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Mapping and comparing Rules of Origin across Regional Trade Agreements with ITC's Rules of Origin Facilitator



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Abstract

An explosion of different Rules of Origin (ROO) has accompanied the spread of Preferential Trade Agreements (PTAs) around the world. Often tailor-made, these ROO are there to prevent trade deflection and transshipment. For developing countries, protection of regional producers of intermediate products in supply chains can be an important — if not the main — objective of PTAs, most often reciprocal Free Trade Areas (FTAs). Complying with ROO requirements entails costs. Observers, firms, customs officials and policy-makers have advocated harmonization and simplification of these ROO. The paper presents the Rule of Origin Facilitator (ROF) database developed at the International Trade Centre (ITC). Currently, the ROF contains all the texts describing ROO for 370 Preferential Trade Agreements (PTAs). These PTAs have 30 distinct Regime-wide (RW) rules and over 50,000 distinct Product Specific Rules (PSRs). Classifying PSRs by aggregating them into a small number of groups is a necessary first step prior to analysing the associated compliance costs.

This paper introduces observation-based metrics to examine the extent of differences across products within a PTA and between PTAs, a first step prior to harmonization. Two indices are used to measure similarity: (i) wording using text analysis; (ii) overlap using regulatory distance. These metrics are applied to RW and PSRs for six PTAs: ASEAN, SAFTA, MERCOSUR, SADC, EUROMED and NAFTA. This choice ensures geographic coverage and is representative of the diversity of ROO around the world. The same menu of RW rules prevails across PTAs for origin provisions but greater diversity is found across the selection of certification provisions. Comparing origin and certification provisions for RW rules across the PTAs suggests that the Asian PTAs have more 'user-friendly' criteria. The great diversity in PSRs across products within PTAs and across PTAs presents a challenge for summarizing similarity, starting with aggregating the distinct PSRs into a small number (20) of categories of PSRs. Except for SAFTA, there is great disparity across sectors and countries over the three dimensions used to classify PSRs (frequency, coverage and distribution of preferential margins).

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1. Introduction

Rules of origin (ROO) are critical components of all Preferential Trade Agreements (PTAs). These 'rules' establish the conditions that products must meet to be eligible for preferential market access. Their primary objective is to prevent trade deflection by ensuring that products from outside the PTA do not enter the duty-free zone through the country with the lowest external tariff. They are there also to prevent transshipment of products in which there is negligible regional content (e.g. repackaging via labelling). However, ROO have other objectives. For developing countries, protecting regional producers of intermediate products in supply chains can be an important — if not the main — objective. In practice, as documented here, ROO are very complicated: they are a nightmare for producers and customs officials alike.¹ Some observers describe PTAs as “giving with one hand—preferences—and taking away with the other — origin requirements (i.e. ROO)”. If ROOs are ‘too complex’ or at odds with methods of production used in modern value chains, they will undo the benefits of preferential market access. Complexity is likely to be prevalent since countries are members to multiple PTAs each with different ROO requirements.²

This paper has two objectives. First, to describe the extensive information on ROO in the ITC database accessible through the [Rules of Origin Facilitator](#) (ROF). The information in the ROF covers ROO in preferential trade agreements.³ The paper lists these rules at the level at which they are recorded in official documents. Second, to present tools needed to apprehend differences across PTAs. These descriptive measures enable the user to draw a ‘map’ of these rules across PTAs. It is largely accepted that these rules are usually unnecessarily complicated, raising trade costs beyond levels necessary to prevent transshipment and trade deflection (Cadot and Melo (2007), Mavroidis and Vermulst (2018), Hoekman and Inama (2018), (2019)). Using the ROF with the tools presented here can help in deciding how to design ROO in new PTAs, or how to harmonize ROO across existing PTAs.

The number of PTAs is growing, often with a larger membership among countries also engaged previously in other PTAs. Several papers have provided roadmaps of the ‘spaghetti bowl’ of FTAs around the world.⁴ Currently, the ITC-WTO-WCO [Rules of Origin Facilitator](#) (ROF) is the most extensive database of PTAs (This is what makes it the most comprehensive tool for comparing ROO across PTAs). Table 1 lists 461 de facto PTAs in the ROF broken down according to six categories along with the number of PTAs that have been processed. Access to preferences, that is not having to pay the full MFN tariff is the motivation for requesting access under types of agreements depicted by these categories. As such, ROO are necessary to ensure that only intended beneficiaries receive preferential access, with the exception of several “pure” customs unions, such as EU28, Southern African Customs Union (SACU) and Eurasian Economic Union (EAEU), which do not use ROO on intra-trade.

Annex 1 gives additional information on the database.

¹ Brenton and Imawaga (2004) report results from a survey administered to customs officials in developing economies by the World Customs Organization. Two-thirds of respondents in Sub-Saharan Africa agreed that dealing with ROO under overlapping trade agreements caused major problems. A majority also agreed that administering ROO detracted from the other objectives of tax collection and trade facilitation.

² Partial scope agreements (PTAs) and free trade agreements (FTAs) both require ROO (as do non-reciprocal preferential trading arrangements (PTAs) like EBA, AGOA and GSP).

³ Note that the WTO members have been engaged in negotiations to impose greater discipline on non-preferential ROO (preferential ROO have been deemed to be negotiated freely by PTA members). At the Uruguay Round, the multilateral Agreement on Rules of Origin (ARO) stipulated that non-preferential ROO should be applied in a non-discriminatory and transparent manner and are not designed to be a barrier to trade. The ARO set to apply a single set of non-preferential ROO for all. However, as documented by Hoekman and Inama (2018), little progress has been achieved to date.

⁴ Estevadeordal and Suominen (2006), Donner Abreu (2016) describe in detail the main PTAs around the world.

Table 1: Types of PTAs in the Rules of Origin Facilitator database

As of 10 October 2020

Type of trade agreement	Total in force	ROO processed and analyzed (% of total)
Free trade agreement	258	84%
Partial scope agreement	118	62%
Non-reciprocal arrangement	65	75%
Customs union	16	63%
Early harvest program/interim agreement	4	50%
TOTAL COUNT	461	76%

Notes:

1/ A PTA is considered to be “in force” if at least one member applies a preferential tariff under this PTA (i.e. PTA is operational).

2/ Categories of PTAs:

- Partial scope agreements: tariff cuts on a limited list of products.
- Free trade agreements liberalize substantially all trade.
- Non-reciprocal arrangements: Preferences only accorded by one party, e.g. AGOA, EBA, GSP.
- Customs unions apply common external tariffs to non-members.
- Early harvest programs are initial arrangements eventually leading to FTAs.
- Not in force are terminated PTAs (e.g. NAFTA) or PTAs not yet in force (e.g. EU-MERCOSUR).

Source: Authors’ calculations based on the ITC trade agreements database available at Rules of Origin Facilitator (findrulesoforigin.org).

The complexity of this maze of interlocking PTAs where, in many cases, two countries have several options to claim preferential access to each other’s markets, calls for indicators of differences in the conditions for market access. This paper proposes two measures of similarity, textual overlap and regulatory distance that are then applied to 6 PTAs: Association of Southeast Asian Nations (ASEAN), South Asian Free Trade Area (SAFTA), Southern Common Market (MERCOSUR), Southern African Development Community (SADC), Euro-Mediterranean Partnership (EUROMED) and North American Free Trade Agreement (NAFTA). This selection omits large intercontinental FTAs like Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), Greater Arab Free Trade Area (GAFTA) and European Union (EU) Economic Partnership Agreements (EPAs), as they are largely inspired from the regional models of ROO of the PTAs we selected. In a significant ROO legal comparison study undertaken by the WCO (2017) in 2016⁵, the authors selected four major PTAs for detailed comparison: ASEAN, EUROMED, NAFTA and TPP, arguing that at least one of them would necessarily influence any new subsequently concluded PTA in the world.

This selection takes into account the following factors: geographical diversity, size (membership and GDP) and historical influence, including diffusion factor. PTAs should also be in force (to have data on preferential tariffs). Geographical diversity dictates to pick one PTA from North America, one from Africa, one from Europe, one from Latin America, one from East Asia and one from West or South Asia.

- In North America, the largest PTA by size is NAFTA. It also has a historical influence, as it was one of the first comprehensive FTAs of the United States, which significantly shaped ROO in subsequent FTAs involving Canada, Mexico and the United States. We note that NAFTA has been recently superseded by United States Mexico Canada Agreement (USMCA) on July 2020, but we kept NAFTA for historical reasons and because USMCA tariffs are not yet available in the MacMap database at the time of writing.
- In Africa, the largest PTAs by membership are Economic Community of West African States (ECOWAS), SADC and Common Market for Eastern and Southern Africa (COMESA). We

⁵ WCO (2017), Comparative Study on Rules of Origin, http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/origin/instruments-and-tools/reference-material/170130-b_comparative-study-on-pref_roo_master-file_final-20_06_2017.pdf?db=web

preferred SADC over COMESA because their ROO were negotiated earlier and might have had an influence on COMESA product-specific ROO protocol. ECOWAS rules were adopted after SADC in 2003, but they significantly differ from SADC and COMESA. Nevertheless, we omitted this PTA because SADC seems to have a larger footprint on the African continent through the current negotiations of the Tripartite FTA (COMESA-EAC-SADC) and of the African Continental Free Trade Area (AfCFTA).

- In Europe, most FTAs are influenced by the EU model of ROO described in the Pan-Euro-Mediterranean convention. EFTA is one such FTA. EFTA has cumulative rules of origin which span 50 European countries.
- In Latin America, we selected MERCOSUR, due to its historical significance and precedence to other FTAs. The Pacific Alliance between Chile, Peru, Colombia and Mexico could be another candidate, but it is very recent (2016) and is likely to have been influenced by the CPTPP model.
- In East Asia, the largest FTAs are ASEAN-centric (so called ASEAN+1 agreements). Therefore, rather than choosing one of the ASEAN FTAs with another Asian country, we selected the original ASEAN agreement (ATIGA) between 10 ASEAN member states. This agreement gives rise to the “ASEAN model” of ROO.
- In West and South Asia, candidate FTAs could be Commonwealth of Independent States (CIS) and SAFTA. CIS (2011) ROO are not yet available in the database (due to Russian language barrier), hence we select SAFTA. SAFTA is a more recent and advanced version of Agreement on SAARC Preferential Trading Arrangement (SAPTA). It is also more comprehensive in membership than Asia-Pacific Trade Agreement (APTA).

This choice gives us geographical coverage, diversity in types of PTAs (North-South for NAFTA and EUROMED; South-South for the others) and differences in membership size and influence on subsequent PTAs. NAFTA and PEM are included because the rules described there apply approximatively for the many subsequent PTAs established in the corresponding regions.

Section 2 starts with an example of how the ROF can help an exporter that has choices on where and under which regime to export his product to a trade partner, then describes the information in the ROF. Section 3 deals with the classification of RW rules. Section 4 compares RW across the 6 PTAs using the text analysis and regulatory distance measures. The remaining sections deal with PSRs. Section 5.1 describes the steps used to present the information on PSRs in a digestible form (the current set of 370 PTAs in the ROF has over 54,000 distinct PSRs). Section 5.2 then uses this aggregated classification to compare the distribution of PSRs across PTAs. Section 6 uses textual overlap and regulatory distance across the six PTAs. Section 7 concludes.

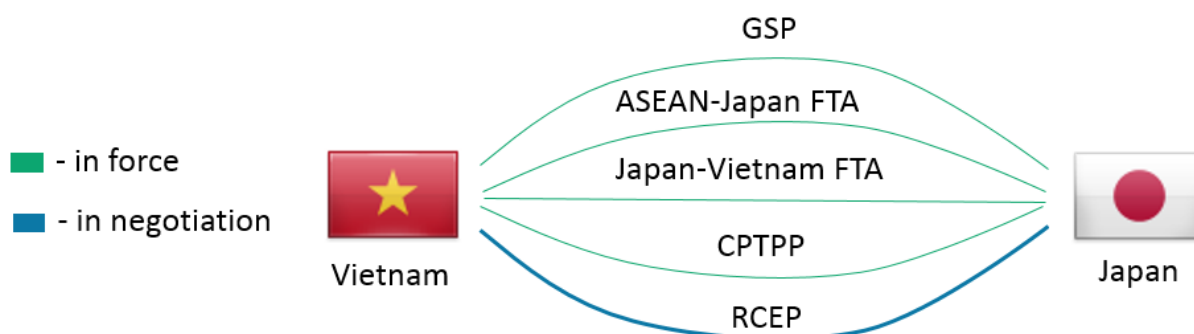
When it comes to describing and analysing ROO, the devil is in the details. This explains the significant number of tables and figures, boxes and the five annexes. These can be skipped as they mostly cover details but are necessary to give a comprehensive presentation of the ROF and to interpret the results from the text analysis and regulatory distance indicators.

