) and Russian companies Khrunichev and Energia is probably the best illustration of why US businesses are so concerned about the quota system. In 1993, a joint venture, Lockheed-Khrunichev-Energia International (LKEI), was established to market Russian Proton launch vehicles. Since 1995, Proton rockets have been marketed by ILS, which was created upon the merger of Lockheed and Martin Marietta (also in 1995). ILS welcomed the Clinton administration's decision in mid-July 1999 to increase the Russian quota from 16 to 20 launches as a step toward meeting near-term business objectives. However, ILS argues that long-term viability will continue to be questionable until the quota is lifted entirely. The issue of LKEI's survival surfaced in 1999 and became serious enough to merit a special hearing, "Has the Russian Space Launch Quota Achieved Its Purpose?" before the International Security, Proliferation, and Federal Services Subcommittee of the Senate Committee on Governmental Affairs in late July 1999.

Wilbor Trafton, ILS president, testified at the hearing. He argued that keeping the Russian quota in place would have four undesirable consequences:²¹

- First, preserving the quota will seriously hurt domestic US satellite industries. Customers cannot stand uncertainty about whether they can get their satellites launched when they need to, and they are wondering whether the quota will continue beyond December 31, 2000. The last time a Proton rocket sold competitively in the marketplace was October 1997, about the same time that the quota issue surfaced. The customer for that launch demanded a special contractual provision called "off-ramps," which provides that if the quota affects the customer's ability to launch its satellite, it can get out of the agreement without penalty and choose another launch service. As of the date of his testimony, Trafton said, ILS had two Protons under contract that are above the limits of the quota. If the quota is not lifted and the Clinton administration sticks to the 20 launches by the end of 2000, these two already booked launches of US payloads would have to be cancelled or rescheduled for 2001. Thus, US satellite launches are being hampered.
- Second, along with causing a blow to the US launch industry, quotas benefit its major European competi-

tor—the French Ariane program that currently is the only launch system capable of taking heavier payloads to geostationary transfer orbit. Trafton testified that the French have aggressively pursued Russian space companies looking for partnerships. If the LKEI consortium is unable to overcome the quota problems and fails, therefore, Khrunichev and Energia would most likely choose Ariane as their new partner to market Proton. The United States would lose in this highly competitive launch market.

- Third, marketing Proton rockets is only one of the two major projects that Lockheed is working on with its Russian partners. They also work on making Russian-built RD-180 engines available to US launch providers. Trafton said that Russia is far ahead of the United States in rocket engine technology, and the RD-180 engine is one of Russia's state-of-the-art rocket engines that could power US-built launch vehicles. The Russian joint venture with Lockheed has two components: the RD-180 engines built in Russia that will boost the Lockheed Martin Atlas-3 and Atlas-5 rockets; and the engines built in the United States that will power the next generation launch system for US government payloads. Lockheed is very keen on securing this technology, since it will significantly advance its current technology and will enhance its competitiveness in the market. Although, legally speaking, marketing Proton and building RD-180 engines are two separate projects, ILS President Wilbor Trafton testified that he strongly believes these two projects will succeed or fail together. If the US government decides to keep the quota system in place and thus to let the LKEI joint venture unravel and fail, the Russians will question why they should risk going down the same road with the RD-180 joint venture. Lockheed would lose its reputation as a reliable partner and the United States would not get a unique rocket engine technology that could have been used for launching both US commercial and government payloads.²²

- Fourth, if the LKEI and RD-180 ventures fail, Trafton argued, there will be serious negative nonproliferation implications. Since it began cooperating with Khrunichev and Energia, Lockheed has transferred about \$1.5 billion to Russia. About 100,000 very skilled Russian engineers, technicians, and scientists receive regular paychecks thanks to joint projects with Lockheed. These projects are in line with the US Cooperative Threat Reduction program's ma-

major objective: to engage space and defense workers in Russia in legitimate economic activities that do not threaten US national security interests. Discontinuing joint ventures with Lockheed may cause unemployment at Russian space enterprises; this in turn may make enterprises and workers less careful about proliferation and more preoccupied with solving their financial problems. If Russian enterprises find a new partner in Europe, some proliferation risk may still exist. The European partner may be not as concerned as the United States is about proliferation, and thus Russian partnering companies may also become less vigilant about proliferation concerns.

