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## **The “Spaghetti Bowl”:**

**A Case Study on Processing Rules of Origin and Rules of Cumulation**

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## **Abstract**

The “Spaghetti Bowl” (or “Noodle Bowl”) phenomenon describes the trade-distorting effects caused by the multitude of Regional Trade Agreements (RTAs) signed in the last three decades. As RTAs allow for a different treatment of imports from different countries, rules defining a product’s country of origin play a crucial role in these agreements. Therefore, RTAs apply so-called Rules of Origin (RoO) and Rules of Cumulation (RoC) with the latter allowing companies to use input material from other contracting countries without jeopardising the product’s originating status.

With many RTAs having been signed in the last decades, a multitude of contradicting RoO and RoC are in force. They contribute to trade diversion and a loss of economic welfare in both, the suppliers’ and the importing country. A vast number of studies analysed and discussed these trade diverting effects – with an overwhelming majority of them focusing on macroeconomic and political aspects. There is, however, little research on how companies deal with the administrative burden the application of the many partly ambiguous, partly contradicting RoO and RoC imposes on them. A detailed analysis of how a company organises the work flow and secures a proper RoO documentation has not yet been published.

In this paper, we describe and analyse the organisation of the “origin management” of a large supplier to the car-assembling industry. The case study adds value to the existing knowledge by providing an insight into a company’s documentation of the products’ origin, in particular with regard to the so-called “Bill of Materials”. Issues of data management are discussed. Thus, the paper adds the in-company view to the preponderantly macroeconomic literature.

## **Keywords:**

Spaghetti Bowl, Rules of Origin, Rules of Cumulation, Trade Diversion, Material Documentation, Origin Management

## List of Abbreviations

ACP	Africa, Caribbean, Pacific
AFTA	Asian Free Trade Area
ASEAN	Association of Southeast Asian Nations
EU	European Union
FTA	Free Trade Agreement
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GSP	Generalised System of Preferences
LTSD	Long-Term Supplier Declaration
NAFTA	North American Free Trade Agreement
OAS	Organization of American States
OEM	Original Equipment Manufacturer
PECS	Pan-European Cumulation System
RTA	Regional Trade Agreement
RoC	Rules of Cumulation
RoO	Rules of Origin
WCO	World Customs Organization
WTO	World Trade Organization

## 1. Introduction

With a large number of Regional Trade Agreements (RTAs) signed in the last three decades, trade distorting effects of partly overlapping, partly contradicting rules in international trade have become a major concern. The expression “Spaghetti Bowl” (later also called “Noodle Bowl”) was first used by Bhagwati (1995) when criticising the US trade policy which seemed to have changed its focus from multilateral trade negotiations towards bilateral Free Trade Agreements (FTAs). As these bilateral agreements implement preferential treatment for the imports from the signing countries, they may divert trade from other countries, thus decreasing economic welfare there as well as in the importing country.

Even though RTAs contradict the WTO’s principle of multilateralism, WTO members are permitted to enter into such agreements as long as the tariffs and other rules of trade applied to non-RTA members are not higher or more restrictive than before. The details are laid down in article XXIV of the General Agreement on Tariffs and Trade (GATT), article V of the General Agreement on Trade in Services (GATS), and the so-called enabling clause which refers to trade in goods between developing countries (WTO 2016a). As of 1 February 2016, some 625 notifications of RTAs (counting goods, services and accessions separately) had been received by the GATT/WTO. Of these, 419 were in force (WTO 2016b).

A multitude of RTAs exists in Europe and the Americas. Within the context of “New Regionalism”, the European Union signed RTAs with the EFTA countries, Turkey, Israel, the Maghreb countries, Egypt, Kosovo, Moldova, Montenegro, Serbia, Albania, Syria, Mexico, Chile, South Korea, and developing countries in Africa, the Caribbean and the Pacific (ACP countries). The United States initiated the North American Free Trade Agreement (NAFTA) and additionally signed Free Trade Agreements (FTAs) with 18 other countries (US Trade Representative 2016). Mexico has signed around 19 regional and preferential agreements and Chile 25 (OAS 2016). A variety of Latin American countries tried to establish common markets with the “Central American Common Market” and “Mercosur” being the most prominent examples. In more recent years, the Association of Southeast Asian Nations moved towards the ASEAN Economic Community, thus deepening the ASEAN Free Trade Area (AFTA).

