



The Post-9/11 Global Framework for Cargo Security

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Abstract

This paper reviews changes in global cargo security policies following September 11, 2001. The events of 9/11 led to the establishment of new protocols for tracking and screening cargo both in the United States and in foreign countries. These protocols have been incorporated into international frameworks such as those under the World Customs Organization (WCO), and in country-specific programs such as the Container Security Initiative (CSI) and the Customs-Trade Partnership Against Terrorism (C-TPAT) administered by the United States. In addition, a host of foreign countries, including Australia, Canada, Sweden and New Zealand have introduced new cargo security programs following 9/11 or have strengthened previously existing programs. Many of these countries aim to harmonize their cargo security standards with those of the United States. Although substantial progress has been made in the development of post-9/11 cargo security programs, some have expressed concern regarding the programs' efficacy, their costs to business, and their effects on cross-border trade. At present, post-9/11 cargo security programs continue to be refined, which may ultimately lead to changes in the direction and implementation of these programs.

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Introduction

This article surveys changes in cargo security policies following the terrorist attacks of September 11, 2001. The events of 9/11 led the United States and its trade partners to re-assess and strengthen the global cargo security regime, resulting in new protocols for tracking, screening, and inspecting containerized imports and exports (Schmitz 2007).² These protocols have entered international frameworks such as those under the World Customs Organization (WCO), and have led to two new prominent U.S. programs; the Container Security Initiative (CSI) and the Customs-Trade Partnership Against Terrorism (C-TPAT). Several U.S. trade partners have either established programs similar to those of the United States or participated in the mutual recognition of these programs.

Despite progress in the development and implementation of post-9/11 cargo security programs, however, concerns remain regarding their efficacy, their costs to business, and their effects on cross-border trade. For example, while the primary goal of post-9/11 programs is to prevent the cross-border movement of terrorist-related weapons, some have found that nonuniform security procedures among C-TPAT members and inadequate screening equipment at certain CSI ports may compromise this objective (GAO 2005). Separately, it is unclear whether the benefits of participation in post-9/11 cargo security programs outweigh their costs to participants. In particular, a 2007 study conducted by the University of Virginia found that whereas the annual costs to U.S. importers of participation in C-TPAT were more than \$30,000, the benefits of such participation, including increased supply chain security and fewer customs inspections, had not yet been fully realized (CBP 2007b). Finally, a recent Canadian study found that while post-9/11 cargo security programs have had no measurable impact on the volume of cross-border trade between the United States and Canada, such programs have resulted in increased border delays and therefore higher costs for firms engaged in U.S.-Canada trade (CBP 2007b).

² In general, the objective of cargo security measures is to prevent the cross-border shipment of dangerous or illicit goods such as weapons of mass destruction (WMD), drugs, chemicals intended for destructive use, counterfeit or undeclared merchandise, firearms, currency, and hazardous materials.

Following a discussion of international agreements that address cargo security, this article will review U.S.- and foreign-country-based cargo security programs developed after 9/11.³ The article will then outline the primary challenges and concerns of current programs, as plans to expand the global framework for cargo security move forward.

International Agreements on Cargo Security

The events of 9/11 precipitated a change in cargo security measures at national borders. Prior to 9/11, customs authorities were responsible primarily for clearing imported goods after such goods arrived at the border. They did so through the review of entry documentation accompanying such goods at the time of importation and, if necessary, their physical inspection. In contrast, the cargo security programs developed after 9/11 emphasize preshipment examination of exports. In particular, these programs require that exporters provide customs documentation in advance of their shipment of goods to the importing country. Such advanced documentation assists customs authorities employing sophisticated and multilayered risk assessment techniques to determine whether to admit goods at the border or to hold them for further inspection.⁴

Although advance information requirements and mandatory screening procedures can disrupt the flow of cross-border trade, recent international conventions aim, for example, to harmonize customs practices across countries and to require that individual customs administrations employ efficient, technologically advanced, and unburdensome procedures for inspecting and clearing cargo (De Wulf and Sokol 2005, xv).

After the events of September 11, 2001, the WCO ratified the revised Kyoto Convention on the Simplification and Harmonization of Customs Procedures and introduced a new set of protocols for cargo security called the Framework of Standards to Secure and Facilitate Trade (SAFE) (WCO 2006).⁵ The objective

³ For a brief comparison of the cargo security programs discussed in the following pages, please refer to the appendix at the end of this article.

⁴ In August 2007, President Bush signed the 9/11 Commission Recommendations Act, which requires that, by 2012, all U.S.-bound containerized cargo must be scanned by X-ray machine before entering the United States. For more information, see subsequent section on U.S.-based cargo security policies. Natter 2007.

⁵ The revised Kyoto Convention, which was drafted in June 1999 and entered into force in February 2006, is an updated version of the International Convention on the Simplification and Harmonization of Customs Procedures (Kyoto Convention) of 1974. As of January 2007, 52 countries were parties to the agreement. WCO Instruments and Programmes.

of these documents was to address the specific security needs of the post-9/11 customs environment while strengthening procedures to facilitate the movement of goods across borders (Widdowson 2007). Building upon core principles found in the 1974 Kyoto Convention, the revised convention established guidelines to facilitate cross-border trade in response to the rapid growth in the volume and pace of international commerce. Among other things, the revised convention recommended that customs administrations (1) use electronically based systems to process and clear goods; (2) employ risk management techniques in selecting goods for inspection; (3) cooperate with customs authorities from other countries; and (4) ensure that customs-related laws and regulations are transparent and made readily available to the public (WCO2005; WCO2000). The revised Kyoto Convention encouraged customs authorities to advance beyond the role of gatekeeper to that of the trade facilitator (Widdowson 2007).

