

February 2015

Boosting the Private Space Industry: Extending NASA's Duty-Free Import Exemption to Commercial Space Companies

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BOOSTING THE PRIVATE SPACE INDUSTRY: EXTENDING NASA'S DUTY-FREE IMPORT EXEMPTION TO COMMERCIAL SPACE COMPANIES

KATHERINE GUSTAFSON*

ABSTRACT

The United States has a strong reputation for being at the forefront of space exploration. The commercial space industry in the United States is flourishing, yet the United States government is not effectively using its resources to help the industry. Currently, the United States government has some policies in place that promote the private space sector. Nonetheless, the government favors its own failing agency, NASA, by giving it extra benefits in the form of exemptions from import duties. Extending an exemption from import duties to the commercial space industry, however, would have several beneficial effects on the United States that the government should want to pursue: (1) production costs for producers would decrease, leading to lower costs for consumers and a more productive industry; (2) space "production" would increase and would help the United States keep its place at the forefront of the space community in the face of rapidly increasing competition; and (3) the United States would be better prepared for the innovative and sophisticated space endeavors that we are likely to see in the future. Following in the footsteps of other progressive nations by extending an import duty exemption, and shifting the focus from the public to the private sector, is a practical approach for the United States to bolster the commercial space industry and remain competitive with the rest of the world.

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INTRODUCTION

The dawn of a new era in space exploration and development has finally arrived.¹ We no longer have to resort to movies and fiction² to imagine the wondrous and mysterious things about our universe. Spacecraft now fly through our skies on their voyages to the stars and beyond. We can look to nations on our own Earth to see enterprises with grandiose plans for planetary exploration,³ space travel for leisure,⁴ and even discussions of exploiting space resources to support celestial colonies.⁵ Many countries around the globe have viable private space industries that are currently expanding into many diverse space projects.⁶ For the past few decades, the United States has been a country well known for its space program, which the government has led under the National Aeronautics and Space Administration (NASA).⁷ However, with the discontinuation of the space shuttle program⁸ and a stagnant budget,⁹ the future of NASA is not shining brightly. The

¹ Clara Moskowitz, *Private Rocket Launch Vindicates Commercial Spaceflight Model*, NBC NEWS (May 22, 2012, 10:20 AM), http://www.nbcnews.com/id/47519305/ns/technology_and_science-space/t/private-rocket-launch-vindicates-commercial-spaceflight-model/#.UsdFL2RDvNY.

² See, e.g., 2001: A SPACE ODYSSEY (Metro-Goldwyn-Mayer 1968); ARMAGEDDON (Touchstone Pictures 1998); INTERSTELLAR (Legendary Pictures, Paramount Pictures, Warner Bros. 2014); STAR TREK (Paramount Pictures 2009).

³ See, e.g., *Mars Exploration Rover Mission: Overview*, NASA JET PROPULSION LABORATORY, <http://marsrovers.jpl.nasa.gov/overview/> (last visited Nov. 19, 2014).

⁴ See, e.g., *Virgin Galactic Brochure*, VIRGIN GALACTIC, http://www.virgingalactic.com/assets/downloads/Virgin_Galactic_Brochure.pdf (last visited Nov. 19, 2014).

⁵ See Mike Wall, *Asteroid-Mining Project Aims for Deep-Space Colonies*, SPACE.COM (Jan. 22, 2013, 12:01 AM), <http://www.space.com/19368-asteroid-mining-deep-space-industries.html>.

⁶ See *About the SSC Group*, SSC GROUP, <http://www.sscspace.com/about-the-ssc-group> (last visited Nov. 19, 2014) (located in Sweden); *Capabilities and Services*, SPACE X, <http://www.spacex.com/about/capabilities> (last visited Nov. 19, 2014) (located in United States); *Company Profile*, ROCKET LAB LTD., <http://www.rocketlabusa.com/about-us/> (last visited Nov. 19, 2014) (located in New Zealand); *Mission*, COPENHAGEN SUBORBITALS, <http://copsub.com/about/mission/> (last visited Nov. 19, 2014) (located in Denmark).

⁷ *What NASA Does*, NASA, http://www.nasa.gov/about/highlights/what_does_nasa_do.html#.UowkupQkEvc (last visited Nov. 19, 2014). See Emily Swanson, *Poll Shows Half of Americans Think U.S. Is Losing Leadership in Space*, HUFFINGTON POST (Nov. 17, 2013, 11:29 AM), http://www.huffingtonpost.com/2013/11/17/space-poll-americans-losing-leadership-in-space_n_4283598.html.

⁸ Michael Curie, Kyle Herring & Candrea Thomas, *NASA's Proud Space Shuttle Program Ends with Atlantis Landing*, NASA (July 21, 2011), http://www.nasa.gov/home/hqnews/2011/jul/HQ_11-240_Atlantis_Lands.html.

⁹ Amina Khan & Rosie Mestel, *NASA on the Verge of Losing its Edge, Report Says*, LOS ANGELES TIMES (Dec. 6, 2012), <http://articles.latimes.com/2012/dec/06/science/la-sci>

private space sector can step in and lead the nation in the development of new space technologies.¹⁰ The U.S. government currently shows some support for private space industry through enactment of legislation like the Commercial Space Act, which encourages the use of private U.S. space vehicles over other countries' vehicles when available.¹¹ However, NASA has unique advantages not available to private producers, like an exemption from import duties for goods used in space projects and the ability to negotiate bilateral trade agreements with other nations.¹²

This Note will argue that to continue support of private space industry, the U.S. government should extend NASA's exemption from import duties to private space producers. Part I of this Note will describe the history and framework for international trade in the United States. Part II will give an overview of space programs domestically and globally, as well as insight into the rapidly growing private space sector. Part III of this Note will detail the tariff and trade advantages that NASA enjoys, including exemption from import duties and the ability to negotiate bilateral trade agreements. Part IV contains a comparative analysis of two other countries, Australia and Russia, which already grant tariff exemptions to private space producers. Finally, in Part V, this Note will argue for an exemption from import duties for domestic private space producers. This exemption would help bolster the U.S. space industry by decreasing production costs, leading to increased production and lower prices for consumers.¹³ Strengthening the private space industry will help to ensure that the United States continues to remain a leader in space technology and is prepared for future space endeavors to come.¹⁴

I. A BRIEF HISTORY OF INTERNATIONAL TRADE AND IMPORT DUTIES

Some background regarding international trade and import duties will be helpful to provide context for the main arguments in this Note. Part A of this section will discuss the two most important players in international trade: the General Agreement on Tariffs and Trade and the World Trade Organization. Part B details import duties and their role in international trade, as well as

-nasa-goals-20121206; *NASA FY2014 Budget Estimates*, NASA, http://www.nasa.gov/pdf/740427main_NASAFY2014SummaryBriefFinal.pdf (last visited Nov. 19, 2014).

¹⁰ See *Space Travel Moves to Private Sector*, 60 MINUTES (Mar. 15, 2012), <http://www.cbsnews.com/news/space-travel-moves-to-private-sector/>.

¹¹ Commercial Space Act of 1998, Pub. L. No. 105-303, 112 Stat. 2843 (1998) (codified at 51 U.S.C. §§ 50101-50134 (2012)).

¹² 14 C.F.R. §§ 1217.100-102, 1217.106 (2014); see discussion *infra* Part III.B.

¹³ See *infra* Part I.B.

¹⁴ See Jennifer Polland, *How the Private Sector Revolutionized the Space Race In a Few Short Years*, BUSINESS INSIDER (Sept. 11, 2012, 10:22 AM), <http://www.businessinsider.com/how-the-private-sector-revolutionized-the-space-race-in-a-few-short-years-2012-8>.

the Harmonized System, which serves to classify imported goods. Part C explains the economic effects of import duties with a focus on how these duties affect producers in a given industry. Finally, Part D discusses how the United States implements World Trade Organization agreements, including the adoption of the Harmonized System.

A. International Trade Framework: GATT and the WTO

From caravans travelling along the Fertile Crescent in Mesopotamia to the ancient trade hub that was the Roman Empire linking Europe, Asia, and Africa, international trade has been advancing humanity in the world for thousands of years.¹⁵ With the world growing smaller and international trade playing an ever-increasing role in the global economy,¹⁶ it became apparent to many industrialized nations in the 20th century that some form of an international trade system would be needed to remedy the discrepancies between the different laws of each nation.¹⁷

A major step toward an effective multilateral trading system was the establishment of the General Agreement on Tariffs and Trade (GATT) in 1947.¹⁸ The main purpose of GATT was to create an organization for trade negotiations and to liberalize trade among its members by introducing limits on tariffs, prohibiting trade restrictions such as quotas, and requiring non-discriminatory treatment of goods.¹⁹ GATT was overtaken by the creation of the World Trade Organization (WTO) in 1995 along with a new GATT (GATT 1994), but both organizations had similar goals: establishing a legal framework, rules and guidelines regarding the conduct of international trade, and a dispute resolution system for members of the organization.²⁰

The main role of the WTO is to take the place of the failed International Trade Organization and administer GATT 1994.²¹ The WTO is structured around four main agreements that authorize the activities of the organization: (1) GATT 1994, which covers trade in goods; (2) the General Agreement on Trade in Services; (3) the Agreement on Trade-Related Intellectual Property

¹⁵ Elhanan Helpman, Harvard Univ. and CIFAR, Onassis Prize Lecture: International Trade in Historical Perspective, at 1–2 (Sept. 1, 2012) (transcript available at http://www.cass.city.ac.uk/_data/assets/pdf_file/0004/141295/E-Helpman-Presentation.pdf).