I have summarized these points made by Trafton in detail because they articulate so well the business point of view, and many satellite enterprises support them. The industry perspective conflicts, however, with the position of the US government, which views the issue through the prism of national security.

US GOVERNMENT PERSPECTIVE

The US government's approach, as represented primarily by the Departments of State and Defense, is based on the presumption that the quota system has both economic objectives and nonproliferation objectives. Although currently US government officials agree that business concerns about predatory pricing and market disruption no longer apply, they still see the national security dimension of the quotas.²³

The national security aspect of the quotas is two-fold. On the one hand, there has been an understanding that, faced with an inability to legally and securely profit from their industrial and technological missile-related potential, China, Russia, and Ukraine might seek contracts of proliferation concern. Specifically, they might assist such "rogue" nations as Iran, Iraq, Libya, and North Korea in developing their missile programs. A guaranteed share of the international space launch market could make these three countries' missile industries feel financially stable, and discourage them from exports that might pose a threat to US national security. On the other hand, the quota system has also been viewed as a tool to keep the three nations "on a short leash" when necessary. Lifting quotas would mean losing that leverage, a development that many in the State Department would like to avoid.

The United States first used a quota as a nonproliferation tool when dealing with China. In 1984, while the Western nations were negotiating the future Missile Technology Control Regime (MTCR), China was designing an export program for its short-range M-9 missiles. By 1987, the year the MTCR was established, the Chinese program had started functioning. To encourage the Chinese government to control its missile-related exports more carefully, the Reagan administration signed a space launch trade agreement with China in 1988 that was later extended by the Clinton administration. The execution of the agreement, however, has not been smooth. After the Tiananmen Square killings in 1989, the US Congress imposed sanctions that included a ban on exports of US satellites to China for launching aboard Chinese Long March rockets. Also, the Bush and Clinton administrations imposed trade sanctions, which included the same provision, against China in 1991 and 1993 because it had sold finished components and launchers for M-11 missiles to Pakistan.²⁴

The US president, however, has the right to grant a special waiver on grounds of national security. Believing that legitimate space cooperation with the United States is a strong incentive for vigilant nonproliferation behavior, Presidents Bush and Clinton have granted 20 waivers to Chinese launches since 1989—Bush granted nine and Clinton granted 11.²⁵ Under a 1994 agreement with China, the United States lifted sanctions in exchange for China's promises to stop missile deals with Pakistan and abide by MTCR guidelines.²⁶

Since then, China has denied selling any finished missile systems to Pakistan. But China is not a signatory to the MTCR, and there are US concerns that China does not abide by the MTCR's ban on sales of missile components. According to a US Central Intelligence Agency report, released in early August 2000, China has recently expanded its role in assisting Pakistan to develop missiles and had a hand in missile development in North Korea, Iran, and Libya.²⁷ Also, the congressional Cox Committee Report in 1998 alleged that China had engaged in espionage at US nuclear laboratories, and had acquired missile technologies through space cooperation with the United States, specifically through launching US satellites.²⁸ In the wake of these reports, launches of US satellites aboard Chinese rockets are subject to intense political debates in Washington; presumption of denial is very strong, and increasing or lifting the Chinese quota is out of the question.²⁹

By contrast, Ukraine's case shows how US nonproliferation policy has successfully evolved from establishing a launch quota, to admitting the country into the MTCR, to the effective lifting of the quota. Media reports in the mid-1990s about Ukraine's alleged missile-related deals with Libya,³⁰ China,³¹ Iran,³² Iraq,³³ Pakistan,³⁴ and India³⁵ led many in Washington to believe that Ukraine seriously intended to profit from its outstanding expertise in the space/missile area. Joint space projects with the United States were thus viewed as a major tool to channel Ukraine's export potential into secure and legitimate ventures. In a 1994 US-Ukrainian memorandum of understanding (MOU), Ukraine agreed to conduct its missile exports according to the criteria and standards of the MTCR. The MOU also opened doors for bilateral space cooperation, and the US-Ukrainian space launch trade agreement was signed in early 1996. After a prolonged debate, in March 1998, Kiev and Washington came to an agreement with respect to Ukraine's joining the MTCR.³⁶ Since then, Ukraine has focused on legitimate space ventures and has an irreproachable nonproliferation record. "Ukraine has been good on both sides, the economic and missile proliferation," said Todd Glass, a spokesman for the US Trade Representative's office, welcoming the administration's decision to lift Ukraine's quota, announced on June 5, 2000.³⁷