In June 2005, the members of the WCO adopted the SAFE Framework,⁶ which further expanded trade facilitation principles in the Kyoto Convention and introduced new provisions on cargo security in response to 9/11 (Schmitz 2007). Like the Kyoto Convention, the WCO Framework viewed customs administrations as playing a key role in facilitating trade. The framework has two customs-centered supports: the customs-to-customs network and the customs-to-business partnership. Both support the international supply chain.⁷

The customs-to-customs network uses automated techniques to screen high-risk cargo; and the customs-to-business partnership sets up procedures to precertify shippers through an authorized economic operator (an AEO program).⁸ The network and the partnerships help traders to realize the four primary concepts of the framework: (1) the harmonization of advance cargo information requirements across parties to the agreement; (2) the use of risk management techniques; (3) the inspection of outbound cargo upon the request of an importing country; and (4) the establishment of new programs to expedite customs processing for commercial shippers (CRS 2006).

⁶ The SAFE framework was developed jointly by customs administrations and the private sector. As of February 2007, 144 of the 171 members of the WCO were signatories to the agreement (Schmitz 2007)

⁷ A supply chain is defined as a network of interrelated activities including the production, transport, and storage of goods.

⁸ Authorized economic operator (AEO), or trusted shipper, programs are an important component of trade facilitation measures in that they permit importers, exporters, manufacturers, and transportation firms who have met precertification requirements to clear their cargo quickly through customs. AEO programs also aim at mutual recognition, where a certified shipper from one country may benefit from expedited customs processing in another country. Kulisch 2006, 32; and Edmondson 2007, 17.

Text box: Risk Management¹

Risk management focuses on identifying and implementing measures to limit exposure to risk, or the likelihood of an event occurring with a negative or unwanted outcome. In trade, the focus of risk management is to systematically identify imports and exports that represent the greatest risk of noncompliance of customs laws and regulations, as well as the greatest risk to national security and safety.

By using multiple risk management strategies, U.S. and foreign customs agencies can identify and target those areas that pose the greatest risk, and allocate resources accordingly. U.S. and foreign cargo security programs generally implement similar risk management strategies based on the following: collecting data elements and detailed shipment information from a variety of sources; analyzing and assessing risk using rules-based computer programs and customs targeting teams; prescribing action, such as undertaking non-intrusive or physical inspection or seizure; and tracking and monitoring the risk management process and its outcomes (Laduba 2005).

In the United States, trade data and detailed shipment information are gathered from various government data sources in the Automated Targeting System (ATS), a vast database that uses targeting rules and criteria based on intelligence to filter through cargo data and flag high-risk shipments. Electronic manifests submitted 24 hours prior to foreign lading allow U.S. Customs and Border Protection to assess cargo risk earlier prior to U.S. arrival (CBU, n.d.). In addition, U.S. cargo security partnerships such as C-TPAT and CSI aim to mitigate risk by strengthening supply chain security in the case of the former, and by prescreening U.S.-bound cargo at foreign ports prior to departure for the latter.

Risk management techniques allow customs to identify shipments that represent little to no risk, and thus focus limited resources on shipments that pose the greatest risk of noncompliance. In contrast to inspection based on a shipment's risk profile, the aim of full inspection is either to physically inspect or scan 100 percent of imported containers. The 9/11 Commission Recommendations Act of 2007, signed into law August 3, 2007, mandates the scanning of 100 percent of all maritime cargo containers entering U.S. ports by 2012. Some industry observers believe that cargo inspection based on risk management is a more practical method to balance cargo security with the flow of legitimate (i.e., low or no risk) trade than 100 percent inspection of imported containers (Anderson 2007). Others question the cost of implementing 100 percent inspection, and who should pay for it (e.g., importers or exporters) (Lane 2007).

¹ Risk management procedures had been used by customs administrations prior to 9/11, but their use has expanded with the introduction of post-9/11 programs such as CSI and C-TPAT.

The cargo security principles included in the WCO SAFE Framework are designed to encourage rather than to impede cross-border trade (WCO 2005). The customs-to-customs network of the agreement outlines 11 substandards, or guidelines, for customs authorities to follow in implementing cargo security measures (WCO 2005). These guidelines recommend, for example, that (1) customs authorities use noninvasive equipment for the inspection of cargo; (2) establish automated systems for risk assessment; (3) develop consistent methods to distinguish high-risk from low-risk cargo; (4) require advance electronic information on cargo and container shipments; and (5) establish performance measures to track the efficacy of cargo security programs. The guidelines on risk management and cargo inspection, in particular, address trade facilitation concerns in that they recommend, to the extent possible, that customs authorities implement security procedures that do not interfere with cross-border trade flows (WCO 2005).

Similarly, the customs-to-business partnership fulfills the dual objectives of trade facilitation and cargo security. The partnership helps private-sector entities such as importers, exporters, freight forwarders, and transportation companies to complete self-assessments of their internal security regime. Those companies whose procedures meet specific criteria for protecting supply chains from the movement of dangerous goods are eligible for expedited customs processing under an AEO, or trusted shipper, program. By requiring that shippers inspect goods that are purchased from foreign manufacturers as they are prepared for outgoing shipment, the customs-to-business partnership enables customs authorities to engage the private sector in securing the international supply chain (WCO 2005).