¹⁶ DANIEL C.K. CHOW & THOMAS J. SCHOENBAUM, INTERNATIONAL TRADE LAW: PROBLEMS, CASES AND MATERIALS 16 (2d ed. 2013); LEE COPPOCK & DIRK MATEER, PRINCIPLES OF MACROECONOMICS 585 (1st ed. 2013).

¹⁷ CHOW & SCHOENBAUM, *supra* note 16, at 4.

¹⁸ *Id.* at 4–5.

¹⁹ GATT originally intended to establish the International Trade Organization, but it never came to fruition. *Id.* at 26.

²⁰ *See id.* at 4–5.

²¹ *Id.* at 28.

Rights; and (4) the Dispute Settlement Understanding, which sets up the WTO's dispute settlement system.²² The WTO now facilitates negotiation of trade concessions between its member parties.²³

Negotiations may cover many facets of trade but are still subject to the WTO's two core principles: Most Favored Nation and National Treatment.²⁴ Most Favored Nation is a principle of non-discrimination, requiring WTO members to give equal treatment regarding trade benefits to all WTO members.²⁵ In other words, no WTO member can discriminate in any way against any other WTO member when it comes to setting tariffs, imposing quotas, etc.; however, there are a few exceptions to this rule.²⁶ The discrimination encompassed by this principle mainly concerns discriminating against a good before it passes through customs at a country's border.²⁷

The National Treatment principle, on the other hand, deals with internal non-discrimination, as opposed to the external non-discrimination addressed by Most Favored Nation.²⁸ National Treatment forbids WTO members from discriminating against other WTO members' imports in favor of its own domestic industry.²⁹ This principle of anti-discrimination applies to goods that have passed customs and entered into the WTO importing country.³⁰ Once goods have cleared the border and any tariffs have been paid, the foreign goods imported from WTO members must be treated the same as any domestic goods.³¹ If a WTO member country imposes a trade restriction that creates a "nullification or impairment" of a trade benefit that was negotiated for, any member party may bring a claim to the dispute settlement body of the WTO to get some form of relief or sanction.³²

B. Import Duties and the Harmonized System

As stated earlier, one of the main goals of the WTO is to reduce trade barriers to encourage free trade and market access among the nations.³³ The WTO does not require the complete elimination of trade barriers but

²² *Id.*

²³ *Id.* at 49.

²⁴ *See id.* at 129.

²⁵ *Id.*

²⁶ *Id.* at 51, 129. Preferential Trade Agreements are an exception to this principle that will be discussed later in Part I.B.

²⁷ *See id.* at 129–30.

²⁸ *Id.* at 129, 142–43.

²⁹ *Id.*

³⁰ *Id.* at 142–43.

³¹ *Id.*

³² *Id.* at 63, 71.

³³ *Id.* at 179.

encourages their reduction.³⁴ The most common barrier to trade imposed on imports are tariffs, or import duties, which are essentially a tax imposed on a good at the border when it enters a country.³⁵ There are four main types of tariffs that countries tend to impose: (1) *ad valorem* tariffs, which are calculated as a percentage value of the product in question; (2) specific tariffs, which are a flat fee on a certain quantity of a good; (3) mixed tariffs, which are a combination of a specific tariff and an *ad valorem* tariff; and (4) tariff rate quotas, which are a sliding scale tariff that change the amount of a tariff that is applied after a certain quantity of a good has been imported.³⁶

All WTO members have agreed to some form of tariff concessions, giving lower tariffs to imports from WTO members.³⁷ The tariffs that WTO members can apply are bound, or, in other words, have a ceiling.³⁸ The bound tariff rates can vary by good, are set out in each WTO member's tariff schedule, and are equal for every WTO country.³⁹ WTO members are, however, allowed to apply tariff rates that are lower than the bound rate listed in their schedule as long as they still abide by the Most Favored Nation principle.⁴⁰

One important exception to the WTO obligation of Most Favored Nation is the ability of nations to enter into preferential trade agreements (PTAs).⁴¹ PTAs are voluntary arrangements between countries that allow the parties to the agreement to have preferential trade benefits that are likely greater than the trade benefits available under the WTO.⁴² Preferential trade agreements are not generally governed by WTO rules and can be created between any group of countries.⁴³ The WTO gives an exemption to many of its obligations, like Most Favored Nation, for its member countries that have PTAs, as these trade agreements encourage the liberalization of trade and increase market access, which are goals of the WTO.⁴⁴

PTAs commonly create two types of preferential trade areas: free trade areas and customs unions.⁴⁵ A free trade area allows for duty-free trade

³⁴ *See id.* at 26.

³⁵ *Id.* at 179.

³⁶ *Id.* at 180.

³⁷ *Id.*

³⁸ *Id.* at 182.

³⁹ *Id.*

⁴⁰ *See id.* at 129, 182. For example, a country could have a GATT bound rate of 10 percent on a certain good. The country would be free to impose a rate of 8 percent as long as it did so for all WTO countries.

⁴¹ *Id.* at 51.

⁴² *Id.*

⁴³ *Id.*

⁴⁴ *Id.* at 51–52.

⁴⁵ *Id.* at 55.

amongst the member parties, but each member country can still maintain its own tariff system to use with regard to trade outside of the free trade area.⁴⁶ A customs union also allows for duty-free trade between member parties.⁴⁷ However, a customs union differs from a free trade area in the fact that the entire customs union maintains a common tariff structure for economic dealings with all non-member parties.⁴⁸

Another important feature of the WTO tariff scheme is the Harmonized Tariff System (HTS).⁴⁹ This system, developed by the World Customs Organization, classifies all goods into twenty-two different categories and then further into chapters, headings, and subheadings.⁵⁰ The classification number can be up to ten digits, with the first six digits remaining the same between every country, which helps standardize import classification.⁵¹ Each country can then set different tariff rates for goods falling under each of the classification codes, as well as specify different rates for WTO members, PTAs, and countries with no benefits.⁵² Most WTO members, including the United States, have adopted this system.⁵³

⁴⁶ *Id.* The North American Free Trade Agreement (NAFTA) is one of the most well-known free trade areas, with parties to the agreement being Canada, the United States, and Mexico—all WTO members. *North American Free Trade Agreement (NAFTA)*, OFFICE OF THE U.S. TRADE REPRESENTATIVE, <http://www.ustr.gov/trade-agreements/free-trade-agreements/north-american-free-trade-agreement-nafta> (last visited Nov. 19, 2014). For example, if Canada wanted to import goods from the United States, those goods would likely be imported duty free as long as they meet NAFTA origin requirements. To be eligible for duty free treatment under NAFTA, goods generally have to originate in a NAFTA country. This is to avoid one NAFTA country importing goods from a non-NAFTA country, then trading it within the free trade area without the other country being able to assess duties on a good; if the NAFTA country had imported the good directly, it would have been able to assess a duty. If Canada wanted to import from a non-NAFTA country, its own tariff schedule would apply. Similarly if the United States wanted to import from a non-NAFTA country, the United States tariff schedule would apply. *See* CHOW & SCHOENBAUM, *supra* note 16, at 55–56. There is no unified tariff schedule between NAFTA members (contrast with a customs union). *See infra* note 48.

⁴⁷ CHOW & SCHOENBAUM, *supra* note 16, at 55.

⁴⁸ The European Union (EU) is one of the most well-known customs unions. All member countries of the EU have a common tariff schedule for trade with non-EU countries. Tariffs are assessed at the border when a good enters the EU, and the tariff will be the same regardless of the country of origin of the good. Once a good enters the EU, it is allowed to move freely between any EU countries without being assessed another tariff. *Id.*

⁴⁹ *Id.* at 188.

⁵⁰ *Id.*

⁵¹ *See id.*

⁵² *Id.*

⁵³ *Id.*

C. The Economic Effects of Import Duties

Import duties have several effects on an industry but will almost always raise prices paid by domestic producers and domestic consumers.⁵⁴ Increasing or imposing tariffs on a good will generally decrease imports of that good, and decreasing tariffs will increase imports of that good—an inverse relationship.⁵⁵ When tariffs are levied or increased, imports will be reduced due to the higher prices passed on to consumers, and the importing state will gain revenue.⁵⁶ If the good subject to the duty is a final retail good, domestic industries will be able to produce more and possibly raise prices due to the lessened competition from foreign manufacturers.⁵⁷

If the imported good is a component part or a producer good (an input), the effects of a tariff are slightly different.⁵⁸ Producers will now have to pay more for their inputs, which will, in turn, lessen the amount of inputs they can import with the same budget as before the tariffs.⁵⁹ This increase in the price of inputs will decrease the quantity of the final goods made by the producer because they imported less due to higher prices.⁶⁰ The decrease in supply will create higher prices for domestic consumers.⁶¹ The inverse of this situation is also true—when tariffs are lowered or eliminated, producers can import more component parts with the same budget.⁶² Importing more inputs for the same budget, compared to when tariffs were higher, increases the production and quantity of the final goods and passes on lower prices to domestic consumers.⁶³

⁵⁴ See *id.* at 181; PAUL KRUGMAN & ROBIN WELLS, *MACROECONOMICS* 450–52 (2006); Tim K. Banner, “*In Major Part*”—*The New Causation Problem in the Trade-Agreements Program*, 44 *TEX. L. REV.* 1331, 1331 (1966).

⁵⁵ See CHOW & SCHOENBAUM, *supra* note 16, at 181; *cf.* Banner, *supra* note 54, at 1333 (explaining that trade concessions increase imports).

⁵⁶ See CHOW & SCHOENBAUM, *supra* note 16, at 181; COPPOCK & MATEER, *supra* note 16, at 599.

