# Impact of rules of origin on market access in Japan for developing countries under Generalized System of Preferences (GSP)

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## Abstract

This paper analyses the impact of rules of origin (ROO) of Japan's Generalized System of Preferences (GSP) on Japan's import value using data for 97 countries and territories. Under the GSP scheme, Japan unilaterally provides preferential tariff treatment for goods originating in developing countries to promote their exportation and economic growth. Aiming to capture the restrictiveness of ROO, I construct a synthetic index based on earlier research by Cadot et al. (2006). Regression results show that when the tariff rate under ROO is raised by one point, import value using GSP decreases by 19.2 per cent. This result is statistically significant and robust. An additional finding is that the GSP import value increases by approximately 3 per cent when the tariff rate is reduced by one percentage point. Furthermore, EPA eligibility reduces the GSP import value significantly because when both Economic Partnership Agreements (EPAs) and GSP preferential tariffs are provided to the same product, and if the EPA rate is less or equal to the GSP rate, importers cannot claim GSP. On the other hand, exemption from documentary submission requirements does not affect the GSP import value. These findings have the potential to enable Japan to make trade rules more strategic in response to changes in the global trade environment.

## 1. Introduction

The Generalized System of Preferences (GSP) has been playing an important role in promoting the economic growth of developing countries, with reduced or zero tariff rates provided by developed countries since its introduction was agreed in United Nations Conference on Trade and Development (UNCTAD) in 1968. Nearly 50 years have passed since the launch of GSP in Japan and the world trade environment has changed dramatically. Trade volume has grown enormously due to economic growth of the third world and expansion of information technology. When GSP started, China was almost absent from world economy because it was in the middle of the Great Proletarian Cultural Revolution (Anderson, 1998). Since China adopted its opening-up policy, it has become the second biggest economic superpower. During that time, Japan experienced both rapid growth and a sequential long-lasting slump after the collapse of the bubble economy.

Furthermore, the World Trade Organization's (WTO) negotiations have shifted to bilateral and multilateral free trade agreements (FTA) or economic partnership agreements (EPA), because the WTO Doha round, which started in 2001, was suspended and member countries needed to find other ways to realise the liberalisation of trade. Global supply chains now cover trans-national networks to minimise the cost of production, which makes it more complicated to understand many factors influencing trade activities and to adopt appropriate policies. Among these rapidly changing circumstances, Japan's GSP scheme should

now be reassessed. It is vital to re-examine its role in the future so that it can balance effective aid for economic development in emerging partners and adequate protection for sensitive domestic industries by using tariff measures and other trade policies.

For each of the preferential schemes, including GSP, the crucial factor that may affect a trader's decision is rules of origin (ROO). ROO is the criteria for importing goods to qualify for preferential tariff treatment. Not only GSP, but each FTA/EPA requires its own ROO. Recently, managing ROO has become a serious issue for both private traders and customs administrations. To manage this technical matter accurately, it is necessary to examine the effect of ROO on trade quantitatively. It is a relatively new academic field to study the impact of ROO using econometric methods.

Related studies can be categorised into three groups. The first group of studies analyses the effect of ROO under FTA/EPAs. The second group examines the ROO effect under GSP. The third group focuses on the effect of Japan's ROO under EPAs. Studies in the first group show a significantly negative impact of restrictive ROO on trade value or utilisation rate of each FTA. For example, Estevadeordal (2000) first creates a synthetic index that captures the restrictive level of ROO under NAFTA as level 1 to 7 at HS[1] 6-digit level. Based on this index, Estevadeordal and Suominen (2004) introduce ROO levels into a standard gravity model using data from 155 countries, aiming to uncover the effect of ROO on trade. Their estimated results show that restrictive ROO undermines the total trade value between FTA partners. This is leading research in the field, nevertheless they do not incorporate the level of tariff reduction and separate import data, which is purely claiming FTA in their model. Therefore, the result might not be adequately precise.

Taking into account these factors, Cadot, Carrere, Melo and Tumurchudur (2006) compare the effect of ROO on the utilisation rate under NAFTA and the PANEURO system by further constructing the ROO index to capture more detailed features. They conclude that restrictive ROO discourages the utilisation of FTAs. Following these works, Kim and Cho (2010) and Hayakawa, Kim and Lee (2014) examine the impact of ROO on the utilisation rate of Korea–ASEAN FTA (KAFTA), while controlling the effect of tariff reduction and average import volume. In their study, ROO indices are basically the same in the works by Estevadeordal et al. (2004) and Cadot et al. (2006), but slightly modified to fit the specific rules of KAFTA. Bombarda and Gamberoni (2013) use the ROO index developed by Cadot et al. (2006) and find the evidence that diagonal cumulation relaxes ROO's negative effect on trade. In addition, Hayakawa and Laksanapanyakul (2017) use an interesting approach to measure the impact of common ROO on FTA utilisation, using export data from Thailand. They create a ROO dummy with more general criteria compared to previous literature to classify 'common ROO' among six ASEAN+1 FTAs. They show that harmonisation of ROO within ASEAN+1 FTAs has different effects, depending on the types of rules, whether the rule is based on classification or value-added (details of these ROO types are explained in 2.2). Yi (2015) provides a comprehensive summary of literature regarding the ROO of FTAs and concludes that ROO create a higher cost and compliance burden for traders using FTAs.

Compared to the studies on FTAs reviewed above, the second group of literature, which uses an econometric approach to GSP, is rather limited. Most of the previous studies have focused on the EU's GSP. Francois, Hoekman and Manchin (2006) research the determinants of the EU's GSP utilisation, applying gravity model analysis. The gravity model was invented to explain the bilateral trade volume, but they assume that the GSP utilisation rate can be estimated by the model. Though they mention that the ROO is one of main costs of utilising GSP, they do not incorporate a detailed ROO effect in their regression. The European Commission (2015) assesses the impact of GSP on export performance of developing countries, using tariff reduction data and differences in methodologies. However, again it does not assess the specific ROO effect in detail.

On the other hand, Hakobyan (2016) analyses the US's GSP. The ROO of US's GSP is simple: the sum of the local input value and local processing cost needs to be at least 35 per cent of the final product. Even though the ROO is common for all eligible products, Hakobyan assumes that the administrative burden is higher if the commodity is a processed product rather than primary product, as more documentation is required. Hakobyan also calculates the local content using OECD data. Her regression results indicate that the degree of processing causes a decrease of GSP utilisation, while the greater the local content share, the greater the utilisation rate. Her method of ROO assessment is unique due to the simplicity of US's GSP rule.[2]

In the third group, there are very few empirical studies regarding Japan's ROO, all of which have examined FTA/EPAs. Cheong and Cho (2007) compare features of ROO under several Asian FTAs, including Japan–Singapore and Japan–Mexico EPAs. They use the index developed by Estevadeordal et al. (2004) and find that Japan's FTA rule is rather more stringent than that of Korea, and less stringent than that of NAFTA. They compare and categorise ROOs by a number of aspects; nevertheless, there is no econometric assessment on trade value or utilisation rate. Bando, Shirayama, Sawauchi and Yamamoto (2008) compare ROO under Japan's four EPAs[3] and conclude that there are large variations among these EPAs, resulting in the spaghetti bowl phenomenon. They suggest that the difference in ROO under each EPA may hinder free trade. However, they do not show any empirical evidence of the actual ROO effect. Nakaoka (2017) conducts her empirical research on ROO under Japan's EPAs, focusing on textiles and apparels (HS Section XI). She creates the ROO index suitable for Japan's EPA rules, mainly based on Harris's (2007) index, which is more segmented, based on Estevadeordal's (2000) index. Her results indicate that a one-point increase in ROO causes around a 5 per cent decrease in the EPA utilisation rate. Although these studies have made limited difference in the development of ROO index, the principle idea is common, and the results are consistent. Still, there is no preceding literature on the impact of ROO of Japan's GSP; therefore, the effect of the GSP rule is currently unknown.