Trade Facilitation Principles Under the World Trade Organization⁹

Although the World Trade Organization (WTO) General Agreement on Tariffs and Trade (GATT) does not address cargo security directly, the provisions of the agreement on trade facilitation under articles V, VIII, and X are complementary to cargo security measures under the WCO (WCO, Information Note 2007). Article V addresses freedom of transit, and states that a country should permit cargo that originates from or is destined for another country to pass through the territory of the former without being delayed by local customs authorities. Article VIII recommends that countries simplify import and export procedures, including customs documentation requirements. Article X requests transparency in the publication of a country's customs-related rules and regulations (GATT 1986, 12). These provisions correspond closely with WCO

⁹ As of July 2007, 151 countries were members of the WTO.

recommendations on trade facilitation, including the cooperation between national customs authorities, the simplification of customs procedures, and the assurance of predictability in customs operations (WCO Information n.d.a.). Under the SAFE Framework, the WCO introduced implementation guidelines for GATT Article VIII, in particular, that form the basis of post-9/11 cargo security measures, such as those pertaining to the electronic processing of customs documentation, the use of risk management, and the pre-authorization of commercial shippers.

In August 2004, the WTO initiated trade facilitation negotiations to strengthen members' commitments under articles V, VIII, and X. Several members submitted proposals on specific aspects of these articles: for example, Canada on the importance of coordination between national customs agencies; Korea on the reduction of administrative burdens in customs processing; and Japan on the pre-arrival examination of cargoes and the use of risk management. (WTO 2005 a, b, c, d).

Trade facilitation negotiations under the WTO remain ongoing, with members working toward the development of a draft text on key principles under articles V, VIII, and X to be finalized by the conclusion of the Doha Round (WTO 2005a).

Cargo Security Provisions Under the International Maritime Organization¹⁰

Acknowledging the importance of the maritime sector to international trade, the International Maritime Organization (IMO) established new security measures following the events of 9/11 to ensure the safety of maritime ports and cargo.¹¹ These measures are outlined in the International Ship and Port Facility (ISPS) Code, which entered into force on July 1, 2004.¹² The objective of the ISPS Code is to establish a set of uniform measures to be implemented jointly by governments, port facility operators, and shipping firms for the

¹⁰ The International Maritime Organization (IMO) was established by the Safety of Life at Sea Convention (SOLAS), adopted in 1948. A specialized agency of the United Nations (UN), the IMO maintains regulations regarding maritime safety, security, and technical cooperation, as well as environmental protection (IMO 2007).

¹¹ According to one estimate, more than 80 percent of world trade is transported by sea. The global maritime industry consists of 46,000 vessels and over 4,000 ports (OECD 2007).

¹² The International Ship and Port Facility (ISPS) Code was adopted as an amendment to the 1974 IMO Safety of Life at Sea (SOLAS) Convention and based on provisions of U.S. legislation entitled the Maritime Transportation Security Act (MTSA) of 2002. Contracting parties to SOLAS, which number 148 countries, must comply with ISPS regulations. However, compliance by parties noncontracting to SOLAS is voluntary (CRS 2006).

assessment of and response to security threats to international ports.¹³ The code is divided into two parts: the first part contains mandatory guidelines on security plans to be established by ships, shipping firms, and ports. National governments are responsible for overseeing the implementation. The second part of the framework provides recommendations on how to execute port security plans (Australian Government 2007). Plans developed and implemented by contracting parties to the ISPS Code are intended to pre-empt security threats to maritime trade (IMO FAC, 2007). As such, participants in the code are requested to develop plans based on three predefined threat levels to port security (for example, “normal,” “heightened,” or “exceptional”), and to use risk assessment to determine which threats represent the highest vulnerability to ships and ports and, therefore, which merit a response (IMO FAQ 2007).

Compliance with the ISPS Code is estimated to lead to significant costs for participant countries. One study assesses such costs as reaching nearly \$300 million in the first year of participation, and \$700 million in each subsequent year. However, these costs are reportedly outweighed by the potential benefits of compliance with ISPS regulations, which include not only the avoidance of a shutdown in port operations due to a security threat, but in faster vessel turnaround times and expedited customs processing (OECD 2003).

Air Cargo Security Measures

Post-9/11 security measures on air cargo have been discussed both at the national and international level, but unlike measures for maritime cargo, such measures have not been codified under a single agreement. Prior to 9/11, the International Civil Aviation Organization (ICAO) established standards for shippers, freight forwarders, and transportation firms to maintain the security of cargo while in transit. The standards also included recommendations to facilitate the cross-border movement of goods.¹⁴ Among the recommendations

¹³ Ibid.

¹⁴ The International Civil Aviation Organization (ICAO) was established under the Convention on International Civil Aviation (also known as the Chicago Convention), signed in December 1944. ICAO is under UN auspices, and its purpose is to maintain standards on aviation safety and security.

established by ICAO and outlined in the Chicago Convention are, where possible, the use of risk management techniques over the physical inspection of cargo, the acceptance of customs documentation in electronic formats, and the use of “authorized importers” to expedite customs processing. In addition, the Chicago Convention mandates that both airports and airlines establish security programs and that contracting states to ICAO cooperate in matters of air cargo security (Buzdugan 2006).