RTAs differ from each other. Each of them defines the duties and import procedures, the way a product’s country of origin is identified, and the procedures how this origin has to be documented, differently. The provisions of the RTAs are partly overlapping, partly ambiguous, and partly contradict each other. For example, AFTA consists of more than 50 bilateral trade agreements. As a result, “we cannot view the Malaysia-Indonesia preferential tariff structure as identical, or even close to the Singapore-Philippines preferential structure” (Baldwin 2008a, p. 451).

Rules of Origin (RoO) and Rules of Cumulation (RoC) play a crucial role in RTAs. They define how a product’s country of origin is identified, which imports from another country are subject to preferential treatment, and how products are eligible for preferential treatment if they are manufactured in various countries. The application of these rules is being seen as the major vehicle for trade diversion as they define whether a product may cross borders under the conditions of an RTA’s preferential treatment (Estevadeordal 2000; Cadot et.al. 2002).

The problem is that – far from economic theory and the ideals of the WTO – the multitude of existing RTAs has led to an uncoordinated, inefficient and highly discriminating form of international trade rules. While discrimination inherent in regionalism is already economically inefficient, the problem seems to become even more virulent in the context of the fragmentation of industrial production which has taken place in the last years. With the unbundling of production, companies increased their efficiency by relocating the individual steps of the production process to the most cost-effective places. This increase in economic efficiency may be counteracted by the inefficiencies of a trade system in which discriminatory RoO and RoC divert trade to less productive trading partners.

While recent research has focused on the macroeconomic and political aspects, there is little evidence of the inefficiencies created within companies. This paper will, therefore, identify the problems the “spaghetti bowl” creates within companies and analyse the work flow and adaptation processes in a multinational company. In a first step, the major characteristics of RoO and RoC will be described and an overview of recent studies will be given. Then, the case study will be described and its major results presented.

## **2. Rules of Origin and Rules of Cumulation in the “Spaghetti Bowl”**

### **2.1 Rules of Origin**

RoO play a major role in RTAs. The first international instrument to deal with rules of origin was the Kyoto Convention (International Convention on the Simplification and Harmonization of Customs Procedures) in 1973. Attempts to reach an internationally agreed definition on how to determine the origin of a good were undertaken under the WTO Agreement on Rules of Origin which was negotiated during the Uruguay Round of multilateral trade negotiations and which is contained in the multilateral legal framework of the WTO. In this agreement, the WTO members tried to pave the way for an internationally accepted definition.

“Rules of origin are the criteria needed to determine the national source of a product. Their importance is derived from the fact that duties and restrictions in several cases depend upon the source of imports. There is wide variation in the practice of governments with regard to the rules of origin. While the requirement of substantial transformation is universally recognized, some governments apply the criterion of change of tariff classification, others the ad valorem percentage criterion and yet others the criterion of manufacturing or processing operation” (WTO 2016c).

RoO can be divided into non-preferential RoO and preferential RoO:

- Non-preferential RoO are used for distinguishing foreign from domestic products when applying trade policy measures such as antidumping or countervailing duties, safeguard measures, origin marking rules, quotas or rules on government procurement (Estevadeordal and Suominen 2005).
- Preferential RoO form the core of RTAs as they define which products are eligible for preferential treatment, in particular, which processes and inputs are required in order to qualify for preferential treatment.

RTAs typically use a combination of five different criteria for the definition of a product's origin (Estevadeordal/Suominen 2004):

- (1) If a commodity or related product was entirely grown, harvested, or extracted from the soil in the territory of a country or manufactured in this country from any of these products, this country is considered the country of origin.
- (2) Manufacturing, processing, or assembling must have led to a substantial transformation of the good. This is defined as a change of the product's classification in the *Harmonised Commodity Description and Coding System* either at the level of chapter (two digits), heading (four digits), subheading (six digits), or item (eight to ten digits).
- (3) As an exception to the previous criterion, there might be a rule which prohibits the use of imported materials from a specific chapter, heading, or sub-heading.
- (4) In many cases, a local content requirement is added prescribing either a minimum percentage of the product's value which must originate in the exporting country or a maximum percentage of the product's value which can originate outside the exporter's country. Alternatively, RTAs often allow exporters to claim the country of origin status for their product if the value of all materials used does not exceed a certain percentage of the ex-works price of the product.
- (5) Technical requirements (TECH) prohibiting certain materials or requiring specific manufacturing operations are "a particular prominent feature in RoO governing textile products" (Estevadeordal/Suominen 2004, p.5).