The author believes that this is the first paper to focus on the product-specific ROO in GSP context, which contributes to Japan's future policy making so that it can continue to benefit both developing nations and Japan. This paper reveals the effect of ROO on importation under Japan's GSP, using a panel dataset composed of products at the nine-digit tariff level from 97 developing countries and territories for a four-year period from 2013 to 2016. The results imply that a one-point increase in the ROO restrictiveness causes a 19.2 per cent decrease in GSP import value, which corresponds to a 1.3 per cent decrease in total import value of the corresponding products. From these outcomes, it can be seen that ROO can undermine importation. In addition, a tariff reduction of one percentage point brings around a 3 per cent increase in GSP import value. Furthermore, the eligibility of EPAs greatly decreases GSP import value, while exemption from documentary submission requirements does not leave a significant effect. These findings contribute to further policy making on Japan's GSP.

Section 2 provides an overview of ROO and GSP. Then, section 3, describes how to convert ROO into numerical numbers; the obtainment of other data; and the empirical model used. Section 4 presents the results and interpretations, including robustness checks. Finally, policy proposals and concluding remarks are presented in section 5.

# 2. Background

## 2.1 Rules of origin (ROO)

ROO are the specific provisions used mainly to determine whether goods being imported attract reduced tariff rates under preferential schemes of GSP or FTAs/EPAs. Why are ROO important? The main reason is 'to prevent trade deflection' (Hakobyan, 2016, p. 410), whereby exports from non-beneficiaries are redirected through an eligible country to avoid customs duties (Brenton & Manchin, 2003). The rules vary

depending on each GSP program or each trade agreement. GSP rules are contained in the provider's own laws and regulations because it is unilateral treatment, whereas ROO of FTAs are negotiated between the FTA partners. In both cases, the ROO are closely related to the countries' concerns about their industrial policy, because each country has domestic industries in which they would like to encourage exportation or which they would like to protect against importation.

The Revised Kyoto Convention[4] identifies two basic criteria for ROO, which most preferential trade agreements, including NAFTA, apply (Reyna 1995 as cited in Estevadeordal & Suominen, 2004), namely 'wholly obtained or produced' and 'substantial transformation'.

**Wholly obtained goods:** Goods in this category are produced entirely in one beneficiary country. Primary commodities, such as agriculture products and fuels, are in this category, as are scrap and waste derived from other goods.

**Goods that satisfy substantial transformation:** Even though non-originating materials are used, if the goods have undergone production in the party and have been transformed substantially, then the goods are recognised as having originating status of the party. The frequently used criteria for substantial transformation are:

(1) Change in tariff classification (CTC rule). Designated HS tariff classification change is needed for all non-originating materials that are used to produce the goods. Frequently used classifications are change of chapter (CC), change of tariff heading (CTH) and change of tariff sub-heading (CTSH).

(2) Value added (VA rule). When the added value in the party exceeds a certain percentage, the goods are recognised as originating from beneficiary countries. Mainly there are two ways to calculate the added value: deducting the value of non-originating goods from the final good; and aggregating the value of originating goods and other values, such as profit. Basically, the final value is calculated at the free on board (FOB) level, whereas the non-originating goods value is calculated by using cost, insurance and freight (CIF), as long as it is possible to trace.

(3) Specific manufacturing or processing operation (Process rule). When goods go through a certain manufacturing process, they get originating status in this category, such as certain chemical reactions and manufacturing processes of clothes, such as spinning and weaving.

In addition to these rules, there are other rules to relax the above origin criteria. For example, the accumulation rule allows that the production in more than two countries can be seen as one manufacturing series and it is counted towards a substantial transformation. Bombarda and Gamberoni (2013) estimate the role of diagonal accumulation under the Pan-European cumulation system to show the relaxing effect on the restrictiveness of the ROO. Another rule, the *de minimis* rule, also permits non-originating goods that do not satisfy the product-specific rules to be disregarded under certain condition of value, weight or volume, so that the goods can get originating status without the need to consider trivial components. This paper, however, does not focus on these supplemental provisions. In addition, even when the origin criteria described above are satisfied, the goods still need to satisfy consignment criteria and customs procedures of proving the originating status in order to obtain the preferential treatment.

## 2.2 Generalized system of preferences (GSP)

GSP[5, 6] is a scheme through which developed countries unilaterally provide wider market access with low or zero tariff rates for commodities exported from developing countries, thereby encouraging the exporting industries and economic growth of these trade partners. The establishment of GSP was agreed upon at the United Nations Conference on Trade and Development (UNCTAD) in 1968. Since then, GSP has been a worldwide scheme between developed countries and developing countries. Currently, there are 13 GSP providers listed by UNCTAD.

There are various types of the GSP schemes in the world. Table 1 compares the GSP schemes of Japan, the US and the EU. The top row shows each country's framework and the bottom row indicates the ROO. Since GSP was introduced in Japan in 1971, Japan has been one of the main nations granting GSP preferences, with more than 3,500 dutiable products imported from about 140 developing countries and territories.[7] The US also provides a wide range of preferential tariff systems, including the African Growth and Opportunity Act (AGOA). Under AGOA, the US grants greater market access[8] for Sub-Saharan African countries than the normal GSP where the beneficiary countries satisfy certain conditions relating to human rights and labour standards. On the other hand, the EU's special system GSP+ has its own objective of promoting sustainable development and good governance, setting conditions such as complying with 27 international conventions on human rights and labour rights. Developing countries that meet the criteria can get greater access to EU markets. Moreover, Japan, the US and the EU all provide GSP for least developed countries (LDCs)[9] and non-LDCs, where LDCs can enjoy more favourable tariff treatment.[10]

Recently, the EU's GSP was revised to restrict beneficiaries to countries that need support for their development. Japan also revised its condition for GSP graduation, and there is a high possibility that China and some other countries[11] that have enough economic competitiveness will graduate in 2019.

The ROO for each country's GSP varies. For Japan's GSP[12], the general rule requires a change in CTH, and product-specific rules are classified into the CTC rule, VA rule, process rule and combinations of these rules, which are similar to the EU. On the other hand, the US's ROO are simple, being a value-added requirement of 35 per cent for all eligible commodities.