⁵⁷ See CHOW & SCHOENBAUM, *supra* note 16, at 181; COPPOCK & MATEER, *supra* note 16, at 598.

⁵⁸ See CHOW & SCHOENBAUM, *supra* note 16, at 181; *see, e.g.*, KRUGMAN & WELLS, *supra* note 54, at 241 (discussing the effects of a rise in oil prices, an input of production).

⁵⁹ See CHOW & SCHOENBAUM, *supra* note 16, at 181; *see, e.g.*, KRUGMAN & WELLS, *supra* note 54, at 241.

⁶⁰ See CHOW & SCHOENBAUM, *supra* note 16, at 181; *see, e.g.*, KRUGMAN & WELLS, *supra* note 54, at 241 (discussing how a rise in oil prices, an input, effects production and supply of goods).

⁶¹ See CHOW & SCHOENBAUM, *supra* note 16, at 181; Banner, *supra* note 54; *see, e.g.*, KRUGMAN & WELLS, *supra* note 54, at 241.

⁶² See CHOW & SCHOENBAUM, *supra* note 16, at 181; Banner, *supra* note 54, at 1336–42.

⁶³ See KRUGMAN & WELLS, *supra* note 54, at 241; Banner, *supra* note 54, 1333–42.

D. United States International Trade Framework

1. WTO Integration into United States Law

It is each WTO members' responsibility to implement their WTO obligations into domestic law.⁶⁴ Without doing so, any trade concessions or other negotiated for benefits will have no effect.⁶⁵ In most countries, the implementation process is fairly streamlined; however, the United States is an exception.⁶⁶ Due to the dual system of government (the federal government and the states) and the separation of powers between the branches of the federal government, implementing trade obligations can be difficult.⁶⁷

2. The Harmonized System and Tariff Classification in the United States

Most WTO members, including the United States, use some form of the Harmonized Tariff System, as mentioned previously.⁶⁸ The United States codifies the Harmonized Tariff System as the Harmonized Tariff Schedule of the United States (HTSUS), but the United States International Trade Commission (ITC) separately maintains and publishes the actual tariff schedule.⁶⁹ Classifying the tariff applied to a good requires three steps: (1) the classification of the good according to the HTSUS; (2) the valuation of the good to determine the base amount the tariff applies to; and (3) determining the origin of the good to establish which category of duty rates should apply.⁷⁰ The HTSUS provides three rates of duties depending on the origin of a good.⁷¹ The first rate is the "General" rate, which is the GATT bound rate provided to all goods from WTO member countries.⁷² The "Special" rate is the second rate in the HTSUS, which applies to countries that have PTAs with the United States.⁷³ The third rate is known as the "statutory rate," which contains the duty rates established by the Smoot-Hawley Tariff Act,

⁶⁴ CHOW & SCHOENBAUM, *supra* note 16, at 96.

⁶⁵ *See id.*

⁶⁶ *Id.* at 97.

⁶⁷ *Id.* at 97–101.

⁶⁸ *See supra* Part I.B.

⁶⁹ 19 U.S.C. § 1202 (2012).

⁷⁰ CHOW & SCHOENBAUM, *supra* note 16, at 180. It is important to note that determining the classification code, value, and origin of a good each have extensive procedures, which are outside the scope of this Note.

⁷¹ *Id.* at 188.

⁷² *Id.*

⁷³ *Id.*

and applies to non-WTO members without PTAs.⁷⁴ Once a good has been classified, and the value and origin have been determined, the proper tariff rate can be determined by selecting the tariff rate based on the exporting country's trade relationship with the United States and then applying it to the good.⁷⁵

II. A BRIEF HISTORY OF SPACE PROGRAMS

A. *The United States and NASA*

Historically, the United States' space exploration efforts have been led by NASA, which was created by the National Aeronautics and Space Act in 1958 as America's response to the Soviet Union's launching of Sputnik.⁷⁶ The Soviets' feat shocked the world and the United States felt the need to respond, especially because of the implications of future military satellite usage by the Soviets.⁷⁷ Eventually, NASA expanded to be much more than just a reaction to the Soviet Union, and became a pioneer in space.⁷⁸ The organization has gone through several eras, each having its own priorities, usually based on presidential decision, and each with its own milestones.⁷⁹

The "birth period" saw the setting of NASA's foundations.⁸⁰ Scientists, engineers, and many others from existing government agencies—such as the Department of Defense and the National Advisory Committee for Aeronautics—were absorbed into NASA.⁸¹ It was during this period that NASA became a structured organization and began to plan its future endeavors despite criticism that it was a weak agency.⁸²

The second major era in NASA's history is the "Apollo Era," ranging from approximately 1961–72.⁸³ During this time, the Soviet Union launched its first man into space, prompting the United States to move ahead with its plans more quickly.⁸⁴ NASA began planning for the unmanned Mariner

⁷⁴ *Id.* at 188–89.

⁷⁵ *Id.* at 180, 188.

⁷⁶ W. Henry Lambright, *Exploring Space: NASA at 50 and Beyond*, 70 PUB. ADMIN. REV. 151, 152 (2009); Bradley G. Shreve, *The US, the USSR, and Space Exploration, 1957–1963*, 20 INT'L J. ON WORLD PEACE 67, 69–70 (2003). NASA's creation signaled a move away from a militaristic attitude to space exploration and towards a more humanistic scientific view.

⁷⁷ Lambright, *supra* note 76, at 152.

⁷⁸ *See id.* at 151–52.

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ *Id.*

⁸² *Id.* at 152–53.

⁸³ *Id.* at 152.

⁸⁴ *See id.* at 153.

exploration program, as well as the one-man Mercury, two-man Gemini, and three-man Apollo missions.⁸⁵ The United States was still in a learning phase, evidenced by the devastating Apollo 1 fire in 1967, which killed all three astronauts on board.⁸⁶ A big success came in 1969 with the Apollo 11 mission, when the United States and the world saw the first man walk on the moon.⁸⁷ The United States continued to have success through 1972, which marked the last flight to the moon and the conclusion of the Apollo era.⁸⁸

With the end of the Apollo era and no new progress, NASA suffered through some budgetary and leadership struggles.⁸⁹ The new NASA administrator decided to shift its focus to human exploration and the space shuttle program, with the goal of making human space exploration cheaper and more routine.⁹⁰ This period is appropriately named the “Shuttle era.”⁹¹ The Viking explorer was sent to Mars and the development of the Hubble Space Telescope began during this period as well.⁹² A plan to build four shuttles was approved by President Carter, after some skepticism, and the first shuttle saw its inaugural flight in 1981.⁹³

The period of time from the mid-1980s to the mid-2000s was aptly named the “Space Station era.”⁹⁴ In the years following, development on the Hubble Space Telescope continued, and something new was proposed: a space station designed to continue the efforts of human space exploration and service space shuttles.⁹⁵ NASA hit another bump in the road when the Challenger space shuttle exploded in 1986, killing seven of its crewmembers, and again putting the shuttle program into jeopardy.⁹⁶ Space shuttles were essential to a successful space station and every hiccup set NASA further back.⁹⁷ Delays and setbacks continued through the early nineties with blurry pictures returning from the Hubble Space Telescope, dismal support from Congress, and changing presidential initiatives.⁹⁸ The NASA administrator at that time continued to push forward with the development of the space station, gained Europe, Japan, and Canada as partners in the project, and eventually was able to lay the foundations for the creation of the International

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ *Id.* at 153–54.

⁹⁰ *Id.* at 154.

⁹¹ *Id.* at 153.

⁹² *Id.* at 154.

⁹³ *Id.*

⁹⁴ *Id.* at 152.

⁹⁵ *Id.* at 154.

⁹⁶ *Id.*

⁹⁷ *Id.* at 154–55.

⁹⁸ *Id.* at 155.

Space Station.⁹⁹ The U.S. mindset switched to one of cooperation with Russia, as opposed to competition, and the first people (U.S. and Russian) boarded the International Space Station in late 2000, beginning the permanent occupation of a space facility by humans.¹⁰⁰ The late 1990s saw a repaired Hubble Space Telescope beaming back dazzling images and the success of the Mars Pathfinder mission.¹⁰¹

The most recent era on NASA's timeline is the "Moon-Mars era."¹⁰² The goal of the agency during this phase is to continue project development with the goal of returning to the Moon and eventually going on to Mars.¹⁰³ Another shuttle accident, this time with Columbia, again provided setbacks for NASA and its objectives.¹⁰⁴ World events such as the wars in Afghanistan and Iraq, Hurricane Katrina, and the collapse of the financial system put additional obstacles in the way.¹⁰⁵ However, NASA continues to be forward-looking, establishing plans to explore further into the universe, and encouraging private industry to take over transportation to the space station after the imminent shuttle retirement.¹⁰⁶ Currently, the exploration of Mars remains a top priority of NASA, including both human exploration, and robotic exploration carried out by the Spirit and Opportunity rovers.¹⁰⁷

B. The Space Race and Foreign Space Programs

As mentioned earlier, NASA was the product of the United States' response to the successful Soviet space program.¹⁰⁸ The United States and the Soviet Union remained cordial with each other despite building tensions between the two nations.¹⁰⁹ The Soviets had continued success with the launch of Sputnik II, while the United States was lagging behind, signified by the explosion of the United States' attempted satellite launch of Vanguard I.¹¹⁰ As the Cold War was in full force between the Soviet Union and the United States, the United States became increasingly worried about its international reputation and the damage that would occur if it fell even further behind the

⁹⁹ *Id.*

¹⁰⁰ *Id.*

¹⁰¹ *Id.*

¹⁰² *Id.* at 152.