More recently, the International Air Transport Association (IATA), whose membership includes 250 global airlines, developed a list of best practices with regard to the protection of air cargo and created an internal working group to establish a strategic plan on air cargo security and trade facilitation (IATA 2006; and IATA 2007). IATA initiatives emphasize all-cargo versus passenger air transport¹⁵ and aim to ensure that cargo security measures, such as screening and clearance procedures, are harmonized across countries both to ensure their maximum efficacy and their minimal interference with air transport operations (Task Force 2007; Peck 2006).

United States-Based Cargo Security Policies

Customs-Trade Partnership Against Terrorism (C-TPAT) and the Container Security Initiative (CSI)

Shortly after 9/11, the U.S. Government introduced two programs to secure the movement of imports into the United States: the Customs-Trade Partnership Against Terrorism (C-TPAT) and the Container Security Initiative. C-TPAT, launched in April 2002, is a voluntary program with participation by all members of the supply chain—including manufacturers, transportation firms, customs brokers, and warehouse and port terminal operators—who are required to complete security self-assessments and security enhancements to meet the criteria of the program.¹⁶ The idea behind C-TPAT is that by engaging private-sector participants to help screen low-risk cargo, the U.S. Customs and

¹⁵ Although up until recently, emphasis had been placed on the screening of air passenger baggage, recent U.S. legislation entitled the 9/11 Commission Recommendations Act, signed into law by President Bush on August 3, 2007, requires that all cargo transported in the storage cabins of passenger planes be screened (e.g., by X-ray, explosive detection systems (EDS), physical search, or canine inspection) by 2010. Earlier legislation proposed by the U.S. Senate recommended the screening of cargo transported by both passenger aircraft and air freighters. See Air Cargo Security Act 2003; Natter 2007, 9; and Putzger 2007, 40-42.

¹⁶ A company that applies for voluntary membership in C-TPAT is required to sign a memorandum of understanding stating that it will follow security guidelines established by the program and will submit a security profile regarding procedures it uses to protect its supply chain, including information from its suppliers. CBP 2007; Tuttle 2007.

Border Protection (CBP) agency¹⁷ can focus its resources on detaining high-risk shipments that represent the greatest security threat (Feldman 2007). Participants in C-TPAT include U.S. companies as well as U.S.-based affiliates of foreign companies, all of whom must be involved in the movement of goods between U.S. and non-U.S. ports. As of June 2007, there were 7,200 companies that were members of the C-TPAT program (Lodbell 2007).

In general, companies that participate in C-TPAT benefit from fewer container searches and faster customs processing of goods that are imported into the United States. In addition, companies under C-TPAT are eligible to participate in the Free and Secure Trade (FAST) program, created to expedite the movement of goods between the U.S.-Canadian and the U.S.-Mexican borders, and a maritime “greenlane” to reduce customs wait times for cargo arriving at U.S. seaports.¹⁸ Once more, companies that have achieved a higher level or higher tier, status within C-TPAT, receive additional customs benefits, such as a guarantee of expedited customs processing during times of elevated security threat levels, and a further reduction in the number of cargo inspections.¹⁹ According to a 2007 study conducted by the University of Virginia at the request of CBP, the annual cost to a U.S. importer of compliance with C-TPAT is more than \$30,000. Approximately 33 percent of the companies surveyed for the study stated that the benefits of the program outweigh the costs, compared with 16 percent who stated that the costs exceed the benefits. Twenty-four percent of the companies surveyed believed that the costs and benefits of participation in C-TPAT are roughly equal (CRS 2007). At the same time, many small- and medium-sized businesses have noted that the costs of compliance with C-TPAT are high enough to deter them from participating in the program (Lodbell 2007).

Under the Container Security Initiative (CSI), begun in January 2002, CBP representatives are placed at foreign seaports where they work with local customs officials to prescreen U.S.-bound containerized cargo (CBP 2007d).

¹⁷ The CBP agency was established under the Department of Homeland Security in 2003 to help deter the movement of terrorist and terrorist weapons across U.S. borders. Prior to 2003, the U.S. Customs Service resided under the Department of the Treasury. CBP 2007.

¹⁸ For a discussion of the FAST program and the greenlane for maritime cargo, see subsequent sections on Mutual Assistance Programs and Post-9/11 Cargo Security Legislation, respectively

¹⁹ The C-TPAT program consists of three tiers of participation. Tier 1 participants are those companies that have passed a preliminary review of their supply chain security based on a written profile submitted to the CBP agency and are certified to participate in C-TPAT. Tier 2 participants undergo an on-site inspection by CBP to ensure that their security procedures are sufficient to protect against a terrorist weapon being transported through their supply chain and are then validated as C-TPAT members. Tier 3 participants are certified and validated members of C-TPAT that have security procedures in place which exceed criteria established by CBP under the C-TPAT program. They are rewarded with the most extensive customs benefits. CRS 2006; Feldman 2007.

Containers are prescreened, in particular, to determine if they are used to transport terrorists or terrorist weapons to the United States. The prescreening process includes a review of customs documentation, along with other intelligence information, to determine which containerized cargo poses a security threat and, if warranted, requires the use of x-ray machines or radiation detection devices to examine the contents of such cargo (CBP 2007d). Potentially dangerous cargo may be further subject to physical inspection and/or withheld from shipment. At present, 58 foreign ports participate in CSI, with the majority of ports being in Asia and Europe (CBP 2006; and CBP 2007g).²⁰ The program also allows for reciprocity: customs officials from Canada and Japan are currently stationed at U.S. ports to screen U.S.-outbound containerized cargo destined for these countries. Like C-TPAT, participation in CSI has a trade facilitative effect in that it reduces customs processing at U.S. ports of destination and expedites the clearance of those containers that have been pre-screened at foreign ports (CBP 2007d). The estimated costs to an individual port of participation in CSI was \$230,000 in 2005, which is reported to be significantly less than the amount of annual revenue that would be lost by a port closure due to a terrorist attack (CBP 2006).