*Table 1: Comparison of major countries' ROO for GSP schemes*

| **Japan** | **US** | **EU** |
|---|---|---|
| GSP<br>GSP for LDC | A: GSP<br>A*: GSP with exception for certain countries<br>A+: GSP for LDC<br>AGOA for Sub-Saharan Africa | Standard GSP<br>GSP+ for vulnerable countries<br>EBA (everything but arms) for LDC |
| General rule: CTH<br>Product-specific rule: CTC, VA and process rules | General rule: VA rule, more than or equal to 35%<br>Materials purchased from third countries can be counted into the 35% only when the material undergoes a double substantial transformation. | Product-specific rule: CTC, VA and process rules<br>Rules are relaxed for LDC countries on some products |

Source: United States Trade Representative HP, European Commission HP.

In summary, although GSP is a global concept for promoting export industries in developing countries, preferential schemes and the ROO of each program vary. In the case of the US's GSP, the ROO are general rules only: value-added rule of 35 per cent. Therefore, Hakobyan (2016) analyses the utilisation rate of the US's GSP using the local content data calculated by input–output tables. However, her results cannot be applied to Japan and the EU, because the ROO under Japan and the EU's GSP have product-specific rules. Again, no study has been done to evaluate product-specific ROO in the context of GSP before this paper.

# 3. Methodology

## 3.1 Data issues

In order to estimate the effect of ROO empirically, it is necessary to convert ROO—which are written in text—into numerical form to indicate the restrictiveness. The ROO of Japan's GSP is a combination of the general and product-specific rules, as seen in section 2.2. For evaluating the restrictiveness of product-specific ROO under FTAs, Estevadeordal (2000) first created a ROO index to capture NAFTA's ROO. After that, Cadot et al. (2006) further developed the index. The basic idea is common, but Cadot et al.'s index is more segmented into the details and suitable for capturing the complicated Japanese GSP rules. Therefore, in this paper the author converted the ROO based on the index of Cadot et al. (2006), with a slight modification to fit Japanese rules.

Following this index, conversion of the ROO is conducted at the HS 6-digit level, ranging from 1 to 7. Level 1 is the least restrictive while level 7 is the most restrictive. The basic idea of assessing the CTC rule is the same as Estevadeordal's index: CC (which requires the manufacturing process with a change in HS 2-digit level if producers use non-originating materials), deserves restrictiveness level 6; CTH (which requires the manufacturing process with change in HS 4-digit level if producers use non-originating materials) is level 4 because it is easier to satisfy than CC; and CTSH (which requires the manufacturing process with change in HS 6-digit level if producers use non-originating materials) is level 2, since it is easier to fulfil. For example, the ROO of HS chapter 3 is 'Manufactured from products other than those of Chapter 3', which corresponds to CC (level 6). In this case, if the final product being exported to Japan is 'salted fish', the main material 'fresh fish' (same in chapter 3) must be obtained within the beneficiary country, whereas other supplemental material such as 'salt' (chapter 25) can be purchased from a third country because there is a chapter change (from chapter 25 to 3).

In the case of the value-added (value-content) rule, Cadot et al. (2006) sets the cut-off point of 60 per cent for local content. If the value-added requirement is smaller than 60 per cent originating (VA1), the restrictiveness level is 4, and if it is higher or equal to 60 per cent, level 5 is assigned (VA2). Also, there are other patterns of requirements, such as the process rule (PROC, which is the same as the technical requirement), exceptions (EXC) and allowances (Allow). Exceptions aggravate the requirement so that exceptions can raise the index one level, whereas allowances mitigate the rule, which can lower the index one level. Other criteria depend on the combinations of several rules, as shown in Table 2. The author converted 6-digit of HS 2012, trying to adhere to Cadot et al.'s (2006) index as much as possible.

*Table 2: Conversion criteria for ROO of Japan's GSP*

| Restrictiveness | Criteria |
|---|---|
| 1 | CI |
| 2 | CTSH<br>PROC |
| **3** | CTH + Allow<br>CTSH + EXC |
| 4 | CTH<br>VA1<br>CTSH + Allow + EXC + VA1 |
| 5 | CTH + EXC<br>CTH + VA1<br>CTH + PROC<br>VA2 |
| 6 | CC<br>CTH + VA2 |
| 7 | CC + EXC<br>CC + PROC<br>CTH + VA2 + EXC<br>VA2 + CI + EXC |

Notes: This criterion is based on the index developed by Cadot et al. (2006). CI = Change of item (9 digit), CTSH = Change of tariff sub-heading (6 digit), CTH = Change of tariff heading (4 digit), CC = Change of chapter (2 digit), VA1 = VA requirement < 60%, VA2 = VA requirement ≥ 60%, PROC = Process rule, Allow = Allowance, EXC = Exception.

One example of a combination of several rules is HS sub-headings 1806.10 to 90: chocolate and other food preparations containing cocoa. Part of these subheadings require 'Manufactured from products other than those of heading 18.06, provided that the value of non-originating products used does not exceed 40% of the value of the products and the sugar and milk (including cream) used is originating'. In this case, 'Manufactured from products other than those of heading 18.06' corresponds to CTH, 'the value of non-originating products used does not exceed 40%', which means that VA requirement is 60 per cent originating (VA2) and 'the sugar and milk (including cream) used is originating' corresponds to exceptions (EXC). Therefore, the combination is CTH + VA2 + EXC, which deserves restrictiveness level 7. In Table 2, VA2 + CI + EXC is for part of HS sub-heading 2106.90 only. CTSH + Allow + EXC + VA1 is for HS sub-heading 9503.00 only.

Some ROO are not compatible with the HS 6-digit level. Some are stipulated at a finer level, or even not exactly corresponding to the 9-digit level. Therefore, if there is more than one ROO within the HS 6-digit level, the author calculated a simple average. For example, HS sub-heading 9603.90 is divided into three groups with different ROO of level 1, 4 and 5. In this case, the author took the average of 3.3. Another

point is that if there is more than one choice between alternative ROO offered for the same product, Cadot et al. (2006) assigns the lowest level, since the exporter can choose which rule applies. However, Japan's GSP does not have an alternative choice in a single commodity, therefore such modification is not included in this data.

Moreover, the author reflects the regulation amendment in 2015 regarding chapter 61 (knitted apparels). Before the amendment, ROO for chapter 61 required two processes. One is making fabrics from textile yarn and the other is manufacturing apparels from the fabrics. In this case, not only satisfying change of chapter (CC) but also going through certain process (PROC) is required, which is equivalent to ROO level 7. However, the two-process rule was relaxed into one process rule in 2015. Consequently, purchasing fabrics from third states and simply producing the final product in the benefitting country is now accepted to use GSP, which corresponds to ROO level 6 (CC).

All data, except for ROO, was obtained from published sources. Japan's GSP import value is taken from Japan Customs' website (Japan Customs, 2018b). Japan Customs data is available from 2013; therefore, the author used four years of import data from 2013 to 2016, which is the maximum of data currently available. In the data, all the GSP-eligible countries and territories in the world are covered (around 140, although this changes every year), although not all the beneficiaries have trade using GSP during the period. That is mainly because some members only export limited commodities, such as crude oil, which has a MFN tariff rate of zero. Hence the data includes 97 developing countries and territories (see Appendix, Table 7). GSP-eligible countries change every year because soon after they achieve economic development to satisfy graduation criteria, they are excluded from the GSP beneficiaries. Croatia and Cook Islands graduated from GSP during the study period, while Samoa also changed from an LDC to a non-LDC country. In this data these changes are fully reflected in the corresponding years.