¹⁰³ *Id.* at 156.

¹⁰⁴ *Id.* at 155–56.

¹⁰⁵ *Id.* at 156.

¹⁰⁶ *Id.*

¹⁰⁷ *Id.*

¹⁰⁸ See *supra* notes 76–82 and accompanying text.

¹⁰⁹ Shreve, *supra* note 76, at 67–68.

¹¹⁰ *Id.* at 69.

Soviets.¹¹¹ Advancements in space technology became a symbol of national power and pride.¹¹² A space race was on between the United States and the Soviets, but the United States eventually surpassed the Soviet Union by successfully placing men on the moon in 1969.¹¹³

The Space Race was slowing down, but other nations wanted to join what was left of the race.¹¹⁴ In the late 1960s and early 1970s, many other countries established national space agencies, most prominently India and the European Space Agency (comprised of twenty European nations, some of which also established their own space agencies in addition to the European Space Agency).¹¹⁵ Two more key national space agencies were formed in the early 1990s, with the founding of the Russian Federal Space Agency in 1992 (after the dissolution of the Soviet Union),¹¹⁶ and the Chinese National Space Agency in 1993.¹¹⁷

While each nation's space agencies have their own significant accomplishments,¹¹⁸ many say that the greatest accomplishment is the International Space Station.¹¹⁹ The International Space Station is essentially a large laboratory orbiting Earth that astronauts can inhabit for several months at a time, and is used to study space, the environment, and geology.¹²⁰ While a

¹¹¹ *Id.*

¹¹² Lambright, *supra* note 76, at 152.

¹¹³ *Id.* at 153.

¹¹⁴ See *About ISRO: Introduction*, INDIAN SPACE RESEARCH ORGANISATION, <http://www.isro.gov.in/scripts/Aboutus.aspx> (last visited Nov. 19, 2014); *History of Europe in Space*, EUROPEAN SPACE AGENCY (Sept. 13, 2013), http://www.esa.int/About_Us/Welcome_to_ESA/ESA_history/History_of_Europe_in_space.

¹¹⁵ See *supra* note 114.

¹¹⁶ Elizabeth Howell, *Roscosmos: Russia's Space Agency*, SPACE.COM (Sept. 9, 2013, 8:10 PM), <http://www.space.com/22724-roskosmos.html>.

¹¹⁷ John M. Logsdon, *Chinese National Space Administration (CNSA)*, ENCYCLOPAEDIA BRITANNICA, <http://www.britannica.com/EBchecked/topic/1111351/China-National-Space-Administration-CNSA> (last visited Nov. 19, 2014). While these agencies were formed much later than many of the others, they should not be overlooked. Both countries had experience in space before these national agencies were established, with Russia, as a part of the Soviet Union, achieving the first human spaceflight, and China being the third nation to do so.

¹¹⁸ See, e.g., *Indian Spacecraft Leaves Earth's Orbit, Bound for Mars*, FOXNEWS.COM (Dec. 1, 2013), <http://www.foxnews.com/science/2013/12/01/indian-spacecraft-leaves-earth-orbit-bound-for-mars/> (discussing Mars orbiter mission); Leonard David, *China Launches 'Jade Rabbit' Rover on its First Moon-Landing Mission*, NBC NEWS (Dec. 1, 2013, 3:05 PM), <http://www.nbcnews.com/science/china-launches-jade-rabbit-rover-its-first-moon-landing-mission-2D11674372> (discussing China's moon rover launch).

¹¹⁹ See Tim Sharp, *International Space Station: The Most Amazing Flying Machines Ever*, SPACE.COM (July 25, 2012, 11:31 AM), <http://www.space.com/16748-international-space-station.html>.

¹²⁰ Sharp, *supra* note 119.

majority of the International Space Station's components comes from Russia and the United States, the members of the European Space Agency, Canada, and Japan have also made significant contributions, and many other nations have sent astronauts to the International Space Station.¹²¹

C. *The Rise of the Private Space Industry*

As NASA's role began to dwindle in the early 2000s, many private space companies began to form and existing companies increased their production and research, leading to an increase in the private space industry.¹²² As competition in the private industry grows, so does the amount of innovation and new technology created by these companies.¹²³ Current and future plans for production of space technology by these companies include launch vehicles, cargo transportation services, advanced satellite intelligence and imaging, space tourism and leisure vehicles, expandable space habitats and commercial space stations, and asteroid mining spacecraft for celestial resource exploitation.¹²⁴ While there are many commercial companies joining in this new private space race,¹²⁵ two American companies are leading the way: SpaceX and Orbital Sciences.¹²⁶ Both SpaceX and Orbital Sciences

¹²¹ Robert Z. Pearlman, *International Space Station: 15 Facts for 15 Years in Orbit*, SPACE.COM (Nov. 21, 2013, 1:39 PM), <http://www.space.com/23686-international-space-station-15-facts.html>.

¹²² See Khan & Mestel, *supra* note 9; see e.g., *Company*, SPACEX, <http://www.spacex.com/about> (last visited Nov. 19, 2014); *Satellites & Space Systems*, ORBITAL SCIENCES CORP., <http://www.orbital.com/SatellitesSpace/> (last visited Nov. 19, 2014); *Virgin Galactic Brochure*, *supra* note 4.

¹²³ See *Swans and Falcons: Two More Steps Towards Free Enterprise in Orbit*, THE ECONOMIST (Oct. 5, 2013), <http://www.economist.com/news/science-and-technology/21587196-two-more-steps-towards-free-enterprise-orbit-swans-and-falcons>.

¹²⁴ E.g., *Bigelow Spacecraft: BEAM*, BIGELOW AEROSPACE, http://www.bigelowaerospac.com/beam_media_brief.php (last visited Nov. 19, 2014); *Capabilities and Services*, SPACEX, <http://www.spacex.com/about/capabilities> (last visited Nov. 19, 2014); *Company Overview*, UNITED LAUNCH ALLIANCE, http://www.ulalaunch.com/site/pages/About_Overview.shtm (last visited Nov. 19, 2014); *Mission*, DEEP SPACE INDUSTRIES, <http://deep.spaceindustries.com/> (last visited Nov. 19, 2014); *Satellites & Space Systems*, ORBITAL SCIENCES CORP., <http://www.orbital.com/SatellitesSpace/> (last visited Nov. 19, 2014); *Virgin Galactic Brochure*, *supra* note 4.

¹²⁵ E.g., *About SNC's Space Systems*, SIERRA NEVADA CORPORATION, http://www.sncspace.com/ss_about_ss.php (last visited Nov. 19, 2014); *Company Overview*, UNITED LAUNCH ALLIANCE, *supra* note 124; *Introduction*, BIGELOW AEROSPACE, <http://www.bigelowaerospac.com/introduction.php> (last visited Nov. 19, 2014); *Mission*, DEEP SPACE INDUSTRIES, *supra* note 124; *Mission*, PLANETARY RESOURCES, <http://www.planetaryresources.com/company/overview/#our-vision> (last visited Nov. 19, 2014); *Virgin Galactic Brochure*, *supra* note 4.

¹²⁶ See Jeff Glor, *U.S. Companies Help Reach Milestones for Space Program*, CBS NEWS (Sept. 29, 2013, 9:25 PM), <http://www.cbsnews.com/news/us-companies-help-reach-milestones-for-space-program/>; *Swans and Falcons*, *supra* note 123.

have successfully launched spacecraft,¹²⁷ carried cargo to the International Space Station, and planned for several more similar missions.¹²⁸

Currently, these missions are a part of NASA's Commercial Orbital Transportation Services program (COTS).¹²⁹ The COTS program recognizes the need for the commercial space industry to step in and fulfill the role that NASA is no longer able to play.¹³⁰ Under COTS, NASA partners with private companies to help them develop space transportation services by providing technical and financial support to certain companies.¹³¹ NASA is also contracting with private companies for transportation services to re-supply the International Space Station under the Commercial Crew & Cargo Program under Commercial Resupply Services (CRS) contracts.¹³² NASA

¹²⁷ Costs to build and develop these spacecraft are incredibly high. SpaceX currently uses its Dragon spacecraft and Falcon 9 rocket. The Falcon 9 rocket, alone, cost over \$300 million to develop. Elizabeth Howell, *SpaceX's Falcon 9: Rocket for the Dragon*, SPACE.COM (Sept. 29, 2012, 1:30 PM), <http://www.space.com/18962-spacex-falcon-9.html>. SpaceX holds a \$1.6 billion delivery contract for twelve missions with NASA. *NASA Hails Success of Commercial Space Program*, NASA (Nov. 13, 2013), <http://www.nasa.gov/content/nasa-hails-success-of-commercial-space-program/#.UsdEJWRDvNZ>. Orbital Sciences uses its Antares rocket and Cygnus spacecraft. The Cygnus spacecraft similarly cost around \$300 million to develop and the Antares launch pad cost \$140 million. The rocket itself is estimated to cost approximately \$472 million. In total, the Antares Rocket, Cygnus spacecraft and new launch pad cost around \$1 billion. Stephen Clark, *Cygnus Cargo Vehicle Gearing up for Debut Flight*, SPACEFLIGHT NOW (Sept. 4, 2013), <http://spaceflightnow.com/antares/cots1/130904ftr/#.UssIP2RdvNY>; Zach Rosenberg, *Orbital Sciences Development Costs Increase* (Apr. 30, 2012, 6:09 PM), FLIGHTGLOBAL, <http://www.flightglobal.com/news/articles/orbital-sciences-development-costs-increase-371291/>. Orbital Sciences holds a \$1.9 billion delivery contract with NASA. *NASA Hails Success of Commercial Space Program*, *supra*.