As an example, the RTA between the EU and Mexico states that industrial fans, blowers and compressors are considered Mexican products if all the materials used are classified within a heading other than that of the product and the value of all the imported materials used "does not exceed 40% of the ex-works price of the product" or, alternatively, "the value of all the materials used does not exceed 25% of the ex-works price of the product" (HMRC 2012). In order to comply with these requirements, Mexican producers may have to abstain from using imported supplies. As a result, the agreement between Mexico and the EU does not only directly divert EU imports from other Latin American countries but also indirectly harms sub-suppliers who would otherwise be able to sell their products to the Mexican producer.

De minimis or tolerance rules allow a specified maximum percentage of imported materials to be used without affecting the origin. "Tolerances allow alleviating specific origin rules when small quantities of prohibited non-originating inputs/materials are used, e.g. a tariff shift requirement excludes the use of inputs which are classified in the same heading as the final product or the use

of certain inputs which are excluded in specific operation requirements, even in very small quantities” (WCO 2016a). In European-type RTAs, the tolerance allows the use of non-originating materials with a maximum value of 10 % of the ex-works price of the final good; the U.S. equivalent is 7% (WCO 2016a). However, the tolerance percentages cannot be taken for an aggregation with a maximum value-added threshold, meaning that this tolerance cannot be used to exceed the maximum value of prohibited non-originating input listed in the product specific rules.

Unlike RTAs on goods, agreements on trade in services do not cover RoO in separate chapters. RoO for trade in services are addressed through a provision called “denial of benefits”. The core requirement enabling service providers to benefit from privileged access to markets is that of “substantive business operations”. According to Latrille and Lee (2012), around four out of five RTAs on trade in services use the GATS approach. As most of the provisions on trade in services are by far not as selective (product-specific) as those concerning manufactured products and as our case is related to the manufacturing sector, RoO regulations on trade in services are not further examined here.

## **2.2 Rules of Cumulation**

RoC (sometimes also called “cumulative rules of origin”) allow RTA members “to share production and jointly comply with the relevant rules of origin provisions, i.e. a producer of one contracting party of a free trade zone is allowed to use input materials from another contracting party without losing the originating status of that input for the purpose of the applicable rules of origin” (WCO 2016b). Thus, “the concept of ... cumulative rules of origin allows products of one country of a free trade zone to be further processed or added to products in another country of that zone as if they had originated in the latter country. In this way, production may be aggregated with other countries’ inputs without losing originating status offering additional opportunities to source input materials. This essentially widens the definition of originating products and provides flexibility to develop economic relations between countries within a free trade zone” (WCO 2016b).

“Accumulation/cumulation is a deviation from one of the core concepts of origin legislations. The basic rules of origin specify that only products which are either produced entirely in a specific country (wholly obtained) or which are sufficiently transformed according to the relevant origin rules may be regarded as originating in that country. The concept of accumulation/cumulation extends this principle in so far as accumulation/cumulation offers the possibility to use products originating in a partner country or in partner countries of a preferential trade area as originating materials for the manufacture of an originating product” (WCO 2016b).

Thus, RoC allow companies to add the value added in other countries to the above mentioned “local content” rules. Cumulation provisions enable producers to use materials from other members without losing the preferential status of the final product:

- Bilateral cumulation permits the use of material imported from the RTA partner country to which the product will be exported.
- Diagonal cumulation allows producers to use parts imported from any RTA member country.
- Full accumulation “extends diagonal cumulation to allow the use of goods processed in any part of the common rules-of-origin zone even if these do not qualify as originating products” (Estevadeordal and Suominen 2005, p. 63).

A producer may only be sure to comply with the specific origin rules when he knows what kind of origin conferring contributions were provided by previous manufacturers (WCO 2016b). Therefore, the traceability of inputs is important. The traceability for originating inputs is relatively easy to provide in bilateral and diagonal cumulation because the origin of a good is indicated in the customs declaration; the customs declaration shows whether or not the inputs were imported under preferences and the respective proof of origin submitted for customs clearance is indicated in the import declaration. Full cumulation models, however, require a sophisticated system to trace back the different manufacturing processes made by the various producers in the different countries. As inputs used under full cumulation may be imported without preferences with the consequence that origin relevant inputs for the use of full cumulation must be indicated separately (i.e. with the suppliers’ declaration). Therefore, an information system must be established between the economic operators in the preferential zone to ensure that the information on previous origin conferring manufacturing operations provided by former producers will be delivered to the further producers in the manufacturing chain. In the European origin systems there is a special form used, the so-called “suppliers’ declaration” with which origin-relevant information can be forwarded to manufacturers further “down” in the supply chain (WCO 2016b).