Japan's total import value, regardless of using preferential tariff or not, is obtained from E-Stat, the trade statistics of Japan. This trade data includes all imports under MFN, EPA and GSP. It is expected that the higher total import value, the greater the import value using GSP. The products (9-digit level) that have a GSP import value of zero are dropped from the data.

Using tariff rates for MFN, GSP and LDCs, the author calculated the tariff margin, which Hayakawa et al. (2014) also introduce into their model, by subtracting preferential tariff rates from MFN rates. The author used 12 patterns of tariff schedules in total: tariff rates for MFN countries, GSP for non-LDCs and LDCs for each year from 2013 to 2016. The tariff schedules are obtained from the World Bank (WITS). In order to make the calculation simpler, 'specific-tariffs' are excluded and use only *ad valorem* tariffs. It is expected that if the tariff reduction is bigger, importers have more incentive to claim preferential tariff, therefore the impact of tariff reduction on import value is predicted to be positive.

EPA availability is also considered. Japan has 15 EPAs in force as of June 2018. Among these EPA partners, 13 countries (Mexico, Malaysia, Chile, Thailand, Indonesia, Philippines, Vietnam, India, Peru, Mongolia, Laos, Myanmar and Cambodia) under 11 EPAs are eligible to both EPA and GSP during the data period. A bilateral EPA with Mongolia entered into force in 2016, while others were all available through the period 2013–2016. Therefore, in total, the author used 41 patterns of EPA tariff schedules obtained from WITS: 10 EPAs from 2013 to 2016 each, plus EPA with Mongolia in 2016. EPA eligibility is predicted to reduce the GSP import value significantly, because when both EPA and GSP preferential tariffs are provided to the same product, and if the EPA rate is less or equal to the GSP rate, importers cannot claim GSP. The only exception is LDC members of Japan–ASEAN EPA (Laos, Myanmar and Cambodia). In the case of these countries, importers can choose to claim either the EPA or the LDC preferential rate. As importers tend to choose the lower tariff rate, the author generated a dummy to identify whether the EPA tariff rate is less than or equal to the GSP tariff rate. It is predicted that if the commodity is eligible for EPA, GSP import value is much less.

Furthermore, documentary exemption is controlled. Some specific goods are exempted from submitting a certificate of origin (CO), with the tariff line specified in administrative regulations, mainly at HS 4-digit level. The author obtained the list from the Japan Customs website and converted it from the version of HS 2017 into HS 2012 using a correlation table obtained from the WCO. The effect of this variable could be positive as exporters do not have the cost of obtaining a CO. Appendix Table 8 shows the summary statistics of these variables and Appendix Table 9 indicates the distribution of ROO restrictiveness in the sample.

## 3.2 Empirical framework

Here the author describes the empirical framework used to analyse the determinants on GSP import value. Whether GSP is claimed or not must depend on its benefit and cost. The benefit of GSP is getting preferential tariff rates, which are lower than MFN tariff rates. Therefore, it is predicted that the greater the tariff difference between the MFN and GSP rates, the greater the positive impact on the GSP import value.

On the other hand, the cost of GSP is necessary to comply with ROO. Before importers decide to claim GSP, they usually need time to determine the origin criteria applied for each good and sometimes need to make adjustments to satisfy the rule, such as shifting the material supplier from a firm in the third country to a firm within the beneficiary country. In addition, the ROO have procedural provisions: importers must submit the CO to Japan Customs to certify the origin of the goods. Normally, an issuing fee is required to obtain the CO (Form A). For example, getting a CO in Malaysia costs 41–67 RM for 30 sets of documents (Federation of Malaysian Manufacturers, 2017). Moreover, importers sometimes need to deal with origin verification conducted by Customs after importation. If they cannot satisfy Customs confirmation of the origin status, GSP treatment would be denied and may even be subject to additional punitive duties. These burdens and risks are the cost of GSP.

Taking into account these factors, the equation is formalised as follows:

$$\text{Log(GSP)}_{cpt} = \beta_0 + \beta_1 \Delta\text{Tariff}_{cpt} + \beta_2 \text{Log(Imp)}_{cpt} + \beta_3 \text{ROO}_{pt} + \beta_4 \text{EPA}_{cpt} + \beta_5 \text{Document}_p \quad (1)$$
$$+ \gamma_c + \delta_s + \eta_t + \varepsilon_{cpt},$$

where $\text{Log(GSP)}_{cpt}$ is the natural log of the import value under Japan's GSP of product $p$ at 9-digit level from country $c$ at year $t$; $\Delta\text{Tariff}_{cpt}$ is the tariff rate difference between *ad valorem* MFN and GSP tariff rate of product $p$ at 9-digit level from country $c$ at year $t$; $\text{Log(Imp)}_{cpt}$ is the natural log of the total import value of product $p$ at 9-digit level from country $c$ at year $t$, regardless of claiming GSP or not; $\text{ROO}_{pt}$ indicates the restrictiveness of ROO under Japan's GSP for product $p$ at 6-digit level at year $t$ (time variation is only in chapter 61); $\text{EPA}_{cpt}$ is a dummy which takes value 1 if product $p$ at 9-digit level from country $c$ is eligible for alternative EPA; $\text{Document}_p$ is a dummy which takes value 1 if product $p$ mainly at 4-digit level is exempt from procedural requirement of submitting CO; $\gamma_c$, $\delta_s$ and $\eta_t$ are the fixed effects for country $c$, industry $s$ and year $t$, respectively.

The industry dummy is introduced at the 2-digit section level of HS code. $\varepsilon_{cpt}$ is the error term, which represents unobserved errors in each country-product-year. To address the remaining potential correlation within a product at 9-digit level, heteroscedasticity and autocorrelation-consistent (HAC) standard errors or clustered standard errors are employed in all the regressions in this study. Significance levels are at 0.1 per cent, 1 per cent and 5 per cent to see more precise relationships.

# 4. Results and robustness checking

## 4.1 Empirical results

The regression results are reported in Table 3. Regression (1) and (2) are obtained by simple OLS, whereas regression (3) to (7) are OLS with fixed effects model. 'Expected sign' represents the initial expectation whether each variable has a positive or negative effect on import value under GSP.