2. The Rules of Origin Facilitator: An example

A producer who, once he has decided to produce — a decision that may be influenced by the prospect of preferential access with some partner(s) — has to determine under which regime she will export to that partner. The decision comes down to choosing the least costly alternative. Suppose it is a Vietnamese firm wishing to export cotton shirts (HS product code 6205.20.000) to Japan. Figure 1 shows the preferential regimes available to the producer (associated tariff in square brackets): (i) Generalized System of Preferences (GSP) for developing nations [No preference, 7.4% MFN applied rate]; (ii) ASEAN-Japan FTA [0 %]; (iii) Japan-Viet Nam FTA [0%]; (iv) the Comprehensive and progressive Agreement for trans-pacific partnership (CPTPP) [0%]. Furthermore, another regional FTA, the Regional Comprehensive Economic Partnership (RCEP) will soon be available (signature

expected by end of 2020). Should meeting the costs of origin and certification requirements exceed the benefits of preferential access, the exporter can always export under MFN status and pay the ad-valorem tariff of 7.4%.

Figure 1: Preferential trade agreements available for Vietnamese exports of cotton shirts to Japan



Source: Based on Rules of Origin Facilitator (findrulesoforigin.org).

The ITC tool Market Access Map (MacMap, <https://www.macmap.org/>) gives information on non-tariff measures (NTMs) and on customs tariffs applying to each alternative, while the ITC-WTO-WCO [Rules of Origin Facilitator](#) (ROF) gives the information on the ROO applying to each of the preferential regimes in the data base (see Annex 1 on preferential regimes). ROO for non-preferential objectives are not yet covered for the example of Viet Nam and Japan.⁶

The information in the ROF covers the two types of ROO:

- (a) Regime Wide (RW) and;
- (b) Product-Specific Rules (PSR).

Returning to the Vietnamese shirt exporter, he has four choices of preferential access (GSP, ASEAN-Japan FTA, Japan-Viet Nam FTA and CPTPP). The ROF facilitator has information on RW and PSR rules under each one of those PTAs. The ROF lists over 54,000 different PSRs and 30 different RW.

Whether preferences are reciprocal, as under FTAs or CUs, or non-reciprocal as under the GSP, exporters have to bear the costs associated with proving that they qualify for the preferential regime. For the Vietnamese shirt exporter, the choice is between five alternatives. He can export under Most Favoured Nation (MFN) status in which case, he pays the ad-valorem tariff of 7.4% imposed by Japan on imports of cotton shirts. Or else he can export under one of the four preferential regimes described above: GSP, ASEAN-Japan FTA, Japan-Vietnam FTA and CPTPP. The first is a non-reciprocal arrangement, the third is a bilateral FTA, and ASEAN FTA and CPTPP are multi membership FTAs. In all cases except GSP, he pays the preferential tariff of 0 %, while for GSP the preferential tariff is not granted.

The shirt exporter must know the “fine print” of the requirements to benefit from preferential access. This is where the details in the ROF come in. As shown in the examples below, these are quite different across preferential regimes when it comes to Product Specific Rules (PSRs). However, there are also differences for Regime Wide (RW) rules. For trade negotiators wishing to simplify the existing maze (some refer to the “spaghetti bowl” of rules), they must know the rules for their preferential regimes and

⁶ Hoekman and Inama (2018, 2019) discuss progress at harmonizing non-preferential ROO which are necessary to determine whether a product is subject to a nation’s trade policy. They show that many rules are similar to those for preferential ROO in PTAs and that there has been trend towards convergence.

those of other regimes they envisage to associate with. Here too, the ROF database with currently 370 PTAs is helpful.

For each PTA in the database, the ROF lists ROO under two types. These are:

- (i) RW rules that apply to all products, and
- (ii) PSRs that are specific to the product. PSRs are often defined at the most disaggregated HS classification.

RW rules cover general conditions for qualification under the preferential regime (for example, direct transport and cumulation) as well as certification requirements (for example, type of certification scheme and validity period of the certificate of origin). Currently, 30 most common provisions are captured in a consistent manner across all PTAs. These are described in section 3.1.

PSRs in many PTAs are defined at the product level to reflect the specificities of a manufacturing process of each product. PSRs consist of criteria defining a substantial transformation process. If the producer does not reach this standard, the product is considered to not have undergone sufficient transformation to acquire originating status that confers benefits (usually the benefit is in the form of an exemption from paying the MFN tariff).

3. Mapping Regime-wide (RW) origin requirements in the ITC database

We start with the RW rules that are easier to compare across PTAs than PSRs. The ROF database lists 30 different RW rules across the six PTAs. As in Gourdon et al. (2020b), we split the two categories of RW provisions — process and certification — into two groups (see tables 2 and 3):

- Transparency,
- Flexibility.

Transparency provisions do not offer less restrictiveness in the application of the origin or certification but their presence decreases the information cost and provides business certainty related to rules of origin. Likewise, flexibility provisions make ROO less restrictive by reducing the production adjustment cost (direct cost of compliance) in the case of origin provisions or the conformity assessment cost (indirect cost of compliance) in the case of certification provisions.

Section 3.1 enumerates the RW provisions. Section 3.2 then compares these provisions using the measures presented in Box 1. RW rules are classified in two categories (number of different rules for each category in parenthesis): *Origin provisions* (16) listed in table 2 and *certification provisions* (14) in table 3.

3.1. Origin provisions.

The origin provisions in table 2 are classified in two categories. The first five provisions are considered to bring transparency. They figure in almost all PTAs. These provisions provide clarity. The provision on *wholly obtained (WO) products* (1) relates to products that must be entirely obtained in the territory of one (or more) PTA party without addition of any ‘non-originating’ materials, i.e. materials from outside the PTA to obtain originating status. The provision on *non-qualifying operations* (2) provides a list of processing operations deemed insufficient or minimal in the sense that these operations do not contribute — or do not contribute sufficiently — to qualify as contributing to determination of origin (e.g. certain types of packaging). *Accessories, spare parts and tools* (3) clarifies conditions to be met for these inputs to be considered part of the delivered good⁷. *Packaging* (4) clarifies whether packaging

⁷ For example, for use with a machine, appliance, apparatus or vehicle, provided they are imported and normally sold with the equipment, spare parts would have to be of the same origin as the machine, appliance, apparatus or vehicle.

should be taken into account when determining the origin of the product. *Sets (5)* clarifies circumstances when sets of goods⁸ can be considered as originating, i.e. situations where not all of the items in the set are originating. The Regional Value Criterion (RVC) expressed as a percentage of the value of the set in question is the usual metric applied to the sets criterion.

Table 2 covers origin and table 3 covers certification provisions. In both tables, the last column shows the frequency of the corresponding criterion in the sample. Cumulation and the associated value-added criterion are the most prevalent. Duty-drawback in the least frequent criterion in table 2.

Table 2 shows all 6 PTAs have provisions on *wholly* obtained and on *non-qualifying operations*. The other provisions are not present across the selected PTAs, particularly the RVC criterion. These provisions bring transparency although documenting them can be time-consuming raising costs significantly as shown by estimates for Shoprite, a South African retailer exporting across Southern Africa SADC members.⁹

Table 2: Regime wide rules across a selection of PTAs: Provisions on Origin

Criterion	SADC	SAFTA	ASEAN	MERCOSUR	PEM	NAFTA	Frequency in 378 PTAs
Provisions on Origin Process (measures for transparency)							
1: Wholly obtained products	YES	YES	YES	YES	YES	YES	80%
2: Non-qualifying operations	YES	YES	YES	YES	YES	YES	75%
3: Accessories, Parts, Tools	YES	NO	YES	NO	YES	YES	74%
4: Packaging	YES	YES	YES	NO	YES	YES	78%
5: Sets (RVC)	YES RVC 85%	NO	NO	NO	YES RVC 85%	NO	55%
Measures relaxing provisions on process (measures for flexibility)							
6: Roll-up (absorption)	YES	NO	NO	NO	YES	YES	49%
7: Indirect materials	YES	YES	YES	NO	YES	YES	75%
8: Fungible materials	Material only	NO	Material only	NO	Material only	Material and final	58%
9: Principle of Territoriality	YES	NO	NO	YES	YES	YES	67%
10: De Minimis (tolerance)	YES (15%)	NO	YES (10%)	NO	YES (10%)	YES (7%)	65%
11: Value-added calculation	Import Content	Import Content	Build down/up	Import Content	Import Content	Build down/net cost	88%
12: Outward processing	NO	NO	NO	NO	YES	NO	25%
13: Cumulation	diagonal	diagonal	Diagonal	diagonal/full	cross	diagonal/full	90%
14: Direct transport	YES	YES	YES	YES	YES	YES	91%
15: Exhibitions	NO	YES	YES	NO	YES	NO	37%
16: Duty drawback	nm	nm	Allowed	Nm	Prohibited	Prohibited	17%

⁸ 'Sets' of items are defined by the WCO in the general rules of interpretation of the Harmonized System. Sets consist of at least two different articles classifiable in a different heading that are suitable for sale directly without repacking. However, countries provide additional interpretations and examples for practical applications. For example, the EU clarifies definitions and examples of 'sets' in its guidelines on classification of sets: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2013:105:0001:0006:EN:PDF>

⁹ Gillson (2012) reports estimates of the administrative costs incurred by Shoprite, a South African retail company operating across SADC, in 2009. Preferences were worth \$13.6 million on \$550 million sales. The company estimated costs of compliance at \$5.8 million with a breakdown of 40% for staff to maintain customs data, 40% on in-house clearing and forwarding and 20% on the maintenance of a library to demonstrate compliance with rules of origin.

Note: Yes in Principle of territoriality (9) and Direct transport (14) imply higher restrictiveness.

Nm: not mentioned.

Source: Authors' calculations based on Rules of Origin Facilitator.

The provisions in the bottom of table 2 are classified as contributing to lower compliance costs because they relax the stringency for establishing proof of origin. The *absorption/roll-up* (6) provisions stipulate that once a part or intermediate material obtains originating status under a PTA, it is considered to be 100% originating when used for further processing (even if inputs used for the production of this part or intermediate material were not originating). The *indirect materials* (7) provision specifies that the origin of certain materials used in the production process indirectly (for example, fuel and lubricants) should not be taken into account when determining the origin of the final good. In the same vein, allowing *fungible goods/materials* (8) also lowers the cost of inputs by allowing accounting methods that trace the origin of fungible inputs without the obligation to keep originating and non-originating materials physically separated.¹⁰

The *principle of territoriality* (9) states that all working and processing needs to be carried out within the territory of parties to the agreement without interruption. Only the Asian PTAs do not have this restrictive provision. The *tolerance/de minimis rule* (10), also called the tolerance rule, states that a product is considered to have complied with the origin requirement rule so long as the value of the non-originating component does not exceed a prescribed percentage. 131 PTAs do not provide for the tolerance rule. The *value-added calculation* (11) provision describes how value-added is computed. The *outward processing* (12) provision allows a good to be temporarily removed from the PTA territory and processed in a third-party country without affecting origin determination of the final product. Only PEM has this provision.

The *cumulation criterion* (13) is present across virtually all PTAs in the database. It determines the modalities by which non-originating materials embodied in products from PTA members qualify as value-added in the partner country having to establish proof of origin. *Direct transport (Transshipment)* (14) requires goods that are claiming preferential treatment under a PTA to be shipped directly from the PTA country of origin to the PTA country of destination in normal circumstances.¹¹ This adds restrictiveness. 35 (91%) of PTAs do not impose this restriction. Provision on *exhibitions* (15) is a derogation from the direct transport rule. This provision permits the direct shipment of exhibits considered to be originating and sold at an exhibition in a third country from the place of the exhibition to the country of the purchaser without losing their qualifications for preferences. This provision that provides flexibility is only present in 37% of the PTAs, including the Asian PTAs in the sample and PEM.

When present, *Duty drawback* (16) schemes allow exporters to claim back duties paid on non-originating materials used to produce the final good exported under preferential tariffs. Having this provision can be especially important for the sourcing of intermediate goods outside the regional trading area. Interestingly, only ASEAN where supply chain trade is extensive incorporates a duty drawback provision.

Cumulation (13) provisions determine which products, which processes, and which countries can participate in the elaboration of the product seeking preferential access and still be considered as "originating." So long as they are not coupled with other provisions, cumulation provisions are easily ranked from most to least restrictive:

¹⁰ Some PTAs require a specific authorization from the Customs authorities for accounting segregation, and limit the application of this method to such cases where maintaining physical segregation would result in considerable costs or material difficulties for the producer.

¹¹ Some PTAs allow for transit under customs control through the territory of a third country. In some cases, these PTAs additionally impose an economic justification test for such transit.