RoC used to be incorporated in a variety of RTAs initiated by the EU, for example in the agreements with Central and Eastern European countries prior to their accession to the EU. With the Pan-European Cumulation System (PECS), established in 1997, cumulation was made possible for trade within Central Europe: “Under PECS, nations can source parts and components from within PECS without fear of the resulting product losing its origin status (and thus its right to duty-free treatment)” (Baldwin 2013, p. 6). With unbundling production and using models of international outsourcing, many companies initially producing in the Western part of Europe, had invested heavily in Central and Eastern European countries (CEEC). The European Union responded to their needs by “multilateralising” trade within the EU and associated neighbouring countries. As a result, the system strengthened trade between the EU and neighbouring countries (Bombarda/ Gamberoni 2013). In other words, it further diverts imports from non-European countries.

### **2.3 The “Spaghetti Bowl”**

Early research on RoO and RoC was mainly related to the Emerging “New Regionalism” as an opponent to multilateral trade liberalisation. Bhagwati’s contribution at the January 1995 meeting of the American Economic Association points out how the “spaghetti-bowl proliferation of preferential trading arrangements clutters up trade with discrimination” (Bhagwati 1995, p. 4)

and jeopardises the multilateral process of trade liberalisation. Based on standard economic theory, he argues, that the expansion of RTAs has increased the importance of RoO, and hence discrimination.

The contributions of Estevadeordal and others (for example: Estevadeordal and Suominen 2005 and 2006) focused on the measurement and classification of the RoO by applying Estevadeordal's restrictiveness index. This index is based on the length of jumps over the Harmonised System's tariff lines required by rules of origin. Length of the jump refers to the hierarchical position in the Harmonised System's tariff lines. If the RTA requires a "jump" from one chapter to another, the agreement is more restrictive than an agreement which requires a "jump" between headings; the latter is still more restrictive than a requirement of changes from one sub-heading to the next. Thus, the restriction index measures seven different levels of restrictiveness for each product, and finally calculates a consolidated (average) figure for all products (Estevadeordal 2000). Research concentrated on a content analysis of the agreements and showed that while earlier RTAs used general RoO across sectors, more recent RTAs have applied product-by-product RoO. Food, textiles, and apparel products tend to have the highest restrictiveness. A more recent overview of RoO provisions worldwide is provided by Abreu (2013).

In addition, studies on welfare effects support the traditional view that "the welfare benefits ... from unilateral or global (multilateral) free trade are much greater than the benefits to be derived from FTAs" (Kiyota, Molnar and Stern 2008, p.7). Ansón et al. (2005) found that the RoO provisions in NAFTA – which are more restrictive than those of most other RTAs – reduce trade flows. The average compliance costs of around 6% in ad valorem equivalent undo the tariff preference (4% on average) for a large number of tariff lines. Administrative costs amount to 47% of the preference margin. In addition, results support the idea that the formation of preferential trade agreements is "an interdependent process and seems to be largely driven by countries responding to the negative externalities of existing agreements" (Baccini and Dür 2010, p. 37). More recent research indicates, however, that RTAs may create "reverse trade diversion" as, for example, the standardisation of regulations within the RTA makes it easier for exporters in third countries to serve the combined RTA market (Baldwin 2011, p. 20).

With ASEAN countries approaching AFTA and the Economic Community, the Asian "noodle bowl" moved into the centre of attention:

- Research in the political economy of RTAs focuses on the interrelation of trade liberalisation within East Asia and economic growth of the region. RTAs are seen as a means for moving towards a "large integrated and dynamic regional market" (Chia 2010, p. 42). The noodle bowl is seen as source of inefficiencies in which RoO "can often be more important than tariff preferences in determining the degree of market access" (Chia 2010, p. 39). Thus, the need for more "coordination of rules of origin and harmonization of standards" (Kawai and Wignarajan 2007, p. 18) is identified and the formation of a "region-wide FTA as a means to consolidate the plethora of bilateral and plurilateral agreements" is suggested (Kawai and Wignarajan 2009a, p. 18). Such a region-wide FTA may include Japan, South Korea and even Australia and New Zealand (Kimura 2010, p. 65; Medalla and Mantaring 2009).