¹²⁸ Miriam Kramer, *Private Space Race: 2 Commercial Spaceships Now Available for Space Station Deliveries*, SPACE.COM (Sept. 30, 2013, 7:20 AM), <http://www.space.com/22995-private-cygnus-spacecraft-spacex-dragon-deliveries.html>; *NASA Hails Success of Commercial Space Program*, *supra* note 127.

¹²⁹ See Kramer, *supra* note 128; *NASA Hails Success of Commercial Space Program*, *supra* note 127.

¹³⁰ See *Commercial Crew & Cargo*, NASA, <http://www.nasa.gov/offices/c3po/about/c3po.html> (last visited Nov. 19, 2014); see also *Commercializing Space*, NASA (Feb. 8, 2013), <http://www.nasa.gov/externalflash/commercializingspace/> (providing an overview of NASA's commercial crew and cargo transportation programs).

¹³¹ *Commercial Crew & Cargo*, *supra* note 130; *NASA Hails Success of Commercial Space Program*, *supra* note 127. NASA awarded SpaceX \$75 million to assist in the development of the Dragon spacecraft. Howell, *supra* note 127. NASA has agreed to make milestone payments to Orbital Sciences totaling \$288 million for development of the Antares rocket. Rosenberg, *supra* note 127.

¹³² See *Commercial Crew & Cargo*, *supra* note 130; Glor, *supra* note 126; *Swans and Falcons*, *supra* note 123; Tariq Malik, *Private Cargo Ship Delivers Gifts, Ants to Space Station Crew*, SPACE.COM (Jan. 12, 2014, 8:30 AM), <http://www.space.com/24252-private-spacecraft-delivers-space-station-gifts.html>.

recently chose SpaceX and Boeing for new contracts to transport crews to and from the International Space Station in an attempt to end the United States' reliance on Russia for crew transport.¹³³

One downside to these partnerships, however, is that some of the contracts and agreements make performance-based, fixed payments, so if a company fails to meet a certain milestone,¹³⁴ they may not receive payment from NASA, even if they have already expended resources.¹³⁵ Some also see NASA's financial contributions as minimal, although helpful, when the total costs of spacecraft, rocket, and launch pad development are examined.¹³⁶ Orbital Sciences, for example, launched its Antares rocket carrying cargo to the International Space Station on October 28, 2014 as part of its CRS contract.¹³⁷ The launch failed, however, as the rocket exploded just moments after lift off.¹³⁸ Orbital Sciences must now bear the additional costs of accelerating upgrades to the Antares propulsion system and finding alternate spacecraft to use in the meantime to fulfill its resupply obligations under the CRS contract.¹³⁹

III. NASA'S BENEFICIAL ADVANTAGES IN INTERNATIONAL TRADE FOR SPACE PROJECTS

Part III will discuss several beneficial advantages that NASA has with regard to international trade. First and foremost is NASA's exemption from import duties for space projects, which will be discussed in Part A. This section will give an overview of NASA's exemption and will also detail how the exemption functions in relation to the Harmonized System. Part B will explore NASA's ability to negotiate bilateral trade agreements with other

¹³³ *NASA Chooses American Companies to Transport U.S. Astronauts to International Space Station*, NASA (Sept. 16, 2014), <http://www.nasa.gov/press/2014/september/nasa-chooses-american-companies-to-transport-us-astronauts-to-international/#.VEwZQZPF-pc>.

¹³⁴ For example, the final milestone under the COTS program is a launch demonstration. *Orbital Set to Launch COTS Demonstration Mission to International Space Station Tomorrow*, ORBITAL SCIENCES CORP. (Sept. 17, 2013), <http://www.orbital.com/NewsInfo/release.asp?prid=869>.

¹³⁵ See *Commercial Crew & Cargo*, *supra* note 130.

¹³⁶ See *supra* notes 127, 131.

¹³⁷ Doyle Rice and William M. Welch, *Unmanned Antares Rocket Explodes on Launch*, USA TODAY (Oct. 29, 2014, 8:06 AM), <http://www.usatoday.com/story/tech/2014/10/28/nasa-rocket-explodes-wallops-island/18080871/>.

¹³⁸ *Id.*

¹³⁹ *Orbital Announces Go-Forward Plan for NASA's Commercial Resupply Services Program and the Company's Antares Launch Vehicle*, ORBITAL SCIENCES CORP. (Nov. 5, 2014), <http://www.orbital.com/NewsInfo/release.asp?prid=1921>. NASA will incur no additional costs.

nations, which provides NASA a more expansive advantage over private industry than the tariff exemption alone.

A. NASA's Exemption from Import Duties for Space Projects

1. An Overview of NASA's Exemption

For the past few decades, NASA has enjoyed duty-free importation of goods into the United States for space-related activities, due to the negotiations made in the Uruguay Round agreements of GATT 1994.¹⁴⁰ The tariff exemption was enacted in order to “encourage and facilitate the use of NASA’s launch services for the exploration and use of space.”¹⁴¹ The policy underlying the tariff exemption implies that the exemption will confer a trade benefit upon NASA, in the form of reduced tariffs.¹⁴² The duty-free exemption applies to articles imported by NASA from foreign countries that are to be launched into space, space parts, and “equipment for use in connection with a launch into space.”¹⁴³ Objects brought back from space by NASA, whether originating from space itself or from another country, also qualify to use the duty exemption.¹⁴⁴ The exemption also applies to third party partner imports, when the imports are used for fulfilling a launch services agreement with NASA.¹⁴⁵

¹⁴⁰ 14 C.F.R. § 1217.102 (2014).

¹⁴¹ *Id.*

¹⁴² *See id.*

¹⁴³ 14 C.F.R. §§ 1217.101–102 (2014). While the exemption does not list specific examples, goods covered by the exemption likely include parts used to build space capsules and rockets, raw materials used on production of space launch vehicles and anything necessary to support people once they are in space (food, clothing, etc.).

¹⁴⁴ 14 C.F.R. §§ 1217.100, 102, 106 (2014). Valuation and ownership of objects originating in space is a currently debated topic, which is outside the scope of this Note. However, is it plausible to say that one day, a country may have to pay some sort of duty for an item they bring back from space, subject to valuation rules that have yet to be formed.

¹⁴⁵ 14 C.F.R. § 1217.102 (2014). For example, SpaceX and Orbital Sciences would be able to take advantage of this exemption and import goods that are used to fulfill their respective agreements with NASA for free. However, this exemption will not be extended to SpaceX and Orbital Sciences for any of their projects that are unaffiliated with their NASA contracts. *See NASA Hails Success of Commercial Space Program*, *supra* note 127. Orbital Sciences decided to use refurbished engines built by the Soviet Union in the 1960s to power the Antares rocket. Mike Wall, *Doomed Antares Rocket Powered by Refurbished Soviet Engines*, SPACE.COM (October 30, 2014, 7:00 AM), <http://www.space.com/27598-antares-rocket-explosion-soviet-engines.html>. While it is unknown when these engines were imported, if imported today, the engines would likely receive duty-free treatment because engines were used to build the Antares rocket under a COTS agreement between Orbital Sciences and NASA. *See id.* Private companies in the space industry that have no affiliations with NASA cannot use this exemption at all, and must pay full duties on their imports.

2. *NASA's Imports Classification Under the Harmonized Tariff Schedule of the United States*

The regulations require specific procedures to ensure that qualified goods enter the United States duty free.¹⁴⁶ Requests for certification of the goods must be given to the appropriate NASA official accompanied with the required forms and documentation, as well as a proposed date and port of entry.¹⁴⁷ NASA, or an affiliate based on an agreement with NASA, will then present the required documents to the customs official at the port of entry.¹⁴⁸ The customs official will then certify the goods under HTSUS subheading 9808.00.80, which accords duty-free entry into the United States.¹⁴⁹ Once the goods are released from the customs area, they must be directly transferred to NASA or the proper affiliate that is using the goods in accordance with the guidelines set out above.¹⁵⁰

B. *NASA's Advantage to Negotiate Bilateral Trade Agreements*

Along with enjoying duty-free treatment of goods imported for space projects, NASA enjoys another important trade benefit that is not available to private producers in the space industry.¹⁵¹ NASA has the unique ability

¹⁴⁶ See 14 C.F.R. § 1217.102 (2014).

¹⁴⁷ *Id.* § 1217.105.

¹⁴⁸ *Id.*

¹⁴⁹ 14 C.F.R. §§ 1217.103, 105 (2014); *Harmonized Tariff Schedule of the United States, Chapter 98, Subchapter VII, Importation of the United States Government*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000C98.pdf>. Once certified under 9808.00.80, the articles are no longer considered to be an "importation" and formal entry of the goods (which requires additional time and documentation) is not required. *Harmonized Tariff Schedule of the United States, Chapter 98, Subchapter VII, Importation of the United States Government*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000C98.pdf>; see U.S. Customs and Border Protection, *What Every Member of the Trade Community Should Know About: Entry*, U.S. DEP'T OF HOMELAND SEC. (March 2014), http://www.cbp.gov/sites/default/files/documents/icp017r2_3.pdf. Other government agencies are also allowed duty-free importation of goods for agency use under chapter 98 of the HTSUS. Other exemptions include, but are not limited to, certain articles for the Department of State, certain articles for the Department of Agriculture and certain articles for military departments. More detailed discussion of other agency exemptions is outside the scope of this Note. 19 C.F.R. § 10.102 (2014); *Harmonized Tariff Schedule—Duty Exemption for Government Agencies*, U.S. CUSTOMS AND BORDER PROT., https://help.cbp.gov/app/answers/detail/a_id/370/~harmonized-tariff-schedule---duty-exemption-for-government-agencies (last updated Mar. 26, 2014); *Harmonized Tariff Schedule of the United States, Chapter 98, Subchapter VII*.

