Chapter 6 – Global Markets: Open and Fair

U.S. aerospace companies currently enjoy a dominant position in the global market for civil and defense products. Seven of the world’s top ten aerospace companies measured by annual aerospace-related sales are based in the United States. The success of U.S. aerospace companies has been a result of two factors: (1) government investments in long-term research and cutting-edge national infrastructure; and, (2) industry’s ability to develop and integrate new technology into their products and services and achieve economies of scale in production through access to a broad global customer base.

Since the end of the Cold War, the U.S. aerospace industry has changed from an industry primarily dependent upon the defense market to one in which a significant portion of its sales are commercial. The result of this change is that for the first time in U.S. history aerospace companies must succeed commercially to remain viable. If they do not, the nation will lose its defense industrial base. As a result, the United States must maintain its global commercial leadership.

However, U.S. industry dominance of the commercial market is eroding. Some of this loss in market share is inevitable as other companies mature and improve their ability to compete. Government regulations, protectionist policies and our government’s failure to invest adequately in technology innovation also are to blame. We must take action to reverse this erosion.

**Figure 6-1  2001 Annual Aerospace-related Revenue (in billions) of Top Global Aerospace Companies**

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenue (in billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boeing/USA</td>
<td>$58.2</td>
</tr>
<tr>
<td>EADS/EU</td>
<td>$27.0</td>
</tr>
<tr>
<td>Lockheed Martin/USA</td>
<td>$24.0</td>
</tr>
<tr>
<td>BAE Systems plc/EU</td>
<td>$19.0</td>
</tr>
<tr>
<td>Raytheon/USA</td>
<td>$16.4</td>
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<tr>
<td>GE/USA</td>
<td>$13.0</td>
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<tr>
<td>UTC/USA</td>
<td>$13.0</td>
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<tr>
<td>Honeywell/USA</td>
<td>$9.7</td>
</tr>
<tr>
<td>Northrop Grumman/USA</td>
<td>$8.2</td>
</tr>
<tr>
<td>Bombardier/Canada</td>
<td>$7.6</td>
</tr>
</tbody>
</table>

Source: company annual reports

**RECOMMENDATION #6:** The Commission recommends that U.S. and multilateral regulations and policies be reformed to enable the movement of products and capital across international borders on a fully competitive basis, and establish a level playing field for U.S. industry in the global marketplace. The U.S. export control regulations must be substantially overhauled, evolving from current restrictions on technologies through the review of transactions to controls on key capabilities enforced through process controls. The U.S. government should neutralize foreign government market intervention in areas such as subsidies, tax policy, export financing, and standards, either through strengthening multilateral disciplines or providing similar support for U.S. industry as necessary.
The Commission wants to make it clear that we are not calling for industrial policy. Rather, we call for a policy of cooperation between the U.S. government and the U.S. aerospace industry to establish a fair and open competitive global market. Government policies and investments have a major impact on the health and future of the U.S. aerospace industry. Therefore, it is important that government and industry work together to achieve national policy objectives. For example, U.S. government investments in aerospace are viewed by some as commercial subsidies. They are not.

U.S. investments in defense provide security for America as well as for its friends and allies abroad. Likewise, U.S. government investments in long-term research and critical aerospace infrastructure benefit U.S. companies as well as companies around the world. National Aeronautics and Space Administration (NASA) investments in fly-by-wire technology, for example, were first applied to commercial aircraft designed in Europe. What concerns the Commission is that other governments are practicing industrial policy by funding the transfer of our research and theirs into commercial products and services, giving their industries a competitive advantage.

Objective: A Globally-Competitive Industry

To lead an increasingly global industry, U.S. companies must remain at the forefront of technology innovation and continue to have access to global markets. This requires collaboration at the global system-of-systems level, such as in air transportation management, to establish common rules and procedures, and competition at the system level, such as aircraft, parts, components, to drive innovation, quality and efficiency.

The United States government must: (a) enable U.S. companies to retain their position at the forefront of technology innovation, (b) reduce government intervention in the market whenever possible, and (c) counteract government-generated market distortions when no alternative exists. Where other countries or coalitions of countries distort the market through policy, regulation or subsidy, the U.S. government must act to level the playing field. If successful, U.S. companies will compete in an environment characterized by:

* An export control system and military procurement policies that allow U.S. companies to

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**Figure 6-2  U.S. Aerospace Trade Balance*  
*Includes aircraft, missiles, space vehicles and parts.**

![Graph showing U.S. Aerospace Trade Balance from 1981 to 2001](image-url)
compete and partner globally without compromising national security;

- Robust U.S. government funding for long-term research and development; and

- A global aerospace market free from distortions caused by protectionist and market distorting foreign government policies.

Issues

Open global markets are critical to the continued economic health of U.S. aerospace companies and to U.S. national security. International markets help U.S. companies to grow by providing a broad customer base. The 2001 U.S. aerospace trade surplus was nearly $32 billion, the largest surplus of any U.S. manufacturing sector. Over half of all U.S.-manufactured large civil aircraft are sold to non-U.S. customers, and foreign airlines represent the largest market growth prospects for the next 20 years. Twenty-five percent of general aviation airplanes produced in the United States are sold to overseas customers. Overall, exports consistently account for around one third of total U.S. aerospace production.

Global demand for aerospace products and services increased dramatically over the last twenty years. Global airline fleets tripled as aircraft connected the world’s economies with readily available and relatively affordable transportation. Governments around the world reduced tariffs and other trade barriers through multilateral and bilateral agreements, opening up new markets for airlines and for producers and reducing the cost of trade.

Revenues generated through export sales helped companies to fund development of new technology, and a broad customer base enabled U.S. companies to achieve economies of scale necessary to incorporate innovative technology into new generations of products. Open international markets enabled U.S. aerospace companies to retain production and jobs in the United States instead of forcing investment overseas to get around trade barriers.

International partners also have contributed to the economic success of U.S. companies and to our national security. These partners have contributed technology and funding to development of new civilian and military products and services. They have opened up new markets and strengthened our ties with allies. They are contributing to our national security by facilitating the increased cooperation and interoperability with allies required in emerging models of coalition and network-centric warfare.
The U.S. industry share of the global market, however, has declined in key sectors over the last twenty years. We are on the brink of ceding our position as the top producer of large commercial aircraft, and are losing market share in civil helicopters and aircraft engines. We have made small gains in the commercial turboprop aircraft market, although regional jets are replacing larger turboprops in many markets.

The situation is somewhat better in space-related industries. The United States remains one of only two nations with human-rated space launch capability, and the only operator of a versatile space shuttle. Until 1999 U.S. companies led the world space launch market in terms of number of commercial and military launches, and have established a number of joint programs with Russian companies, their closest competitors. U.S. companies dominate the world satellite manufacturing industry in large satellites and are very competitive in the manufacture of new smaller satellites. U.S. manufacturers continue to lead worldwide in sales and development of missile systems.

We remain strongest in military aircraft markets. U.S.-origin aircraft dominate existing international fleets of military transports, tankers and helicopters. Existing world fleets of Russian origin combat aircraft and non-piston engine trainers exceed those of U.S. origin, but U.S. market share is set to grow with the introduction of the Joint Strike Fighter and procurements of F-22 fighters, while sales and replacements of Russian fighter aircraft are weak at best.

Nonetheless, we have determined that continued dominance of each of these sectors is by no means assured. U.S. industry is slowly losing market share to foreign competitors.
European companies present the most formidable competition to U.S. companies in global markets as the only other current producers of large civil aircraft and complete engines, and leading producers of helicopters and many elements of military hardware. Europe leads the world commercial space launch market, and European advances in satellite manufacturing capability as well as consolidation of the European missile industry may result in declining U.S. share of these markets.

European companies also are our most important partners. U.S. companies collaborate more with companies from Europe than from any other country or region in the world, through partnerships on projects and systems, joint ventures and direct investment. Not surprisingly, Europe is the biggest customer of U.S. aerospace exports, as well as the largest supplier of U.S. aerospace imports.

The Russian aerospace industry also is highly developed in all sectors, although most Russian aerospace manufacturing has ground to a halt under the weight of economic and political problems following the dissolution of the Soviet Union. This is turning around, in part because of the evolving relationships between U.S. companies and their Russian counterparts. However, it is unclear when and if Russian aerospace manufacturing will regain a competitive position in many sectors. Russia is an important partner in space flight and exploration, and a growing partner and competitor in commercial and military aerospace production.

Other countries with long-established aerospace industries historically have focused on producing a limited range of complete products and supplying parts and subsystems to other large manufacturers. They are now expanding their market presence with first-tier prime manufacturers.

For example, U.S. and Canadian aerospace industries have had close ties for decades with significant cross-border trade and investment. Successful sales of regional and business jet aircraft have propelled Bombardier into one of the top ten global aerospace industry companies with plans to break into the 100 seat commercial aircraft market. Japan has long been an integral supplier of small and large subsystems for a wide variety of U.S. aircraft and engine programs. Japan also produces a limited selection of indigenous civil and military aircraft and trainers. After nearly twenty years of development, Japan has just completed development of its first space launch vehicle to be offered on the global commercial market.

New partners and competitors in Asia and Latin America are further changing global market dynamics. For example, the Chinese aerospace industry has a number of civil and military aircraft programs under development. More importantly, the Chinese government has identified aerospace as one of
China’s leading high-technology industries for the 21st century centered around a core government policy goal of self-reliance in the aerospace and defense sectors. This strategy is exemplified by China’s commitment to aerospace as one of its leading high-technology industries for the 21st century. The Chinese government has identified aerospace as a priority sector with a target of becoming a world-class producer by 2012, in part via close cooperation with major international aerospace firms and enhanced supplier relationships with non-Chinese primes. Other Asian countries such as Korea and India also are establishing sophisticated aerospace industries. In South America, Brazil has emerged as a significant player in a number of areas, led by sales of regional aircraft to airlines around the world.