The US experience with Russia has not been as positive as it has been with Ukraine, nor as tough as it has been with China. Over the years, Washington has actively used both "sticks" and "carrots" in order to persuade Moscow to behave responsibly in the area of nonproliferation. Introducing a space launch quota for Russia was part of the solution to a nonproliferation problem in the early 1990s. After the collapse of the Soviet Union, Russia inherited a contract with India to sell cryogenic rocket engines and production technology, and was proceeding without delay toward executing the contract. Unlike Russia, the United States saw selling missile technology to India as an issue of proliferation concern. Following intense negotiations, both sides reached an agreement in which the United States permitted Russia to launch US-built satellites on a quota basis in exchange for canceling the contract with India and accepting MTCR guidelines. Following the 1993 space launch trade agreement, the Clinton administration, as a part of its Russia nonproliferation policy, also involved Russian space enterprises in the construction

of an international space station.³⁸ The original US-Russian agreement provided \$400 million to Russia for space hardware and launching services, including three modules for the space station. In return for extensive space cooperation with the United States, Russia had to make strong nonproliferation commitments. In August 1995, Russia joined the MTCR.

When negotiating the quota accord, the US negotiators made it clear to the Russians that smooth implementation of the space agreement was contingent upon Russia's missile nonproliferation behavior. Russia, nevertheless, has been on the proliferation radar screen in the last couple of years. The most scandalous allegations claimed that Russian space organizations had been assisting Iran in developing missile capabilities. On January 28, 1998, the United States sanctioned seven of the Russian entities believed to have assisted Iran's missile program. About a year later, on January 12, 1999, the United States announced economic sanctions against three more Russian organizations for sharing nuclear and missile technology with Iran.³⁹

The US government also decided in early 1998 to tie an increase in the space launch quota to Russian curtailment of missile cooperation with Iran, just as it had tied the original quota to Russia's agreement to stop missile cooperation with India. In December 1998, the Clinton administration notified the Russian government that it would not increase its quota of 16 launches without significant efforts on the part of the Russian government to stop the spread of missile technologies, particularly to Iran. In response, the Russian negotiators stated that if the United States wanted to see strict missile export controls in Russia, its launch quota had to be increased from 16 launches to 25 by the end of 2001.⁴⁰ The argument was resolved favorably for both sides. In early July 1999, the Russian Parliament passed legislation that provides a strong legal basis to stop transfers of missile technologies to countries of proliferation concern and to punish violators. In mid-July 1999, acknowledging that "the Russian government has taken good steps to improve their export controls," President Clinton approved four more launches of US-built satellites on Russian rockets. This decision raised Russia's quota to 20 launches through the end of 2000.⁴¹

The Russian government also committed itself to implementation of a plan of action designed to terminate cooperation between Russian space organizations

and Iran. However, it has not made much progress on that as of September 2000, and this remains the major obstacle to lifting the quota. According to a State Department official, the US government is looking to Russia to clean up entities within the country that continue to do business with Iran. He states: "We think Russia can make it much more difficult for Iran to get this type of technology from Russian enterprises. They need to clean up so Iran does not turn to Russia when it is looking for missile technology."⁴²

As a general strategy, the US Departments of State and Defense would like to keep the quota system as a powerful nonproliferation tool. Senior government officials admit that economic sanctions against Russian violators do not have the maximum effect. According to Holum, "You either have a blow-back on your interests, if they are effective, because they are usually involving trade with the United States, or they don't have any effect on the target because there is no meaningful trade there." He argues that the most effective strategy at this point would be to reward Russia for positive progress on nonproliferation behavior by increasing the quota but not to lift it entirely. He advocates this strategy:

because we want to make sure that those promised steps are fully implemented.... We do not want to wind up with a situation in which some Russian companies are responsible and work with the United States and others remain free to contribute to Iran's missile effort. Our policy is aimed at the organization that can resolve this across the board, and that is the Russian government.⁴³

CONCLUSION

US industry and government officials evaluate the Russian quota differently. US satellite companies believe that the Russian quota has outlived its usefulness, creates uncertainty among customers, constrains the availability of commercial satellite services at a time of growing demand, and, therefore, should be eliminated. However, the US government, although admitting that the quota system might hurt the ability of US businesses to negotiate future contracts, is confident that in the short run the quota strikes an appropriate balance between market demands and nonproliferation considerations.