- Studies analysing the degree to which companies utilise the FTA benefits of preferential tariffs concentrated on Japanese companies with businesses in various South-East Asian countries. They were based on questionnaire surveys and interviews of managers. They concluded that FTAs are neither well known nor well utilized mainly due to high documentation costs and low marginal benefits of preferences (Baldwin 2008b, p. 58). Therefore, FTAs are used for intra-firm trade rather than for inter-firm trade (Hiratsuka, Sato and Isono 2009; Kawai and Wignaraja 2009b). Simplifying the RoO procedures has been identified as a major task.
- Hayakawa (2012) investigates the firm-level relationship between the local input share and the number of used FTAs by employing the data on FTA utilization in Japanese affiliates in ASEAN. As a result, there is no robust linear relationship. However, affiliates using a large number of FTAs (seven or eight) have an extremely higher share of local inputs. This result might be interpreted as evidence for the spaghetti bowl phenomenon.

Recent studies on the European spaghetti bowl analyse the multi-layer approach of European economic integration. Besides the EU-internal division into euro-zone members and other EU member states, the “external integration” includes a variety of different agreements: The European Economic Area with Iceland, Liechtenstein and Norway as well as the agreement with Switzerland come close to a common market. A second layer of agreements appears in forms of customs unions, FTAs, and Economic Partnership Agreements and include a diversity of countries such as Turkey, Balkan countries, countries in the Mediterranean neighbourhood, and different sub-groups of ACP countries. Finally, agreements with geographically more distant trading partners in Asia and Latin America, like South Korea and Mexico are considered (Koopmann and Wilhelm 2010).

Empirical research on RoC is a relatively new field. Major contributions are the investigations of Augier, Gasiorek and Lai-Tong (2007) and Bombarda and Gamberoni (2013). Both studies explore the impact of the Pan-European Cumulation System (PECS) on trade volumes. They interpret the various European RTAs as a hub-and-spoke-system and show that the change from bilateral to diagonal cumulation in 1997 not only increased trade but that spoke countries benefitted most. Diagonal cumulation positively impacts the probability of exporting both the intermediate and the final products for the spoke countries whereas it negatively affects the probability that the “hub” exports the intermediate products to the spoke countries. This seems to suggest that diagonal cumulation increases the incentive to share the production value chain in the cumulation zone, with a consequent increase in intra-firm trade.

In contrast to research in international economics, there is little research analysing the impacts of RoO and RoC on how companies deal with them. Their administrative burden is mentioned in many studies but never described in detail. The analysis of Jurše et al. (2011) focuses on the cost-saving effects of diagonal cumulation. The study uses the case of a Slovenian company with a subsidiary in Serbia and compares the cost effects of bilateral and diagonal cumulation if the Serbian company exports appliances to the European Union. The result is clear: with diagonal cumulation, export prices of the Serbian subsidiary decrease. Beretta (2010) stresses the importance of establishing a customs and origin management in international companies without

going into detail, van de Heetkamp and Tusveld (2011) discuss various aspects of how companies may manage the paperwork related to RoO efficiently.

A detailed case study of how a company organises the work flow and secures a proper RoO documentation has not yet been published.

### **3. Managing the Product's Origin: The Case of a Tier-I Supplier in the Automotive Industry**

#### **3.1 Research Objectives and Methodology**

Our study aims at closing this gap. It provides an insight into the organisation of the customs and origin management of an international company in the automotive industry. In our study we

- describe the formal organisation of the process,
- analyse the related workflow,
- and identify problems and weaknesses related to the “Spaghetti Bowl” issue.

The present paper, thus, adds the company perspective to the existing literature. The value added to existing knowledge consists of a better understanding of how companies already established in international business manage the documentation of imported parts and components, in particular with respect to the claim for preferential treatment, and how the documentation of the product's origin is managed, in particular with regard to the so-called Bill of Materials. Issues of data management and data sharing are discussed.

In addition, the investigation reveals how the pressure of car manufacturers (so-called Original-Equipment-Manufacturers – OEMs) forces suppliers to follow the above-mentioned procedures even though the suppliers may not export their products but deliver them to customers within the same country. Thus, the study demonstrates how RTAs affect not only a country's exporters and importers but also suppliers in the domestic supply chain.

As a methodology a typical case study approach was chosen (Yin 2014). A tier-I supplier in the automotive industry was selected as these companies are at a central stage of the value chain. They must provide their customers with proper documentation on the parts and components – in the automotive sector often called “modules” – being unable doing this without receiving proper documentation from their sub-suppliers. The company is a multinational “tier-I” supplier producing a variety of components which the company sells and delivers to many final car companies, such as Volkswagen, Toyota, BMW, and Mercedes-Benz. The company manufactures the modules in Germany by using parts and components from sub-suppliers in Germany, other countries in the European Union, and outside the EU. As the final products (the cars) are subject to import tariffs in the European Union unless they fulfil the RoO requirements, the “tier-I” suppliers must prove that the modules accomplish them. In addition, those cars exported to countries covered by RTAs of the European Union, must fulfil the requirements set in the respective RTA. Thus, the modules produced by the tier-I supplier must fulfil these requirements, too.