Post-9/11 Cargo Security Legislation

Finally, following 9/11, several U.S. policies were set up to address cargo security. The first of these policies is the Maritime Transportation Security Act (MTSA) of 2002, which requires that participants in the U.S. maritime sector, including operators of passenger vessels, cargo vessels, and ports complete security assessments of their facilities and establish procedures to counter the threat of terrorist attacks (DHS 2003). The act recommends that participants deploy specific safety measures to ensure the security of their facilities, such as the screening of both passengers and baggage, the establishment of identification procedures for onsite personnel, and the use of surveillance equipment. In addition, regulations under MTSA provide for the implementation of the Automatic Identification System (AIS), which monitors vessel movement through the electronic exchange of ship-to-ship and ship-to-shore information (DHS 2003).

Also in 2002, the CPB introduced the Operation Safe Commerce (OSC) program and the 24-Hour Advance Manifest Rule. Operation Safe Commerce provides government funding for private-sector initiatives to better secure containerized cargo moving into and out of U.S. ports. Such initiatives may include the development of information systems to track and monitor cargo or the use of

²⁰ For a listing of ports in the CSI program, see CBP 2007a. Ports that participate in CSI are selected on the basis of the volume of goods that they export to the United States, and whether or not their geographic location makes them likely to be the source of terrorist activity. See CBP 2006; and CBP 2007.

electronic seals on cargo containers. Participants in the program represent all levels of the supply chain, including customers, shippers, and transportation firms (DOT 2002). Separately, the 24-hour rule requires ships and nonvessel operating common carriers (NVOCCs)²¹ to provide CBP with a declaration of the items within a U.S.-bound cargo container 24 hours before the container is loaded onto a vessel. The rule permits U.S. Customs to determine if a specific container represents a security threat and, consequently, whether it should be denied further shipment (CBP 2003; Maersk n.d.).

In 2005, the U.S. Senate introduced the GreenLane Maritime Cargo Security Act and, in 2006, the Secure Freight Initiative. The GreenLane Maritime Cargo Security Act provides additional customs benefits to C-TPAT participants if the participants meet certain criteria regarding the screening and inspection of cargo (U.S. Congress 2006; Heritage 2007). These benefits include priority customs processing, reduced cargo or container searches, and the expedited release of goods through customs. The Secure Freight Initiative calls for the increased scanning of U.S.-inbound containers for nuclear or radiological weapons. Under this initiative, nuclear detection equipment is deployed in overseas ports to scan containers before they are transported to the United States. Currently seven foreign ports—including Hong Kong, and those in Honduras, Korea, Oman, Pakistan, Singapore, and the United Kingdom—participate in the program (DHS 2006; CBP 2007c). Finally, also in 2006, Congress passed the Security and Accountability for Every (SAFE) Port Act, which built upon previous U.S. legislation to secure maritime ports and cargo. Among other things, the Act codified into law C-TPAT, required the placement of radiation detection equipment in 22 U.S. ports, established a new identification card system for employees at 40 U.S. ports, and set aside \$400 million in government funding for port security grants (Edmundson 2006; White House 2007).

Foreign-Country-Based Programs

Countries outside of the United States have either updated or introduced new cargo security programs following 9/11. Some of these programs contain measures that are compatible with provisions under the U.S.-based program C-TPAT. The following section discusses cargo security programs in the EU, Sweden, Australia, New Zealand, and Canada.

²¹ Nonvessel operating common carriers (NVOCCs) purchase cargo space from shipping lines at wholesale rates and resell such space at retail rates to shipping customers.

The European Union

In 2005, the European Union introduced a series of measures aimed at protecting the internal EU market, securing international supply chains, and facilitating legitimate cross-border trade through improved customs procedures. These measures, which are embodied within the EU Customs Security Program, introduce three changes to the Community Customs Code²² by (1) requiring traders²³ to provide customs authorities with advance electronic information prior to the import of goods to or the export of goods from the EU (pre-arrival and pre-departure declarations); (2) creating a uniform risk management approach based on common risk-selection criteria for EU-Member States, and (3) creating an AEO program to provide reliable and customs-compliant traders with simplified customs procedures to facilitate legitimate cross-border trade (EC 2006a). Each measure will enter into force at a different time. For example, a new framework to establish EU-wide risk-based procedures entered into force in early 2007, with computerized risk management systems scheduled to be put into place by 2009. At the same time, provisions regarding the AEO program entered into force on January 1, 2008, while requirements for traders to submit to customs authorities advance information on all goods entering or leaving the EU will become mandatory on January 7, 2009 (EC 2006a).

Under the AEO program, reliable and customs-compliant traders will benefit from the streamlining of EU-Member State customs procedures and/or from facilitation with customs controls related to supply chain security or from both (EC 2006a; EC 2006b). Benefits for operators granted AEO status—dependent on the type of AEO certificate granted—include, among others, the simplification of customs procedures, fewer physical inspections and documentation requirements, and priority treatment for shipments (EC 2006b, 7, 14; 2006c, L360/67-68).²⁴

Under the program, EU-Member States will be able to grant AEO status to an economic operator involved in the international supply chain that is able to demonstrate a history of compliance with customs requirements, appropriate record-keeping standards, proven financial solvency, and adequate security and safety standards (EC 2005). Economic operators eligible for AEO status

²² The Community Customs Code contains the basic customs legislation of the EU customs territory.