US industry also argues that maintaining the quota might lead to the collapse of US-Russian joint ventures,

beginning with LKEI. That could leave thousands of Russian missile experts unemployed or severely underpaid, creating a proliferation risk. While they agree that employing Russian engineers and scientists in legitimate commercial activities supports security objectives, US government officials do not share industry's view that the quota will cause joint ventures to collapse. They argue that Russian specialists have been successfully employed under the quota system, and they do not see any direct connection between preserving the quota and failure of US-Russian joint ventures.

US satellite industries argue further that their Russian partners are not involved in proliferation, but have become hostages of proliferation concerns provoked by other Russian entities. They suggest that "clean" companies should be encouraged by new legitimate contracts, and the companies engaged in proliferation should be punished by using export controls, sanctions, and other tools. The US government's counter-argument is that it cannot deal with "good" and "bad" Russian entities on a case-by-case basis. The US government prefers to deal with the Russian government on nonproliferation issues, and convince the government to implement export control measures across the board covering all space/missile related organizations in the country. By "punishing all because of one," the US government intends to send a strong signal to Moscow in regard to nonproliferation efforts.

The quota system has become redundant from the business point of view. Originally intended to preserve the interests of US aerospace companies, it now hampers business development. The only reason why quotas are still in place is thus their function as an element in the administration's nonproliferation strategy. However, it seems that quotas may have already served their security-related purpose as well and are getting weaker as a bargaining chip. The first signal of that was the US decision to abandon quotas as a nonproliferation tool with respect to Ukraine. In terms of security considerations, the quota system has proven to be a powerful bargaining chip at the initial stages of nonproliferation talks with Russia, Ukraine, and China, but definitely not one that can be effectively used for decades. A strong opposition to quotas has developed not only in the countries against which they were imposed, but also in the United States. In fact, the pressure from the inside the United States may prove to be even more powerful than Russia's opposition. Also, Russia's bargaining strategy

has reduced the effectiveness of quotas as a US bargaining chip. In 1999, the Russians demanded a quota increase as a precondition for improved export controls; now they demand that the quota be lifted entirely.

It is very likely that Russia is the next to be rewarded for improved nonproliferation behavior. The new Russian government is trying to convince the White House that it is making progress with respect to curtailing the spread of missile and nuclear technologies. In early June 2000, Presidents Clinton and Putin discussed the issue and agreed that teams of experts from both sides would meet to work out the conditions for eliminating existing constraints on space launches. The teams met in mid-July and agreed on specific actions (which were not made public) that the Russian government should carry out in order to have the quota eliminated by the end of 2000.

The Russian government is also trying to persuade North Korean leaders to put their missile program on hold. It hopes such a positive development would be credited to Russia's nonproliferation efforts. Putin visited North Korea in late July 2000 and obtained the pledge of the North Korean leader Kim Jong Il to give up the country's missile program if other nations supply its scientists with rocket technology for peaceful space research.⁴⁴ In September 2000, Russia froze a contract to sell laser equipment to Iran because of US concerns about technology transfer to the Islamic republic.⁴⁵ As President Putin has made the development of Russia's space industry a priority, and is interested in collaboration with the United States, there are grounds to expect new nonproliferation steps from the Russian government to meet US requirements.

Russia's progress in the area of nonproliferation, combined with pressure from the US satellite industry, could eventually become powerful factors convincing the US administration to eliminate the Russian launch quota by the end of 2000. The general tone of the bilateral discussions suggests slow but steady progress toward this decision.

¹ Testimony of Clayton Mowry, Executive Director, Satellite Industry Association, hearing on US Bilateral Space Launch Agreements before the Subcommittee on Space and Aeronautics, Committee on Science, US House of Representatives, May 24, 2000, available on Federation of American Scientists website, <http://www.fas.org/spp/civil/congress/2000_h/000524-mowry_052400.htm>.

² Testimony of Walter Slocombe, Undersecretary for Policy, US Department of Defense, hearing on "Has the Russian Space Launch Quota Achieved Its Purpose?" before the International Security, Proliferation, and Federal Services Subcommittee, Committee on Governmental Affairs, US Senate, July 21, 1999, available on Federation of American Scientists website, <http://www.fas.org/spp/starwars/congress/1999_h/990721-rus.html>.