¹⁵⁰ 14 C.F.R. § 1217.105 (2014).

¹⁵¹ *Id.* § 1217.102.

to negotiate and agree to bilateral preferential trade agreements with other countries regarding the import and export of goods, information, and technology related to space.¹⁵² At first, these trade agreements do not appear to have a great impact on NASA, as NASA already enjoys duty-free importation of goods.¹⁵³ However, these exemptions generally grant duty-free imports and exports in both countries that are parties to the agreement.¹⁵⁴

¹⁵² Most of the trade agreements between United States and the respective treaty partners contain relatively similar provisions, especially regarding areas of cooperation, implementation, and tariff treatment. *See, e.g.*, Framework Agreement Between the Government of the Federative Republic of Brazil and the Government of the United States of America on Cooperation in the Peaceful Uses of Outer Space, U.S.-Braz., Mar. 19, 2011, *available at* <http://www.brazilcouncil.org/sites/default/files/FAonCooperationinthePeacefulUsesofOuterSpace-Mar19%202011.pdf> [hereinafter Brazil Agreement]; Framework Agreement between the National Aeronautics and Space Administration and the German Aerospace Center on Cooperation in Aeronautics and the Exploration and Use of Outer Space for Peaceful Purposes, U.S.-Ger., Dec. 8, 2010–Dec. 13, 2010, *available at* <http://www.state.gov/documents/organization/159445.pdf> [hereinafter Germany Agreement]; Framework Agreement between the National Aeronautics and Space Administration and the Indian Space Research Organization for Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes, U.S.-India, Feb. 1, 2008, *available at* <http://www.state.gov/documents/organization/108925.pdf> [hereinafter India Agreement]. Some of the countries NASA currently has agreements with include, but are not limited to: Brazil, Canada, France, Germany, India, Norway, and Russia. *See, e.g.*, Brazil Agreement, *supra*; Germany Agreement, *supra*; Framework Agreement Between the Government of the United States of America and the Government of Canada for Cooperation in the Exploration and Use of Outer Space for Peaceful Purposes, U.S.-Can., Sept. 9, 2009, *available at* <http://www.state.gov/documents/organization/143670.pdf>; India Agreement, *supra*; Implementing Agreement between the United States National Aeronautics and Space Administration and The Federal Space Agency, the Russian Federation, on the Flight of the Russian Lunar Exploration Neutron Detector (LEND) on the United States Lunar Reconnaissance Orbiter (LRO), U.S.-Russ., Mar. 10, 2007, *available at* <http://www.state.gov/documents/organization/195782.pdf>; Framework Agreement Between the Government of the United States of America and the Government of the French Republic for Cooperative Activities in the Exploration and Use of Outer Space for Peaceful Purposes, U.S.-Fr., Jan. 23, 2007, *available at* <http://www.state.gov/documents/organization/130472.pdf>; Space Cooperation Agreement between the United States of America and Norway, U.S.-Nor., Oct. 20 2000–Nov. 14 2001 (agreement extended Oct. 23, 2006), *available at* <http://www.state.gov/documents/organization/131802.pdf>.

¹⁵³ 14 C.F.R. § 1217.102 (2014).

¹⁵⁴ *See supra* note 152. For example, the United States' agreement with Brazil, which is similar to many of the other bilateral agreements, states:

1. In accordance with its national laws and regulations, each Party shall ensure free customs clearance and exemption from all applicable customs duties, fees, and taxes for the import or export of goods necessary for the implementation of this Agreement.

2. In the event that any duties, fees, or taxes of any kind are nonetheless levied on such goods, such duties, fees, or taxes shall be borne by the Party of the country levying them.

Brazil Agreement, *supra* note 152.

NASA, therefore, could export goods or technology to a treaty partner country, and the importer would not have to pay any customs duties on the article in question.¹⁵⁵ This gives NASA an advantage over private companies, effectively lowering the costs of its goods by the amount of the tariff rate. If an importer has a choice between two comparable goods at the same price, one from NASA and one from a private producer, but does not have to pay duties on one, it is more likely to choose the duty-free product, which, here, would be the product from NASA because the overall cost would be less.¹⁵⁶ Currently, most of the benefits of these trade agreements are limited to the national space agencies of the treaty partner country,¹⁵⁷ as most countries besides the United States do not have viable private space industries. This is likely to change in the future as the space industry becomes more lucrative and privatization increases.¹⁵⁸

An additional benefit, not quite apparent at first, is that the scope of what is covered by these trade agreements is incredibly broad.¹⁵⁹ These agreements may be so broad that they expand the reach of what NASA can import duty free from treaty member countries beyond the exemptions granted by HTSUS chapter 98.¹⁶⁰ The extended scope is clearly an additional benefit

¹⁵⁵ See *supra* note 152.

¹⁵⁶ See David R. Henderson, *The Concise Encyclopedia of Economics: Demand*, LIBRARY OF ECON. AND LIBERTY, <http://www.econlib.org/library/Enc/Demand.html> (last visited Nov. 19, 2014).

¹⁵⁷ Although some of these treaties are limited to national space agencies of the treaty partners, nothing is to say that transactions do not take place between the agencies.

¹⁵⁸ See Ken Kremer, *Private American Rockets Blast Open 2014 & Commercial Space Race with Big Bangs on Jan. 6 & 7*, UNIVERSE TODAY (Jan. 2, 2014), <http://www.universetoday.com/107599/private-american-rockets-blast-open-2014-commercial-space-race-with-big-bangs-on-jan-6-7/>.

¹⁵⁹ Most of these bilateral trade agreements allow for duty-free entry of goods related to the following areas: earth science and observation, space science, exploration systems, space operations and other areas of mutual interest to both countries. Those areas of interest may be implemented with the following: spacecraft, space research platforms, space missions, sounding rockets, scientific balloons, aircraft campaigns, space communications including ground based antennas, ground based research facilities, exchanges of scientific personnel and data, joint workshops, education and public outreach, and other mechanisms of mutual interest. See, e.g., Brazil Agreement, *supra* note 152.

¹⁶⁰ While the text is subject to interpretation, at first glance, the bilateral trade agreements between the United States and its treaty partners seem to encompass a much larger group of goods, as well as other activities than NASA's exemption in the HTSUS. NASA's HTSUS exemption is limited to "space-related activities" and articles for third parties who have agreements with NASA. The bilateral agreements, however, include provisions for Earth science and observation, and "[o]ther relevant areas of mutual interest," as well as using education and public outreach programs and "[o]ther mechanisms of mutual interest" for implementation. The inclusion of these additional categories, especially the "other"

for NASA over private space producers who enjoy no breaks in import duties in any countries.¹⁶¹ NASA alone enjoys the above-mentioned benefits with dozens of countries with which it has negotiated these preferential trade agreements.¹⁶²

IV. AN ANALYSIS OF COUNTRIES ALLOWING DUTY-FREE IMPORTATION OF GOODS TO PRODUCERS IN THE PRIVATE SPACE INDUSTRY

Several other countries currently allow for the duty-free importation of goods for space projects.¹⁶³ However, unlike the United States, which only extends duty-free importation to the government, these countries grant duty-free importation to private producers as well, subject to some conditions.¹⁶⁴ Countries that grant duty-free importation to private producers provide a significant benefit to the private space industry in that country by lowering

categories in the bilateral agreements, could leave open a wide range of activities and goods not included in the scope of NASA's current exemption under the HTSUS. *See* 14 C.F.R. § 1217.102 (2014); *Harmonized Tariff Schedule of the United States, Chapter 98, Subchapter VII, Importation of the United States Government*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000C98.pdf>; Brazil Agreement, *supra* note 152.

¹⁶¹ *See Harmonized Tariff Schedule—Duty Exemption for Government Agencies*, U.S. CUSTOMS AND BORDER PROT., https://help.cbp.gov/app/answers/detail/a_id/370/~ /harmonized-tariff-schedule---duty-exemption-for-government-agencies (last updated March 26, 2014); *Harmonized Tariff Schedule of the United States, Chapter 98, Subchapter VII, Importation of the United States Government*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000C98.pdf>; Brazil Agreement, *supra* note 152.

¹⁶² *See supra* note 152.

¹⁶³ *See Space Concession*, AUSINDUSTRY, <http://www.business.gov.au/grants-and-assistance/import-export/space-concession/Pages/default.aspx> (last visited Nov. 19, 2014); Reshenij Komissii Tamozhennogo O edinom tamozhenno-tarifnom regulirovanii tamozhennogo sojuza Respubliki Belarus', Respubliki Kazahstan i Rossijskoj Federacii No. 130 [On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation] (Belr./Kaz./Russ.) (Nov. 27, 2009), available at <http://tsouz.ru/KTS/meeting11/Pages/130-2.aspx> (last visited Nov. 19, 2014); O vnesenii izmenenij v Reshenie Komissii Tamozhennogo sojuza ot 27.11.2009 g. No. 130 "O edinom tamozhenno-tarifnom regulirovanii Tamozhennogo sojuza Respubliki Belarus', Respubliki Kazahstan i Rossijskoj Federacii" [On Amendments to the Customs Union Commission Decision of 27.11.2009 No. 130 "On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation"] (Belr./Kaz./Russ.) No. 727 (June 22, 2011), available at http://tsouz.ru/KTS/KTS29/Pages/R_727.aspx.