²³ A trader refers to a supply chain participant involved in the cross-border movement of goods. Such entities include, for example, manufacturers, importers, exporters, freight forwarders, warehousing firms, customs agents, and transportation firms.

²⁴ Types of AEO certificates include customs simplification certificates, security and safety certificates, and joint certificates. Holders of either the AEO security and safety certificate or a joint certificate may benefit from reduced data information requirements and prior notification for physical inspection of shipments (effective July 9, 2009).

include manufacturers, exporters, freight forwarders, warehousing firms, customs agents, transportation firms, and importers. The program is voluntary; economic operators may apply for AEO status through an application process to determine program eligibility based on the criteria outlined above. The application process involves a security self-assessment followed by a formal assessment by the customs authority of an economic operators' risk. The risk assessment is based on the Compliance Partnership Customs and Trade (COMPACT) framework, a methodology that incorporates risk mapping along with security guidelines established under the AEO program.²⁵

Sweden

In addition to the security measures adopted by the European Union at the supranational level, Sweden, an EU-member country, has developed the Stairsec program aimed at improving customs compliance and supply chain security. The Stairsec program is an integrated supply chain security program developed within Sweden's existing Stairway customs accreditation program, which focuses on increasing the quality of customs compliance (Tullverket 2002). The objective of the Stairsec program is to increase supply chain security through an accreditation process for all private-sector stakeholders in the international supply chain, including importers and exporters, brokers, forwarders independent of transport mode (e.g., air, sea, and land), and terminals. Stairsec became operational with the certification of pilot operators on January 15, 2004, following the CSI-certification of the Port of Gothenburg in May 2003. Currently, more than 40 Swedish companies are certified in Stairsec or are in the processing of becoming so (Tukkverket n.d.a.). According to former U.S. CBP Commissioner Robert Bonner, Stairsec mirrors closely the objectives of C-TPAT (Bonner 2004). The two programs are compatible, and discussions between Sweden and the United States on ways C-TPAT and Stairsec can be further harmonized are ongoing (Tullverket n.d.b.).

²⁵ The COMPACT framework acts as a pre-audit to determine an economic operator's eligibility for AEO status. If AEO status is granted, customs authorities issue an AEO certificate to the operator. However, if customs authorities conclude that the security profile of an AEO applicant is high risk and requires additional improvements, then the applicant is asked to address such improvements and re-apply for assessment under COMPACT. See EC 2006b.

Australia

Australia's Frontline program, established in 1990, is a cooperative effort between the Australian Customs Service and Australian private-sector firms to deter illegal activities such as drug trafficking, wildlife and flora smuggling, money laundering, and the illegal importation and exportation of prohibited items (Australian Customs 2003). After 9/11, the program shifted its primary focus from the prevention of the movement of narcotics to counterterrorism although the former remains an important program objective (Embassy of Australia 2007a). The Frontline program currently has 705 members that are involved in international trade and transport, including shippers, freight forwarders, airlines, customs brokers, warehousing firms, air couriers, and postal and port authorities (Parliament 2003; Embassy of Australia 2007a). The program is voluntary in nature although membership is essentially by invitation from the Australian customs administration (Parliament 2003). Companies sign a memorandum of understanding (MOU) with customs to formalize the agreement. However, the MOU is not a legally binding or enforceable contract (Australian Customs 2007a). Program participants receive awareness training on illegal drugs and activities and correspond regularly with Australian customs to report any suspicious activities.

Within the context of the WCO SAFE Framework, Australia is conducting an AEO pilot program involving Australian customs, industry, and foreign customs administrations in the Asia-Pacific Economic Cooperation (APEC) region. The aim of the pilot program is to test the AEO application and assessment processes for the security accreditation of supply chain operators (e.g., importers, exporters, freight forwarders, and customs brokers), with the ultimate objective of achieving mutual recognition between Australian Customs and other customs administrations participating in the AEO pilot program (Australian Customs 2007b).

New Zealand

In 2004, the New Zealand Customs Service initiated the Secure Exports Scheme (SES), an export-oriented voluntary partnership between customs and exporters to strengthen security measures that protect goods against tampering when containers are packed and uploaded for shipment (Australian Customs 2007b). To participate in the program, potential SES participants are required to submit advance export information and maintain security measures approved by New Zealand's customs administration in return for "greenlane"

status, or expedited customs processing.²⁶ SES partners' security measures comply with standards outlined in the WCO SAFE Framework.

On July 1, 2007 the United States and New Zealand signed a Mutual Recognition Agreement (MRA) under which C-TPAT and SES-certified trading partners receive reciprocal benefits from each other's program. SES-certified trading partners will be eligible for direct benefits such as faster customs clearance times for exports arriving in the United States and reduced customs inspections (New Zealand Embassy 2007).