*Table 3: Estimation results: Impacts on log of import value under Japan's GSP*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | Expected Sign |
|---|---|---|---|---|---|---|---|---|
| | OLS | OLS | FE | FE | FE | FE | FE | |
| ΔTariff | | 0.032*** | 0.035*** | 0.032*** | 0.036*** | 0.032*** | 0.032*** | + |
| | | (0.004) | (0.005) | (0.005) | (0.006) | (0.006) | (0.006) | |
| Log(Imp) | | 0.612*** | 0.621*** | 0.622*** | 0.622*** | 0.623*** | 0.623*** | + |
| | | (0.007) | (0.009) | (0.009) | (0.008) | (0.008) | (0.008) | |
| ROO | –0.266*** | –0.093*** | –0.083*** | –0.087*** | –0.178*** | –0.188*** | –0.192*** | – |
| | (0.028) | (0.015) | (0.015) | (0.017) | (0.047) | (0.047) | (0.047) | |
| EPA | | | | –0.386*** | | –0.643*** | –0.641*** | – |
| | | | | (0.116) | | (0.128) | (0.128) | |
| Document | | | | –0.037 | | | –0.036 | + |
| | | | | (0.053) | | | (0.061) | |
| Year FE | No | No | Yes | Yes | Yes | Yes | Yes | |
| Country FE | No | No | Yes | Yes | Yes | Yes | Yes | |
| Industry FE | No | No | No | No | Yes | Yes | Yes | |
| Constant | 9.777*** | 2.250*** | 2.116*** | 2.198*** | 3.060*** | 3.228*** | 3.258*** | |
| | (0.161) | (0.102) | (0.109) | (0.126) | (0.442) | (0.441) | (0.442) | |
| Obs. | 13,456 | 13,436 | 13,436 | 13,436 | 13,436 | 13,436 | 13,436 | |
| R–squared | 0.027 | 0.643 | 0.651 | 0.651 | 0.696 | 0.698 | 0.698 | |
| Std. Error | HAC | HAC | HAC | HAC | HAC | HAC | HAC | |

Notes: Clustered standard errors are in parentheses. ***, ** and * indicate significance at the 0.1%, 1% and 5% level, respectively.

In regression (1), ROO restrictiveness is regressed against the GSP import value. The result shows a significant negative effect of ROO on importation, which is consistent with previous studies. However, R-squared is only 0.027, which is too small to explain the overall relationship. It suggests that there must be some omitted variables from which the estimated ROO effect is biased. In regression (2), the author added two control variables, tariff reduction and log of total import value. Hayakawa et al. (2014) calls the tariff reduction a 'margin effect' on utilisation rate of FTAs and shows a significant positive outcome. Total import volume is also important to control because it represents total demand for each commodity. After introducing these controls into the regression model, the coefficient of ROO is moderated and R-squared jumps up.

In regression (3) and (4), the author brought in year fixed effect and country fixed effect, which can control unobservable specific effects within each year and each country. In addition, regression (4) contains other possible control variables, binary dummies for EPA eligibility and documentary exemption. Hakobyan (2016) includes the availability of other preferential programs such as FTA to evaluate the determinants of GSP utilisation rate in US. The results of ROO are almost the same as simple OLS regression (2), though absolute value of coefficient slightly decreases.

In regression (5), (6) and (7), the author applied industry fixed effect in HS 2-digit level, which captures constant common characteristics within each industry. Then the negative impact of ROO is broadened, implying there is positive bias in regression (3) and (4) without industry fixed effect. In regression (7), with all controls, it is implied that when ROO restrictiveness is raised by 1 point, import value using GSP decreases by 19.2 per cent even at 0.1 per cent significance level. This figure corresponds to 1.3 per cent decrease in total import value of sample products regardless of claiming GSP or not, as shown in Table 4.

*Table 4: Calculation of the impact of ROO on total import value*

| **Total import value** | **Import value GSP** | **(Import value GSP)*19.2%** |
|---|---|---|
| 6,943,518 million yen | 453,355 million yen | 87,044 million yen |
| (Import Value GSP)*19.2% / (Total Import Value) = 0.013 | | |

Notes: 'Total import value' represents total import value of corresponding products in the sample data regardless of claiming GSP or not, exported from the 97 sample countries in 2013–2016. 'Import value GSP' is the sum of import value claiming GSP in the sample data exported from the 97 sample countries in 2013–2016.

Note that not all importers may totally abandon trade because of the unavailability of GSP. Instead, it is likely that if ROO becomes more restrictive, some importers simply do not use GSP and import the goods paying MFN duty, or reduce the amount of importation commensurate with their cost balance. As a result, a decrease in the ratio of total import value could be less than 1.3 per cent.

Throughout the regressions in Table 3, tariff reduction and total import value have significant positive effects, while EPA eligibility has a large negative effect as initially expected. These results are consistent with previous studies. When the tariff rate is reduced by one percentage point (e.g. from 4% to 3%), the import value under GSP increases around 3 per cent. Likewise, when the total import value, regardless of claiming GSP, increases 1 per cent, import value under GSP increases around 0.6 per cent. When EPA is applicable for the same commodity, claiming GSP falls about 64 per cent. An additional finding is that documentary exemption does not affect the GSP import value.

## 4.2 Robustness checks

In order to address the concerns of potential internal validity threat related to the omitted variable bias and possible sample bias caused by large outliers, the author conducted two different robustness checks: adding several control variables, which might affect the import value of GSP; and excluding China, which could lead to a certain bias because of the dominating ratio of observations in the sample.

In the first robustness check—added control variables are GDP per capita—the inflation rate measured by the consumer price index (annual per cent) and the population growth rate (annual per cent). These data are obtained from the World Bank World Development Indicators. The author also incorporated the country-specific linear time trend to eliminate possible endogenous factors on changes within each country. GDP per capita is included because it represents the level of economic development of each country, hence the assumption is possible that the greater the GDP per capita, the more traders have experience with the GSP scheme. For instance, Hayakawa, Kim and Yoshimi (2017) put GDP per capita in their regression to explain the utilisation rate of Korea–ASEAN FTA. The annual inflation rate is added because when the inflation rate is high, the value of domestic currency of sample countries becomes lower, which would promote exportation and might affect GSP export value from these countries. Population growth rate is also included as it is possible that the countries with high population growth have a greater future labour force, which attracts foreign manufacturers and traders, resulting in increased GSP export.

An equation for the first robustness check is formalised as follows:

$$\text{Log(GSP)}_{cpt} = \beta_0 + \beta_1 \Delta\text{Tariff}_{cpt} + \beta_2 \text{Log(Imp)}_{cpt} + \beta_3 \text{ROO}_{pt} + \beta_4 \text{EPA}_{cpt} + \beta_5 \text{Document}_p \quad (2)$$
$$+ \beta_6 \text{GDPcap}_{ct} + \beta_7 \text{Inflation}_{ct} + \beta_8 \text{POP}_{ct} + \text{Trend*}\ \gamma_c + \gamma_c + \delta_s + \eta_t + \varepsilon_{cpt},$$

where $\text{GDPcap}_{ct}$ is GDP per capita in country $c$ at year $t$; $\text{Inflation}_{ct}$ is the inflation rate of consumer prices in country $c$ at year $t$; $\text{POP}_{ct}$ is population growth rate in country $c$ at year $t$. Trend* $\gamma_c$ is the country specific linear time trend.

Table 5 shows the first robustness checking results. Regression (1) to (7) in Table 5 corresponds to the main results (1) to (7) in Table 3. Even after adding more controls, coefficients and clustered standard errors have hardly changed, whereby the robustness of the main results are confirmed.