- Bilateral cumulation is the minimum standard. It stipulates that materials from the partners qualify as originating (provided the PSRs are similar); it is the most restrictive provision, aside from PTAs where cumulation provision is completely missing. The bilateral cumulation criterion is not used in any among the six selected here.
- Diagonal cumulation allows the inclusion of originating materials from multiple trading partners in the FTA, provided the PSRs are similar. Diagonal is less restrictive than bilateral. The most prominent example of diagonal cumulation is the Pan-European (PANEURO) Cumulation System (PECS) that applies to most of EU PTAs in the EU neighborhood. Diagonal cumulation also applies in most plurilateral PTAs.
- Full cumulation allows the use of non-originating materials within the PTA. Full cumulation is less restrictive than diagonal cumulation. However, this is not necessarily so if full cumulation is accompanied by other PSRs (see Box 1).
- Cross cumulation allows the use of non-originating goods from other trading partners in other PTAs even if the PSRs differ. This is the least restrictive cumulation criterion and the least commonly used.
- The intensity of bilateral trade in PTAs is positively associated with the presence of cumulation rules. Switching from bilateral to diagonal cumulation leads to a re-organization of sourcing decisions. See Box 1.

Box 1: Comparing Cumulation rules

RVC criteria are widespread across PTAs. Cumulation rules (bilateral, diagonal or full) used to compute RVC differ across PTAs. Additional requirements along with cumulation (for example must all partners have the same Product-Specific Rule (PSR) or a certain type of Change of Tariff Classification (CTC) for the good in question) also contribute to differences in cumulation rules across PTAs.

Bilateral cumulation applies to a bilateral FTA between say A and B. It provides that materials originating in B are considered as originating (provided that the intermediates are themselves originating) in A and vice-versa. As discussed in the text, diagonal and full cumulation apply to trade between three or more trading partners.

The example in the table below illustrates these alternatives where a product destined to market goes through two stages of transformation with some intermediate imports coming from the ROW (i.e. are non-originating). As shown in the table, bilateral cumulation is the most restrictive since exports from partner A to partner B in the first stage of the supply chain have some intermediates from the ROW (rather than only from B).

Under diagonal cumulation (the basic principle of the PEM system applied to all EU's PTAs), in the second stage of transformation, intermediate imports qualify if they originate from any partner. Origin would be granted if all intermediates were originating (i.e. 50 instead of 40 of intermediates were from a PTA partner) regardless of whether the processing is sufficient to confer originating status to the materials themselves. Clearly Diagonal cumulation is less restrictive than bilateral cumulation.

For full cumulation non-originating imports in the final product will have to satisfy either/or/and another rule. In the table, the final good does not satisfy the diagonal cumulation under a CTC because it has some non-originating inputs in the first stage but it qualifies if instead, the PSR is a 60% Regional Value Content (RVC).

The presence of multiple PSRs complicates the comparison between diagonal and full cumulation. Moreover, even if full cumulation is mechanically less stringent than diagonal cumulation, it requires complete traceability of the production process and sourcing of intermediates. This may be sufficiently costly that full cumulation will be less attractive than diagonal (if the producer has a choice). In any case, this illustrates the difficulty of ranking PSRs by degree of restrictiveness.

Table: The Principal Forms of cumulation

THE ROLE OF CUMULATION RULES

Bilateral cumulation

- Imported intermediates used in A to produce a good for export to B are counted as originating only if they come from B

Diagonal cumulation

- Imported intermediates are counted as originating provided they come from any country in the bloc

Full cumulation

- If PSRO is CTC and intermediate produced in A uses imported inputs without a CTC, then final good is not originating under diagonal but originating under full
- If PSRO is 60% RVC and the intermediate produced in A fails it (\$25 LC/50) while final meets it (\$40 LC/50), then final good is not originating under diagonal (\$40/100) while it is under full (\$40+\$25/100)

	Assumptions		Eligibility	
	Stage 1 (A)	Stage 2 (B)	Combined (final product)	
			Diag. cumul.	Full cumul.
CTC	no	yes		
Satisfies CTC requirement?			no	yes
Value of transformation				
Originating	25	40	40	65
Non-originating	25	10	60	35
Satisfies 60% RVC?			no	yes

All PTAs require a method to compute value-added. The most popular method across all PTAs is “import content” (in 119 PTAs) and “build down” (in 86 PTAs). In our sample, two-thirds rely on the “import content” method and one-third on “build down/up” method. The provision on value-added calculation describes the method used. Three ways are used to compute the percentage of originating and non-originating materials — value of parts, domestic content and imported content. The value of parts method examines whether the originating parts reach a certain percentage of the total value of parts, it focuses on a very small set of either local or non-local material inputs, making it the most restrictive method.

The domestic content set a minimum percentage of total valued added that should be necessarily achieved with the help of domestically obtained inputs. Build-up and build-down are the two most used methods to evaluate domestic content with the build-down method of calculation considered less restrictive than the build-up method (see Box 2).

The import content method sets a maximum allowable limit of imports expressed in percentage of imported part and materials vis- a-vis total requirement of parts and materials.

The import content method is considered less restrictive than the domestic content method because of less computation complexity. This reduces compliance and administration costs.

Box 2: Methods to compute Regional Value Content (RVC)

WCO (2017) presents the different approaches to compute RVC and describes the three common methods to calculate Regional content: Import Content, Build-Down, and Build-Up. Several non-African agreements also use a net cost method and a focused-value method. Table 1, followed by an example, contrasts the three methods.

- The Import content method relies on the Value of Non-Originating Materials (VNOM) used in the production of the product, which cannot exceed a certain percentage (say α) of the Final Value (FV) of the product, i.e. $VNOM \leq \alpha FV$.
- The Build-down method (also known as indirect method) is equivalent to the import content method, but defined in inverted terms, i.e. through the Regional value content percentage. It defines the Regional value content as the final value of the product minus the value of non-originating materials ($RVC = FV - VNOM$). The Regional value content (RVC) defined this way should exceed the minimum designated percentage threshold in terms of the final value of the good. $RVC \geq (1 - \alpha) FV$.
- The build-up method (also known as direct method) estimates directly the originating content of the product, which should then exceed the minimum percentage threshold in terms of the final value of the good. It adds up the value of originating materials (taking into account any documented roll-up provision¹²) as well as, in many agreements, other qualifying content such as labour costs, overhead, and, sometimes, profits. Some agreements further permit addition of, yet, other qualifying costs. For example, GAFTA permits addition of depreciation of productive assets, rental costs, interests, R&D costs, energy, electricity, water and even general administrative costs, such as phone bills. This painstaking process gives the Qualifying Value Content (QVC) used in the computation of RVC. The ECCAS text does not clarify at such a level of detail which expenses can be added into qualifying “value-added” and which expenses must be excluded.

To be in conformity with the build-up method, a firm might have to rely on a corporate accounting and resource planning system and hire specialists that can bring the company into compliance with international and national accounting standards, such as GAAP. It should also have set up a good management process of accounting documentation and have trust in the origin calculations provided by intermediate suppliers. This method might be inaccessible or too costly for micro, small and medium-sized enterprises. (MSMEs). This is why it is entered as high compliance cost in terms of administrative costs, and thus can be classified as ‘hard’, or more restrictive in Table 1.

Table 1: Comparison of the three most common RVC calculation methods

<i>Calculation Method</i>	<i>Formula</i>	<i>Compliance Costs</i>
Import content	$VNOM/FV$	Relatively low
Build-down	$(FV - VNOM)/FV$	Relatively low
Build-up	QVC/FV	High

¹² If the roll-up provision is not available, then the firm has to further decompose the value of materials into the value of components of those materials and assess the originating value percentage within each component. This requires time as tracing and accounting effort involving due-diligence from intermediate suppliers throughout the supply chain is resource-consuming.

Notes: VNOM is the value of non-originating materials, FV – final value of the good, QVC – qualifying value content.

Even though at first glance build-down and build-up methods seem equivalent in that $QVC + VNOM = FV$, the fact that only specific cost components can be added into QVC, requires additional accounting resources raising compliance costs.

The Nairobi Ministerial Decision (2015, WT/L/917) reached an agreement to relax the restrictiveness of origin requirements for the non-reciprocal PTAs (e.g. AGOA and EBA) applying to the Least Developed Countries (LDCs). The agreement states that LDCs can satisfy the origin requirement if up to non-originating materials do not exceed a threshold of 75% of the value of the final product. It also recognizes that the calculation method based on the value of non-originating materials (or indirect method) as the most desirable method for the benefit of LDCs.

Example: Take a Mauritian firm that manufactures T-shirts (cut and sew) to be shipped to a SADC member, say South Africa. Each shirt has a final value of \$10. The firm imports cotton fabric (non-originating) from India at \$4. Additionally, it buys stitching threads from a Mauritian supplier at \$1. It has invoices to prove these purchases. For illustrative purposes, suppose that under the SADC FTA, non-originating content should not exceed 60% of the value of the good, i.e. $RVC \geq 40\%$, i.e.

Under the import content method, the import content is $(\$4)/\$10=40\%$. Hence the product complies with the maximum threshold, as it does not exceed the 60% mark. Note that in this case, to avoid additional compliance risks, the firm might assume that the stitching threads are of undetermined origin and add them into import content and still satisfy the RVC criterion since $(\$4+\$1)/\$10=50\%$. Equivalently, under the build-down method, $RVC = (\$10-\$4-\$1)/\$10=50\%$, so the product satisfies the RVC criterion of 40%.

Under the build-up method, proving RVC is more complicated. The firm identifies that it uses stitching threads. These may be considered as originating inputs, but more information is needed from the supplier. However, there is a separate rule of origin applied on stitching threads, and it is not clear if the supplier is aware of it. Under the build-up method, the firm also needs to review how to account for salaries (it hires both domestic and foreign workers) to compute labour content (workers produce T-shirts and pyjamas on the same machines for other markets at the same time) and overhead. As a result, it is not clear if the firm could correctly add up enough qualifying value content to pass the 40% mark.

3.2. Certification provisions

Having overcome the “hurdle” of origin provisions, the exporter has to satisfy certification provisions related to the issuance and administration of proofs of origin. Certification provisions are typically found in the chapter on origin procedures of the main text. Table 3 lists 14 certification provisions.

As with origin provisions, we classify these provisions in two categories: those assumed to bring transparency and those assumed to give flexibility. The first seven certification provisions are assumed to add transparency and clarity rather than flexibility. *Verification process (1)* provides information on timeline, procedures and other related requirements regarding the verification of proofs of origin in the importing countries. This requirement is present in all PTAs. Note however, that verification can be direct, indirect, or combined, the latter being the easiest to satisfy. Provision on *competent authority (2)* gives information on which bodies or agencies are authorized to issue the proof of origin. Only Mercosur

has this provision. Provisions on *supporting documents* (3) should add clarity to the verification process because they clarify which documents are required on top of the proof of origin to claim for preferences.

Advance rulings (4) is a written decision provided by a PTA member to the applicant prior to the importation of a good covered by the application. It sets forth the treatment that the member shall provide to the good at the time of importation with regard to the HS code, origin, customs value, etc. Advanced rulings reduce uncertainty considerably. When implemented, advanced rulings also reduce discretion. They are considered a highly efficient tool to ensure the proper implementation and application of administrative procedures. Once more only ASEAN and NAFTA have a provision on advanced ruling which adds transparency and should reduce certification costs. This provision is only present in 52 PTAs.

All PTAs have a provision on *Retention period* (5) which stipulates for how long traders have to preserve commercial documents related to shipment and origin qualification¹³. For this group, the retention period varies between 2 years and 5 years. *Penalties* (6) clarify (to the extent possible) the circumstances that may lead to penalties or sanctions against any person presenting a document containing false information to obtain documentary evidence of origin. All 6 PTAs have a provision on penalties. *Appeals* (7) gives the right to request a second review of decisions given by the customs administration. Half have an appeals provisions which is higher than average for the sample.

The next seven provisions (8 to 14) aim to provide flexibility to the certification process. Most provisions are not present in the 6 PTAs, notably so for SADC and ASEAN. This serves to illustrate that not having provisions on clarification implies that provisions on flexibility are not needed, presumably because the definition are clear. The *exemption of certification* (8) allows for a waiver of proof of origin if the value of the goods does not exceed a prescribed threshold¹⁴. The *validity period* (9) for certification determines the time period over which parties need to conclude the importation process, claim preferential treatment, and correct any issues that may arise.

Provisions on *refund of excess duties* (10) paid at the time of importation or on retroactive issuance of proofs of origin add leniency to rules of origin because they allow importers to claim preferences even after a lapse of time. *Minor errors* (11) allow for minor discrepancies that will not lead to rejection of a proof of origin. *Approved exporter* (12) provides simplification to certification procedure, authorizing exporters to issue a proof of origin without any direct authentication by the competent authorities. Only PEM has this provision.

¹³ If a document is lost before the expiry of the period, it may result in customs charges, including penalties and a reclaim of duties by the customs. Therefore, the shorter the period, the better the PTA is from MSME perspective.