Canada's Partners in Protection (PIP) Program

Administered by Canada's Border Services Agency (CBSA), the Partners in Protection (PIP) program is a voluntary initiative between CBSA and private-sector firms engaged in international trade to enhance border security, increase awareness of customs compliance issues, help detect and prevent smuggling of contraband goods, and combat organized crime and terrorism (CBSA 2007c). In a cooperative effort based on a voluntary MOU (CBSA and PIP partners develop joint action plans, conduct assessments of security measures, and participate in security awareness sessions (CBSA 2007c). PIP participants benefit from reduced shipment processing times and improved security levels. PIP participants also become eligible to participate in the FAST program developed jointly between Canada and the United States (CBSA 2007a). The Canadian Government plans to harmonize measures established under the PIP program with those of C-TPAT with the eventual goal of mutual recognition between the two programs (CBSA 2007A; Anderson 2007).

Mutual Assistance Programs

Mutual assistance programs are established to harmonize cargo security practices between two or more countries thereby increasing the effectiveness of such practices, while at the same time facilitating the cross-border flow of goods. The United States currently participates in two separate mutual assistance programs: the U.S.-EU Mutual Assistance Agreement and the Free and Secure (FAST) Program between the United States-Canada and the United States-Mexico.

²⁶ The program requires that participants meet formal security guidelines established by New Zealand's customs administration, but also recognizes and incorporates participants' existing security practices (New Zealand Customs 2006); Secker 2007).

U.S.-EU Mutual Assistance Agreement

In April 2004, the United States and European Union reached an agreement to improve cargo security on a reciprocal basis while ensuring equal levels and standards of control for U.S. and EU ports and operators (Europa 2004). The objective of the agreement is to achieve mutual recognition of C-TPAT and the EU-AEO program. The agreement expanded the existing U.S.-EU Customs Cooperation and Mutual Assistance in Customs Matters Agreement (CMAA), signed in 1997, to include supply chain security (Europa 2004). The new agreement established a U.S.-EU Joint Customs Cooperation Committee (JCCC) and two working groups to identify and examine activities to achieve the objectives outlined in the agreement, including minimum standards for CSI ports, common risk criteria, and trade partnership programs (EC 2007b). In 2007, the 8th U.S.-EU JCCC formalized a work plan to move towards mutual recognition, including an in-depth comparison of C-TPAT and the AEO program, a pilot program to identify and assess any differences between the two programs, and a draft plan outlining additional steps to take towards mutual recognition prior to the formal implementation of the AEO program in 2008 (EC 2007b; EU-U.S. 2007).

Free and Secure (FAST) Program Between the United States-Canada and the United States-Mexico

As noted earlier, the FAST program comprises two bilateral initiatives between the United States and Canada and the United States and Mexico that allow pre-approved eligible or low-risk shipments to cross the U.S.-Canadian and U.S.-Mexican borders with greater speed through dedicated highway lanes and with reduced customs inspections (CBSA 2007b; CBP 2007f). Participants eligible for expedited goods clearance under the FAST program include importers, transportation firms, and drivers that are enrolled in C-TPAT and/or the PIP program for U.S.-Canadian highway carriers, or that are enrolled in C-TPAT for U.S.-Mexican highway carriers. By allowing expedited transborder shipments from carriers certified in C-TPAT and/or the PIP program, the FAST program aims to promote increased supply chain security while facilitating legitimate cross-border trade, permitting U.S. Customs to focus resources on high-risk shipments.

Assessment of Post-9/11 Cargo Security Programs

Although cargo security programs had been in place prior to the events of September 11, 2001, post-9/11 cargo security initiatives differ from earlier programs in three important ways. First, although like previous programs, post-9/11 efforts generally target the movement of illegal or dangerous cargo, their

primary emphasis is on preventing the cross-border transport of terrorist weapons of mass destruction (WMD). Second, while earlier cargo security programs focused on the role of national customs administrations in policing the transborder movement of goods, post-9/11 programs have engaged private-sector supply chain participants—from manufacturers to importers to transportation providers—in achieving this objective. As such, post-9/11 programs offer a more holistic approach to cargo security by recognizing both the need for cooperation between private-sector entities and customs administrations and by acknowledging the importance of “behind-the-border measures” in securing the international supply chain. Finally, whereas post-9/11 programs have introduced new and additional procedures for screening and clearing cargo through customs, many of these programs also contain trade facilitation components. As noted, such components may be based on the pre-authorization of shippers, the use of risk management techniques, or the simplification of customs documentation requirements. Post-9/11 programs therefore attempt to strike a balance between security and facilitation, recognizing that rather than being mutually exclusive, the two objectives may be mutually reinforcing.

Despite progress in the development of cargo security programs six years after the events of 9/11, some key concerns remain. In particular, participants in post-9/11 cargo security programs have asked whether these programs are effective in securing the international supply chain; what their impact is on cross-border trade; and whether the benefits of compliance with post-9/11 programs outweigh their costs to participants. Recent studies evaluating post-9/11 cargo security programs offer at least partial answers to these questions. For instance, on the question of efficacy, a May 2005 report completed by the United States Government Accountability Office (GAO) reviewed both the C-TPAT and CSI programs and found that certain factors may compromise their effectiveness in preventing the movement of terrorist weapons. For example, the report stated, among other things, that uniform standards for assessing the supply chain security of C-TPAT members are not in place; that screening equipment used at some CSI ports may not be capable of detecting weapons of mass destruction (WMD); and that ship manifest data, used by CSI officials to prescreen containerized cargo, may often be inaccurate and thereby ineffective in identifying dangerous goods. However, improvements to both these programs continue to be made, some of which may address the above issues (GAO 2005).