A key strength of the case study method involves the opportunity to use multiple sources and techniques in the data gathering process (Yin 2014). As the study was combined with a six-month-internship in the company, the following triangulation can be applied:

- Participant observation: The advantage of participant observation is that the understanding of “how” and “why” the company organises its origin management in the observed form develops in the context of working as an intern. It allows a deeper understanding of the processes, related flaws and weaknesses than in-depth interviews may ever make possible. Participating in the process allows the researcher to learn about the “real story” whereas all other data collection methods may produce biased results, due to their “artificial” setting (Jones 2014). For example, interviewees may tend to paint a far more attractive picture of their own activities or may give answers they suppose are expected by the interviewer.
- Analysing documents: As the documentation of purchased material is at the core of the business process to be analysed, the research project naturally deals with this documentation. To a large part, the documentation is processed electronically, mainly within the company’s SAP system, partly in form of Excel tables. The form of documentation is interrelated with the organisation of the work flow. The work flow itself is documented in organisational charts and handbooks. These are additional documents to be analysed.
- In-depth-interviews create the possibility to get answers concerning the “why” behind the observed procedures. In each of the interviews, the observed processes were discussed, the reasons behind them discoursed, and their potential strengths and weaknesses analysed.

Based on the described data gathering methods, it was possible to identify the administrative burden the handling of RoO and RoC imposes on the company. However, due to the lack of access to cost accounting data, it was not possible to compute the cost in euros.

The last point constitutes a clear limitation of the study. With the focus on the description of the organisation of the work process, the analysis of the work flow, and the identification of potential problems and weaknesses, the project is rather explorative. A second limitation is grounded in the nature of case studies – the results cannot easily be generalised. A third limitation of the study may be the fact that the company wishes to stay absolutely anonymous. Any information which might allow identifying the company must be omitted. This inhibits the use of original company documents in the paper. Lists and organisational charts are therefore anonymised and modified such that the information is still being transmitted but the company cannot be identified.

### **3.2 Supplier’s Position in the Supply Chain Architecture and Relevance of the Origin Determination Process**

The automotive industry has been subject of many studies on internationalisation (for a summary see Dicken 2015, ch. 15). Therefore, the description of the industry structure and the supply chain architecture are kept brief. The main feature relevant to the study is the central role the

tier-I supplier plays in the supply chain. Even though the car “manufacturers” (OEMs) still dominate the supply chain by defining the conditions for long-term business relations, “manufacturing” is mainly outsourced to suppliers. Tier-I suppliers deliver complex modules which are assembled in the OEM’s lines. Examples for modules are brake systems, turbo chargers, gear shift systems, and engine cooling systems. Examples for tier-I suppliers are Aisin Seiki, Bosch, Behr, BorgWarner, Brose, Hitachi Automotive, Magna, Sumito, and Valeo. The role of the tier-I suppliers is crucial for the development of the industry as they do not only manufacture complex modules but are also deeply involved in research and development, engineering, and quality assessment. As a result, some of them are deeply integrated into the business processes of the OEMs. Therefore, recent literature has even used the expression “tier 0.5 suppliers” (KPMG 2012).

The analysed tier-I supplier develops, designs and manufactures a module in close cooperation with OEMs like Volkswagen/Audi, Daimler, Ford, Renault, BMW, and General Motors. The company operates more than 50 production sites worldwide. The case study was conducted in a German production site.

The contracts with the customers are long-term, specific and customer-tailored; contact persons and representatives are known personally. Besides, a second segment of lower strategic importance consists of rather sporadic, low volume orders, mainly for spare parts. Sourcing is mainly based on long-term contracts with tier-II suppliers located within and outside the European Union.

As vehicles are subject to a 10% per cent import tariff if a certain local-content-threshold is not achieved (for example defined as 55% in the EU-Korea FTA), the tier-I supplier must comply with the rules and provide the OEM with the documentation needed for selling the vehicles within the EU. In addition, OEMs may wish to export the products to countries the EU had signed a RTA with. Then the documentation must additionally satisfy the documentation requirements of that particular RTA. Moreover, the tier-I requires the documentation provided by the sub-suppliers because otherwise the imported inputs would be subject to tariffs. As a result,

- the tier-I supplier must provide the OEMs with a clear documentation of origin which fulfils the requirements to sell the vehicle within the EU;
- the tier-I supplier must provide the OEMs with a clear documentation of origin which fulfils the requirements to export the vehicle to countries under the conditions of different individual FTAs;
- in order to comply with the documentation needs of the OEM, the tier-I supplier requires the respective documentation from any EU and non-EU sub-supplier;
- if the sub-supplier is located in a country with which the EU had signed a FTA, certificates of origin are needed as a prerequisite of preferential treatment;
- if the sub-supplier is located in a developing country, the documentation is needed for preferential treatment under the General System of Preferences (GSP);
- in order to benefit from cumulation rules, the documentation must contain a complete chain of evidence.