¹⁴ if the threshold for exemptions is sufficiently high, exports of small parcels, often from MSMEs, are exempt from the complicated ROO certification process (the threshold for exemptions is 500 Euros for EU PTAs and \$2000 for US PTAs).

Table 3: Regime wide rules across a selection of PTAs: Certification provisions

	SADC	SAFTA	ASEAN	MERCOSUR	PEM	NAFTA	Frequency in 378 PTAs
Provisions on Certification Process (measures for transparency)							
1: Verifications	YES	YES indirect	YES combined	YES indirect	YES indirect	YES direct	89%
2: Competent authority	NO	NO	NO	YES	NO	NO	45%
3: Supporting documents	NO	YES	YES	NO	YES		46%
4: Advance rulings	NO	NO	YES	NO	NO	YES	37%
5: Retention period	5 years	2 years	3 years	2 years	3 years	5 years	78%
6: Penalties	YES	YES	YES	YES	YES	YES	72%
7: Appeals	NO	NO	YES	NO	YES	YES	51%
Flexibility to Certification Provisions							
8: Certification exemption	NO	NO	NO	NO	YES <500 eur	YES <1000\$	63%
9: Period of validity	NO	12 mos	NO	12 mos,	4 mos.	4 years	79%
10: Refund of excess duties	NO	YES 45 days	NO	NO	YES	YES 1 year	64%
11: Minor errors	NO	YES	NO	YES	YES	NO	51%
12: Approved exporter	NO	NO	NO	NO	YES	NO	30%
13: Certification	Authorize d body	Authorize d body	Authorize d body	Authorized body	Self <6000 eur	Self	95%
14: Third party invoicing	NO	NO	NO	NO	NO	NO	34%

Source: Authors' calculations from ROF database.

Two options are available for *certification* (13): a proof of origin may be self-issued by the exporter (or her (his) representative); or it must be issued by an authorized body, the latter being more restrictive. A provision allowing for *third party invoicing* (14) stipulates that the certificate of origin will not be nullified only due to the invoice being issued by a third party. This provision is not widespread in the sample and it is absent for all PTAs in the sample.

Comparing origin and certification criteria across the 6 PTAs, and with others in the database, shows that the Asian PTAs, in particular ASEAN, have more 'user-friendly' criteria. ASEAN is the only PTA in the group that has a duty-drawback scheme. ASEAN and SAFTA are the only PTAs that do not impose the territoriality provision. On the certification side, both allow for indirect verification and ASEAN is the only PTA in the group that allows for advanced ruling.

4. Comparing RW with text analysis and regulatory distance measures

Section 3 documented the complexity and disparity in criteria across PTAs, highlighting significant heterogeneity of RW across the six PTAs. But how different are origin requirements across PTAs in reality? Here we present tools to explore differences in rules across PTAs. We present two complementary approaches:

- (i) Text overlap;
- (ii) Regulatory distance.

Both heuristics are a measure of similarities/differences. Both measures will be applied to RW and PSRs. Each comes with advantages and shortcomings. Text overlap is the simplest in terms of attribution of meaning about content since it only identifies strings of words. To isolate meaning, two synonymous words are counted as different. Box 3 explains the assumptions used to build this index of text overlap. The second is regulatory distance. Distance attributes differences in ROO to whether a

count of the selected descriptions for the RW are the same between FTAs. Here the assumption is that the categorization of RWs is an adequate approximation of the different characteristics. Regulatory distance is explained in Box 4.

4.1. Textual similarity across the six PTAs

Box 3 shows the text metric used to compute similarity. We acknowledge that despite the use of identical phrases, the substance may still differ dramatically. However, similarity in textual form can give a first hint of the extent of proximity between PTAs.

Box 3: Measuring Textual Overlap

We use a Jaccard index of similarity¹⁵ to measure the extent of overlap between two texts. The index measures the overlap of two sets relative to the union of the two sets on a scale from 0% (no overlap) to 100% (complete overlap). We further improve the approach by taking into account the structure of the text, i.e. the original ordering of words.

The approach consists in isolating and grouping ordered strings of words into n-grams ('n-gram' means a string of n words). Due to computational limitations, we only focus on all n-grams until 10 (i.e. 1-grams, 2-grams, 3-grams, 4-grams, 5-grams, 6-grams, 7-grams, 8-grams, 9-grams and 10-grams). We take each n-gram into account only once (for example, the 3-gram string "from any other" can appear 4 times in the text of a long PSR, however we take it into account only once).

Striking a 10-consecutive word match between two texts is akin to hitting a jackpot (some might say 'perfect plagiarism!'). To avoid penalizing the text similarity score (i.e. give a small value to the score) due to small differences in the text (such as "Chapter 1" vs "Chapter 01"), we progressively downgrade the weight of n-gram as n increases. The Jaccard index is weighted, as shown in step 3 of the example below. The formula for text overlap across all PSRs in our exercise is

$$Overlap_{i,j,k}^{PSR} = \frac{\sum_{n=1}^{10} \sum_{g=1}^{g_n} w_n \cdot I_{i,j,k,n,g_n}^{\cap}}{\sum_{n=1}^{10} \sum_{g=1}^{g_n} w_n \cdot I_{i,j,k,n,g_n}^{\cup}}$$

where $w_n = \frac{1}{n}$; i – PTA #1, j – PTA #2, k – HS6 code, n – degree of n-gram (1 through 10), g_n – amount of n-grams of degree n , I_{i,j,k,n,g_n}^{\cap} – indicator of a matching n-gram between i and j , I_{i,j,k,n,g_n}^{\cup} – indicator of a distinct n-gram in $i \cup j$. For RW, $Overlap_{i,j,k}^{RW}$, is calculated in the same way, except that k stands for one of 30 provisions.

To aggregate $Overlap_{i,j}^{PSR}$ to the PTA level, we take a simple average

$$Overlap_{i,j}^{PSR} = \frac{\sum_{k=1}^K Overlap_{i,j,k}^{PSR}}{K}$$

where $K = 5,387$ in the case of HS6 (PSR). The same simple average is used for RW, where $K = 30$ If a provision k is missing in both PTAs, it is not taken into account in calculations (i.e. K is a function of i, j).

$$Overlap_{i,j}^{RW} = \frac{\sum_{k=1}^K Overlap_{i,j,k}^{RW}}{K}$$

The example below illustrates the 3 steps involved in comparing the PSR for live animals between Agadir and SADC. The table also shows that the relatively low score still hides the fact that the two PSRs for live animals are the same even though Agadir uses the wording "shall", and

¹⁵ Source: https://en.wikipedia.org/wiki/Jaccard_index

“obtained” while SADC uses the “must” and “produced” wording. This is why text analysis needs to be complemented by similarity criteria based on analytical coding of the substance of the rule (i.e. both criteria are in essence “wholly obtained”, or WO, in our example with live animals).

Table: Comparing text similarity in origin criterion for live horses in Agadir and SADC.

PTA	Agadir	SADC
PSR (HS 0101.21)	All the animals of Chapter 1 shall be wholly obtained	All the animals of Chapter 1 used must be wholly produced
Word count	10 words	11 words
I. Basic overlap (1-grams only)	62% (8 intersecting 1-grams (i.e. words), 13 total 1-grams)	
II. Structured overlap (1- through 10-grams, unweighted)	25% (24 intersecting n-grams, 96 total n-grams)	
III. Structured overlap (1- through 10-grams, weighted by $1/n$)	40% (13.5 intersecting n-grams (weighted), 33.7 total n-grams (weighted)) ↓	
Final text overlap	✓ 40%	

Table 4 reports the results of textual comparisons across the 30 RW provisions in the 6 PTAs.

Table 4: Textual similarity of RW of 6 PTAs

(% of textual overlap)

PTA	ASEAN	PEM	MERCOSUR	NAFTA	SAFTA	SADC
ASEAN		5	NA	6	9	3
PEM			NA	3	5	7
MERCOSUR				NA	NA	NA
NAFTA					2	2
SAFTA						3
SADC						

Notes: The overall textual overlap between a pair of PTAs was computed as a simple average of text similarities between corresponding 30 RW provisions in these PTAs. It can range from 0 (absolutely no overlap) to 100 (all texts are perfectly identical). See Box 3.

The computed overlap for MERCOSUR with the other PTAs is 0 because the text is only available in Spanish. To flag this, we entered N.A.

Source: Authors' calculations based on Rules of Origin Facilitator database.

Note that because the MERCOSUR text is only available in Spanish, we entered N.A. to flag the absence of an English version. Overall, textual similarity is virtually non-existent between the 6 selected PTAs (close to 0). This is in part by design since we selected PTAs that were different both geographically and in terms of the underlying model (the United States or EU). The low scores suggest that the drafters of these PTAs were not using other PTAs in this group as a model. However, there is some minor degree of textual overlap in ASEAN and SAFTA (9%), owing probably to regional proximity. There is also some overlap between EFTA and SADC (7%), owing to the fact that SADC ROO were

inspired from the EU model. There is also some degree of overlap of ASEAN with PEM (EFTA) and NAFTA.

For comparison, a similar calculation across 6 African PTAs gives a range of textual similarity between 3% (SADC and ECOWAS) and 42% (SADC and AGADIR)¹⁶. Hence, we conclude that similarity is low across the 6 PTAs suggesting that the ROO for these FTAs were drafted independently (with a minor exception of EFTA and SADC both likely inspired by the EU model). For SAFTA and ASEAN, the similarity likely reflects geographical proximity.

4.2. Regulatory Distance

The Regulatory distance (RD) index, inspired from Asprilla et al (2015), is the second measure of similarity. If two PTAs impose (or abstain from imposing) the same RW requirement, they score an index value of 1 for that requirement. If they have different requirements for that requirement, they score an index value of 0 for that requirement. Once aggregated, the index is converted into a percentage. By construction, each indicator takes a value in the zero-one range. Box 4 gives the details.

Box 4: Regulatory distance of RW

Consider a RW category, say *Absorption*. Suppose that FTA *i* imposes an RW type coded in the ITC classification as “*included*” on that product. If FTA *j* imposes the same RW type for the same RW category then, for that RW type-category pair, the two FTA are considered “similar” with no regulatory-distance. The regulatory distance is assigned a score of zero and the similarity index, which is the exact inverse of regulatory distance, is set to one.

If, by contrast, one of the two PTAs imposes RW type *included* on RW category *Absorption* but the other does not, the regulatory distance is assigned a score of one and the similarity index is set to zero.

Formally, let *i* index PTAs, *k* RW categories, and *j* RW types, and let a “dummy” (binary) variable take the value of 1 if RW type *j* by PTA *i* for RW category *k* applies, and zero otherwise, i.e.

$$n_{ijk} = 1 \text{ if PTA } i \text{ applies RW type } j \text{ to RW category } k$$

Let *N* indicate the total number of observed RW category-RW type combinations. Under the assumption that all RW are equally important (i.e. have the same weight), the RW regulatory distance between two PTAs *i* and *j*, RD_{ij} , is then defined as the sum of the absolute values of the differences in RW application status.

$$RD_{ij} = \frac{1}{N} \sum_k \sum_\ell |n_{i\ell k} - n_{j\ell k}| \quad (1)$$

These individual terms are either zero (when a given RW is applied by both *i* and *j* to RW category) or one (when one of the two PTAs applies a measure that the other does not to a RW category);. Because *RD* is normalized by the grand total of RW category-RW type combinations, it lies between zero and one. We then construct the similarity index which is the inverse of regulatory distance. *Similarity index* = 1 - *RD*

¹⁶ See Gourdon et al. (2020), table 6.

This procedure yields a single number zero or one for each FTA pairs-RW category, that indicates the regulatory distance between the two PTAs for that RW category (a value closer to one means that the countries are more similar in their RW patterns).

RD measures are computed separately for origin and certification criteria for both transparency and flexibility (see figure 2). In table 5 and figure 2, each indicator has the same weight (See below for results with different weights). So, in table 5, the value of 50% for NAFTA and PEM implies that the two PTAs have in common (share) half of their RW.

Table 5 displays the pairwise similarity values (expressed in percentage) across the six PTAs. The high values for SAFTA and ASEAN (63%) and MERCOSUR and SAFTA (67%) suggest similarity while MERCOSUR and ASEAN (37%) have low similarity. These different values confirm a geographical dimension in the selection of RW criteria although, somewhat surprisingly, the highest similarity score is for MERCOSUR and SAFTA. If one takes ASEAN as the PTA with the RW criteria most friendly to encourage intra-regional trade, then SADC and NAFTA are the furthest away from ASEAN. Overall, however, PTAs have relatively close values. This is to be expected since, presumably, ROO share the objective of devising yardsticks to establish if sufficiently substantial transformation has taken place for the product to qualify for preferential access.

Table 5: Regulatory similarity of RW rules for 6 PTAs

(regulatory distance measure)

	ASEAN	PEM	MERCOSUR	NAFTA	SAFTA	SADC
ASEAN		53%	37%	47%	63%	47%
PEM			30%	50%	47%	43%
MERCOSUR				37%	67%	50%
NAFTA					40%	53%
SAFTA						60%
SADC						

Notes: A higher score indicates greater similarity (see Box 4). Scores are displayed in percentage and scores above 50% in red.