³ Testimony of John Holum, Department of State Senior Advisor (Undersecretary since August 2000) for Arms Control and International Security, hearing on "Has the Russian Space Launch Quota Achieved Its Purpose?" before the International Security, Proliferation, and Federal Services Subcommittee, Committee on Governmental Affairs, US Senate, July 21, 1999, available on Federation of American Scientists website, <http://www.fas.org/spp/starwars/congress/1999_h/990721-rus.html>.

⁴ See, Testimony of Catherine Novelli, Assistant US Trade Representative for Europe and Mediterranean, hearing on "Has the Russian Space Launch Quota Achieved Its Purpose?" before the International Security, Proliferation, and Federal Services Subcommittee, Committee on Governmental Affairs, US Senate, July 21, 1999, available on Federation of American Scientists website, <http://www.fas.org/spp/starwars/congress/1999_h/990721-rus.html>.

⁵ Ibid.

⁶ Paul Mann, "US, Ukraine Sign Space Pact," *Aviation Week & Space Technology*, November 28, 1994, pp. 26-27.

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²¹ Testimony of Wilbor Trafton, President, Lockheed Martin International Launch Services.

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³² In late 1993, Iran reportedly purchased eight SS-N-22 Sunburn super-sonic anti-ship missiles from Ukraine for \$600,000 each. See: "Ballistic, Cruise Missile, and Missile Defense Systems: Trade and Significant Developments, September 1994-January 1994," *The Nonproliferation Review* 1 (Spring/Summer 1994), p. 195.

³³ US and UN officials have said that the Iraqi government has used a covert network of purchasing agents and dummy companies to buy millions of dollars worth of sensitive missile parts from foreign firms, in direct violation of the UN embargo. Iraq has sought to conceal them from UN inspectors and stockpile them for later use. The gyroscopes, as well as missile guidance system components made in Ukraine, were uncovered by UN inspectors. See: Jeffrey Smith, "Iraq Buying Missile Parts Covertly," *Washington Post*, October 14, 1995, pp. A1, A20.

³⁴ Ukraine reportedly offered *Tochka* tactical missiles to Pakistan. See Aleksandr Sychev, "Weapon Producers From The CIS Are Taking Over Russia's Business," *Izvestiya*, April 16, 1996, cited in "Ballistic, Cruise Missile, and Missile Defense Systems: Trade and Significant Developments, February-June 1996," *The Nonproliferation Review* 4 (Fall 1996), p. 169.

³⁵ In mid-September 1994, Ukraine and India signed an agreement to cooperate in the areas of space technology and satellite monitoring of the Earth. The United States expressed concern that rocket technologies restricted by the MTCR could be transferred to India. Following pressure from Washington, the deal has been reportedly been suspended. According to Russian press reports, Ukraine also offered unspecified missiles to India. See: Sychev, "Weapon Producers From The CIS Are Taking Over Russia's Business."

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³⁷ Jason Bates and Simon Saradzhyan, "US Likely To End Price, Quantity Restrictions on Russian-Made Rockets," *Space News*, June 19, 2000, p. 19.

³⁸ For history and current status of the international space station, see: International Space Station, <http://fullcoverage.yahoo.com/fc/Science/International_Space_Station>.

³⁹ For a summary of suspected Russian nuclear and missile assistance to

Iran, see Fred Wehling, "Russian Nuclear and Missile Exports to Iran," *The Nonproliferation Review* 6 (Winter 1999). For more details on the three entities sanctioned in January 1999, see Voice of America, "Russian Institutes Sanctioned," January 22, 1999, available on the Federation of American Scientists website at <<http://www.fas.org/news/russia/1999/990122-rus1.htm>>.

⁴⁰ See: "USA Has No Evidence Against Sanctioned Russian Institutes," CNN Custom News, January 13, 1999; "US, Russia to Hold Talks on Technology Nonproliferation," CNN Custom News, May 26, 1999, <<http://customnews.cnn.com>>.

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⁴³ Testimony of John Holum, Senior Advisor for Arms Control and International Security, Department of State.

⁴⁴ "North Korea Willing To Give Up Missile Program, Putin Says," MyCNN, July 19, 2000, <<http://my.cnn.com>>.

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