### 3.3 Major Results

#### 3.3.1 “Spaghetti Bowl”-Related Issues in the Process Organisation and Workflow

The process regarding preferential origin is closely connected to sourcing and selling the module to the OEM.

When purchasing material from sub-suppliers, the latter is required to prove the origin of the material with one or several of the following documents:

- movement certificate EUR.1 or movement certificate EUR-MED (if the shipment’s value exceeds EUR 6,000)
- invoice declaration
- certificate of origin form A
- supplier’s declaration (for goods shipped within the EU)
- EUR.2 certificate

In case of imports, the product may be delivered with the documents. In this case, the tier-I supplier does not pay the tariff according to the preferential treatment. Alternatively, documents are sent later. In this case, the tier-I supplier must pay the tariff and request for reimbursement by the customs authorities later.

In case of intra-EU purchases, the high documentation costs can be lowered by using the “Long Term Supplier Declaration (LTSD)” according to Council Regulation 1207/2001 (EU 2001).

When selling the produced module to the OEMs, the tier-I supplier is obliged to keep records and to demonstrate that the module is of EU origin. These records should include details of the process of manufacture, supporting invoices and accounts, and a supplier’s declaration stating the origin of the module. The documents related to the purchased material are, therefore, to be complemented by the tier-I supplier’s internal documentation – typically in form of the “Bill of Materials” imbedded in the company’s SAP system.

Also at the end of the process, an LTSD can be used relieving the company from administrative costs. However, Council Regulation 1207/2001 states the minimum documentary requirements only so that the OEMs have the right to modify the LTSD according to their needs. This implies additional complexity for the tier-I supplier.

The module manufactured in the company’s German factory may be sold to OEM’s assembly plants within or outside the EU. Moreover, the vehicles assembled in Europe may later be exported to non-EU destinations – with the latter being probably located in countries with which the EU had signed FTAs. The following table provides an overview of FTA provisions relevant for two modules’ exports.

For each product, columns I and II show the alternative RoO applied. For example, product I exported to Morocco confers originating status if manufactured from materials of any heading, except that of the product, in which the value of all non-originating materials used does not exceed 40% of the ex-works price of the product or, alternatively, in which the value of all

materials used does not exceed 25% of the ex-works price. The de-minimis rule allows for 10% of the products value. CTH stands for “change in the heading”, and thus refers to the “substantial transformation” of the product at the four-digit level.

**Table:** RoO relevant to the tier-I suppliers’ exports

Preferential Zones (Examples)	Product I			Product II		
	Value of material			Value of material		
	I	de minimis	II	I	de minimis	II
Switzerland Israel Morocco Jordan Tunisia	40%	10%	25%	40%	10%	30%
Mexico	40%	10%	25%	CTH	n.a.	40%
Chile	40%	10%	25%	40%	10%	30%
Korea	CTH	n.a.	50%	CTH	n.a.	50%
ACP Countries	40%	15%	25%	40%	15%	30%

Source: Tier-I supplier; CTH = change in the heading

The calculation is also relevant for OEMs in Europe, as they incorporate the module into the final product – the vehicle – needing the documentation for the LTSD they send to their non-EU customers.

The formal process in case of non-preferential RoO seems to be comparably easy. As the tier-I supplier’s products are not mentioned in any annexes to Council Regulation 2913/92 and Commission Regulation 2454/93, respectively the Union Customs Code (Regulation 952/2013), the “general principles” apply. These are the CTH or – alternatively – the rule that 45% of the ex-works price is based on value added as a result of working and processing and the incorporation of parts originating within the EU.

The workflow follows the RoO requirements. If the material is purchased from within the EU, the company requests thee LTSD from the sub-suppliers. In case the material is eligible for preferential treatment in particular countries, the responsible clerk in the company’s trade department registers the origin of the product, checks additionally in which countries the product is eligible for preferential treatment and validates the information in the SAP-run Bill of Materials.