*Table 5: Robustness Check 1 – adding more controls and country-specific linear time trend*

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| | **OLS** | **OLS** | **FE** | **FE** | **FE** | **FE** | **FE** |
| ΔTariff | | 0.032*** | 0.036*** | 0.033*** | 0.036*** | 0.032*** | 0.032*** |
| | | (0.004) | (0.005) | (0.005) | (0.006) | (0.006) | (0.006) |
| Log(Imp) | | 0.621*** | 0.622*** | 0.623*** | 0.624*** | 0.624*** | 0.624*** |
| | | (0.008) | (0.009) | (0.009) | (0.008) | (0.008) | (0.008) |
| ROO | –0.172*** | –0.096*** | –0.084*** | –0.088*** | –0.179*** | –0.190*** | –0.194*** |
| | (0.028) | (0.015) | (0.015) | (0.017) | (0.049) | (0.049) | (0.049) |
| EPA | | | | –0.395*** | | –0.660*** | –0.658*** |
| | | | | (0.116) | | (0.130) | (0.130) |
| Document | | | | –0.042 | | | –0.035 |
| | | | | (0.054) | | | (0.062) |
| GDPcap/1000 | –0.007 | 0.008* | 0.015 | 0.013 | 0.016 | 0.014 | 0.014 |
| | (0.008) | (0.004) | (0.044) | (0.044) | (0.044) | (0.044) | (0.044) |
| Inflation | –0.085*** | 0.010*** | –0.002 | –0.002 | –0.001 | –0.002 | –0.002 |
| | (0.009) | (0.003) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| POP | –0.615*** | 0.072*** | –0.816 | –0.854 | –0.891 | –0.965 | –0.970* |
| | (0.056) | (0.025) | (0.567) | (0.570) | (0.586) | (0.588) | (0.588) |
| Trend* $\gamma_c$ | No | No | Yes | Yes | Yes | Yes | Yes |
| Year FE | No | No | Yes | Yes | Yes | Yes | Yes |
| Country FE | No | No | Yes | Yes | Yes | Yes | Yes |
| Industry FE | No | No | No | No | Yes | Yes | Yes |
| Constant | 10.29*** | 2.004*** | 50.57 | 50.25 | 45.11 | 46.99 | 47.24 |
| | (0.180) | (0.111) | (42.20) | (42.20) | (42.94) | (42.89) | (42.87) |
| Obs. | 13,369 | 13,349 | 13,349 | 13,349 | 13,349 | 13,349 | 13,349 |
| R-squared | 0.097 | 0.644 | 0.652 | 0.653 | 0.698 | 0.699 | 0.699 |
| Std. Error | HAC | HAC | HAC | HAC | HAC | HAC | HAC |

Notes: Clustered standard errors are in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels.
GDP per capita is divided by 1000 in order to increase visibility.

The second robustness check involved excluding China from the dataset as the sample data from China made up nearly half of all observations (see Table 7 in Appendix), and China already has strong trade competitiveness, unlike other developing countries. Therefore, there is a doubt that Chinese data dominates the whole results and that it is biased. An equation for the second robustness check is the same as the equation (2). The only difference is that all the observations of China are excluded.

Table 6 indicates the results of the second robust check. Regression (1) to (3) in Table 6 is compatible with the main results' regression (5) to (7) in Table 3, and regression (4) to (6) in Table 6 is responding to the regression (5) to (7) in Table 5. These regressions all incorporate country-, year – and industry-fixed effects so that the endogenous problem is controlled as much as possible. In all regressions in Table 6, which excludes China, statistical significance in tariff reduction has been eliminated. Still, the ROO maintain rather strong effects and the magnitude of coefficient is almost the same as the main results in Table 3. Hence, even without China, it can be said that there is clear negative impact of ROO on trade.

*Table 6: Robustness check 2 – estimation without China*

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | FE | FE | FE | FE | FE | FE |
| ΔTariff | 0.007 | 0.003 | 0.003 | 0.007 | 0.002 | 0.002 |
| | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) | (0.005) |
| Log(Imp) | 0.557*** | 0.559*** | 0.559*** | 0.558*** | 0.560*** | 0.559*** |
| | (0.010) | (0.010) | (0.010) | (0.010) | (0.010) | (0.010) |
| ROO | –0.124** | –0.142*** | –0.158*** | –0.122** | –0.142*** | –0.158*** |
| | (0.051) | (0.051) | (0.051) | (0.055) | (0.055) | (0.054) |
| EPA | | –0.661*** | –0.655*** | | –0.681*** | –0.675*** |
| | | (0.119) | (0.119) | | (0.121) | (0.121) |
| Document | | | –0.143* | | | –0.146* |
| | | | (0.0779) | | | (0.080) |
| GDPcap/1000 | | | | –0.044 | –0.048 | –0.048 |
| | | | | (0.049) | (0.049) | (0.049) |
| Inflation | | | | –0.001 | –0.002 | –0.002 |
| | | | | (0.005) | (0.005) | (0.005) |
| POP | | | | –0.483 | –0.556 | –0.587 |
| | | | | (0.568) | (0.570) | (0.571) |
| Trend* $\gamma_c$ | No | No | No | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes | Yes | Yes | Yes |

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | FE | FE | FE | FE | FE | FE |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | 3.716*** | 3.990*** | 4.109*** | –353.7 | –71.75 | –75.69 |
| | (0.472) | (0.471) | (0.470) | (366.8) | (378.9) | (377.5) |
| Obs. | 7,633 | 7,633 | 7,633 | 7,546 | 7,546 | 7,546 |
| R-squared | 0.684 | 0.687 | 0.687 | 0.687 | 0.689 | 0.690 |
| Std. Error | HAC | HAC | HAC | HAC | HAC | HAC |

Notes: Clustered standard errors are in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels. GDP per capita is divided by 1000 in order to increase visibility.

## 5. Conclusion

This paper empirically analyses how rules of origin (ROO) of GSP affect the importation into Japan, using a fixed-effect regression model with a panel dataset from 97 developing countries and territories for a four-year period from 2013 to 2016. The most significant finding is that the import value under Japan's GSP significantly decreases with the more stringent ROO level. An increase in the ROO level of 1 point causes a 19.2 per cent decline in the GSP import value, which is equivalent to a 1.3 per cent decrease of the total import value of the corresponding products. This outcome was maintained in robustness checks. Another finding is that one-percentage-point tariff reduction brings around a 3 per cent increase in the GSP import value. An additional finding is that the eligibility of EPAs greatly decreases GSP import value, while exemption from documentary submission requirements does not affect the GSP import value.

Taking into account these research outcomes, what can Japan do to realise the objective of GSP (i.e. to encourage export from developing countries and constructing strong economic partnerships with them)? The GSP scheme now stands at a turning point, because the government may need to redefine its role due to changes in the trade environment, nearly 50 years after the policy was established. The biggest beneficiary country, China, will graduate from Japan's GSP treatment soon, and most of the Asian countries and Central/South American states are entering into EPAs with Japan. Therefore, the main beneficiary countries under Japan's GSP will shift from Asia to other parts of the developing world, especially Africa. Since the Tokyo International Conference on African Development (TICAD) will be held in Yokohama in 2019, the Japanese government needs to prepare proposals to strengthen its aid for development with effective tools. The expansion of the GSP program may be one option.