¹⁶⁴ *See Space Concession*, *supra* note 163; On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation No. 130, *supra* note 163; On Amendments to the Customs Union Commission Decision of 27.11.2009 No. 130 "On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation," *supra* note 163.

their costs of production, and, in turn, lowering prices for consumers of space goods.¹⁶⁵ The countries analyzed in this Note are all WTO members and their duty-free importation programs comply with their WTO obligations or are allowed under the exceptions to WTO obligations.¹⁶⁶

A. Australia

In 2002, the Australian government implemented the Space Concession Program, providing for duty-free entry of goods imported for use in authorized “space projects” provided that the project and the goods meet certain conditions.¹⁶⁷ The goal of the Space Concession Program is to increase the competitiveness of Australia’s space industry, while ensuring compliance with international obligations, like those to the WTO.¹⁶⁸ In implementing this program, Australia is attempting to facilitate the transfer of advanced space technology and expertise to its country.¹⁶⁹ The program, while still relatively new, is expected to be of a substantial benefit to companies looking to establish themselves in the high-technology space industry in Australia.¹⁷⁰ The Space Concession Program was implemented as item 41 into schedule 4 of the Customs Tariff Act of 1995.¹⁷¹

To be eligible to receive duty-free importation under this program, a company must follow several steps set forth in the Space Concession Program guidelines.¹⁷² First, the space project must be authorized.¹⁷³ The potential importing company must complete an application form as well as an industry participation plan, which should describe the company’s engagement in the Australian space industry, and how the company will also give reasonable opportunity for Australian suppliers to supply the goods needed.¹⁷⁴ The Australian Minister for Innovation, Industry, Science, and Research (“the

¹⁶⁵ See *supra* Part I.C.

¹⁶⁶ *Understanding the WTO: The Organization—Members and Observers*, WORLD TRADE ORG., http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Nov. 19, 2014); see *infra* parts IV.A and IV.B (discussing WTO member obligations and exceptions).

¹⁶⁷ *Space Concession*, *supra* note 163.

¹⁶⁸ *Id.*; *Space Concession Fact Sheet*, AUSINDUSTRY (May 2011), <http://www.business.gov.au/grants-and-assistance/import-export/space-concession/Documents/SPACE-Factsheet.pdf>.

¹⁶⁹ *Space Concession*, *supra* note 163.

¹⁷⁰ *Id.*; *Space Concession Fact Sheet*, *supra* note 168.

¹⁷¹ *Space Concession Fact Sheet*, *supra* note 168.

¹⁷² See *Space Concession*, —*Customs Tariff Act 1995—Sch 4—Item 41 Policy and Administrative Guidelines*, AUSINDUSTRY (May 2014), available at <http://www.business.gov.au/grants-and-assistance/import-export/space-concession/Documents/Space-Guidelines.pdf>.

¹⁷³ *Id.* § 3.

¹⁷⁴ *Id.*

Minister”) must approve the application.¹⁷⁵ Following the application, the company must apply for an Eligible Goods Determination.¹⁷⁶ If approved by the office of the CEO of Customs, the eligible goods determination certifies that the imported goods fall within the scope of the concession and will be used for an authorized space project.¹⁷⁷

Two key criteria must be met for a space project to be authorized: (1) the project must contain activities between Australian parties and parties from other countries, involving joint investment, research, manufacturing, or the supply of equipment or technologies from one party to another for the purpose of joint activities; and (2) the project must be in the field of outer space exploration, remote sensing, space medicine and biology, protection of the space environment, material processing in space, space communications, information and technologies, satellite navigation technology, automated and manned space systems and ground technologies, or space launch services.¹⁷⁸ Other key considerations for project authorization include the contribution to Australia’s efforts in space exploration; facilitation of Australia’s participation in international space programs; economic benefits to Australia including increased employment and investment; matching Australia’s areas of competitive advantage in the space industry; the opportunity for Australian industry to participate in the space project; consistency with national security interests, government policies and international obligations; and consistency with licensing regulations regarding space launches.¹⁷⁹

There are few restrictions on the types of goods eligible for duty-free entry under the Space Concession Program.¹⁸⁰ Eligible goods include certain types of equipment and materials used in the construction or operation of a commercial spaceport or other space-related activities.¹⁸¹ To ensure that companies do not take advantage of the broadness of the concession, if a potential imported good can be used for non-space activities, the company must convince the Minister, through information establishing a clear and direct link, that the good is “necessary for, or integral to, the development or operation of the authori[z]ed ‘space project’, and are for use solely in that project.”¹⁸² If the good is deemed to be for an authorized space project, or necessary to a project if it has other uses, as long as the company has complied with

¹⁷⁵ *Id.*

¹⁷⁶ *Id.* § 4.1.

¹⁷⁷ *Id.* § 4.3.

¹⁷⁸ *Id.* § 3.1.

¹⁷⁹ *Id.* § 3.2.

¹⁸⁰ *Id.* § 4.1.

¹⁸¹ *Id.*

¹⁸² *Id.*

other application requirements, the Eligible Goods Determination will be granted allowing for duty-free import of the specified good.¹⁸³

B. Russian Federation and Customs Union

While Australia's Space Concession Program is currently one of the most comprehensive duty-free import programs for producers in the private space industry, the Russian Federation and its customs union also allows for the duty-free importation of goods for the exploration and use of outer space.¹⁸⁴

Russia's system appears to be much simpler than Australia's system, and is somewhat similar to the United States' regime of exemptions for NASA, except that it is extended to any producer.¹⁸⁵ Members of this customs union—Belarus, Kazakhstan, and the Russian Federation—have declared that goods imported into the customs territory of the union “in the framework of international cooperation in the exploration and use of outer space,” shall enter the customs union duty free.¹⁸⁶ This program also has its limitations, set forth in a list of goods eligible for duty-free importation.¹⁸⁷ This list contains eighty-two types of objects that may be imported

¹⁸³ *Id.* § 4.3.

¹⁸⁴ See *Space Concession*, *supra* note 163; On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation No. 130, *supra* note 163; On Amendments to the Customs Union Commission Decision of 27.11.2009 No. 130 “On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation,” *supra* note 163. See *supra* notes 46–48 and accompanying text (discussion of customs unions).

¹⁸⁵ See On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation No. 130, *supra* note 163; On Amendments to the Customs Union Commission Decision of 27.11.2009 No. 130 “On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation,” *supra* note 163; see also *supra* Part III.A.

¹⁸⁶ On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation No. 130, *supra* note 163; On Amendments to the Customs Union Commission Decision of 27.11.2009 No. 130 “On the Unified Customs Tariff Regulation of the Customs Union of Belarus, Kazakhstan and the Russian Federation,” *supra* note 163.

¹⁸⁷ Resheniem Komissii Tamozhennogo sojuza No. 727: PEREChEN—tovarov, vvozimyh na tamozhennuju territoriju Tamozhennogo sojuza v ramkah mezhdunarodnogo sotrudnichestva v oblasti issledovanija i ispo’zovanija kosmicheskogo prostranstva, v tom chisle okazaniya uslug po zapusku kosmicheskikh apparatov [Commission Decision Customs Union No. 727: List-Goods Imported into the Customs Territory of the Customs Union within the Framework of International Cooperation in the Field of Research and Use of Outer Space, Including Provision of Services for Spacecraft Launch] (June 22, 2011), available at http://www.eurasiancommission.org/ru/Lists/EECDocs/P_727.pdf.

duty free, which are organized into nine broader categories: (1) space launch vehicle objects; (2) spacecrafts; (3) equipment for measuring and information gathering; (4) onboard command, control, and measurement equipment and systems; (5) ground infrastructure; (6) automated ground control complexes; (7) components and equipment for space rockets; (8) software; and (9) products for operating ground infrastructure and goods for supporting cosmonauts in current space programs.¹⁸⁸ The program of this customs union encompasses many types of goods.¹⁸⁹ It differs from other programs in the fact that it has a specified list of goods that are eligible for duty-free importation, as opposed to general categories of goods related to space.¹⁹⁰

V. EXTENDING NASA'S TARIFF EXEMPTION TO PRIVATE INDUSTRY— A REFORMED APPROACH FOR THE UNITED STATES

While the United States government had good intentions in enacting a duty exemption on imports for NASA, the original purpose of the exemption is not relevant anymore.¹⁹¹ The main goal of the tariff exemption was to facilitate the use of NASA's launch services.¹⁹² However, NASA's budget is consistently shrinking¹⁹³ and the agency is contracting launch services out to private companies.¹⁹⁴ It only seems logical to extend the exemption benefit to the private companies that now have to fill NASA's shoes. Congress has even declared that "free and competitive markets create the most efficient conditions for promoting economic development, and should therefore govern the economic development of Earth orbital space,"¹⁹⁵ yet through some of its actions, Congress still favors NASA and not the free market.¹⁹⁶ Extending the duty exemption would continue the government's current policy goals of supporting domestic space programs while providing other key benefits to the United States.¹⁹⁷

¹⁸⁸ *Id.*

¹⁸⁹ *See id.*

¹⁹⁰ *See id.*

¹⁹¹ *See* 14 C.F.R. § 1217.102 (2014).

¹⁹² *Id.*

¹⁹³ Khan & Mestel, *supra* note 9; *NASA FY2014 Budget Estimates*, *supra* note 9.

¹⁹⁴ Kramer, *supra* note 128; *NASA Hails Success of Commercial Space Program*, *supra* note 127.

¹⁹⁵ 51 U.S.C. § 50111(a) (2012).

¹⁹⁶ 14 C.F.R. § 1217.102 (2014); *see also infra* Part V.A.2 (discussing Congressional emphasis on partnering with NASA instead of commercial companies).