Competition is healthy. It drives innovation, quality and efficiency. However, we are greatly concerned where the rise in foreign competition has been aided by persistent government intervention. We see concerted strategies by other governments to unseat U.S. companies from their position of world leadership. Interventionist policies are being used as tools to establish and support “national champions” protecting them from market forces at the expense of U.S. industry. These policies are described in the “International Playing Field” section later in this chapter.

Many governments have well-established aerospace industrial policies because of the unique market dynamics of the industry and the blurring line between civil and military products. Aerospace is a complex, expensive and highly cyclical industry characterized by long lead times for new product development and purchase decisions. The aerospace industry also is highly susceptible to external factors such as terrorism or general economic downturn. And in spite of growing overall size of the commercial aviation market, it can support only a limited number of major aerospace manufacturers. As a result, governments often provide financial support to help their companies get into the market and stay there.

Production choices are not made entirely according to immediate market demand and price. Manufacturers in essence “buy market share” by offering discounts to entice downstream sales of additional products, replacements, spares and repairs. Airlines tend toward equipment commonality to increase flexibility of their labor and route structure, as well as to reduce operation and maintenance costs. Military procurements often are focused on procurement of a single product to satisfy each particular requirement. In this environment, governments sometimes are able to sway procurement decisions with political pressure.

It also is difficult to separate commercial considerations from national security. Military users increasingly look to civilian aerospace products for military applications, and hence may intervene in civilian markets to protect military capability. For this reason, recent years have witnessed dramatic consolidation of the aerospace industry on a national level, but insufficient rationalization on a global level.
We have identified key areas of intervention that warrant a policy response from the U.S. government. These include:

- Restrictions on sales or transfer of technology to foreign customers through export controls;
- Restrictions on collaboration through partnerships, acquisitions, foreign investment and military procurement of foreign-sourced products;
- Significant government funding for commercial aerospace research and development, and in some cases assistance with the “launch” of new products;
- Tax law;
- Export financing for civil and military products;
- Obstacles to collaboration on commercial projects;
- Regulations and standards used by national governments to distort markets and provide their domestic firms a competitive advantage; and
- Insufficient commitment to global partnerships in air transportation systems and space activities.

**Export Controls and Defense Procurement Policies: Impede Competitiveness**

The preeminence of U.S. military aerospace capability is a direct result of our concerted policies to withstand and ultimately defeat international communism. In the early years of the Cold War, America and our allies were confronted by a numerically-superior opponent that threatened our European allies from secure interior lines of communication compared to our need to mobilize and project forces from the United States. To deter our opponent, we crafted a three-part strategy. First, we assembled a standing military alliance composed of democratic states committed to standing together against the threat. Second, we stationed substantial American forces in Europe and Asia on an indefinite basis and extended America’s nuclear guarantee to our allies. Third, we committed ourselves to building a qualitatively superior military force to counter the numerical superiority of the Warsaw Pact.

The qualitatively superior military force depended on two subordinate strategies. First, we committed to a program of substantial peacetime research and development to ensure we invented more advanced ideas and brought those ideas into production with qualitatively superior weapons. Second, we instituted a systematic program to keep that advanced technology out of the hands of our opponents through effective export controls.

**ISSUES**

- Export Controls and Defense Procurement Policies
  - Restrictive Export Controls
  - Collaboration in Defense Procurement
- International “Playing Field”
  - Commercial Research and Development Funding
  - Domestic Tax Policy
  - Export Financing
  - Commercial Mergers and Teaming
  - Offsets
  - Regulations and Standards
- Global Partnerships
  - Air Traffic Management
  - Open Global Air Transportation
  - Cooperative Space Activities
The strategy worked. The commitment to military superiority depended on those two equally important policies—strong continuing research and development and systematic export control. It should be noted that these policies never prevented the Soviet Union from stealing America’s industrial secrets, or the secrets of our allies. Indeed, we were continually confronted by effective Soviet espionage that stole our military secrets. But in the main, the strategy worked because it insured that we stayed qualitatively ahead of our opponent. We won the race because we never stopped running.

The end of the Cold War brought about a shift in U.S. military research and procurement priorities, with negative consequences for the U.S. military aerospace establishment. U.S. Department of Defense (DoD) spending for aircraft research, development, testing and evaluation (RDT&E) declined dramatically in the 1990s. U.S. DoD aircraft procurements dropped by half during that period as well.

The RDT&E trend appears to be reversing as the U.S. fights the war on terrorism and takes a new look at U.S. military capabilities and priorities. Hopefully this increase in spending is evidence of a long-term reorientation instead of a temporary aberration. Our defense investment is critical to provide for the security of the U.S. and the world. This increase is needed due to the lack of defense investment elsewhere in the world.

The outlook for military aircraft procurement is less clear. Although we now are committing more resources to keeping our military aircraft fleet flying, future aircraft procurement projects face an uncertain future. U.S. military planners are investigating options to fund transformational changes in our military capability to meet emerging needs. This has resulted in scaling back or canceling key upcoming aircraft programs, including the F-22 fighter, the V-22 tilt-rotor and the RAH-66 Comanche helicopter. However, air and space assets likely will continue to play a central role in any new concepts of military operations and warfare.

Restrictive Export Controls. One of the primary obstacles to the health and competitiveness of the U.S. aerospace industry is our own export control regime. Export controls have been and should be an important component of America’s national security. We believe, however, current export controls are increasingly counterproductive to our national security interests in their current form and under current practices of implementation. In our judgment, export control reform is crucial to provide better security in the future and to insure the health and vitality of our aerospace industry.
As a central element of our concerted military policy, export controls took two forms. We tried to control the export of weapon systems directly through a system of export controls managed by the Department of State. We also tried to limit the export of commercial products and technology that could be applied to military purposes, the so-called “dual use” items. Dual use export controls were managed by the Department of Commerce.

Export controls largely worked because we created a consensus with our European allies to control the same things globally. All of the countries agreed to limit the export of military items. And the dual-use items were controlled through the Coordinating Committee of the North Atlantic Treaty Organization (COCOM) process.

At the end of the Cold War, several trends dramatically affected the course of export controls. First, the United States broadened the use of export controls beyond our Cold War strategy. Export controls and embargoes became a favored way to signal our disapproval of other countries and to express foreign policy objectives. Second, the consensus with our allies broke down after the end of the Warsaw Pact and the Soviet Union. The COCOM system was dissolved and replaced by a weak Waasenar process. European allies often saw our export restrictions as protectionism intended to enhance U.S. commercial competitiveness rather than national security measures. Third, the nature of advanced manufacturing and design evolved sharply as companies and consortia of companies established trans-national design teams. Just-in-time business practices evolved with international shipments of components being installed within hours of receipt at the loading dock.

Export controls, which were set up in an era of local manufacturing and slow paper-based processing, strained (unsuccessfully, we believe) to cope with the explosion of new technologies and business practices. Over 180 individual export control licenses have been needed for export sales of C-130J military transport aircraft to the United Kingdom (UK) Royal Air Force, to support companies in the UK that are involved in the production of the aircraft. The U.S. prime manufacturer must apply for a new Technology Assistance Agreement every time the U.S. company needs to discuss technical issues for parts being manufactured by the UK partner. The UK company was selected for its manufacturing expertise and capabilities and therefore it is difficult to see how this process is effective in protecting national security.

In the process, export controls became increasingly complex, elaborate and burdensome.

Our complaint about export controls is twofold. First, we believe export controls now provide too little security and impose enormous inefficiency. Some 40,000-export licenses are reviewed every year by the Department of State, and 99.8 percent of the licenses are approved, too often after many long months of review. The bulk of the licenses are required for prosaic items of equipment, often to our strongest allies. Ninety percent of the military export licenses are granted to companies exporting equipment and components to North Atlantic Treaty Organization (NATO) allies, for example. The current system fails to distinguish adequately between friend and foe, between cutting-edge and pedestrian technology.

Administrative hurdles and out-of-date information further exacerbate the inefficiencies of the system. Country risk surveys used to evaluate the willingness and ability of recipient nations to comply with restrictions on the unauthorized use or retransfer of U.S.-origin defense exports are woefully out of date. The absence of up-to-date information causes export-licensing authorities to depend on data that
may no longer reflect current conditions in many United States defense export markets when evaluating licenses. It also puts U.S. negotiators at a disadvantage when consulting with other governments on how to strengthen compliance among the community of nations with whom the U.S. shares modern defense hardware and technology. Bad information makes for bad decisions.

More importantly, U.S. export controls are undermining one of the central goals of military planning during the past 30 years—alliance interoperability. We actively try to get allies to buy American military equipment to improve our ability to fight as an alliance, yet we bog down that process through nettlesome export controls. For example, during the Kosovo air war, allies were petitioning the DoD to intercede with the State Department to expedite license approval of weapon systems needed to arm combat aircraft flying side-by-side with American pilots.

Export controls are undermining the collaboration between companies in alliance countries on new system developments. Foreign companies have actually instructed design engineers to avoid American components because of the difficulty of acquiring license approval from the United States government.

We believe U.S. export controls now provide too little security and impose enormous inefficiency.