The GSP's objective of promoting exports from developing countries cannot be efficiently achieved solely by cutting tariff rates. The ROO's negative impact must be taken into account when the Japanese government simulates or forecasts the economic impact of duty reduction. In order to allow wider access to the Japanese market and protect domestic industries simultaneously, it may be necessary to appropriately modulate ROO and tariff reductions together. Simplification and relaxation of ROO must be considered as a strategic tool, together with tariff management, by which Japan can provide a future-oriented, mutually beneficial GSP scheme for developing partners.

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# Appendix

*Table 7: Sample countries and number of observations*

| Exporting Country | 2013 | 2014 | 2015 | 2016 | Total |
|---|---|---|---|---|---|
| Argentina | 27 | 24 | 17 | 19 | 87 |
| Azerbaijan | 1 | 1 | 1 | 1 | 4 |
| Bangladesh | 269 | 288 | 327 | 348 | 1,232 |
| Belarus | 5 | 3 | 6 | 7 | 21 |
| Belize | 1 | 1 | 1 | 1 | 4 |
| Benin | 1 | | | | 1 |
| Bhutan | 1 | 1 | 1 | 3 | 6 |
| Bolivia | 6 | 6 | 5 | 6 | 23 |
| Bosnia Herzegovina | 2 | 3 | 3 | 2 | 10 |
| Brazil | 112 | 110 | 103 | 105 | 430 |
| Burkina Faso | 4 | 3 | 3 | 6 | 16 |
| Cambodia | 114 | 136 | 237 | 266 | 753 |
| Cameroon | 6 | 4 | 3 | 2 | 15 |
| Chile | 6 | 5 | 8 | 7 | 26 |
| China | 1,434 | 1,482 | 1,450 | 1,441 | 5,807 |
| Colombia | 35 | 28 | 26 | 26 | 115 |
| Costa Rica | 8 | 9 | 10 | 11 | 38 |
| Cote d'Ivoire | 1 | 1 | 1 | 1 | 4 |
| Croatia | 1 | | | | 1 |
| Cuba | 1 | 1 | 1 | 1 | 4 |
| Dominican Republic | 3 | 5 | 1 | 1 | 10 |
| Ecuador | 22 | 21 | 22 | 19 | 84 |
| Egypt | 26 | 23 | 27 | 21 | 97 |
| El Salvador | | 1 | 1 | 1 | 3 |
| Ethiopia | 8 | 8 | 10 | 13 | 39 |
| Fiji | 4 | 2 | 2 | 2 | 10 |
| Georgia | 1 | 1 | 1 | | 3 |

| Exporting Country | 2013 | 2014 | 2015 | 2016 | Total |
|---|---|---|---|---|---|
| Ghana | 4 | 2 | 5 | 2 | 13 |
| Guatemala | 10 | 12 | 11 | 11 | 44 |
| Guinea | | | | 1 | 1 |
| Haiti | 1 | | | 1 | 2 |
| Honduras | 2 | 1 | | | 3 |
| India | 8 | 14 | 13 | 8 | 43 |
| Indonesia | 26 | 20 | 18 | 22 | 86 |
| Iran | 23 | 23 | 23 | 19 | 88 |
| Jamaica | 1 | | 1 | | 2 |
| Jordan | 1 | 3 | 1 | 3 | 8 |
| Kazakhstan | 5 | 7 | 7 | 5 | 24 |
| Kenya | 18 | 20 | 15 | 15 | 68 |
| Kiribati | 2 | 3 | 5 | 2 | 12 |
| Kyrgyz | 2 | 4 | 4 | 3 | 13 |
| Laos | 51 | 57 | 65 | 57 | 230 |
| Lebanon | 3 | 2 | 8 | 5 | 18 |
| Lesotho | 3 | 3 | 2 | 2 | 10 |
| Macedonia | | 1 | 1 | 1 | 3 |
| Madagascar | 19 | 22 | 28 | 22 | 91 |
| Malawi | 3 | 2 | 2 | 3 | 10 |
| Malaysia | 5 | 5 | 4 | 3 | 17 |
| Exporting Country | 2013 | 2014 | 2015 | 2016 | Total |
| Maldives | 3 | 2 | 2 | 3 | 10 |
| Mali | 1 | 2 | 6 | 2 | 11 |
| Mauritania | 2 | 4 | 3 | 1 | 10 |
| Mauritius | 2 | 2 | 3 | 2 | 9 |
| Mexico | 1 | 1 | 2 | 1 | 5 |
| Moldova | 2 | 3 | 3 | 2 | 10 |
| Mongolia | 10 | 4 | 12 | 5 | 31 |

| Exporting Country | 2013 | 2014 | 2015 | 2016 | Total |
|---|---|---|---|---|---|
| Morocco | 17 | 17 | 24 | 20 | 78 |
| Mozambique | 2 | 3 | 3 | 7 | 15 |
| Myanmar | 181 | 189 | 277 | 296 | 943 |
| Namibia | 1 | 1 | 1 | | 3 |
| Nepal | 154 | 164 | 159 | 146 | 623 |
| Nicaragua | | | 1 | 1 | 2 |
| Niger | 1 | 2 | | | 3 |
| Nigeria | | | | 1 | 1 |
| Pakistan | 61 | 56 | 68 | 55 | 240 |
| Palau | | 1 | | | 1 |
| Panama | 1 | 1 | 2 | 3 | 7 |
| Papua New Guinea | 1 | | 2 | | 3 |
| Paraguay | 6 | 3 | 4 | 5 | 18 |
| Peru | 2 | 2 | 1 | 1 | 6 |
| Philippines | 7 | 6 | 6 | 4 | 23 |
| Rwanda | 1 | 1 | 1 | 1 | 4 |
| Samoa | 1 | 1 | | | 2 |
| Senegal | 8 | 10 | 12 | 8 | 38 |
| Serbia | 4 | 5 | 5 | 7 | 21 |
| Sierra Leone | | | | 1 | 1 |
| Solomon Islands | 2 | 2 | 2 | 2 | 8 |
| Somalia | | | | 1 | 1 |
| South Africa | 63 | 68 | 62 | 62 | 255 |
| Sri Lanka | 65 | 70 | 75 | 73 | 283 |
| Sudan | 1 | 2 | 2 | 2 | 7 |
| Tanzania | 5 | 7 | 5 | 7 | 24 |
| Thailand | 14 | 11 | 11 | 12 | 48 |
| Togo | | | 1 | 2 | 3 |

| Exporting Country | 2013 | 2014 | 2015 | 2016 | Total |
|---|---|---|---|---|---|
| Tokelau Islands | | 1 | | | 1 |
| Tunisia | 8 | 14 | 9 | 14 | 45 |
| Turkey | 211 | 209 | 218 | 194 | 832 |
| Uganda | 4 | 4 | 4 | 3 | 15 |
| Ukraine | 12 | 13 | 18 | 23 | 66 |
| Uruguay | 5 | 7 | 9 | 10 | 31 |
| Uzbekistan | 1 | 1 | 1 | 1 | 4 |
| Vanuatu | 9 | 9 | 7 | 5 | 30 |
| Venezuela | 1 | 1 | | 1 | 3 |
| Viet Nam | 11 | 7 | 7 | 6 | 31 |
| Yemen | 3 | 3 | | | 6 |
| Zambia | 1 | 2 | 2 | 1 | 6 |
| Zimbabwe | 1 | 2 | 1 | 1 | 5 |
| **Total** | **3,175** | **3,281** | **3,512** | **3,488** | **13,456** |