Source: Authors' calculations based on Rules of Origin Facilitator database.

Figure 2 plots bilateral distance for each pair of PTAs along the two dimensions of measures, origin and certification. Figure 2a covers transparency and figure 2b flexibility. Take transparency for the ASEAN and MERCOSUR (ASN-MER) pair. In figure 2a, the values of 0.58 (origin) and 0.18 (flexibility) indicates greater similarity on origin provisions than on flexibility provisions. For most pairwise comparisons on transparency, similarity is greater on certification provisions than on flexibility provisions. Similarity in provisions are greatest for the NAFTA- SADC and the NAFTA-SAFTA pairs.

Two patterns stand out. First, distance in transparency (figure 2a) is often less than distance in flexibility mechanisms (figure 2b). Adopting transparency measures is certainly less controversial and perhaps technically easier than for flexibility. Rather than comment on the disparity in patterns, suffice it to say that, PTAs closer to the top right corner would have more similar RW rules.

Second, the regulatory distance on origin provisions is usually higher than on certification provisions as shown by the prevalence of above-the-45° line dots in both figures. This suggests that harmonizing the core origin provisions would not be enough since having met the “hurdle” of origin provisions, the exporter also has to satisfy certification provisions related to the issuance and administration of proofs of origin. Yet, this harmonization on certificate provisions could actually be easier to achieve than for origin provisions. Indeed, there is a move towards adopting any event.

Figure 2: Pairwise similarity patterns for Regime Wide Rules



Abbreviations: ASN (Asean) – NAF (Nafta) – MER (Mercosur) – PEM (Pem) – SDC (Sadc) – SAF (Safta).

Notes: A higher value indicates a greater average similarity (See Box 4). If all RTAs in the sample were identical on origin and certification in the transparency (figure 2a) or flexibility (figure 2b) dimensions, the similarity scores would all be located at the top-right angle of the figure (red circles). Take ASEAN and PEM (ASN-MER). The values of (0.71) [0.65] on (origin) [certification] indicate a relatively high degree of similarity for both provisions on origin and certification.

Source: Authors' calculations based on Rules of Origin Facilitator database.

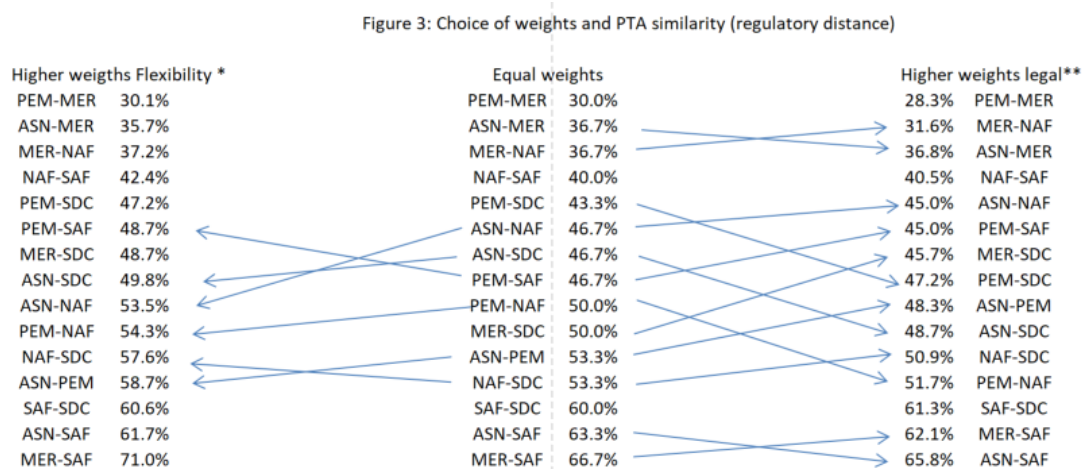
If equal weights is a benchmark easy to interpret, surely some provisions ‘matter’ more than others. To explore the sensitivity of the computed values to the equal-weighting scheme, we now explore two weighing options:¹⁷

¹⁷ These options are applied to the entire set of PTAs We also explored two other options, one in which text volume was given higher weight, the other in which frequency was given higher weights.

- Option 1 (*legal order*): Positioning in the document determines the weight because the most important provisions appear first¹⁸.
- Option 2 (*flexibility*): Assumes that flexibility provisions are well-selected and that flexibility provisions capture compliance costs (direct and indirect) better than transparency provisions. Under this option, flexibility provisions receive a larger weight¹⁹. A higher RD value then suggests lower compliance costs.

For each pair of PTAs in the sample, figure 3 compares the similarity rankings under the equal weight scheme from table 5 with those under the two options above. Values do not change much, but since these rankings are ordinal rather than cardinal, the indicator is informative about rank. In the equal weight scheme MER-SAF are the most similar and PEM-SAR the least. Rankings change more when higher weights are attached to legal order than when higher weights are given to flexibility provisions.

Figure 3: Choice of Weights and PTA similarity (regulatory distance)



Notes:

*Flexibility provisions gets a weight of 2 and transparency provisions a weight of 1

**Weight of article is inversely proportional to the rank position in the text

In each column, PTAs are listed from least to most similar

Source: Authors' calculations based on Rules of Origin Facilitator database.

5. Mapping Product-Specific Rules (PSR) across PTAs

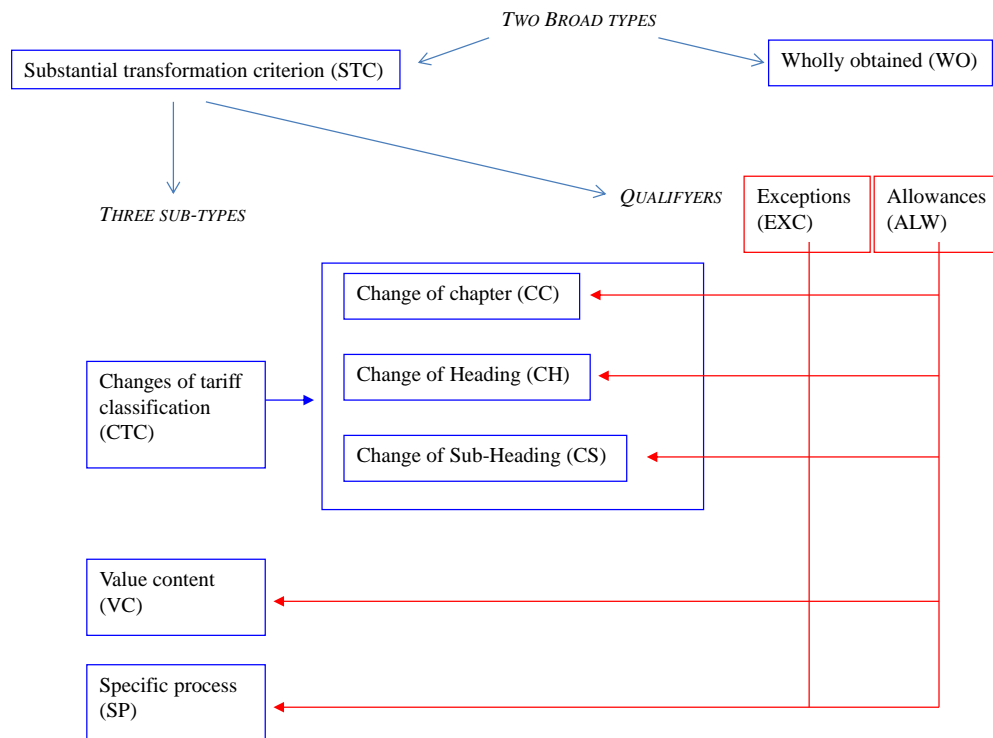
Almost all PTAs have extensive annexes describing the ‘forest’ of PSRs where each ‘tree’ is different.²⁰ These PSRs specify criteria at the HS4-digit or even at the HS6-digit level. Since the WTO Agreement on Rules of Origin does not prescribe specific design criteria for ROO and origin procedures, PTA members are free to negotiate preferential ROOs without any legal constraints. Many observers have described this overlapping and intertwining ROO and procedures as a “spaghetti bowl” of criteria. This complexity is a challenge for anyone trying to describe these PSRs. Here we describe the forest.

¹⁸ Weight is inversely proportional to the article rank in the text.

¹⁹ Flexibility gets a weight of 2 and transparency provisions a weight of 1.

²⁰ Krueger (1994) was the first to ponder about the ‘forest’ of PSRs when examining NAFTA’s ROO. She noted that several hundred pages were devoted to the description of these rules, wondering why they required so much space in the Treaty. Most recently, in its evaluation of PSRs UNCTAD (2019) used the number of pages devoted to PSRs as a metric of the complexity of PSRs.

Figure 4: Categories of Product-Specific Rules (PSRs) of Origin to meet the origin requirement



Source: Authors' elaboration from classifications in Rules of Origin Facilitator.

PSRs listed in figure 4 fall under two categories: Wholly obtained (WO) and Substantial transformation (ST) for those products that are not required to meet the WO criterion. The ST requirement specifies that the country of origin is the country where the last transformation took place. The criterion could be: (i) a Change of Tariff Classification (CTC) (i.e. the exported good must have a different tariff classification than that of any imported inputs); (ii) a Specific Process (SP) of production (e.g. the exported good must have undergone a chemical reaction); (iii) a Value Content (VC) requirement (i.e. a minimum threshold of local value content). The three different criteria, along with qualifiers — themselves classified into exceptions (EXC) and Allowances (ALW) — are used to meet the ST criterion. Note that qualifiers can come with each criterion. In some cases, exporters have a choice among the criteria ('either/or') and in others the qualifiers have to be met ('and').

5.1. Aggregating PSRs into 20 blocs

The ROF database identifies over 54,000 textually distinct origin criteria at the product level. The ITC developed a method for collapsing these PSRs into '1,600 standardized' coded criteria composed of 120 basic types or building blocks. The procedure is described in Box 4 "Coding of PSR".

Box 5: Coding of Product Specific Rules (PSR)

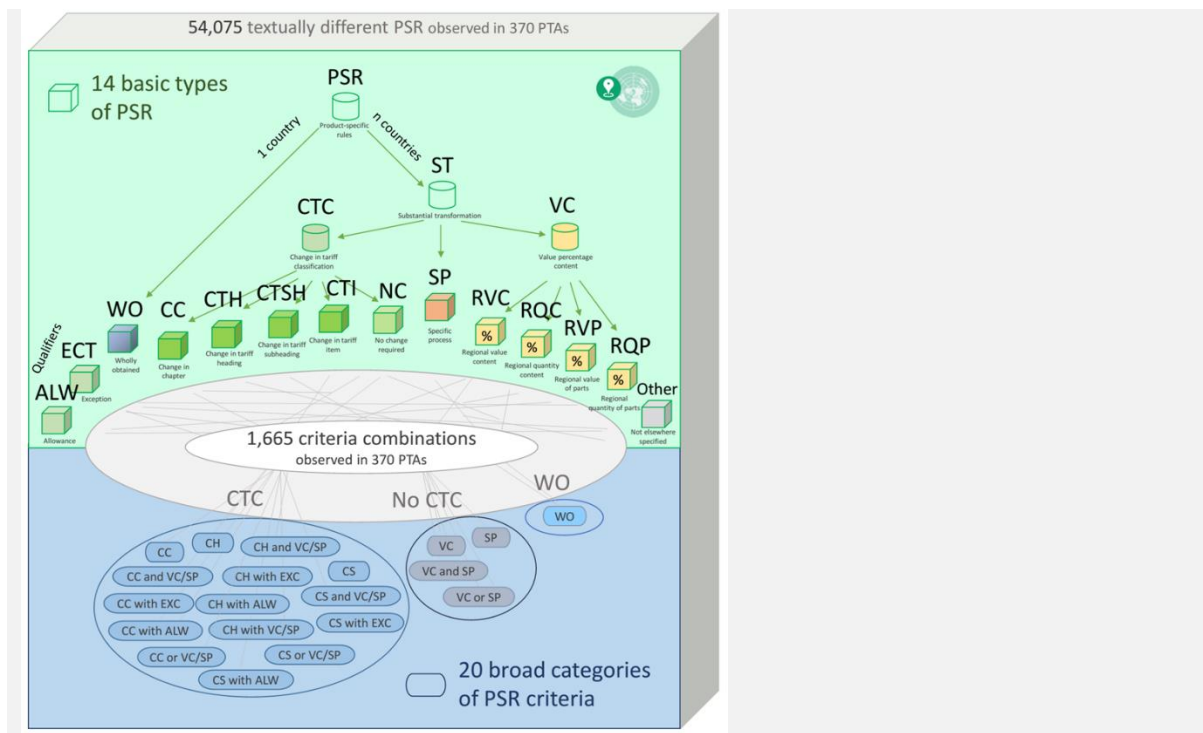
Each PSR was extracted from the legal text, and then passed through a natural language processing algorithm to identify the semantics to match with key attributes. This process yields 14 'basic types' of rules (see green area in figure below) in a structured logical way. In addition, the structure of the PSR was preserved and taken into account.