The current approach to export controls is increasingly isolating the American aerospace industry from the commercial sector in an unproductive cocoon of regulation. The defense industrial base is falling farther and farther behind the commercial market place because it has to cope with excessive regulation.

The Commission is fully prepared to defend such regulation where it purchases indispensable security. But we are convinced that today’s export controls do not. We do think it is important to regulate the sale of stealth technology, for example, but see little reason to block the sale of five-ton trucks. We see the need to formally decide whether to sell a combat aircraft to an ally, but we see little need to require hundreds of subsequent licenses for necessary support gear, training manuals, replacement spare parts, etc. We see the clear need to block the sale of military equipment and dual use items to irresponsible nations like Iran and Libya, but we see little justification to impose the same standards on our strongest allies.
In sum, the current export control regime provides too little security and is choking American companies and preventing effective technology collaboration with others.

The United States export control system needs a thorough overhaul. We recommended a number of immediate reforms in Interim Report #2. However, if we are to improve the long-term competitiveness of our industry, minor tinkering on the margin is unacceptable and even counterproductive.

We call for a fundamental shift away from the existing transaction-based licensing system to process licensing.

**Shift From Transaction to Process Licensing.** We call for a fundamental shift away from the existing transaction-based licensing system to process licensing. Currently, we require an export license for every sale and every shipment. Instead, we should establish a process that approves a company for basic operations under predefined conditions. A useful analogy here is the way aircraft are produced. Before Boeing can sell a new design aircraft it must submit to extensive, detailed licensing approval by the Federal Aviation Administration (FAA) for that new design. It cannot be sold or delivered to a customer without that basic production approval. Once it is approved, however, Boeing does not need to subsequently test and safety-certify every subsequent aircraft that comes off the production line. The FAA certifies the design and the production methodology once for safety, and then monitors ongoing production on the basis of departures from the baseline design.

The export control system would be much more efficient if it were similarly reconfigured. Companies that wish to export would undergo a rigorous certification process to ensure they possess the internal controls that safeguard against the sale of weapons or dual use items to unacceptable parties. Once approved, the company would be free to sell and ship goods consistent with U.S. government policy. The government would monitor and audit those operations for compliance. In some instances, the government approval would require case-by-case approval of sales. For example, we believe the government would want to approve any and all individual sales of advanced technology like stealth technology, even to our strongest allies. Also, we believe the government would want case-by-case approval of any sale to countries that we judge to be serious security risks.

**Additional Reforms Are Needed.** This shift to a process approval licensing system will not be effective unless other elements of the U.S. export control policy are changed as well.

- Expand International Traffic in Arms Regulations (ITAR) Waiver Process to Allies With Appropriate Security Controls. Currently, the United States requires approval of exports of components even to a subsidiary of the same company that is located in a different country. Because of the integration of U.S. and Canadian production capacities, the United States entered into an agreement with Canada for license-free transactions of non-classified components between the two countries. Licenses are required if the item leaves either the United States or Canada for another country. We believe this streamlined ITAR waiver process should be expanded to other key allies. We believe that countries should be granted this waiver only after agreeing to appropriate security procedures with the United States.

- Fix the Munitions List. The current so-called “munitions list” is far too inclusive and out of date. It has not been reviewed since 1992. The list should be shortened substantially and refocused on items that meet the multilateral standards of significance, such as precursor chemicals for chemical weapons. It should no longer control commercial products and technologies that have been “modified or designed for” a military product, unless they substantially improve military performance. In particular, commercial communication satellites and related components should be removed from
the “munitions list” and again be controlled as a dual-use product. The government should establish an annual review process to continually clean up the munitions list.

Just fixing the U.S. list is not enough. We must work with our allies to identify critical technology and come up with solutions on how to protect it. By and large, the United States and its allies agree on the items that should be controlled for non-proliferation reasons. However, we lack sufficient buy-in from the international community on actually getting the job done. The six major European countries that account for most European defense production have signed a Letter of Intent (LOI) to harmonize export controls for countries outside the group while facilitating defense trade and competition among the group. The United States should begin discussions with the “LOI six” to exchange ideas and to examine the possibility of a framework between the U.S., the “LOI six” and later with other industrial democracies.

- Establish an Objective Appeals Process. Currently, if the government rejects a license application, the applicant has no effective method to appeal the decision except to return to the same people who rejected it in the first place. The only other course is for companies to take up the matter at the highest levels of the government, a step that can be used rarely and with great peril. A more objective appeals process should be established. Ultimately only the secretary of a department has the authority to approve or reject a license. But the secretary should have an appeals board that can offer an alternative recommendation to the secretary if the panel decides the original decision was unwarranted. This way the secretary will have an independent perspective to consider before making a final decision. It also permits a more normal way for appeals to be made, other than than extraordinary intervention to senior officials that is largely unavailable except to the largest defense contractors.

- Extraterritorial Retransfers. One of the current great controversies in the export control system is the American insistence that no component part or technology from the United States that is used by a foreign producer can be sold to a third party without gaining permission each and every time from the United States. No matter how small the component is as a part of the entire system, the United States has asserted that it has exclusive control rights over the entire sale. This retransfer obligation should be retained for significant military equipment, such as complete end items. But for other items, the 25 percent de minimus content threshold originally developed by the Reagan Administration should be reinstated as the threshold governing extraterritorial retransfers.

- Compliance Risk Management. Decision makers must have an up-to-date and detailed understanding of the willingness and ability of recipient nations to comply with restrictions on the unauthorized use or retransfer of U.S.-origin defense exports. Updated country risk surveys are one key way of developing and maintaining this information. Moreover, up-to-date country risk surveys would provide a basis for government-to-government consultations to strengthen compliance among the community of nations with whom the U.S. shares modern defense hardware and technology.

Since the Commission’s February 2002 public hearing, U.S. federal agencies have reviewed nearly half of the chapters of the U.S. Munitions List, including the chapter on aircraft. Agencies are considering removing a number of aircraft from the USML, as well as expanding the use of waivers for spare part export licenses to certain parties. As the first review of the USML in a decade, this is a step in the right direction. Nonetheless, this review will be insufficient unless it culminates in a comprehensive revision of the list.
Administrative Streamlining. Finally, the federal government should make a major investment in streamlining the licensing administrative process. The Department of State should establish timelines and interagency dispute resolution procedures. The process outlined in the national disclosure process is appropriate. The federal government also should modernize the information technology backbone for the license approval process, and establish a totally interoperable system with all executive branch departments that have a role in the license review/approval process. Such a system ought to allow industry to file licenses and all supporting data electronically. Adequate staffing and training are fundamental to the success of any reform initiative.

Collaboration in Defense Procurement. Export controls are not the only problem—other U.S. military procurement policies also undermine our goals of alliance interoperability and U.S. competitiveness. In order to protect our position of military leadership and capability, we must re-evaluate military procurement policies that hamper collaboration with our allies.

The United States has a number of restrictions affecting military acquisitions of foreign-manufactured products, systems and parts. U.S. legislation requires many military products to be manufactured in the United States. Even in instances where foreign procurement could be authorized, some DoD program managers have a bias against considering non-U.S. equipment.

These restrictions do not reflect the realities of a new global economy. Instead, they hamper U.S. industries’ access to technology and impede their competitiveness. In some cases these restrictions limit U.S. industry and government access to superior capabilities and technology developed in other countries. In other cases it means that U.S. companies have to establish two separate production facilities for the same product to ensure that no foreign nationals are involved in producing the copy of the product going to the DoD. As commercial companies become more global, they will be less and less willing to go through the financial and administrative expense of selling to the DoD.

Existing solutions to this problem are cumbersome. Most foreign companies interested in selling to the DoD end up investing in U.S. companies or working through U.S. prime contractors. In fact, a number of leading European aerospace companies have an extensive presence in the U.S. market through “special security agreements” (SSAs) designed to prevent technology flows out of the U.S. from U.S. subsidiaries to their foreign parent companies. There certainly are benefits to this system. For example, the 1995 acquisition of the U.S. Allison Engine Company by Rolls-Royce plc of the UK has resulted in a stable, ongoing partnership that has brought benefits to companies on both sides of the Atlantic. As a result of this investment, the U.S. DoD is Rolls-Royce’s largest single military engine customer.

However, not only do SSAs prevent U.S. technology from leaving the country, so do they prevent U.S. subsidiaries from taking advantage of foreign technology advances.

If we do not change our procurement policies, it will become increasingly difficult to find competitive suppliers of military products as U.S. industry consolidates. We will be stuck with sole-source contracts for critical technologies, and may be forced to subsidize U.S. suppliers just to keep them operating.

Support International Collaboration and Procurement. U.S. government procurement rules should be revamped to support increased collaboration with, and in some cases procurement from, non-U.S. based companies. The resulting competition will drive innovation and efficiency, and allow the government to choose items at the best cost and
performance, regardless of where it is produced. It will promote interoperability with key allies, a critical element to the success of the emerging model of coalition and network-centric warfare. It will enable U.S. industry to take advantage of the best technology available anywhere in the world, integrating it into products for the U.S. warfighter.

We are doing this in the Joint Strike Fighter program, bringing in technology from key allies, securing access to additional markets, stabilizing funding and ensuring the long-term sustainability of both U.S. and partner defense industries. This close partnership also establishes a channel of influence when dealing with these countries on defense and national security issues. We recognize that this partnership is a two-way street, providing foreign governments and suppliers some level of influence over production and maintenance of U.S. military equipment. However, if projects are correctly managed this is a manageable concern, since further integration will bring a dual dependency resulting in convergence of views.