Separately, regarding the effect of cargo security measures on cross-border trade, a study conducted by the Conference Board of Canada found that while tighter security along the U.S-Canadian border has had no measurable impact on the volume of Canadian exports to the United States, it has in many cases increased the overall costs to firms of engaging in U.S.-Canada trade. Some of

these costs result directly from companies' compliance with new security measures; others are indirect costs, such as those arising from increased border delays (Conference 2007). Finally, on the issue of whether the benefits of participation in cargo security programs outweigh the costs to individual participants, a study cited earlier in this article by the University of Virginia on C-TPAT found that while the costs of C-TPAT membership are high, compliance with the program may result in several potential benefits to participants such as increased supply chain security, fewer customs inspections, enhanced reputation with customers, and improved inventory control. However, although these so-called "secondary" benefits are important to C-TPAT participants, the majority of the companies surveyed for the study indicated that such benefits have not yet been fully realized (CBP 2007e).

Conclusion

Following the events of 9/11, many programs have been developed both at the international and national level to ensure the secure movement of goods across borders. The United States appears to be at the forefront of these efforts, and has established the most comprehensive cargo security programs to date. Although post-9/11 programs have as their primary focus preventing the cross-border movement of dangerous cargo and, in particular, terrorist-related weapons via the international supply chain, they also contain trade facilitation measures designed to expedite customs processing and enhance trade. Nonetheless, current cargo security programs face certain implementation challenges that some claim may compromise their effectiveness and minimize their potential benefits to participants. Overall, however, as many cargo security programs continue to be refined, conclusions regarding their efficacy, their costs to business, and their effects on trade will likely change, in turn influencing the future direction of these programs.

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Appendix Selected post-9/11 programs on cargo security and trade facilitation

Program	Year implemented	Country of origin	Main objectives	Participants
The Revised Kyoto Convention	2006	Global	- Customs/trade facilitation - Simplification and harmonization of customs procedures across countries	- 52 member countries as of January 2007
WCO SAFE Framework	2005	Global	- Customs/trade facilitation - Supply chain security	- 144 member countries as of February 2007
IMO International Ship and Port Facility (ISPS) Code	2004	Global	- Maritime port security - Cargo/supply chain security	- National governments - Maritime port facility operators - Shipping firms
International Civil Aviation Organization (ICAO)	(^a)	Global	- Air cargo security - Customs/trade facilitation	- Airlines and airports of contracting parties to ICAO
Customs-Trade Partnership Against Terrorism (C-TPAT)	2002	United States	- Security of cargo transported by land, air, and sea into the United States - Supply chain security	- Importers, manufacturers, transportation and logistics firms, customs brokers, warehouse and port terminal operators ^b
Container Security Initiative (CSI)	2002	United States	- Cargo security for U.S.-inbound maritime containers	- Maritime port facility operators of U.S. trade partners ^c

Appendix Selected post-9/11 programs on Cargo security and trade facilitation—*Continued*

Program	Year implemented	Country of origin	Main objectives	Participants
European Union's Authorized Economic Operator (AEO) program	2008 ^d	European Union	-Customs/ trade facilitation -Supply chain security	- Importers, exporters, manufacturers, customs brokers, transportation firms of EU member-states
Stairsec	2004	Sweden	-Customs/trade facilitation -Supply chain security	- Importers, exporters, customs brokers, freight forwarders, and terminal operators
Frontline Program	1990 ^e	Australia	- Cargo security, with a new focus on counter-terrorism following 9/11	-Shipping firms, freight forwarders, airlines, customs brokers, warehousing firms, postal and port authorities
Secure Exports Scheme (SES)	2004	New Zealand	- Strengthen and ensure security of New Zealand's containerized exports to its trading partners	- New Zealand's Customs Service and firms involved in exporting goods from New Zealand
U.S.-EU Mutual Assistance Agreement	2004	United States, European Union	-Mutual recognition and harmonization of customs procedures	- Customs administrations and port terminal operators in the United States and the European Union

Appendix Selected post-9/11 programs on cargo security and trade facilitation—*Continued*

Program	Year implemented	Country of origin	Main objectives	Participants
Free and Secure (FAST) Program	2002/2003 ^f	United States, Canada, and Mexico	-Expedited customs clearance for firms operating between the U.S.-Canadian and U.S.-Mexican borders	-Trucking firms operating along highways between the U.S.-Canadian and U.S.-Mexican borders
Partners in Protection (PIP) program	1995 ^g	Canada	-Enhance security with respect to cargo crossing the Canadian border -Increase customs compliance	-Canadian customs authority and firms involved in U.S.-Canadian cross-border trade

Source: Compiled by USITC staff from various sources.

^a The agreement establishing ICAO, known as the Chicago Convention, was introduced in 1944. Annexes to the Chicago Convention, including those on air cargo security, have been subsequently amended as recently as 2006.

^b Although C-TPAT is a U.S.-based program, Canadian and Mexican manufacturers are eligible to enroll in the program, as are highway transportation carriers operating between the United States and Canada and the United States and Mexico.

^c As of October 2007, 58 foreign maritime ports were participating in the CSI program.

^d Year the program enters into force.

^e Although originally introduced in 1990, Australia's Frontline program was revised in response to 9/11.

^f FAST-Canada was introduced in December 2002, and FAST-Mexico was introduced September 2003.

^g According to officials from the Canada Border Services Agency, membership in the PIP program increased notably in the aftermath of 9/11. In 2008, security criteria under PIP will be revised so that the program meets standards under the WCO SAFE Framework and is also more closely aligned with the U.S.-based C-TPAT program.