An Artificial Intelligence (AI) algorithm was applied so that for each PTA knowledge of classification and corrections to previous batches of PTAs were taken into account. This amounts to 'supervised' machine learning, where the 'teaching' sample continuously expands and includes already coded PTAs. The results from the processing algorithm were then reviewed manually. Finally, during the overall compilation of the database, additional checks were carried out to flag inconsistencies across all rules and coding.

These steps led to collapse more than 54,000 textually distinct PSRs into only 1,665 standardized 'universal origin' criteria. Furthermore, each origin criterion consists of one or a combination of "building blocks" – the most basic types of PSR, such as WO or CTH (Figure below).

For clarity's sake, and to ease comparisons, we further simplify the categorization of products. These 1,665 codes are aggregated into 20 broad categories (see bottom of the figure) following, three rules. First, composite rules are distinguished according to whether multiple criteria relax the rule by giving more choice ('or' rules) or make the rule stricter ('and' rules). For example, the PSR [CTH and RVC 40%] is not the same as PSR [CTH or RVC 40%]. Therefore, the rule was separated into two alternative sub-rules so that the two PSRs are classified separately. Second, we do not differentiate VC rules by the allowed percentage of originating materials. This helps reduce significantly the number of PSR entries in the database. Third, we group in the same category the combination of a CTC with a SP or with a VC rule. Likewise, we also group in the same category the alternative of a CTC with a SP or a VC. The end-result of applying these observation-based criteria is the 20 categories in the bottom of the figure.

Collapsing PSRs across the world into 20 categories.



5.2. Comparing the distribution of PSRs across PTAs

Table 6 shows much heterogeneity in the distribution of PSRs across the 6 PTAs. However, one can distinguish two families.

One is the CTC-type group or ‘family’: (SAFTA, ASEAN, MERCOSUR and NAFTA). These PTAs have opted for a CTC-type of PSR for substantially all products sometimes along with a VC as an alternative. The CTC criterion consists mostly of specifications at the chapter and heading levels which is more restrictive than at the sub-heading level (CS), even though there are many specifications and exceptions in the legal texts. Yet, there is diversity in this CTC-type family. SAFTA proposes one type only of CTC and MERCOSUR only two types, but NAFTA uses all 15 options for the CTC requirement in our classification. This could indicate legal ‘cherry picking’ in response to special interests or a genuine attempt at capturing the difficulty of properly identifying if sufficient transformation has taken place.

At the opposite end of the spectrum is the ‘value content’ (VC) family group with a significant share of VC or SP criteria accounting for 20% to 40% of PSRs. The PEM, SADC and MERCOSUR PTAs fall in this group.²¹ Those PTAs also rely roughly equally on VC and SP. The CTC-type classification with quasi-uniform criteria suggests that the PSRs under SAFTA, MERCOSUR and ASEAN are more transparent. Hence, these rules should be easier to understand by exporters.

Table 6: Distribution of the 20 PSRs across PTAs (HS 6 level).

²¹ EU FTAs rely heavily on PSRs using a formulation in SP form. The same substance could have achieved with a CTC rule. The European Commission believes that the SP formulation is more business-friendly (easier for humans to read). Indeed, ‘CTC’ rules require a bit of unpacking to understand the implications from HS nomenclature analysis.

	Label	Abbreviation	SDC	SFT	ASN	PEM	MER	NFT
	(1) Change in Tariff Classification (CTC)	CTC	53.6	100	92.6	55.0	77.5	99.9
1	Change in Chapter	CC						29.9
2	Change in Chapter and Value content/Specific Process	CC and VC/SP						5.8
3	Change in Chapter with Exceptions	CC with EXC						17.2
4	Change in Chapter with Allowances	CC with ALW						0.3
5	Change in Chapter or Value content /Specific Process	CC or VC/SP			18.4			0.1
6	Change in Heading	CH	27.5			20.1		16.7
7	Change in Heading and Value content/Specific Process	CH and VC/SP	0.7	100		2.1	10.0	4.5
8	Change in Heading with Exceptions	CH with EXC	2.9			0.9		17.2
9	Change in Heading with Allowances	CH with ALW	0.1			1.7		0.1
10	Change in Heading or Value content/Specific Process	CH or VC/SP	19.1		59.4	23.1	67.4	1.9
11	Change in Sub-heading	CS	3.4			3.2	0.1	3.2
12	Change in Sub-heading and Value content/Specific Process	CH and VC/SP						0.5
13	Change in Sub-heading with Exceptions	CS with EXC						2.2
14	Change in Sub-heading with Allowances	CS with ALW						0.1
15	Change in Sub-heading or Value content/Specific Process	CS or VC/SP	0.0		14.9	2.6		0.4
	(2) No Change in Tariff Classification(NO-CTC)	NO CTC	38.1	0	3.3	34.9	22.5	0
16	Value Content	VC	18.8		3.0	16.5	11.6	
17	Specific Process	SP	13.3		0.3	17.0	10.9	
18	Value Content and Specific Process	VC and SP	0.4			0.8		
19	Value Content or Specific Process	VC or SP	5.6			0.6		
	(3) Wholly Obtained (WO)	WO	8.4	0	4.1	10.1	0	0.1
20	Wholly Obtained	WO	8.4		4.1	10.1		0.1

Notes: CTC+ NO-CTC + WO=100

Abbreviations: ASN (Asean) – NFT (Nafta) – MER (Mercosur) – PEM (Pem) – SDC (Sadc) – SFT (Safta).

Source: Authors' calculations based on Rules of Origin Facilitator database.

Figure 5 gives more detailed information for the 20 PSR categories presented in table 6 for which there is market access on the table (i.e. for those products with a positive average MFN tariff at the HS6 level). PSRs are compared along three dimensions: frequency (vertical axis), coverage (horizontal axis) and preferential margin (bubble size). Bubble size is proportional to preferential margin (e.g. diameter of a 20% margin is twice the size of a 10% margin). The number next to the bubble indicates the preferential margin.

As illustration, take SAFTA that has only one PSR 'CH or VC/SP' (this is PSR 7 in table 5). Because this criterion is applied to all HS6 product categories, the bubble is located in the upper right-hand corner where the 11 next to the bubble is the corresponding average preferential margin across all sectors. SADC is a more informative case. Here the CH criterion applies to 27 % of imports which account for 25 % of products and is associated on average to a 15 % preference margin. Also, SADC has a full range of PSRs.

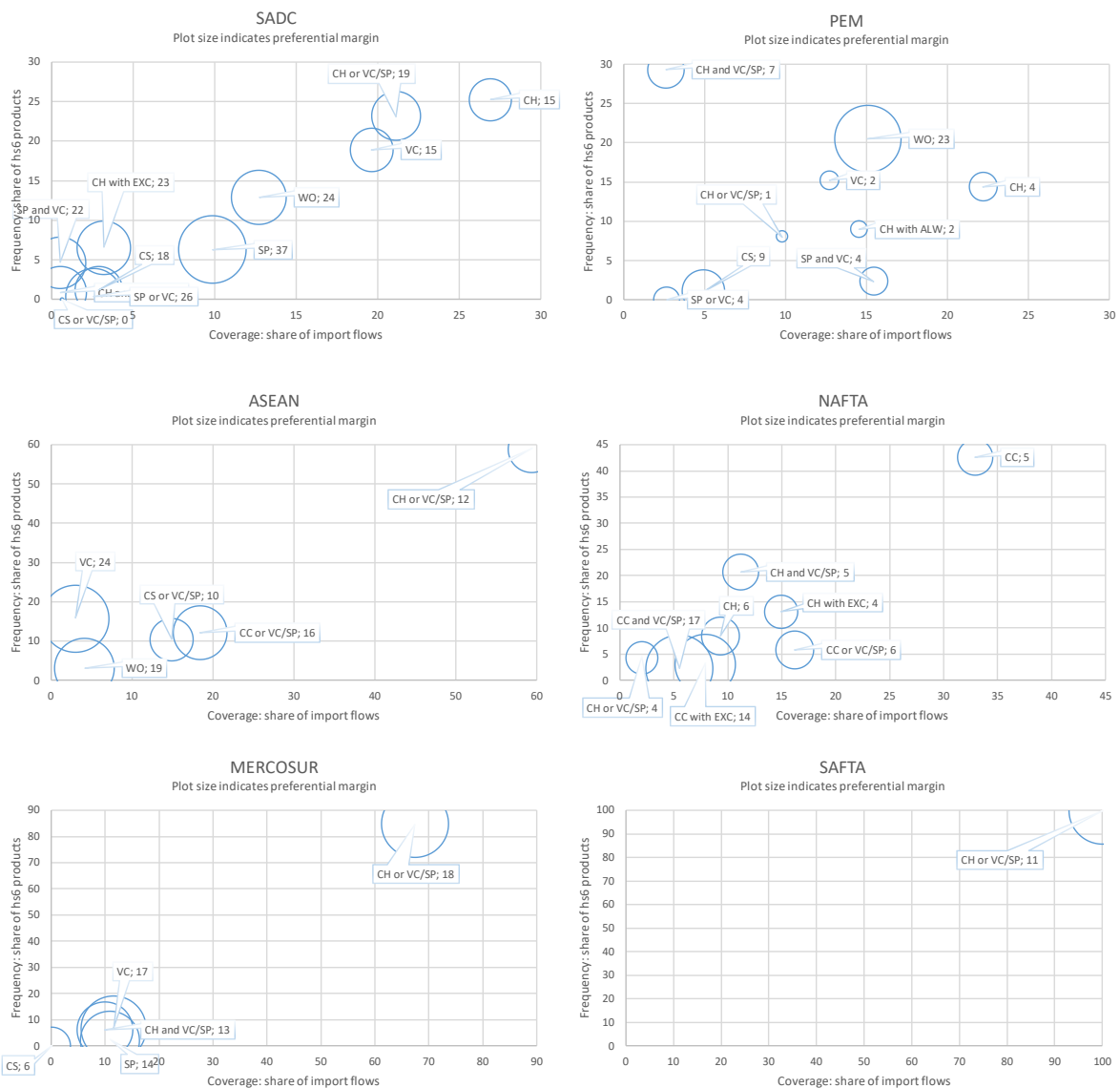
Several patterns stand out. First, except for SAFTA, there is great disparity across the three dimensions (frequency, coverage, and distribution of preferential margins) echoing the call by many observers that advocate harmonization. These disparities are the outcome of choices taken to meet the substantive transformation criterion. The choices could reflect product characteristics, legal or administrative capabilities across PTAs, or the intensity of protectionist lobbying. Or they could reflect when the PTAs took effect.

Second, frequency and coverage patterns differ. For example, for PEM — here represented by EFTA which has specific ROO on trading in fish, watches and pharmaceuticals, when compared to SADC.

Hence, PEM is imposing a presumably restrictive combined rule (CH and VC/SP) on a small number of products (low frequency) but covering a high share of imports might be intentional. For SADC most PSRs are on the 45-degree line indicating that coverage and frequency are similar.

Third, the PSRs adopted for products with high preferential margins often seem more complicated/restrictive or tailor-made, for example *WO* in PEM and SADC, *CC and VC/SP* for NAFTA in ASEAN and NAFTA, or *SP* in SADC and MERCOSUR.

Figure 5: Frequency, import coverage and Preference margins across 20 PSRs.



Notes: The figure covers the 20 PSRs of table 6. The horizontal axis indicates the share of total imports covered by the corresponding PSR. The vertical axis is frequency, the percentage of 5200 HS6 products with the corresponding PSR. Figure only includes products with a positive preferential margin (i.e. a positive average MFN tariff) covered by the corresponding PSR. Bubble size is proportional to preferential margin (e.g., diameter of a 20% margin is twice the size of a 10% margin). Bubble sizes are not comparable across PTAs. For SADC, the CH criterion applies to 27% of imports that cover 25% of HS6 product. The associated average preferential margin for these products is 15% (the same bubble size as for the VC PSR). SAFTA only has one PSR “CH and VC”. See text for further interpretation.

Source: Authors' calculations based on Rules of Origin Facilitator database.

6. Comparing PSRs with text analysis and regulatory distance measures

6.1. Comparing a PSR across PTAs: the case of razors

Table 7 gives an example of how text overlap combined with regulatory distance helps compare a PSR for any HS6 product (here non-electric razors) across PTAs. We chose razors, which has a simple PSR across the two selected PTAs, SADC and PEM. The table gives the PSR text, followed by three criteria: Text overlap; the coded CTC; and distance.