The Bush Administration is taking positive steps in promoting international collaboration on other key defense programs as well. For example, the DoD is investigating the possibility of including international partners in development of its new ballistic missile defense system. In July 2002 at the Farnborough Air Show, Boeing and the European Aeronautic Defense and Space company (EADS) announced plans to work together on missile defense in response to the DoD’s policy. EADS already is a major subcontractor to Integrated Coast Guard Systems (ICGS) recently selected by the U.S. Coast Guard to work on the Deepwater Capability Replacement Program (“Deepwater”). As a major subcontractor to ICGS, EADS will refurbish and supply helicopters and surveillance aircraft.

We need to reform DoD procurement regulations to permit integration of commercial components into military products even if they are provided by non-U.S. companies or worked on by foreign nationals. For example, if a commercial aircraft is to be upgraded with military hardware, the company should not have to set up a separate assembly facility to ensure that particular aircraft are not worked on by foreign nationals.

We are not calling for unilateral opening of our defense market. Key allies must offer reciprocal access to U.S. companies bidding in foreign procurement competitions. Increased U.S. procurement of foreign products can only work if our companies have access to their markets as well.

Countries seeking access to our defense market also must reconsider their investment priorities. These allies should invest their limited development budgets in creation of new capabilities instead of seeking to displace sales of existing U.S. products. Such targeted investment will bring bigger returns and advance the overall capabilities of all parties. This partnership has established a strong foundation for cooperation with our allies in NATO and elsewhere in the past that must not be weakened in an effort by some parties to simply broaden the product range of domestic champions.

International partners have contributed technology and funding to the multinational Joint Strike Fighter program.
The U.S. government should protect the strength and viability of the U.S. industrial base in certain areas of critical technology and capability. This includes continuing to procure the most critical equipment from U.S. prime contractors, and careful consideration of partnership/teaming requests. The United States government should remain committed to continued foreign investment in the United States with the appropriate safeguards for U.S. technology. The U.S. government also should continue to monitor closely the transfer and use of sensitive technology to ensure that it stays in the control of our partners. Most importantly, policies on procurement and teaming must be clear and consistent, enabling companies to make judicious decisions on new projects and acquisitions.

International “Playing Field”: Out of Balance

**Commercial Research and Development Funding.** Although we are ahead of other countries in investment in military technology and capability, we are on the edge of dropping out of the race in the civil sector. Instead of continuing to invest, our government has increasingly pulled back from the civil aerospace market and left it up to U.S. companies to compete against competitors subsidized by governments that have “not stopped running.”

The U.S. government historically has limited civil aerospace technology-related funding to basic research, creating enabling technologies and sharing the results with U.S. and non-U.S. companies. We have left it up to the companies to integrate these technologies into commercial products.

NASA spending for aerospace research has declined in recent years, resulting in fewer and less robust programs. NASA rotorcraft research was eliminated entirely in Fiscal Year 2002, bringing an end to rotorcraft wind tunnel testing at the Ames Research Center.

Starved of funds, the U.S. government research and development infrastructure is deteriorating as well. Some NASA research facilities have closed, while others are saddled with an aging infrastructure and declining number of programs. In fact, the percentage of the budget NASA must spend on maintaining aging infrastructure has increased over the last ten years, displacing money intended to be spent on other aspects of the research programs.

Instead of increasing private funding for basic R&D, U.S. industry spending has fallen off too. Because companies contribute money and resources when they participate in government-funded R&D...
projects, a reduction in federal funding is matched by a corresponding decrease in industry funding. Companies have little incentive to fund basic research on their own because capital markets and stockholders shy away from risky investments with indeterminate returns.

Chapters 5 and 9 addresses in more detail the need to reverse this decline in federal civil aeronautic R&D funding. Although there are many reasons to take action in this area, declining international competitiveness is near, if not at, the top of the list.

Other countries do not share the United States’ philosophy regarding civil aerospace research and development funding. Many take their funding beyond basic technology development, choosing to fund product development and even bringing the product to the market (also known as product launch). These governments seek to establish and support aerospace producers, even if their products are not fully commercially viable. In their view, the benefits of employment in a high-value and high-tech industry, establishment of a national aerospace industrial base and even national pride outweigh the costs of market distortions. This has become one of the most politically charged forms of government intervention requiring U.S. government attention.

Foreign government subsidies directly affect the competitiveness of our companies. Subsidized prime manufacturers as well as suppliers are able to undercut prices offered by their U.S. competitors, and are better able to weather market downturns. Subsidized companies are able to secure cheaper commercial financing since their governments share the risk associated with bringing new products to market. Subsidized production skew the market itself by flooding it with products that are not commercially viable. Governments providing the subsidies also apply political pressure on customers in an effort to facilitate a positive return on the governments’ “investments”. In many cases, these government subsidies stifle competition and often slow the introduction of new technology into the market.

European funding has had the most dramatic impact on U.S. competitiveness because European products directly compete with U.S. products in most sectors. This problem will be compounded as other governments fund new competitors that will seek to enter an already saturated market. If we maintain the status quo, U.S. industry will be left to compete against companies that don’t play by the same rules.

European and U.S. companies benefit from similar types of government funding in many respects. European governments fund military R&D and buy aerospace products, albeit at lower levels than the United States. Accordingly, European Union (EU) aerospace companies benefit from enhanced technology capability and a strengthened aerospace industrial base in the same manner as U.S. firms benefit from U.S. military spending. However, some EU officials have indicated that in the absence of sufficient defense contracts, they seek to establish and sustain their aerospace industrial base through commercial aerospace subsidies. European industry and some NATO officials have called for increasing European military procurement and improving capabilities, although such changes are likely to come about slowly. More importantly, there has been no corresponding call for reducing funding for commercial aerospace products in light of increased military investment.

Like the U.S., individual European governments provide funding for basic civil aerospace research in
many areas such as materials, aerodynamics, safety, propulsion, systems and manufacturing processes. This has led to a number of basic technology advances ranging from composites to greater fuel efficiency. Participation in these programs, and access to the research results, is limited to European firms.

The EU supplements its member state basic R&D funds via European Commission (EC) “framework programs” (FPs). In contrast to declining NASA and FAA funding, FP funding has increased dramatically since 1987. The first EU four-year FP (1987 – 1991) consisted of $35 million in R&D assistance to the aerospace industry. This figure jumped to nearly $1 billion in the sixth EU FP (2002 – 2006). According to the EC, Sixth Framework funding goals are to enhance the competitiveness of European commercial aerospace manufacturers, improve EU air traffic management and other safety issues, reduce emissions and aircraft noise and enhance the space industry. An advisory committee was established in 2001 to create EU-wide aerospace research goals and coordinate EU member state activities in an effort to improve the effectiveness of European basic research.

European and U.S. government approaches diverge on the issue of project “launch aid” (financially supporting the introduction of commercial aerospace products in the market). The U.S. has never supplied “launch aid” for commercial products. In contrast, “launch aid” funded development of almost every large commercial aircraft and aircraft engine model produced by European companies. As one example, over 75 percent of total development costs for Airbus commercial aircraft, totaling over $30 billion at current market value, were paid by European governments to help Airbus establish a competitive product line. Thus far, Airbus has repaid an estimated 25 percent of these total development costs according to the U.S. Commerce Department.

As another example, UK engine company Rolls-Royce plc has received nearly $2.2 billion since 1975 in government “launch aid” for the RB-211 and successor Trent engine programs that constitute the bulk of their engine offerings for Airbus and Boeing large commercial aircraft. According to government and private sector sources, an estimated $300 million of that launch aid has been repaid, with the majority of this debt erased from the slate at privatization in 1987 and during subsequent royalty repayment loan forgiveness by the UK government. Beyond this support, multiple European aerospace companies have received equity infusions (sometimes concurrent with privatization) to cover losses.

Figure 6-8 Boeing vs. Airbus Deliveries*

*Number of large civil jet transport aircraft produced; Boeing figures before 1997 include aircraft models manufactured by McDonnell Douglas

![Boeing vs. Airbus Deliveries](image-url)
Often European subsidies are targeted specifically to replace U.S. suppliers with European companies. The EC subsidy to Sextant to develop the avionics suite for the A340 provides a clear example. In its approval of this subsidy, the French government cited the goal of displacing the U.S. supplier of avionics for earlier models of that aircraft.\(^8\)

European funding for the “launch” of new commercial products is continuing. Nearly $4 billion in government public funds have been allocated for development of the Airbus A380,\(^9\) and nearly $385 million have been allocated by the UK government for new Rolls Royce engine derivative projects.\(^10\) In both cases, funding is being provided in the form of royalty-based loans that don’t have to be fully paid back unless the projects are a complete commercial success.

To the Europeans’ credit, their funding strategy has been very successful. EU companies have developed robust commercial product lines that are slowly displacing U.S.-produced commercial aircraft and helicopters, aircraft engines and components. Government subsidies have aided in this rise of European industry competitiveness.
European subsidies to Airbus had a direct impact on the exit of McDonnell-Douglas from the market as an independent large civil aircraft (LCA) manufacturer and its subsequent merger with Boeing. European government and industry officials repeatedly have cited the goal of Airbus achieving a fifty percent share of the global LCA market. With Airbus surpassing Boeing in terms of orders and backlog in 2001 and possibly poised to exceed Boeing in deliveries in 2003, it appears that the Europeans are achieving their goal.