*Table 8: Summary statistics of variables*

| Variables | Observations | Mean | Std. Dev. | Minimum | Maximum |
|---|---|---|---|---|---|
| Log(GSP) | 13,456 | 8.371 | 1.993 | 5.303 | 15.182 |
| ΔTariff | 13,436 | 4.847 | 4.538 | 0 | 50 |
| Log(Imp) | 13,456 | 10.556 | 2.599 | 5.303 | 18.288 |
| ROO | 13,456 | 5.283 | 1.236 | 1 | 7 |
| EPA | 13,456 | 0.131 | 0.338 | 0 | 1 |
| Document | 13,456 | 0.231 | 0.422 | 0 | 1 |

*Table 9: Distribution of ROO restrictiveness in the sample*

| | 1.0 | 2.5 | 3.0 | 3.3 | 3.5 | 4.0 | 4.5 | 5.0 | 6.0 | 6.5 | 7.0 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Live animals, animal products | | | | | | 23 | | | 243 | | 40 | **306** |
| Vegetable products | | | | | | 445 | | | 319 | 26 | 9 | **799** |
| Animal or vegetable fats/oils | | 5 | | | | 71 | | | | | | **76** |
| Food products | | | | | | 94 | | 44 | 33 | 61 | 617 | **849** |
| Mineral products | | | | | | 74 | | | | | | **74** |
| Chemical products | 16 | | 132 | | 137 | 1,670 | 4 | 357 | | | 17 | **2,333** |
| Plastics and rubber | | | 12 | | | 611 | | 212 | | | | **835** |
| Leather products | | | | | | 12 | 6 | 324 | | | | **342** |
| Wood products | | | 4 | | 115 | 345 | | 2 | | | | **466** |
| Paper products | | | | | | 132 | | | | | | **132** |
| Textiles | | | | | | 11 | 17 | 764 | 2,102 | 16 | 2,452 | **5,362** |
| Footwear | | | | | | 83 | 71 | 147 | | | | **301** |
| Stone, ceramic, glass products | | | | | | 188 | 82 | 26 | | | | **296** |
| Precision metal products | | | | | | 26 | | 96 | | | | **122** |
| Basic metal products | | | | | | 394 | 23 | 297 | | | 31 | **745** |
| Machinery | | | | | | 1 | | 29 | | | | **30** |
| Precision machinery | | | | | | | | 9 | | | | **9** |
| Arms and ammunition | | | | | | | | 15 | | | | **15** |
| Miscellaneous articles | | | | 6 | 18 | 302 | 9 | 29 | | | | **364** |
| **Total** | **16** | **5** | **148** | **6** | **270** | **4,482** | **212** | **2,351** | **595** | **87** | **5,284** | **13,456** |

# Notes

1 Harmonized Commodity Description and Coding System, which is the international product nomenclature developed by WCO.

2 She also assesses the effect of cumulation and other preferential scheme eligibility, which have positive and negative impact on utilisation rate of US's GSP, respectively.

3 Japan–Singapore, Japan–Mexico Japan–Malaysia and Japan–Philippine Economic Partnership Agreement

4 The Revised Kyoto Convention (RKC) was adopted by World Customs Organization (WCO) in 1999 (original version was in 1974) to harmonise customs procedures for trade facilitation, which stipulates the Standards and Recommended Practices regarding ROO in Specific Annex K. RKC defines ROO as 'the specific provisions, developed from principles established by national legislation or international agreements ('origin criteria'), applied by a country to determine the origin of goods' (Chapter 1, Definitions)

5 GSP was initially proposed at the first UNCTAD conference in 1964 and agreed upon the second conference in 1968. The Resolutions 21 (2) of the conference report indicates that 'the objectives of the generalised nonreciprocal, non-discriminatory system of preferences in favour of the developing countries, including special measures in favour of the least advanced among the developing countries, should be: (a) To increase their export earnings; (b) To promote their industrialisation; (c) To accelerate their rates of economic growth;' (UNCTAD Resolutions 21 (2), 1968, p. 38) To legalise it, GATT approved temporarily as for 10 years of waiver to Article 1 of General Agreement in 1971. This means GSP treatment became a legal exception for most-favoured-nation (MFN) principle of GATT (currently WTO). Finally, in 1979, member countries agreed to maintain the GSP scheme permanently by adopting 'Enabling Clause', which states 'contracting parties may accord differential and more favourable treatment to developing countries, without according such treatment to other contracting parties' (Decision of 28 November 1979 (L/4903) 1.).

6 Recently, WTO members have worked on the relaxation and simplification of ROO used under preferential scheme for LDCs. In particular, 'the 2013 Bali Ministerial Decision on Rules of Origin for LDCs' and 'the 2015 Nairobi Ministerial Decision on Rules of Origin for LDCs', provide the guideline for granting countries to make ROO easier for LDCs, though they do not have any compelling power.

7 Japan established its GSP scheme right after the international legal basis was structured in 1971. Japanese GSP is in faithful accordance with the initial international understanding of the scheme objective to support economic growth of developing countries. Beneficiaries are currently 133 countries plus 5 territories including 47 LDC members as of April 2018, designated in notification Heisei 30, No. 81 by Minister of Finance, Japan. Product coverage under the GSP is also widely generalised. As for agriculture products, which is chapter 1 to 24 under the Harmonized System, Japan grants preferential tariff for about 400 selected products. Regarding industrial products, which is HS chapter 25 to 97, basically all products are subject to GSP except for some sensitive items. In total Japan provide GSP treatment for more than 3500 out of 6000 dutiable 9-digit tariff lines. Moreover, LDC countries can enjoy duty free and quota free treatment for almost all products with a few exceptions of around 200 items.

8 Including wider products, such as apparel and footwear, which is not eligible under US's GSP.

9 Low-income countries confronting severe structural barriers to sustainable development, which is eligible for several international support measures. United Nations continues to review the criteria of GNI per capita, by which currently 47 countries are designated as of March 2018.

10 Under the US's GSP (A*), designated countries are not qualified for certain products specified at 8-digit level. See the country-product list in the US HTSA General Notes 4

11 Thailand, Malaysia, Brazil and Mexico are possible to graduate with China in 2019.

12 The ROO of Japan's GSP stipulated in article 26 of the Cabinet Order for Enforcement of the Temporary Tariff Measures Law is consistent with the Revised Kyoto Convention's basic ideas. Wholly obtained goods and goods that have been produced with substantial transformation are recognised as originating goods of beneficially countries. The Administrative Rule for Enforcement of the Temporary Tariff Measures Law further clarify the conditions of substantial transformation. The English translation (reference only) of these specific rules are available in the UNCTAD GSP Handbook as of November 2016.


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