Table 7: From text overlap to regulatory distance: razors

Non-electric razors of base metal (8212.10)

	SADC	PEM
PSR text	Manufacture from materials of any <u>sub-heading</u> except that of the product	Manufacture from materials of any <u>heading</u>, except that of the product.
Text overlap	51%	
Coded criterion ^a	CS	CH
Distance ^b	1 (max)	

Notes: a/ See table 6 for codification. CS is abbreviation for “change in tariff subheading”. CH is abbreviation for “change in tariff heading”. b/ See Box 4 for the measure of regulatory distance.

The Text overlap indicator shows a very high degree of overlap (>50%) in the first example and a very low one (4%) in the second one. From the first example, we see that the score underestimates the degree of similarity since the structure only differs slightly due to a different key word in the middle of the text: “subheading” (SADC) vs. “heading” (PEM). We cannot say by how much the two rules differ in substance, but we can say they are almost a match in drafting style.

The Regulatory distance is a binary indicator. In table 7, the different CTC criterion is sufficient to attribute a maximum of distance of 1 since CS (change in tariff subheading) is different from CH (change in tariff heading). To keep the comparisons transparent, a value of 1 is attributed to any pair of CTCs regardless of whether they are close (e.g. CC → CH) or further away (e.g. CC → CS) even though, for a given classified product, it is easier to accommodate (CC → CS) than (CC → CH).

6.2. Textual similarity across the six PTAs

Table 8 computes textual similarity for PSRs to the 6 selected PTAs. The results show a significant overlap between PEM and SADC PSR, a reflection of their stemming from the EU model. There is also some overlap between ASEAN and NAFTA, due to the recent adoption of CTC rules in 2009 by ASEAN. Non-existent overlap for SAFTA is due to its adoption of an across-the-board rule. For MERCOSUR, zero overlap is due to the text being available only in Spanish.

Table 8: Textual similarity of PSR of 6 PTAs (in % of textual overlap)

PTA	ASEAN	PEM	MERCOSUR	NAFTA	SAFTA	SADC
ASEAN		4	1	14	2	4
PEM			0	4	3	40
MERCOSUR				0	0	1
NAFTA					2	4
SAFTA						4
SADC						

Notes: The overall textual similarity between a pair of PTAs was computed as a simple average of text similarities between corresponding 5,287 HS6 codes in these PTAs. It can range from 0 (absolutely no overlap) to 100 (all texts are perfectly identical for each HS6 code).

6.3. Regulatory distance (RD) across the six PTAs

Box 6 describes the calculation of RD for PSRs. The measure applies the same principles as for the RW provisions. Indicator values are in the zero-one range, then converted to a percentage. Then an index value of 66 % for a pair of PTAs indicates that the two PTAs share the same PSR for two-thirds a of similar PSR requirement

Box 6: Regulatory distance for Product-specific requirement (PSR)

Let's take two PTAs, say COMESA and SADC. If both PTAs have similar (different) PSRs then the similarity index will tend towards one (zero)

Example. The coding follows the same conventions as for RW rules. Take product, HS 840731 (pistons of less than 50cc). Compare then FTA i (COMESA) that imposes the PSR coded [(CTH + ECT) or RVC 30%] — call it change of heading for short — in the ITC ROF classification with FTA j SADC. If both PTAs impose the same PSR on pistons then, for that PSR-product pair, the two FTA are considered “similar”. The regulatory-distance RD then takes a value of zero and the similarity index is set to one. This is also the case, if for both PTAs there is no ROO for pistons of less than 50 cc. If, by contrast, one of the two PTAs imposes a change of tariff heading for pistons and the other does not, or imposes any other, the regulatory distance take the value of one and the similarity index is set to zero.

Formally, let i index PTAs, k HS6 products, and j PSR types, and let be a “dummy” (binary) variable marking the application of PSR type j by PTA i on product k .

$$n_{ijk} = 1 \text{ if PTA } i \text{ applies PSR } j \text{ to product } k$$

Let N be the total number of observed product-PSR combinations. The PSR regulatory distance between two PTAs i and j , RD_{ij} , is i.e. the sum of the absolute values of the differences in PSR application status.

$$RD_{ij} = \frac{1}{N} \sum_k \sum_\ell |n_{i\ell k} - n_{j\ell k}| \quad (2)$$

As for the RW indicator, because RD is normalized by the grand total of product-PSR combinations, it lies between zero and one.

Table 9 calculates the similarity score for the 20 PSR categories in table 6. The resulting similarity ‘scores’ add some granularity to the comparison of PSRs. To simplify interpretation, PTA pairs that share the same PSR for a given product are assigned a score of 1 even if the PSRs differ slightly.²² Results suggest that NAFTA, and to a lesser extent, SAFTA, are two standalone FTAs. For NAFTA, it is expected since NAFTA is the model for an entire family of PTAs, none of which are in this sample. Also as expected, the high similarity score of 60% for PEM-SADC reflects that SADC was inspired from the EU model. For the other pairwise scores, like MERCOSUR and ASEAN, the score reflects a common large number of “CTH or VC” rules.

²² For example, even if minimum originating VC percentages differ across products, they will be assigned a value of 1.

Table 9: PSR similarity of 6 PTAs

	ASEAN	PEM	MERCOSUR	NAFTA	SAFTA	SADC
ASEAN		22%	40%	1%	0%	23%
PEM			16%	2%	3%	60%
MERCOSUR				1%	11%	22%
NAFTA					4%	4%
SAFTA						1%
SADC						

Notes: Table displays scores in percentage and in red similarity index above 15%.

Source: Authors' calculations based on Rules of Origin Facilitator database.

7. Conclusions

Motivated by the example of the trade regimes at the disposal of a Vietnamese exporter of cotton shirts to Japan, this paper has documented the “fine print” of origin and certification requirements that must be fulfilled to secure preferential access. The paper then presented the information in the Rules of Origin Facilitator (ROF), available online to any exporter. Currently, the ROF lists the full legal texts of 378 PTAs, a valuable tool in a world where countries are entering in multiple agreements with many partners.

How different are these ROO in reality? It is largely accepted that these rules are often unnecessarily complicated, raising trade costs beyond levels necessary to prevent trans-shipment (e.g. re-packaging via labelling) and trade deflection (importing goods via the low-tariff partner). The paper then proposed textual similarity and regulatory distance measures to estimate differences in ROO across PTAs. Both rules were then applied to Regime-Wide (RW) and Product-Specific Rules (PSRs) to a sample of six PTAs representative of the diversity of PTAs around the world.

In conjunction with the tools presented here, the ROF provides information for the design of new PTAs. The measures are also part of the first exploratory steps one would undertake in a quest to harmonize ROO across PTAs. This is currently the case for the AfCFTA where negotiations are underway towards harmonizing the ROO requirements across the Regional Economic Communities.

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Annexes to

Mapping and comparing Rules of Origin across Regional Trade Agreements with ITC’s Rules of Origin Facilitator

Annex 1: Preferential trade agreements (PTAs) database in Rules of Origin Facilitator	1
Annex 2: Grouping PSRs into broader categories	6
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[Annex 1: Preferential trade agreements \(PTAs\) database in Rules of Origin Facilitator](#)

The preferential trade agreements (PTAs) database available in the Rules of Origin Facilitator (ROF) and Market Access Map have been continuously maintained by ITC since 2005. The ROF captures all “de facto” PTAs (i.e. regardless of whether they were notified to the WTO or not) and provides support to the Market Access Map tariff database maintained and available online since 2003. The database has been maintained for internal purposes until 2018 when it was released on the Rules of Origin Facilitator website for the first time. The database is comprehensive, disaggregated and detailed, covering all regions in the world and is tracked and updated daily, accessible at findrulesoforigin.org and macmap.org.

I. Coverage

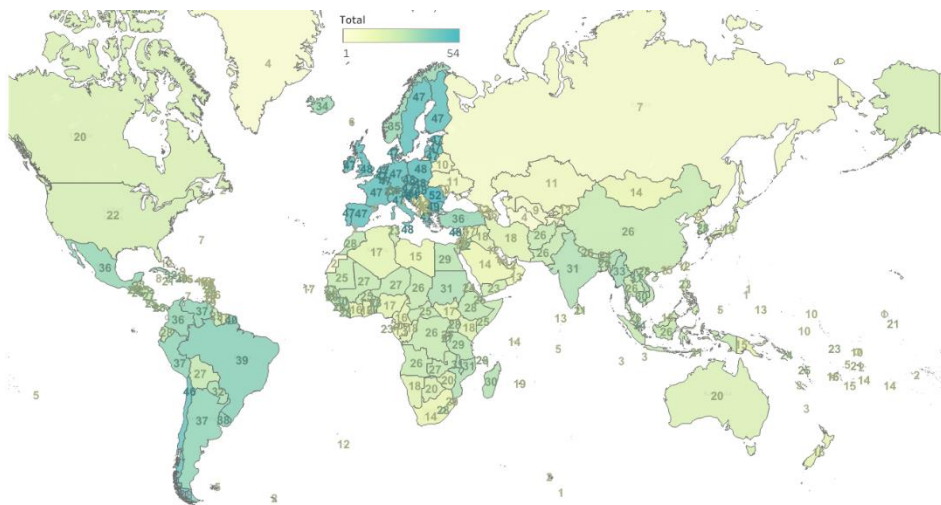
The PTA database tracks exclusively trade agreements that contain a preferential tariff component. Hence it omits trade agreements such as EU-Armenia CEPA (2018), as it covers services, but not goods; EAEU-China Trade and Cooperation Agreement (2019), as it only covers trade facilitation; US-China trade deal Phase 1 (2020), which involves commitments to increase purchases of certain American products, cuts by the US on Section 301 tariffs and various other commitments, but not preferential tariffs.¹

The main objective of the database is to capture in ‘real time’ all “in force” PTAs. However, PTAs in the process of negotiation or ratification are tracked as well. The database is updated daily based on the desk research of public news and announcements, global network of field contacts of ITC, customs tariff data and official government websites.

As of October 2020, 461 PTAs are in force. Figure A1 shows a map with the distribution of active PTAs by country. The total additive number across all countries on the map significantly exceeds 461 because each PTA is shared by 2 or more countries.

¹ Future expansion of the PTA database to cover other types of agreements, beyond preferential trade in goods, is envisaged.

Figure A1. World country map of active PTAs



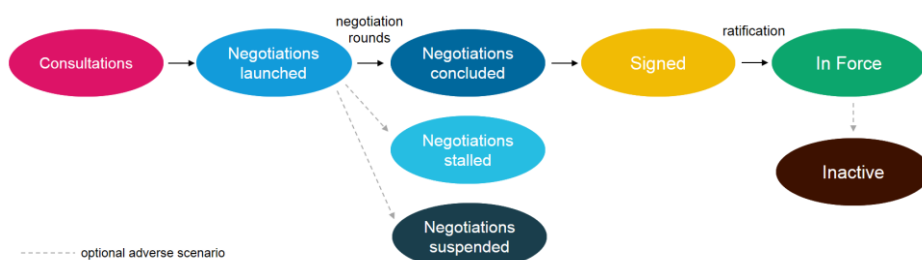
Source: Authors calculation based on Rules of Origin Facilitator in October 2020.

II. Dimensions

Time dimension

Because the PTAs are tracked and updated in a daily continuous manner, starting from the start of consultations between interested parties, consequently for each PTA a history of negotiations is tracked in the form of milestones and corresponding dates. Figure A2 presents a typical sequence of milestones captured for each PTA.

Figure A2. Milestones map of a typical preferential trade agreement



The life cycle of a typical PTA starts with the start of consultations, or a joint feasibility study or “explorative talks”, where parties assess the potential scope of a perspective agreement and its economic desirability.

Some PTAs reach the subsequent stage of the launch of negotiations. The negotiations then proceed in a number of rounds, where negotiators exchange requests and offers and search for compromises.

If negotiations are successful, typically the chief negotiators announce a substantial conclusion of the talks (“negotiations concluded”), after which the draft text of the agreement is sent for legal review and scrubbing for a subsequent signature by executive powers. In some cases, negotiations are announced to be concluded “in principle”, meaning various parts of the text of technical nature still need to be agreed and drafted by the negotiating teams, however, there is a political consensus that the agreement is essentially finalized.

However, some PTA negotiations do not advance to the next stage and reach an impasse, becoming “stalled” or “suspended”. Negotiations are considered stalled by ITC definition, when no subsequent negotiation rounds are announced within 1 year after the last negotiation round, but the parties do not admit that the negotiations reached an impasse. Negotiations are considered suspended if one or several parties officially announce that the talks reached an impasse. “Negotiations stalled” status is necessary as sometimes parties are reluctant to admit that the negotiations are suspended.

Successful negotiations lead to a signing ceremony (“Signed” status) of the finalized legal text of the trade agreement, normally performed by a high executive power (trade minister or prime minister or president) of both parties. After that, the text of the agreement is sent for ratification to the national parliament, as well as the necessary preparations begin to make the agreement operational.