Unfortunately, it appears that European officials intend to continue directly subsidizing EU companies. The recently unveiled EU aerospace policy strategy calls for an increase in subsidies to continue building market share, largely at the expense of U.S. companies. If trends continue, European companies may soon gain market leadership in other products and technologies as well. This fundamental mismatch of declining U.S. government R&D funding for basic research and increasing European government funding for both basic research and product development is reaching crisis proportions for U.S. industry. This challenge cannot go unanswered.

Disputes over subsidies are likely to be exacerbated in the coming years as other governments look to Europe as a role model and support their indigenous manufacturers in an attempt to establish or gain market share. Countries such as China have well-established plans to foster their domestic aerospace manufacturing capability for military and civil aircraft. Production by Russian aerospace manufacturers has fallen off greatly since the dissolution of the Soviet Union, and the Russian government has implemented a number of protectionist policies in an attempt to rebuild their industry.

Stop Direct Commercial Product Subsidies. In order for the playing field to be level, foreign companies need to be subject to the same market forces as their U.S. competitors when seeking funding for the introduction of new products to the market. We should support the further privatization and increased transparency of European companies so they become more responsive to company shareholders than to government planners. Establishment of EADS as a private company is an important step in this direction. Another positive trend is European companies reportedly seeking other risk-sharing partners to cover nearly a third of the development costs for the two newest commercial aircraft-related programs, namely the Airbus A380 and the Rolls-Royce Trent 900 program to power the A380. Increasing availability of commercial financing may reduce European industry dependence on government subsidies.

In reality, European companies are unlikely to stop taking government money if European governments keep offering it. Therefore we should make every effort to work bilaterally with EU governments to get them out of the business of “product launch”. This will be very difficult. European officials offer grossly exaggerated claims of U.S. subsidies to commercial aircraft programs through funding of military research and procurement as justification for their continuing subsidies. U.S. efforts to clear up these misconceptions thus far have fallen on deaf
ears, but we should continue to press our case. We are skeptical that bilateral efforts with European governments or other market newcomers will be sufficient.

Any truly workable solution must therefore be multilateral in nature. International trade agreements have significantly liberalized trade of civil aerospace products and reduced government intervention in the civil aerospace market, starting in 1979 with the negotiation of the General Agreement on Tariffs and Trade (GATT) Agreement on Trade in Civil Aircraft. This agreement has successfully eliminated import tariffs on aircraft, engines and parts by signatories, and had some impact on reducing government intervention in procurement decisions.

Under the pressure of a possible U.S. challenge of European subsidies to Airbus in the GATT, U.S. and European negotiators went to the table to draft the 1992 Agreement U.S.–EU Agreement Concerning the Application of the GATT Agreement on Trade in Civil Aircraft on Trade in Large Civil Aircraft (the “1992 Aircraft Agreement”). This agreement further clarified the type and extent of financial and political support U.S. and European governments could provide to large aircraft manufacturers.

The 1994 Marrakech Agreement establishing the World Trade Organization (WTO) contained further disciplines on market-distorting subsidies through the Agreement on Subsidies and Countervailing Measures (ASCM). Together, these three trade agreements provide relatively robust disciplines that theoretically establish a level playing field for global aerospace producers.

Although WTO provisions are established to ensure there is fair and open trading between signatory nations, the system breaks down when one party chooses to violate the agreement. Application of remedies becomes difficult when addressing actions by nations in support of global companies with global customers and partners. Governments may be reluctant to pursue trade cases in the WTO for fear of starting a devastating trade war. Globally-focused companies may be reluctant to press for action against their subsidized competitors for fear of losing access to foreign suppliers or customers because of counter-retaliation or political pressure.

Failure to enforce WTO provisions, however, results in distorted competition where the subsidized company gains market share at the expense of unsubsidized companies. The only option left is to subsidize in kind. Once one country steps out of line, the rest follow. We find ourselves in a “race to the bottom”, where both parties would find it in their best interests to withhold subsidies but instead find themselves pressured to take the exact opposite course.

The ongoing dispute between Brazil and Canada over violations of the ASCM by both parties in support of regional aircraft sales shows both the strength and the weakness of WTO provisions in addressing aerospace subsidies. A WTO Dispute Panel conducted an objective study of both countries’ subsidy programs and found them to be in violation of the ASCM. A successful resolution to this dispute has been far more elusive, as neither party has been willing thus far to eliminate the market distorting effects identified by the panel.

Our response must be to fix the World Trade Organization instead of abandoning it. The U.S. government should work to strengthen the existing WTO provisions restricting the use of subsidies to distort the market. This could be a combination of new and/or more stringent subsidy disciplines applicable to aerospace companies to be negotiated in the WTO Doha round of negotiations. This will be a difficult challenge as previous attempts have been only partially successful, perhaps due to a failure of all parties to commit to finding a workable solution. In any event, existing provisions must not be weakened.

Our response must be to fix the system instead of abandoning it.
The U.S. government also should work with other WTO members to adopt more effective trade remedies to address distortions that do occur. These remedies must be usable and effective in a market characterized by increased globalization. We cannot let the WTO become a forum where member governments seek to divide up markets and production work shares. Instead, WTO members must commit to work together to eliminate market distortions to enable competition between companies, not between countries.

Despite the deficiencies of the existing system, the U.S. government should not shy away from challenging illegal subsidies under applicable WTO provisions. All parties have negotiated these provisions in good faith and willingly agreed to them. Accordingly, the U.S. government should require that European and other governments live up to their obligations. This includes obligations in the 1992 U.S.–EU Aircraft Agreement as well as the WTO.

We also believe there is a compelling case to help our companies get back in the technology race by revising our policies on investment in basic research and development. The U.S. government should not provide “product launch” funding for new programs. However, we should increase funding for investigation of revolutionary enabling technologies and processes such as propulsion, materials, communications, air traffic management and security. In areas where we conduct basic research, the government should bring technology to a more advanced level of technology readiness than is current practice to assist with technology diffusion among the industry. Without such investments, our companies will only fall farther behind.

**Domestic Tax Policy.** Like subsidies, tax policies impact the prices companies are able to offer in international sales. Accordingly, tax policy is the source of another long-standing dispute between the U.S. and the EU. EU countries rely heavily on a value-added tax (VAT) for revenue. The VAT tax is imposed on imports and rebated at the border for exports. EU countries also tend to tax their companies more leniently on overseas earnings than on domestic profits. Similar benefits are not traditionally available to U.S. companies under domestic U.S. tax law.

To create a more level playing field, over thirty years ago the United States government established a provision in U.S. tax law that permitted U.S. companies to reduce domestic taxes on a share of profits derived from exports. This regime, called the DISC (Domestic International Sales Corporations), was intended to offset the competitive advantage offered to European companies via the VAT system. Europe challenged the DISC program under multilateral rules (the GATT) as an unfair advantage to U.S. companies, and the U.S. challenged the VAT system in response. Following negotiations with the Europeans, in 1984 the U.S. government established the U.S. Foreign Sales Corporation (FSC) tax regime, replacing the DISC with a more restrictive regime that still leveled the playing field.

Fifteen years later, Europe once again challenged U.S. tax law under multilateral rules, even though WTO negotiators had refrained from establishing explicit WTO rules on domestic taxation. Although the FSC system directly offset tax benefits available to European competitors, the WTO determined that the FSC regime was an illegal export subsidy inconsistent with WTO rules. In an effort to become WTO compliant, the United States repealed FSC and enacted the “FSC Repeal and Extra-territorial Income Exclusion Act of 2000” (ETI) regime in November 2000. The WTO subsequently ruled that ETI also was not in compliance.

We highlighted in Interim Report #2 the need for the United States to work closely with the EU to find a mutually agreeable solution to this dispute in order to avoid the up to $4 billion in trade sanctions against the United States threatened by the EU. Retaliation of this magnitude would be devastating to U.S.–EU trade relations. However, U.S. companies will face a significant competitive disadvantage if a replacement U.S. tax regime is adopted that does not counter the export-related benefits to European companies of their VAT system. Loss of the ETI tax incentive would result in declining sales as U.S.
manufacturers have to raise prices to compensate for
the increased tax burden, and may result in the loss
of U.S. employment as companies move jobs to off-
shore facilities that enjoy favorable tax treatment by
foreign governments.

The U.S.–EU dispute over FSC/ETI will have a par-
ticular impact on U.S. aerospace companies. Because
they generate a significant portion of their revenue
from export sales and their primary competitors are
European companies who receive VAT benefits,
many U.S. aerospace companies are active users of
the FSC program.

Negotiate Permanent Solution to Tax Disputes. In the
near term we must seek to delay European sanctions
while both parties negotiate a solution. We urge the
President and Congress to authorize changes to U.S.
tax law that are WTO compliant but that continue
to offset the advantage enjoyed by European compa-
nies. The Commission highlights some favorable
proposals for such changes in Chapter 7, namely an
enhanced national security R&D credit and propos-
als offered by the National Foreign Trade Council
related to wage credits and changes in accordance
with WTO rules (including “Footnote 59” of the
WTO ASCM). The Commission urges the
Administration to work with industry and Congress
to develop an equitable resolution to this dispute.

In the longer term, the Administration should initi-
ate changes in the WTO rules to remove the current
inequity in the treatment of direct and indirect taxes
that caused the dispute in the first place. We are not
advocating the global harmonization of tax law,
rather we wish to ensure that WTO rules create a
level playing field.

Export Financing. The U.S. government also has
sought to eliminate unfair pricing practices and to
level the playing field in the area of government-supported export financing.