This manual check is not without problems. As different sub-suppliers list different “sets of countries” on their LTSD, it is the individual decision of the responsible clerk to insert the

correct country group into the SAP system. This process is time consuming and provokes errors. If the material is imported from a non-EU country, the Certificate of Origin may help. However, as mentioned above, the documents do not always accompany the physical delivery but are sent later. As the company is not able to handle an ex-post registration of origin, imported products not accompanied by the documentation are generally booked as “not originating in EU”.

After the material was processed, the total material value of the product is calculated based on the Bill of Materials. As the SAP system provides the accounting department with the information “originating” or “non-originating”, the percentage of originating materials can be computed easily. However, a second issue occurs: The Bill of Materials does list identical parts with one ID number – regardless of the individual sub-supplier. So, materials (for example mass ware like screws) being sourced from different countries of origin cannot be identified as preferential if at least one of the sub-suppliers is located in countries without FTAs with the EU. Therefore, this material is listed as non-originating.

The final step – submitting the LTSD to the OEM – includes complications, too. As mentioned above, the LTSD form may be modified by the individual OEMs. For example, BMW requires additional information – such as the “supplier ID” and the “material ID” used by the BMW accounting system. As each of the OEMs uses own material classifications and supplier classifications, dozens of different LTSD forms need to be generated. One of the OEMs even requires the “dual use code” and flag as the modules seem to be used in trucks which may be exported for military purposes.

As the LTSD is only valid for one year, it has to be renewed each year. Moreover, whenever there are changes during the period – in the sourcing process, the list of sub-suppliers and the prices paid for the purchased material – the LTSD needs to be revised. If one considers the significant fluctuations of imported goods’ prices due to fluctuations in exchange rates, it is necessary to monitor the LTSD contents continuously.

In comparison, the issuing of non-preferential Certificates of Origin is a rather simple process, typically initiated through the customs web-portal. However, some of the customers require the proof of origin prior to the goods’ arrival in the port of destination. In Egypt, for example, the importer needs to submit the certificate to the customs authority for customs clearance. Other countries may request an additional entry of the product’s origin on the invoice.

### **3.3.2 Other Challenges and Issues**

In addition, the lack of information flows between departments may increase the administrative burden. The sales department, for example, negotiates with OEM customers without being informed of the costs which may arise in the process of documentation. A higher diversity of customers increases the complexity of certification and, thus, creates costs never taken into account in the sales negotiations.

Similarly, the procurement department is unaware of the documentary needs. Buyers focus on the price of the product but neglect the related cost in the company’s customs department. Even more, purchasing decisions may jeopardise the status of preferential treatment. Thus, sourcing at

lowest prices may end up in higher costs for the company as the preferential status of the produced modules may be lost. Documentation needs, therefore, create a pressure on the company to source rather within the European Union than to search for opportunities outside this region.

Therefore, the tier-I supplier is partly forced not to realise opportunities of low prices in the purchasing sector, because low-cost suppliers from outside the EU are not able to provide them with accurate documentation. In addition, even parts purchased from suppliers in FTA-partner countries are listed as non-originating, as it seems nearly impossible to identify them unless the documents are delivered with the products.

Moreover, the following activities are assigned to one individual clerk: requesting the documents from sub-suppliers; the SAP-related data validation regarding the country zones where the manufactured module is eligible for preferential treatment; the monitoring of data accuracy, and the filing of data. The delegation of these activities to one person requires, on the one hand, a rather high level of expertise but, on the other hand, leads to a higher risk of mistakes and even fraud. The smaller a company is, the more problematic it is to manage the complexity of the many different RoO and RoC regulations.

#### **4. Conclusions**

The multitude of RTAs creates a “Spaghetti Bowl” with various RoO and RoC. As pointed out in the rather macroeconomic and policy-related literature, this leads to inefficiencies and trade diversion. Companies are inclined to deviate from global sourcing and head for purchasing strategies which rather follow the incentives of preferential treatment. For tier-I suppliers in the automotive industries, the incentive is not so much the lower import duties but the sheer necessity of providing their customers with a clear and complete documentation of preferential treatment for their purposes. Tier-I suppliers not being able or willing to provide their OEM customers with this documentation would be out of the market soon.

This case study supports the rather macroeconomic literature with an insight into the organisation and workflow of a company processing the documentation of products’ origin. It adds the view from inside the company.

The organisational issues described above may seem to be minor. However, considering the automobile industry’s rather low return on sales, even rather small inefficiencies are of importance. Unfortunately, the company was not prepared for a more sophisticated analysis which would have allowed for calculating the costs of the documentation process in euros.

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