The agreement enters into force when a first preferential tariff cut applies. This specific definition is necessary to separate out murky cases when various framework parts of the agreement enter into force at different stages, but not the preferential tariff part. A case in point is AfCFTA, which “entered into force” in May 2019, however its tariffs and rules of origin have not yet been negotiated as of October 2020. Therefore, according to ITC definition, AfCFTA is still considered to be at the stage of “Signed”.

Some trade agreements eventually become inactive. They are either terminated or superseded. For example, Jordan-Turkey FTA was suspended at the initiative of Jordan in 2018. NAFTA was superseded by USMCA in 2020. Croatia-Turkey FTA was terminated in 2013 because Croatia joined the European Union.

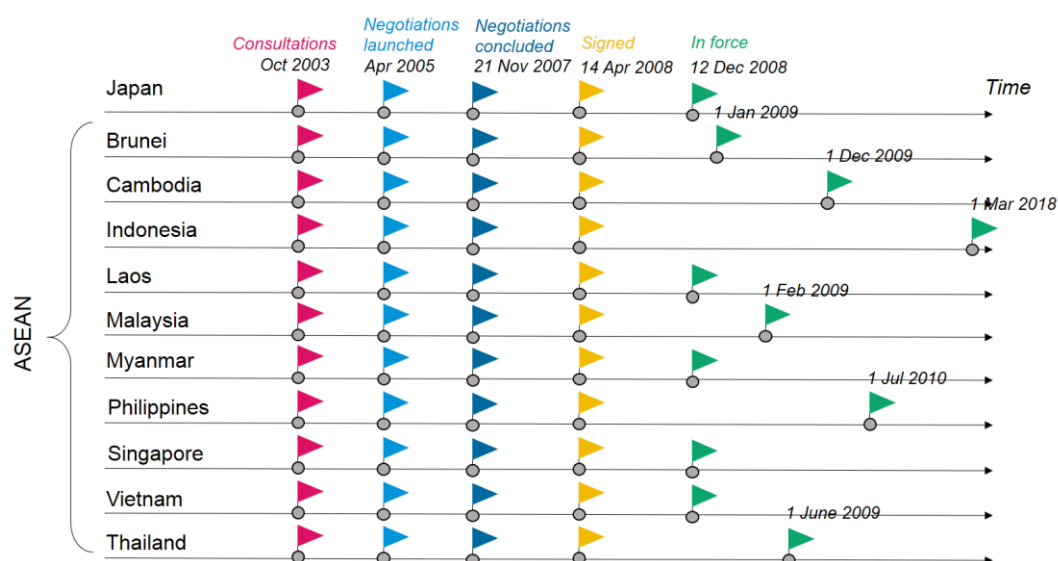
However, if one or several countries terminate a PTA, but one or several countries still remain, the PTA overall is considered to be still “In force”. For example, Romania and Croatia withdrew from CEFTA in 2006 and 2013 respectively due to joining the EU; however, CEFTA continues to exist with 7 remaining members.

Country-time dimension

Members of the same plurilateral PTA may reach certain PTA stages at different speeds, creating a country-time heterogeneity. Figure A3 provides an example for Japan-ASEAN FTA. This PTA is commonly known to have entered into force in 2008; however, de facto some members delayed ratification procedures and implemented the agreement only in 2009, 2010 or even 2018 (Indonesia). This example motivates the necessity of a country dimension when tracking the evolution of PTAs.

In this same example, we note that even if Japan started implementing the PTA in 2008, because of the principle of reciprocity, it did not extend its preferences to those countries that were late with ratifications. Hence, for example, Japan started applying preferences to Indonesia only in 2018. This detail again has to be reflected in the PTA database. This motivated the creation of dyads (importing country + exporting country dimension). In addition, it should be noted that ASEAN and Japan apply this FTA bilaterally as two counterparts, in the sense that Laos does not apply Japan-ASEAN preferences on the trade with other ASEAN bloc members, such as Malaysia and Indonesia. However, ASEAN-Australia-New Zealand FTA (AAZNFTA) does cover intra-ASEAN trade by its preferences.

Figure A3. Country-specific accession history in Japan-ASEAN free trade agreement



Another example motivating the creation of dyads is that in some cases one of the PTA parties may temporarily apply preferences on a non-reciprocal basis without waiting for the other party to complete domestic ratification procedures. An example is EU-Ukraine FTA (2014) shown in Figure A4. Even though it is a reciprocal FTA, EU decided to apply it provisionally without waiting for a signing ceremony. However, Ukraine took time until late 2015 to complete ratification steps.

Figure A4. Country-specific accession history in EU-Ukraine free trade agreement



Currently, as shown in Figure A5, out of 1,039 agreements in the world, 132 have reached the stage of consultations, 120 have seen negotiations launched, 30 and 11 currently have negotiations stalled and suspended respectively, 46 have been signed, and 461 are in force. Furthermore, 207 PTAs have been deactivated and for 24 PTAs current status is unknown.

Figure A5. Preferential trade agreements grouped by current status

Reached stage	Consultations	Negotiations launched	Negotiations stalled	Negotiations suspended	Negotiations concluded	Signed	In force	Inactive	Status unknown
PTA count	132	120	30	11	8	46	461	207	24

Table A1 compares ITC PTA database with existing global PTA databases of other institutions. We do not consider in our comparative analysis those PTA databases that are limited to a specific region (e.g. Asia or Latin America), hence we omit Asian Development Bank’s database (aric.adb.org/fta), Organization of American States’ database (http://www.sice.oas.org/agreements_e.asp), UNESCAP’s APTIAD (www.unescap.org/content/aptiad/) and others.

We also omit global PTA databases that are re-disseminated versions of original databases, such as of WTO RTA database. These include NSF-Kellogg Institute Database on Economic Integration Agreements (sites.nd.edu/jeffrey-bergstrand/database-on-economic-integration-agreements/), Mario Larch’s RTA database (www.ewf.uni-bayreuth.de/en/research/RTA-data/index.html), DESTA (www.designoftradeagreements.org) and World Bank’s database on contents in “deep” trade

agreements. In the DESTA case, this database is a combination of several original databases (WTO RTA + SICE + etc.).

Table A1. Cross-comparison of existing global PTA databases

Name	ITC PTA database	WTO RTA database	World Bank GPTAD
Website	findrulesoforigin.org	rtais.wto.org	wits.worldbank.org/gptad/database_landing.aspx
Institution	ITC	WTO	World Bank
Update	Daily	Upon member notification	Not updated since 2010
PTA types	All PTAs (RTA and GSP)	Only RTA, not GSP	Only RTA
Geography	Global	Only WTO region	Global
Stage	All stages of negotiation	From 'under negotiation'	Only in force and inactive
Milestone dates	Yes	Yes (only signed and in force)	No
Total number	1,039	560	352
Dyad disaggregation	Yes	No	No
PTA full texts	Yes	Yes	Yes
PTA ROO	Yes	No	No
PTA COO	Yes	No	No

Note: based on last retrieval on 10 October 2020.

Annex 2: Grouping PSRs into broader categories

To facilitate the analysis of ROO across PTA, it is necessary to simplify the categorization of product-specific rules of origin into a manageable number of categories. Here is an aggregation into 14 key categories. The correspondence can be found in Table A2 below. First, we do not differentiate VC rules by the percentage because this helps to reduce significantly the number of PSR entries in the ROF. Second, we group in the same category the combination of a CTC with a SP or with a VC rule; also we group in the same category the alternative of a CTC with a SP or with a VC.

Table A2: Mapping of PSR criteria into 14 simplified PSR categories

14 key PSR	Detailed PSR criteria	14 key PSR	Detailed PSR criteria
1: CH	CTH ALW	10: SP	SP SP or SP SP or SP or (SP and RVP 52.5%) SP or SP or SP SP or SP or SP or RVP 52.5% SP or SP or SP or SP
2: CH and VC/SP	CTH + ALW 20% and RVC 50% CTH + ALW 50% and RVC 50% CTH + ALW and SP CTH and RQC 70% CTH and RQP 70% CTH and RQP 70% + WO CTH and RVC 30% CTH and RVC 50% CTH and RVC 60% CTH and RVC 60%* CTH and SP	11: SP and VC	SP and RVC 40% SP and RVC 45% SP and RVC 50% SP and RVC 75% SP and RVC 85% SP and RVP 30% SP and RVP 60% SP and RVP 65%
5: CH or VC/SP	(CTH + ALW 20% and RVC 50%) or RVC 60% (CTH + ALW 20%) or RVC 30% (CTH + ALW 20%) or RVC 60% (CTH + ALW 50%) or RVC 30% (CTH + ECT) or RVC 30% (CTH + ECT) or RVC 50% (CTH + ECT) or RVC 60% (CTH + ECT) or RVC 70% (CTH + ECT) or SP or SP (CTH and RVC 50%) or RVC 75%	12: SP or VC	SP or (SP and RVP 50%) SP or (SP and RVP 52.5%) SP or RVC 30% SP or RVC 60% SP or RVC 75% SP or RVP 52.5% SP or RVP 52.5% or (SP and RVP 52.5%) SP or RVP 60%
		9: VC	(RVC 50% and ALW 20%) or RVC 75%

	(CTH and RVC 50%) or SP (CTH and RVC 60%) or RVC 40% (CTH and RVC 60%) or RVC 70% (CTH and RVC 60%) or RVC 75% (CTH and RVC 60%*) or RVC 70% (CTH and RVC 60%*) or RVC 75% ALW or RVC 30% CTH or (SP and RVC 30%) CTH or (SP and RVC 50%) CTH or (SP and RVP 40%) or (SP and RVC 35%) CTH or (SP and RVP 50%) CTH or (SP and RVP 50%) or (SP and RVC 35%) CTH or ALW or RVC 30% CTH or RVC 30% CTH or RVC 40% CTH or RVC 40% or SP CTH or RVC 50% CTH or RVC 60% CTH or RVC 70% CTH or RVP 50% CTH or RVP 75% or RVC 60% CTH or SP CTH or SP or RVC 30% SP or (CTH + ALW 50%) SP or CTH		(RVC 60% and ALW 10%) or RVC 40% (RVC 60% and ALW 10%) or RVC 70% (RVC 60% and ALW 10%) or RVC 75% (RVC 60% and ALW 10%) or SP or RVC 75% (RVC 60% and ALW 25%) or RVC 70% (SP and RVC 45%) or (SP and RVC 40%) (SP and RVP 60%) or SP NC or RVC 30% NC or RVC 60% RQC 60% RQP 70% RVC 30% RVC 35% RVC 40% RVC 45% RVC 50% RVC 60% RVC 60% or RVC 70% RVC 60%* RVC 60%* or RVC 40% RVC 60%* or RVC 70% RVC 60%* or RVC 75% RVC 60%* or RVC 80%
4: CH with ALW	CTH + ALW CTH + ALW 20% CTH + ALW 30% CTH + ALW 50%	14: WO	WO WO and RQP 70% WO and RVC 40% WO and RVC 50% WO*
3: CH with EXC	ALW + ECT ALW 50% CTH + ECT CTH + ECT + WO CTH + ECT 30%	13: WO or VC	WO or RVC 40% WO or RVC 40% or RVC 25% or RVC 35% WO or RVC 40% or RVC 25% or SP WO or RVC 40% or RVC 35% or Other WO or RVC 40% or RVC 35% or RVC 35% WO or RVC 40% or RVC 35% or SP

	CTH + ECT 30% + WO CTH + WO		WO or RVC 40% or RVC 35% or WO WO or RVC 40% or RVC 45%
7: CS	CTSH NC NC + ECT NC + ECT + WO NC + ECT 20% NC + ECT 30% NC + ECT 40% NC + ECT 50% NC + ECT 50% and RVP 50% NC + ECT and RQC 70% NC + ECT and SP	6: CH or VC or WO	WO or RVC 40% or RVC 25% or (CTH + ECT) WO or RVC 40% or RVC 25% or (CTH and RVC 35%) WO or RVC 40% or RVC 25% or CTH WO or RVC 40% or RVC 35% or (CC + ECT) WO or RVC 40% or RVC 35% or (CTH + ECT) WO or RVC 40% or RVC 35% or (CTH and RVC 35%) WO or RVC 40% or RVC 35% or (CTH and SP) WO or RVC 40% or RVC 35% or ALW WO or RVC 40% or RVC 35% or CC WO or RVC 40% or RVC 35% or CTH
8: CS or VC/SP	(CTSH + ALW 20%) or RVC 30% (NC + ECT 20%) or (NC + ECT) or RVC 30% (NC + ECT 20%) or RVC 30% (NC + ECT 20%) or RVC 60% (NC + ECT 20%) or RVC 75% (NC + ECT 30%) or RVC 60% (NC + ECT 50%) or RVC 75%		

References

Kniahin, Dinh, Pichot, Mimouni (2019), GTAP Conference

Paper, https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=5827