Financing plays a critical role in the ability of cus-
tomers to procure military and commercial aircraft.
International agreements, such as the Organization
for Economic Cooperation and Development
(OECD) Arrangement on Officially Supported
Export Credits, establish ground rules for govern-
ments seeking to support commercial export financ-
ing by absorbing some of the risk of loan default by
customers. These financing arrangements, known as
export credit agency (ECA) programs, facilitate the
purchase of aircraft by customers who would not
otherwise have sufficient access to commercial
financing.

The U.S. Export Import Bank (Ex-Im Bank) sup-
ports financing for sales of commercial aircraft as the
U.S. ECA. Ex-Im Bank loan guarantee applications
are rigorously reviewed for commercial viability and
risk before they are approved, resulting in an excel-
rent history of repayment. Nonetheless, Ex-Im Bank
has congressionally appropriated funds to cover
losses from high-risk projects that exceed program
fees.

Ex-Im Bank funding programs for exports of com-
mercial aircraft are an essential tool to counter dis-
counted or otherwise preferential financing terms
offered by foreign manufacturers with the assistance
of their governments. Continued support from Ex-
Im Bank is particularly important in light of a recent
agreement among European ECAs to expand their
export credit support for European aircraft and
engines.

Ex-Im Bank financing also enables airlines from
poorer countries or with credit problems to access
financing they need to keep operating and to inte-
grate safer and more environmentally friendly air-
craft into their fleets. Airlines struggling to survive
the current downturn in global traffic will become
more reliant upon these programs in the near future.

Continue Commercial Aircraft Official Export
Financing. Continued funding for Ex-Im Bank is
important to the U.S. aerospace industry. The U.S.
government also should support efforts to reduce
international reliance on ECAs for export financing
assistance, such as through ratification of the “Cape
Town convention” (The International Institute for
the Unification of Private Law Mobile Equipment
Convention and Aircraft Protocol). This convention
The House Armed Services Committee has proposed expanding the list of countries eligible for DELG assistance in an effort to make the program more usable. We supported inclusion of this provision in the FY 2003 Defense Authorization legislation, and encourage further revisions to the program.

and protocol sets rules that determine the order in which creditors will get paid if an airline defaults on mortgage payments. The certainty provided by these rules helps airlines to access cheaper financing and helps creditors to make wise loan decisions.

The U.S. government falls short in providing necessary financing for military aircraft exports. The Defense Export Loan Guarantee (DELG) program established by Congress in 1996 provides a framework for such financing, but the shortfalls in the program are evidenced by its limited use. The DELG program shares most of the characteristics of the Ex-Im Bank loan guarantee program for civil sector exports with an important exception—the defense loan guarantees are not subsidized with funds appropriated to the DoD. Because of statutory constraints and regulatory and administrative practices, this program has proven to be unattractive to potential foreign customers—only one small transaction has been executed in more than five years of operation. As a result, the United States is the only significant exporter of defense-related equipment without an effective military-related exports credit mechanism.

Modernize the DELG. The DELG program needs to be modernized to permit the DoD to create an effective export credit organization that will facilitate the financing of defense exports to U.S. allies and friendly nations abroad. Modernization of the DELG should remove dysfunctional statutory and regulatory constraints that frustrate implementation of the DELG statute. A number of legislative and policy changes would make this program more effective. For example, customers should be permitted to finance their exposure fees, the lists of countries eligible for DELG financing should be expanded, and administrative costs should be reduced. These reforms are highlighted in more detail in the Commission’s Interim Report #2.

In addition to DELG reforms, Export Import Bank funding could be extended to military equipment purchases and the Foreign Military Sales (FMS) program could be updated.

Commercial Mergers and Teaming. International collaboration between companies and much needed rationalization of the global aerospace industry are impeded by a number of foreign government policies on foreign investment and mergers and acquisitions in the commercial sector. Oftentimes countries impose restrictions in these areas to protect their “national champions” from national or international competition.

Because of the increasing global nature of production and customers, foreign governments have increasing jurisdiction over mergers or teaming plans of U.S. companies. This becomes a competitiveness issue when foreign governments make decisions based on different criteria than the U.S., or based on concerns about the market share of their own “national champion”.

This issue has been most prominent in Europe. United States and European officials appear to have different philosophies on consolidation and partnerships. U.S. regulators tend to investigate the impact of a merger on the consumer and the ultimate monopoly power of the company in the overall market. EU policy makers seek to preserve stability of the internal European market and to protect market share of European companies competing with U.S. companies.

The EU imposed a number of conditions upon the 1997 merger between the Boeing Company and McDonnell Douglas in an attempt to prevent any competitive advantage of the new company over their own Airbus Industrie. More recently, concerns
about the competitive impact on EU based manufacturers apparently contributed to the EU rejection of the General Electric-Honeywell merger in spite of U.S. anti-trust approval.

All countries, including the United States, have some level of restriction on foreign investment in sensitive industries to preserve national security. However, we are concerned about instances where countries such as Russia restrict foreign investment in their commercial aerospace industries to foster their national champions. In fact, these restrictions can be counterproductive when they isolate companies from international markets and much-needed sources of capital investment.

For example, U.S. aerospace companies have invested extensively in Russia over the last ten years, providing much needed financial support and access to global markets for Russian products and capability. Multiple partnerships between U.S. and Russian companies in the space launch industry have had a significant impact on the global launch market. U.S. and Russian civil aerospace manufacturers also have worked extensively together to develop Russian aircraft with U.S. parts, systems and even engines and to secure FAA safety certification. However, domestic political pressure on the Russian government has led to restrictions on foreign investment in Russian aerospace companies, potentially resulting in divestment by U.S. companies in their Russian partners and depriving them of the myriad benefits of international collaboration.

Remove Obstacles to Commercial Mergers and Teaming. The U.S. government should remove policy and regulatory obstacles to increased commercial mergers and teaming within the U.S. and with international partners. Examples of the benefits of this business model abound. Most commercial aircraft engine programs today are characterized by extensive international collaboration, where U.S. and foreign partners combine their technology and investment capital to bring new engines to the market. U.S. prime producers of large civil aircraft and helicopters also rely heavily on foreign suppliers and partners to provide critical elements, components and expertise.

U.S. suppliers benefit from this business model as well, as evidenced by the regional jet industry. The global market for regional jets is only big enough for a limited number of manufacturers, but until recently was plagued by oversupply. The manufacturing base has undergone some consolidation/rationalization in recent years with the exit of Fokker and BAE from regional aircraft production. Following the impending departure of Fairchild-Dornier from this market segment, Embraer (Brazil) and Bombardier (Canada) will be the remaining regional jet manufacturers in business today.

U.S. prime manufacturers have not directly pursued the regional jet market. However, U.S. suppliers have significant content on both the Embraer and the Bombardier aircraft models. In fact, U.S. companies provide nearly 70 percent of the hardware to Embraer for assembly, from engines to electronics to structural components. In turn, Embraer is a key supplier of structural components to Boeing for other aircraft. U.S. suppliers benefit from an increased market for their products, and U.S. customers win as some of the largest customers of these Brazilian and Canadian regional jets.

The U.S. government should assist in developing and policing international anti-trust treaties relating to mergers/teaming between commercial entities. Such multilateral agreements could minimize divergence of requirements and the methods of assessment, presumably making reviews more objective. The U.S. government also must continue to work bilaterally with key countries to remove barriers to foreign investment.
Offsets. “Offsets” are a form of market distortion in global aerospace trade that can take on the form of forced collaboration. Offsets are conditions that a foreign government negotiates with a company seeking to export a major defense or commercial system to its country. Under an offset agreement, the exporting company agrees to either shift some production of the system and/or parts to the procuring country, or to offer some other technological or economic benefit. Procuring governments usually seek to negotiate the best offset package possible from all competing bidders, e.g., U.S. and foreign aerospace companies.

Offsets are most prevalent in defense procurements because governments negotiate the terms of the sales. According to figures gathered by the U.S. Department of Commerce and the Office of Management and Budget, the dollar value of defense offset agreements negotiated with U.S. companies as a percentage of the export sales with which they are associated has ranged from 34 percent to 98 percent over 1980 – 1998. U.S. exporters of defense systems complete approximately $3 billion per year in defense offset transactions with other nations. The dollar value of defense offset agreements relative to defense exports has remained stable over time; however, anecdotal evidence provided to the Offsets Commission suggests that offset demands may have grown qualitatively as the receiving countries increasingly require specific results rather than best efforts from the U.S. exporters and seek greater technology transfer. These figures in most cases exceed the actual dollar value of offsets provided, since procuring governments usually will associate higher values to offsets that are more important to them and hence use a “multiplier” to equate the actual offset and the negotiated percentage.

Offsets also can be involved in exports of commercial aerospace products and systems where governments own or have influence over the buyer, such as state-owned or controlled airlines. There is little data on the prevalence of commercial aerospace offset requirements since the government does not have any effective or comprehensive reporting requirements for offsets in the commercial industry. Industry surveys indicate that countries require offsets on a relatively small percentage of commercial export sales.

The full impact of offsets is difficult to determine. Such agreements can reduce the U.S. content in the product or system being exported, and can shift some production or technological capability to the procuring country. This may result in a shift of U.S. jobs to foreign suppliers. However, if an offset agreement enables a U.S. company to make an export sale that would not have occurred without the offset, the effect is to create additional work and jobs in the United States. Offsets also can provide U.S. industry access to new markets and technology. We highlight concerns about the impact of offsets on the U.S. workforce in Chapter 8.