¹⁹⁷ *See* 51 U.S.C. § 50111(a) (2012).

A. The United States Government's Current and Continuing Support for the Private Space Industry

1. The Commercial Space Act

The United States currently has several policies in place to promote the use of the commercial space industry for various space services.¹⁹⁸ The Commercial Space Act contains several provisions in pursuit of these goals.¹⁹⁹ That act encourages the free market to take over operating, servicing, and expanding the International Space Station.²⁰⁰ Under the act, NASA is supposed to make use of United States commercially provided services for International Space Station crew transfer and rescue services to the extent possible.²⁰¹ The government also has a policy of acquiring transportation services from United States commercial providers whenever possible, as opposed to foreign providers of similar services.²⁰²

2. Working with NASA: Current Exemption for NASA Partners and Contracts with Commercial Space Companies

The United States government also shows support for the commercial space industry by providing tariff exemptions to private companies that partner with NASA.²⁰³ As mentioned previously, though, this exemption is only available to companies who partner with NASA in a space project, and not to all commercial space companies.²⁰⁴ In accordance with the Commercial Space Act,²⁰⁵ NASA has been contracting with private space companies to resupply the International Space Station.²⁰⁶ These acts show that, in its actions as well as in its policy, the United States government does in fact support the commercial space industry, at least in some ways.²⁰⁷ Governmental support could be even stronger and have more of an impact

¹⁹⁸ See, e.g., *id.*

¹⁹⁹ *Id.* § 50111(b)(1)(a)–(d).

²⁰⁰ *Id.* § 50111(a).

²⁰¹ *Id.* § 50111(b)(1). The United States currently relies on Russia to send astronauts to the International Space Station. *NASA Chooses American Companies to Transport U.S. Astronauts to International Space Station*, *supra* note 133.

²⁰² 51 U.S.C. § 50131(a) (2012).

²⁰³ 14 C.F.R. § 1217.102 (2014).

²⁰⁴ *Id.*

²⁰⁵ See *supra* Part V.A.1.

²⁰⁶ Kramer, *supra* note 128; *NASA Hails Success of Commercial Space Program*, *supra* note 127.

²⁰⁷ See 51 U.S.C. § 50111(a) (2012); 14 C.F.R. § 1217.102 (2014); see also *NASA Hails Success of Commercial Space Program*, *supra* note 127.

if the United States government extended a tariff exemption to all commercial space producers, regardless of their affiliation with NASA projects.

B. Exempting Private Producers in the Space Industry from Import Duties

In furtherance of the United States government's current policies of supporting and strengthening the commercial space industry,²⁰⁸ the United States should extend NASA's tariff exemption to all domestic commercial space producers. This action will create a more free and competitive marketplace for space technologies in the United States.²⁰⁹

Combining elements of the current exemption system that NASA uses with parts of the Australian Space Concession would provide the easiest and most effective way to extend the tariff exemption to private producers. Commercial space companies would have to go through an application process before receiving duty-free importation privileges. Companies would submit an application to an official in U.S. Customs for approval and a new position in this department could be created if necessary. The company would submit a proposal detailing the project it is working on, the project's relation to space exploration and use, the estimated time to complete the project, and the goods it expects to import along with the goods' classification under the HTSUS. The company must also show that it made an effort to obtain the goods domestically, but that the domestic goods were more expensive than imported goods would be.

If the application is approved by the customs official, the company would be certified to import goods for that project duty free, and the items would now be classified under a new classification number in chapter 98, subchapter 17—Other Special Classification Provisions, which would list a duty rate of “Free” for the goods.²¹⁰ The certification would last as long as the estimated time to complete the project. If there are unforeseen delays or the company needs unexpected materials, it could file for an extension or amendment of the certification instead of reapplying. Allowing the certification to last for the length of the project would allow the company to import as needed, instead of having to fill out an application every time it needed to import an additional good, as long as the good was on the original approved list of imports.

An official from U.S. Customs would also conduct occasional investigations into the use of the duty-free imports. If the official finds a company to

²⁰⁸ See *supra* Part V.A.

²⁰⁹ See *infra* Part V.C.

²¹⁰ See *Harmonized Tariff Schedule of the United States Government, Revision 2, Ch. 98, Subchapter XVII*, U.S. INT'L TRADE COMM'N (2012), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1202C98.pdf>.

be abusing its duty-free importation privileges, certification will be revoked and the company would be placed on probation, which would require a more extensive application for future projects, monitoring, and submitting detailed reports about its work and the use of imported goods while it is completing its projects. Applying for duty-free importation would not be mandatory, but would be up to the company to decide if it wants to go through the application process.

C. Positive Economic Effects of the Exemption

Allowing a tariff exemption for domestic private space companies would have several effects on the economy.²¹¹ First and foremost, eliminating tariffs would allow the companies to be more productive.²¹² A company's

²¹¹ See *supra* Part I.C; see also *infra* note 212.

²¹² See *supra* Part I.C. Potential savings from reducing tariffs depends on a variety of factors such as the good being imported, the country of origin of the goods, and whether or not the United States has a trade agreement with that country or if it is a WTO member. See *supra* Part I.D.2. For example, a company could potentially save in the following areas: precious metals such as gold, silver and platinum (up to 65%); iron and steel (up to 35%); articles of iron and steel (up to 45%); copper and articles thereof (up to 80%); nickel and articles thereof (up to 45%); aluminum (up to 45%); lead and articles thereof (up to 45%); machinery, lab equipment, mechanical appliances, valves, and bearings (up to 45%); motors, converters and circuits (up to 35%); and aircraft, spacecraft, and parts thereof (up to 30%). *Harmonized Tariff Schedule of the United States Government, Ch. 71*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1202C71.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 72*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1400C72.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 73*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1400C73.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 74*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1400C74.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 75*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1400C75.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 76*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000C76.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 78*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1400C78.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 84*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000c84.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 85*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1202c85.pdf>; *Harmonized Tariff Schedule of the United States Government, Ch. 88*, U.S. INT'L TRADE COMM'N (2010), available at <http://www.usitc.gov/publications/docs/tata/hts/bychapter/1000c88.pdf>. When costs for space projects can be millions or even billions of dollars, the savings on tariffs have the potential to be incredibly great. See *supra* note 128.

production costs would be reduced because it would no longer have to pay the tariffs, and it could put the money saved back into production and research costs.²¹³ Having more money for production will increase the supply of goods and services the company is able to provide, as well as lowering the costs for the consumers of space goods.²¹⁴ Alternatively, the company could use the additional savings to hire more workers, creating more jobs for Americans and also leading to increased productivity for the company.

Critics may worry that the government will lose out on the tax revenues from the tariff exemptions, especially because the lost revenues seem substantial based on the magnitude of space projects. However, in the grand scheme of the economy, the number of commercial space companies is relatively small.²¹⁵ While space projects may cost millions of dollars, production in other more common industries also costs millions of dollars, and those industries have many more producers than the space industry that will generate tax revenues for the government.²¹⁶ Additionally, the government would get to tax the wages of any additional workers companies would hire, and it could also impose a sales or consumption tax on space goods to make up for some lost revenues. The decrease in tax revenues would be fairly minimal in relation to total government tax revenues.²¹⁷

D. The United States in the New Space Race

Throughout the last few decades, the United States has remained at the forefront of space exploration.²¹⁸ However, nations around the world are beginning to catch up,²¹⁹ and the United States is losing ground due to its reliance on NASA.²²⁰ Encouraging the use of the private space industry will help the United States keep its reputation as a leader in space exploration. Giving breaks to the domestic space industry will allow companies to focus on the research, development, and production needed to keep the United States at the forefront of the New Space Race.

The private industry is also pursuing many activities that NASA has not contemplated.²²¹ The United States needs to assist the private industry in

²¹³ See *supra* Part I.C.

²¹⁴ See *supra* Part I.C.

²¹⁵ See *supra* Part II.C.

²¹⁶ See Mansur Gidfar, list: *Billion-Dollar Industries That Don't Even Need the Tax Dollars You've Been Giving Them*, UPWORTHY, <http://www.upworthy.com/list-billion-dollar-industries-that-dont-even-need-the-tax-dollars-youve-been> (last visited Nov. 19, 2014).

²¹⁷ See *supra* note 212 and accompanying text.

²¹⁸ See *What NASA Does*, *supra* note 7; Swanson, *supra* note 7.

²¹⁹ See *supra* note 118.

²²⁰ See Khan & Mestel, *supra* note 9.

²²¹ See *supra* note 124 and accompanying text.

pursuing these projects so that the country can be prepared for future space endeavors like space mining and colonization of other planets,²²² and retain its pride in space and its superpower status.²²³ An import duty exemption is a simple way for the United States government to support the private space industry in an impactful way without losing many resources.

CONCLUSION

The United States is continuously in the spotlight for many reasons, one of them being space research and exploration. However, the spotlight is beginning to fade on the accomplishments of the United States in space.²²⁴ The United States' reliance on NASA needs to end, as NASA's activities are decreasing along with its budget.²²⁵ The government needs to follow through on its policies of letting the free market take over in the space industry, and can help accomplish that policy by extending NASA's duty exemption for imports to private space companies.²²⁶ A duty exemption would allow companies to be more productive and to focus on research and development of new space technologies. With a thriving private space industry, the United States could reinforce its place as a leader and innovator in the space community.

²²² See *supra* note 124 and accompanying text.

²²³ See *Glor, supra* note 126.

²²⁴ See *supra* notes 8–9 and accompanying text.

²²⁵ See *supra* notes 8–9 and accompanying text.

²²⁶ See *supra* note 200 and accompanying text.