Reactivate Offsets Commission. To minimize any negative impact of government-mandated offsets on the U.S. aerospace industry and employment, the United States should maintain its policy of discouraging such offset requirements by foreign governments. Unilateral restrictions that prevent U.S. producers from participating in offset agreements likely would shift demand to other countries, reducing business for a wide range of U.S. prime contractors and subcontractors. Therefore the U.S. government should pursue a multilateral solution to curtail offset demands.

The National Commission on Offsets in International Trade established in 2000 to examine the use of offsets has not undertaken further study following the publication of an interim report in January 2001. Reactivating that Commission may be the best alternative for developing policy recommendations on this issue.

Regulations and Standards. Global standards and regulations are critical to the efficient operation of the global aviation system and international markets. They provide predictability and stability that
companies and customers alike need to make wise investment choices. They are the avenue through which governments ensure the safety and security of air travel. They also facilitate the free movement of goods and people by creating transparency of policies and compatibility of products and systems. Governments use standards and regulations to pursue other goals in the public interest as well, such as reducing the environmental impact of aviation.

The decline of traditional trade barriers has led to an increasing impact of standards and regulations on the competitive position of U.S. companies. To gain competitive advantage, some countries have established domestic standards or regulations that do not fully reflect or, in some cases, ignore global aerospace standards and practices.

Since the signing of the Chicago Convention in 1944, the International Civil Aviation Organization (ICAO)—a specialized agency of the United Nations (UN)—has served as the forum for establishment of international civil aviation standards and recommended practices that have enabled development of the aerospace industry as we know it today. As a consensus organization made up of representatives from almost every nation of the world, ICAO has been and remains the right place for aviation standards and practices to be developed and policed.

In view of the increasing international competition, the U.S. has not kept pace by devoting adequate resources to the development of global standards. As of the end of 2001, U.S. citizens occupied only 11 of the 27 staff positions the United States is entitled to hold in ICAO. Our involvement in ICAO often is further hampered by general U.S. government policy regarding the UN, such as the zero nominal growth policy for UN budgets. Even though we want and need ICAO to do more to support global aviation, we are prevented from providing the resources necessary to do so. Lack of resources and reduced involvement in ICAO and other international cooperative efforts erode the image of the U.S. FAA as a global leader. The U.S. is losing its position as the de facto standard setter.

To minimize any negative impact of government-mandated offsets on the U.S. aerospace industry and employment, the United States should maintain its policy of discouraging such offset requirements by foreign governments.

In contrast, European governments actively are seeking global leadership in this area, often at odds with U.S. and other country interests. They have devoted increasing resources to international standards-setting bodies such as ICAO in an effort to shape global standards and regulations. The EU also is active in providing technical assistance to third-country regulators in an effort to influence their regulatory decisions. When they are not satisfied with the process or outcome of international deliberations, the EU has chosen to establish unilateral regulations to force their position.

The unilateral European “hushkit” regulation (European Council Regulation-EC No. 925/1999) established in 1999 by the EU clearly illustrates the need for internationally agreed-upon standards. The stated goal of the hushkit regulation was to provide European citizens relief from aircraft noise, but the regulation was constructed in a way that it had a disproportionate impact on U.S. products and airlines. U.S. industry-estimated economic damage caused by the European hushkit regulation approached $2 billion in lost sales of aircraft engines and hushkits and reduced asset value of U.S. airline fleets.

This dispute has been partially resolved by ICAO adoption in October 2001 of a new aircraft noise standard and related policy guidelines. U.S. political leadership and technical expertise was instrumental
in developing this global consensus on aircraft noise. It is exactly this sort of effort from the U.S. government that must be sustained, as well as expanded in other areas. Future unilateral regulations, especially environmental regulations related to aircraft noise and emissions, constitute a serious threat to fair and open trade.

Another example of regulation being used to further EU competitiveness goals relates to aircraft safety certification. European authorities appear to have used delays or denial of certification of U.S. aircraft to be operated in Europe for competitiveness reasons instead of safety or objective technical reasons. There are numerous examples where additional certification testing or procedures were required or where the certification process was unjustifiably prolonged for particular U.S. manufactured aircraft models. The resulting delays caused by European regulators worked to the benefit of European manufacturers.

Reinforce Commitment to Leadership in Global Standards. In most cases, a multilateral solution is the best remedy for regulatory trade barriers. Global standards would reduce the burden on manufacturers, provide clarity and constancy of requirements and ensure the playing field is level.

The U.S. government needs to devote adequate leadership and resources to the development of global standards in ICAO and via other forums. The United States has been a leading voice and influence in ICAO since its inception, although that influence is waning. We are not critical of increasing European involvement in ICAO—in fact, we welcome an increasing reliance on international standards. The U.S. government must follow suit and commit sufficient funding and staff resources to ensure U.S. views are integral to ICAO discussions and decisions. Particular attention should be paid to the development of global environmental standards and recommended practices through ICAO, based on objective analysis and common metrics.

An increased commitment to ICAO includes an expanded U.S. presence at ICAO. We must proactively support the placement of U.S. citizens in leadership and staff positions in the ICAO organization. This means devoting more attention to recruitment for ICAO positions and actively supporting FAA employees who make working for ICAO a career objective. There is no better way of ensuring U.S. views are well represented than having U.S. citizens working at ICAO.

U.S. officials must have sufficient funding to participate in ICAO meetings and to cover operational expenses too. Industry has spent significant money and resources to facilitate the development of ICAO standards and procedures. This partnership with industry is critical to the successful establishment of standards, but the burden should not fall solely on their shoulders. The United States cannot afford to be left behind as a result of not devoting adequate resources to protect our interests.

The U.S. government also needs to do a better job of coordinating U.S. policy positions before bringing them to international forums. In spite of best efforts, the existing interagency coordination process is not always effective in giving equitable weight to the views of each agency or in avoiding unclear or conflicting U.S. positions in international negotiations. The government structure reforms outlined in Chapter 3 would facilitate this coordination.

Although ICAO is in essence a consensus organization, numbers still matter. Therefore, we take issue with one element of increasing European involvement in ICAO—the European voting block. The U.S. is disadvantaged in ICAO discussions by the European voting block of fifteen European votes to one U.S. vote when there is a disagreement. The United States government should oppose adding a voice in ICAO for the EC unless it will replace individual EU member state votes instead of complementing them.

Our cooperation should not be limited to activities in ICAO—some issues such as requirements for safety certification may be best addressed bilaterally. The United States should continue to devote
resources to harmonizing U.S. and foreign safety certification requirements to ensure the highest level of safety while reducing the burden of meeting multiple requirements in different countries. Harmonizing aircraft safety certification also would reduce the ability of foreign authorities to unfairly restrict U.S. industry access to their markets. This will require a commitment to international exchanges of technical experts and policy makers as well as a concerted effort to develop support of all the necessary constituents affected by such a harmonization.

Global Partnerships: Lack of Commitment
The importance of global standards and cooperation extends beyond avoidance of regulatory barriers to trade. International partnerships are essential to the creation of system-of-systems solutions to global challenges.

**Air Traffic Management System.** In order to move people and goods anywhere around the world, anytime, we need a global air traffic management system. In Chapter 2 we discuss the need to transform our management of U.S. airspace through the use of advanced technologies and improved procedures. We also need to ensure that there continues to be a seamless transition for aircraft entering or leaving U.S. airspace. Therefore, the transformation will be successful only if the United States acts in concert with other governments around the world in a number of areas.

Fundamentally, the overall architecture of the new system we envision must be compatible with that of neighboring airspace, requiring cooperation on near-term upgrades as well as long-term development plans. We are encouraged that long-term development plans issued by Eurocontrol and other foreign authorities appear similar to the new system we are proposing. The FAA must continue to consult with their foreign counterparts to ensure that these development plans are coordinated.

Common operational procedures and standard protocols are critical elements of compatibility. Through ICAO, aviation experts have established recommended practices to guide the operations of pilots and air traffic controllers. Pilots and controllers will rely on each other and share information in new ways in the proposed new system. As a result, the United States should lead development of new operational guidelines through ICAO, as well as promote opportunities for training of pilots and controllers in the new procedures.

Interoperable technology is another critical element of compatibility. ICAO now is developing standards and recommended practices for global navigation satellite services, one element of the new system we propose. The United States should lead ICAO efforts to accelerate work in this area, bringing together existing technology and expertise gained from American GPS and Russian GLONASS systems and new systems of the future. We also must start work now in ICAO to identify additional areas where introduction of new ATM technology will require common standards and procedures, and commit technical and policy resources to assist in their development. A failure of the United States to commit sufficient resources and attention to ICAO work in these areas could have disastrous implications for our efforts to field a new system.

We also must ensure that deployment of a satellite-based navigation and ATM system is not thwarted
by disputes over radio spectrum allocation. The United States must work cooperatively with other countries via the World Radio Conference and other multilateral forums to ensure that the necessary frequencies are available around the world. For us to be effective, U.S. government officials must coordinate policies among our own government agencies as well as commit the resources needed for active participation in international negotiations.

European plans to establish the “Galileo” satellite constellation system could either help or harm efforts to establish a new global ATM system. Galileo is intended to provide the same type of service as the existing Global Positioning System (GPS) constellation owned and operated by the United States government and available to all users for free. GPS and other satellite services would serve as the foundation of our proposed new ATM system, providing better navigation and positioning information to pilots and to controllers around the world.

The impact of Galileo on the global air traffic system and on U.S. industry depends largely on how European policy makers choose to develop and operate their system. In the best-case scenario, Galileo would offer enhanced capability as well as redundancy to users of the satellite navigation system, although we are skeptical that establishment of a completely redundant system is necessary or even a wise investment of limited budgets. To be compatible, Galileo and GPS must use common protocols and not interfere with each other’s signals.

In the worst-case scenario, Galileo signals would be incompatible or even interfere with GPS signals. We are concerned that current European government proposals for funding development, deployment and operation of Galileo could lead to just such a conflict.

European governments do not intend to fully fund Galileo as the U.S. government funds and operates the GPS constellation. Instead, the EU intends to rely on commercial revenues from the sale of access to Galileo signals. We are unclear how the EU intends to generate demand for a fee-based system that offers the same service as a free system, unless EU regulators mandate the use of Galileo transponders and services by European companies or within the borders of the EU. We strongly oppose any such mandate. It would be very harmful to U.S. and all other non-European industry and create artificial barriers to the integration of European and neighboring airspace. Such a scenario surely would be grossly detrimental to the global aviation community.

U.S. government officials must work bilaterally and multilaterally to ensure GPS and Galileo are compatible and complementary in the event that Galileo becomes a reality. There have been some positive steps taken by U.S. and EU officials over the last year toward this goal, and we urge those officials to continue their discussions. We also must collaborate with others in the global aviation community to develop common standards and procedures in support of a truly seamless system of worldwide capability.

Open Global Air Transportation. A safe, efficient global transportation infrastructure provides little benefit if airlines are not able to use it. We therefore call for increased liberalization of air transport services. Growing demand for air traffic will translate into the need for more planes and equipment, benefiting passengers, airlines and manufacturers around the world. Therefore, continued liberalization of the air transport market is another critical prerequisite to the continued growth and competitiveness of the U.S. aerospace industry.
Restricted access to airports is a problem. The United States government should continue to negotiate “open skies” agreements that allow domestic and foreign airlines to use airports and airspace more productively by reducing overcapacity and enabling more point-to-point travel. This will avoid reliance upon congested hubs and reduce the cost and time of travel for the passenger, an issue of particular importance given the increased prevalence of security-related delays.

Cooperative Space Activities. Our cooperation should not be limited to terrestrial-based systems. We discuss in detail recommendations related to space in Chapter 3, but would be remiss if we failed to mention some key points related to the global nature of space exploration and planetary defense.

Space Exploration. The success or failure of our future efforts in space exploration is linked to our ability to work effectively with international partners. The magnitude of establishing a permanent presence in space and exploring new systems is too great to undertake alone—or would we want to. Beginning with the first Apollo-Soyuz mission in 1975, we have learned that collaboration in space exploration benefits all parties as we set aside differences and pool our resources to achieve common goals.

Although we are responsible for managing and operating the International Space Station (ISS), U.S. government decision makers must remember that U.S. funding and policy decisions directly affect the ability and willingness of international partners to participate in the ISS program. We want and need the ISS to be an international endeavor. ISS partners contribute expertise and resources fundamental to the operation of the station.

NASA must consider carefully the impact on international partners of decisions to restructure or reorient U.S. space exploration priorities. This includes decisions on a crew return vehicle needed to boost ISS staffing to a level beyond basic operation of the station. ISS partners have invested significant resources and expertise in developing and producing research modules and other ISS components that simply won’t be used unless there is sufficient staffing on board.

Planetary Defense. Cooperative space efforts also should include planetary defense against Near Earth Objects (NEOs) ranging from asteroids to comets that come near (or impact) the earth. NEOs pose a potentially serious threat for the planet and for human kind. Scientists point to evidence of NEOs striking the earth millions of years ago, dramatically altering the climate and life on earth. The 1908 “Tunguska event” in Siberia, estimated to have had an impact equivalent to a 40 megaton bomb, was a more contemporary warning that this threat is real. Recent press reports have highlighted a series of near-misses on a planetary scale where NEOs the size of small cities came dangerously close to striking the earth.

NEOs represent a truly global problem in need of a truly global solution. The U.S. government must work with other countries through the UN and other organizations on efforts to integrate a planetary surveillance, identification and defense system.
Conclusions
Open global markets are critical to the continued economic health of U.S. aerospace companies and to U.S. national security. In order to remain global leaders, U.S. companies must remain at the forefront of technology development. They must also have access to global customers, suppliers and partners in order to achieve economies of scale in production needed to integrate that technology into their products and services.

Government intervention continues to distort global markets, from subsidies to anti-competitive restrictions on partnerships and collaboration to biased standards and regulations. U.S. companies frequently find themselves competing against foreign competitors supported directly or indirectly by their governments. We need to move to a different model of business characterized by competition between companies instead of between countries.

Reform Export Controls and Defense Procurement Policies. U.S. national security and procurement policies represent some of the most burdensome restrictions affecting U.S. industry competitiveness.

We call for a fundamental shift away from the existing transaction-based export-licensing regime to process-based licensing. Under this new system, the government would rely on companies to safeguard against the sale of controlled technologies to unacceptable parties through internal company controls certified by the government. The government then would monitor and audit those company operations for compliance. Such a process-based licensing regime would improve security, reduce licensing costs and enable our companies to collaborate with international partners and sell to global customers.

Additional reforms, including those outlined in Interim Report #2, are necessary to make this new system effective. As quickly as possible, the government should revise the U.S. Munitions List, remove barriers to global project licenses, expand waivers for trading with friendly nations, and update country risk surveys to facilitate better policy decisions.

U.S. procurement regulations currently are too restrictive and must be modified to be supportive of a global industrial base to meet military requirements, while maintaining U.S. industrial capacity in critical technologies and capabilities. We need to reform DoD procurement regulations to permit integration of commercial components into military products even if they are provided by non-U.S. companies or worked on by foreign nationals.

Establish a Level International “Playing Field”. U.S. companies have lost market share to foreign companies supported by protectionist and market distorting policies. The U.S. government must take immediate action to neutralize these distortions and enable fair and open competition.

We must continue to meet our responsibilities of setting national goals and priorities for basic research, reverse declines in basic R&D funding and expand efforts to fund technology diffusion through U.S. industry.

We also must work bilaterally and multilaterally to get foreign governments out of the business of commercial “product launch.” In spite of inadequacies of the current WTO system, the U.S. government should work in the WTO Doha round of negotiations to strengthen the existing WTO provisions restricting the use of subsidies to distort the market. The U.S. government also should work with other WTO members to adopt more effective trade remedies that are usable and effective in a market characterized by increased globalization. When countries do violate existing provisions, we should not shy away from taking action.
We must ensure that U.S. companies are not disadvantaged by differences between U.S. and foreign tax policies as exemplified in the current WTO dispute over U.S. FSC/ETI regulations. In the near term we must seek to delay European trade sanctions while both parties negotiate a solution to this dispute. We urge the Administration and Congress to authorize changes to U.S. tax law that are WTO compliant but that continue to offset the advantage enjoyed by European companies. In the longer term, the Administration should initiate changes in the WTO rules to remove the current inequity in the treatment of direct and indirect taxes that caused the dispute in the first place.

Official export credit support for commercial and military products is an essential tool to facilitate U.S. aerospace exports. In addition to continued funding for U.S. Ex-Im Bank programs, we should seek to reduce international reliance on official export credits for export financing assistance, such as through ratification of the “Cape Town convention.” For military exports, the DELG should be modernized to permit the DoD to create an effective unsubsidized export credit organization to facilitate the financing of defense exports to U.S. allies and friendly nations abroad.

The U.S. government should remove policy and regulatory obstacles to increased commercial mergers and teaming within the U.S. and with international partners. The U.S. government should assist in developing and policing international anti-trust treaties relating to mergers and teaming between commercial entities to minimize divergence of requirements and the methods of assessment in anti-trust reviews, presumably making reviews more objective. The U.S. government also must continue to work bilaterally with key countries to remove barriers to foreign investment.

Global standards and regulations are critical to the efficient operation of the global aviation system and international markets. The U.S. government needs to step up its commitment to the development of global standards in ICAO and via other forums. This will help to mitigate the efforts of other countries seeking to provide a competitive advantage for their companies through biased domestic standards or regulations.

**Commit to Global Partnerships.** International partnerships are essential to the creation of system-of-systems solutions to global challenges.

In order to meet our goal of transforming the way we use airspace through the use of advanced technology and improved procedures, we must act in concert with other countries around the world. We must commit to developing common standards and recommended practices for satellite navigation in ICAO, and ensure that global cooperative efforts are not thwarted by disputes over radio spectrum allocation. We strongly urge U.S. officials to work bilaterally and multilaterally to ensure that U.S. GPS and European Galileo systems are compatible and complementary in the event that Galileo becomes a reality.

U.S. policy makers should work toward global standards for safety certification as a way to prevent the use of safety certification by some governments to enhance their domestic competitiveness. We also call for increased liberalization of air transport services through negotiation of open skies agreements in order to expand the demand for all countries’ air transport services and alleviate undue congestion at the largest airports.

The success or failure of our future activities in space is fundamentally linked to our ability to work effectively with international partners. It is in our country’s best interest to work cooperatively with partner nations in space exploration and protection of our planet from the threat of NEOs.
RECOMMENDATION #6: The Commission recommends that U.S. and multilateral regulations and policies be reformed to enable the movement of products and capital across international borders on a fully competitive basis, and establish a level playing field for U.S. industry in the global marketplace. The U.S. export control regulations must be substantially overhauled, evolving from current restrictions on technologies through the review of transactions to controls on key capabilities enforced through process controls. The U.S. government should neutralize foreign government market intervention in areas such as subsidies, tax policy, export financing, and standards, either through strengthening multilateral disciplines or providing similar support for U.S. industry as necessary.